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# SYNESTHETIC PERCEPTION IN MUSIC

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Fig.8. Galeyev. Two frames from Prometei lumia music film Space Sonata, 1981.

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## CONTENTS

INTRODUCTION	l
CHAPTER ONE	
Synesthetic Associations in Literature Clinical Description of Synesthesia Patterns in Synesthesia	3 4 7
CHAPTER TWO	
Synesthesia based on Compositional Style Synesthesia based on Timbre Synesthesia based on Pitch Synesthesia based on Tonalities	10 11 11 12
CHAPTER THREE	
Musical Background The Poem of Fire Scriabin's Synesthetic Perception Visual Performance of Prometheus	16 17 20 23
CHAPTER FOUR	
Music Kinetic Art Experiments in U.S.S.R	27
CONCLUSION	31
APPENDIX	33
REFERENCES	35
BIBLIOGRAPHY	39



Fig.1. Reduced copy of a poster designed for the promotion of a series of concerts by Olivier Messiaen.

#### INTRODUCTION:

I first became interested in this subject when I was asked to design a poster to promote a series of concerts by the contemporary composer Olivier Messiaen. I was drawn to the fact that Messiaen used colour as a stimulus for composing music. He regarded colour, especially celestial colour, as a personal sensation. In works like Couleurs de la Cite Celeste [Colours of the Celestial City], Des Canyons aux Etoiles [Canyons at the Stars] or Catalogue d'Oiseaux [Catalogue of Birds]; these colour sensations were notated in the musical score. But Messiaen was not interested in the visual performance of his colour sensation, he felt that if the audience wished to see them they would have to train their imagination whilst listening to his music. With this information about Messiaen and his music I tried to design a poster using a code of colours that corresponded specifically to a small piece of music in his Turangalila [Song of Love] symphony. The result was an array of brightly coloured squares that ranged from very dark blue to almost white with dot and triangular notations. What I tried to visually create was a series of coloured units that reflected the tonality of Messiaen's music. Hence, I used dark colours to represent deep tones and bright colours to suggest higher ones. (Fig.1)

So Messiaen, along with help from a design tutor subsequently led me to investigate if other such analogies between colour and music existed. My research brought me to synesthesia. A phenomenon in which the stimulation of one sense produces a mental impression associated with a different sense. For example hearing certain sounds can cause a person to see certain colours and this ability to 'hear' colour or 'see' music has been termed by psychologists as synesthetic perception.

This thesis stands as a practical exploration of the ideas of synesthetic perception in music. It documents the existance of such theories and analyses the effect of one composer's synesthetic perception. I have divided this paper into four main chapters. The first one discusses aspects of the phenomenon, outlining a discription of synesthetic perception, its manifestation in literture and the patterns it develops. This then allows me to deal more specifically in chapter two with four main areas of synesthetic perception in music. Having outlined these my third chapter analyses the individual synesthetic perception of one composer, namely Alexander Scriabin. His fifth symphony written in

1910, <u>Prometheus: The Poem of Fire</u> was orchestrated with a play of coloured light. This was a direct result of his perception of sound as literal colour. <u>Prometheus: The Poem of Fire</u> was the first ever colour light symphony and was also the most celebrated use of the colour organ. This chapter analyses the whole composition of light including a brief background of Scriabin's musical history. In a more detailed account I will outline Scriabin's own synesthetic perception with reference to <u>Prometheus</u> and in the final section of this chapter look at how the composition was presented for public performance. My final chapter considers the effect Scriabin's synesthetic perception had on the Soviet School of Music Kinetic Art. Due to very limited available information I have only included some principal experiments in this broad subject to create a better understanding of this new art form.

Researching for this paper was difficult as no books exist solely on synesthetic perception in music. For my part I have relied on music biographies, journals and essays. As an extra stimulus I have provided a copy of Scriabin's symphony, <u>Prometheus: The Poem of Fire</u> to be enjoyed. I suggest that Faubion Bowers' verbal explanation of the symphony in the appendix be read during the recital. CHAPTER ONE

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#### Synesthetic Associations in Literature

Psychologists describe synesthesia as the direct linking of vivid perceptions in one of the senses with a stimulus from another. To prove this interaction of senses exists they discovered that if blindfold and deprived of the sense of smell it is impossible to tell if one is eating an apple or an onion. (Ref.1) So synesthetic experiences involve a kind of crisscrossing of stimuli and sensations. For example a visual stimulus can provide another kind of sensation such as the tactile feeling of temperature. A person who can register these sense impressions is called a synesthete. It is said they can be blessed or cursed with the ability to 'hear' colours and 'see' sounds. But synesthesia is not limited to the association of colour and sound, although it is the most common experience.

In literature there are many well known examples of synesthetic associations. For example, E.T.A. Hoffman's description of Dr. Johannes Kreisler as 'the little man in a coat of the colour of C Sharp Minor with an E Major coloured collar'. (Ref.2) In Baudelaire's poem <u>Correspondances</u> in 1857 he referred to the interchangeability of colours, perfumes and sounds. (Ref.3)

Comme de longs echos qui de loin se confondent Dans une tenebreuse et profonde unite Vaste comme la nuit et comme la clarte Les parfums, les couleurs et les sons se repondent

Another French symbolist poet, Arthur Rimbaud also claimed to have synesthetic associations. His prime example lies in the sonnet Les <u>Voyelles</u> where he attached a colour as it appeared to him to each vowel; A black, E white, I red, O blue and U green. In a search for the source of his theory, a spelling book used by him in his childhood was discovered. In it the vowels were printed in the same colour sequence as his sonnet.

The association of colours and letters is quite common, yet relatively unknown because few individuals have attempted to illustrate this

particular pattern of thinking. As an example Vladimir Nabokov, the Russian writer did not employ direct colour association in his books, but in an article published by the London Observer in 1927 he claimed that since childhood he could 'see every letter of the alphabet, both Russian and English as a dab of constant and distinct colour'. (Ref.4) His system of colour correspondence differed from Rimbaud's because for him the tint of the vowels varied, depending on their sounds. This establishes the first point that personal often subconscious mental processes are responsible for synesthetic associations.

An extremely interesting example of synesthetic perception in nineteenth century literature occurs in J.K. Huysmans' novel <u>A Rebours</u>. Chapter four describes how Jean des Esseintes enjoyed 'sonorous gustation' an 'orgue a bouche', which satisfied sight, taste and hearing simultaneously. It was provided by a set of vials of coloured liquors. By pulling stops labelled 'flute', 'horn' or 'voix celeste' a few drops from each vial could be tested in various combinations. What resulted were termed 'inner symphonies' because each liquor corresponded to the sound of a musical instrument. Dry curacao was associated with the clarinet, Kummel with the oboe, Creme de Menthe the flute, Kirsch the trumpet, Gin and Whiskey cornets and trombones and Brandy the tuba. Huysmans claimed 'the music of liqueurs had its own scheme of interrelated tones'.

Thanks to a series of erudite experiments [des Esseintes] had been able to perform upon his tongue silent melodies and mute funeral marches; to hear inside his mouth creme de menthe solos and rum-and-vespreto duets. (Ref.5)

## Clinical Description of Synethesia

The whole concept of synesthesia in both literature and music has been analysed by many psychologists. They have discovered that a highly complex pattern of imagery occurs in synesthetic perception. Chromesthesia, photothesia, synopsia and colour hearing are a few of the many terms applied to the mixing of sensorial perception. Literature on the subject published during the nineteenth century added the prefix 'pseudo'to indicate the false nature of visual sensations produced by

other stimuli. The process is described in Warren's <u>Dictionary of</u> <u>Psychology</u> as:

A phenomenon characterizing the experiences of certain individuals, in which certain sensations belonging to one sense or mode attach to certain sensations of another group and appear regularly whenever a stimulus of the latter type occurs.

One of the first references to colour hearing was in Goethe's <u>Zur</u> <u>Farbenlehre</u> [Towards a Knowledge of Colour] in 1810. It is interesting to note that Goethe first embraced but later rejected the idea of an analogy between musical tone and coloured light. (Ref.6) In his book <u>Zur Farbenlehre</u> he cited the case of a Swiss magistrate who perceived colour in sounds. To him each instrument evoked specific colours and high notes were especially vivid. The composer, Joachim Raff, in 1855 stated that colour impressions came from different instruments. For example, the flute gave him the sensation of intense azure blue; the cornet green; the trumpet scarlet and the French horn purple. Reports of his colour associations differ from others which again confirms the arbitrary nature of synesthesia.

Many studies of associative perception appeared in medical journals during the late nineteenth and early twentieth centuries. It became a very fashionable branch of psychology. One extensive study of synesthesia made was based on responses to a questionnaire by 596 people with a detailed examination of 77 instances of 'compulsory light perception via sound'. That study was made in 1881 by Bleuler and Lehmann. The most astonishing subject in that study was a 23 year old medical student. (Ref. 7) All of his perceptions were accompanied by parallel colour imagery, even letters and words were coloured according to sound. Variations in pronunciation caused a great change in the tone of the colour. He sensed that each language had a characteristic colour; French was dark brown, English light brown, German green, Italian blue and Greek yellow. Colour sensations were also evoked by numbers as well as geometric patterns; circles were bright yellow and triangles were silver, possibly due to the familiarity with the instrument. Odours were also never perceived without colour

sensations. The smell of vanilla was seen to be lilac, ammonia was white and vinegar was red. The sense of taste was also accompanied by colour associations. Sweet taste was analogous to red and a bitter taste suggested dark brown.

In 1883 in his <u>Inquiries into Human Faculty and its Development</u> Francis Galton made interesting remarks on the nature and value of such associations. He concluded that although systems of correspondance often differed, those who spontaneously saw colour in letters were numerous. Through several studies he explained how some individuals used colour association to spell. Particular colours were associated with each letter of the alphabet but in combination these letters provided a characteristic colour for words. The word was misspelled if the correct colour tint was not evoked.

During the nineteenth century the linking of perceptions was seen as a dificiency much like colour blindness; a short circuiting of nerve endings and this view extended into early twentieth century. One example is Otto Ortmann's 10 year study of the colour tone associations of a musically gifted girl in 1933. He concluded that 'the probable basis for synesthesia is an interlacing of [nerve] fibres..... sensory reflex describes the phenomenon.' (Ref.8) Numerous descriptions continued to treat the phenomenon as a highly unusual form of perception but some publications, which appeared in the early part of this century showed an interest in the various degrees and possible patterns in synesthesia. Professor Charles Myers was one of the first to broaden the definition of synesthesia to include colour thinking. (Ref. 9) This definition recognised those cases where a subject's response to actual stimuli was the thought of particular colours with no accompanying photism. A photism is a sensation of light caused by a change in the retina, not by stimulation by light waves. Drugs and certain diseases are said to be causes of photisms which may appear as small bright lights or as an illumination of the entire visual field. Other psychologists considered examples where no physical stimulus was present to be valid of synesthesia. To illustrate this, a response was produced in one of the senses by merely thinking of something related to another sense. An example of the former type is the person who thinks 'red' without visualizing a pattern of colour in response to hearing a composition in

C Major. The latter type would either think 'red' or experience vivid imagery upon thinking about C Major. (Ref. 10)

## Patterns in Synesthesia

By the 1930s psychologists began to discern patterns in synesthetic perception. They discovered that the phenomenon was not as rare and mysterious as had been assumed. The most important pattern was discovered from a study of an intelligent seven year old in 1934, by Riggs and Karowski. (Ref. 11) This study determined two characteristics of synesthetic perception. Firstly, the phenomenon originated in childhood and, secondly, they claimed that 'every case of synesthesia, whether simple or complex, emotional or ideational. consists essentially of a parallel arrangement of two gradient series'. These series are emotions, tastes, odours, temperatures or colours which are then paired with letters, words, numbers, intensities, pitches, tonalities or anything else of interest to the synesthete. It is possible to explain many associations on the basis of learning experiences. For example anyone who registers number one with yellow, two as blue, three as red, four as purple, five as orange and eight as black might well be influenced by the game, pool, as billiard balls follow the same colour-number sequence. The spelling book of Arthur Rimbaud is another example.

More evidence that synesthesia is related to meaning and thinking in general was found during a test in 1938 of Dartmouth College students. The psychologists Karwoski and Odbert discovered that 13% of the students associated colour with music but a larger percentage only occasionally felt this. The experiments concluded that a colour music could be imagined, broad enough in range to satisfy the patterns of practically all synesthetes. From this and other experiments Karwoski and Odbert outlined five patterns: (Ref. 12)

1. Certain colours fit 'moods' of music.

 Lines of different colour are often associated with instruments of different timbre.

CHAPTER TWO

- Photism patterns are frequently related to music i.e. smooth lines accompany a graceful music and jagged lines accompany syncopated or staccato passages.
- Photisms expanding within the visual field are related to an increase in volume or rise in pitch.
- Colours become lighter and increase brightness with the rise of pitch or quickening of tempo.

The film Fantasia demonstrates many of the above characteristics.

These experiments also explored whether different responses to stimuli resulted if the subject was asked to choose from colour chips or use a word to identify the colour of associated impressions. The responses were the same. Other experiments, involving non-synesthetic subjects resulted with associations remarkably like synesthetes. It was concluded that subjects who were forced to relate colours to music gave responses very similar to those who reacted readily to music with vivid visual imagery. The main difference was in the richness of the response. Ιt was apparent that many synesthetic associations followed patterns exhibited by language metaphor. For example, exciting fast music might be visualized by a synethete as a bright red photism cut by jagged lines in sharply etched colours. A non-synesthete would merely agree that verbal metaphors such as red hot or bright provided an adequate discription of the music. Experimental psychologists have continued to examine the connection of intersense perception. However, attempts to understand linguistic encoding have generally replaced interest in reporting diverse cases of synesthesia. One psychologist who has pursued experimental research into synesthesia is Lawrence Marks. During the 1970s he conducted work on non-synesthetic individuals with the aim of establishing general principals of intersensory relations. (Ref. 13)

It is clear that regardless of the degree of synesthesia i.e. the vividness of photisms, associative phenomenon seems to a) originate in childhood and b) to consist essentially of a parallel arrangement of two gradient series. As I already explained these series may be emotions.

tastes, odours, temperatures or colours which are then paired with letters, words, numbers, intensities, pitch, tonalities or anything else of interest to the synesthete. How and why particular systems of correspondence are established is an individual, often subconscious process. It is clear from all my research that synesthetic perception found its greatest channel in music and my next chapter classifies this into four main groups. Compiled from an article on synesthetic perception by Kenneth Peacock (Ref.1) and information from music dictionaries it is possible to class synesthetic perception in music into four groups:-

- 1. Synesthesia based on compositional style.
- Synesthesia based on timbre [a distinctive character of musical sound or voice apart from its pitch or intensity].
- Synesthesia based on pitch [musical degree of highness or lowness of tone].
- 4. Synesthesia based on tonalities [the relationship between tones of a musical scale].

### Synesthesia based on compositional style

The first type of synesthesia is an expanded concept of colour hearing experienced in many individuals. The association of colours with particular composition seems to be an entirely subjective one, and often a characteristic of musically unsophisticated composers. Christoph Wagenseil in his book on the Meistersinger in 1697 speaks of knowing certain tunes as the 'evening red tune', 'the blue cornflower tune', 'the black amber tune' and 'the yellow lion skin tune'. Cases have been cited, for example, in which the opera 'Tannhauser' was considered blue, and 'The Flying Dutchman' was misty green. These subjective associations were possibly derived from the blue cave of Venus in the first opera. and the passive sea in the second. Subjects have also been found who looked upon Mozart's music as blue, Chopin's as green and Wagner's as 'luminous'. The psychologist Theodore Flournoy in 1893 spoke of the music of Francois Gounod as evoking a sensation of violet in one individual and blue in another. Another of Flournoy's subjects felt the music of Beethoven to be black. (Ref. 2) In 1930 P.E. Vernon mentioned the case of a person who found Wagner's music to be green and vellow and that of Chopin luminous. He also remarked:

A very well known living pianist has said that his synesthesia is so vivid that he sees the colours aroused by the music the whole time he is playing at concerts and guides his interpretation according to whether it is blue, green, brown. (Ref.3)

### Synesthesia based on timbre

The second group of synesthetes concerns those with colour associations based on timbre. It is the most general example among musicians. This type of synesthesia connects certain colours with musical instruments. An example of this association can be found with the colour scarlet. Its colour is emotionally exciting because of its use by royalty and its association with pageants. Trumpets also connected with royalty are often associated with fanfares at pageants. Hence both trumpets and the colour scarlet evoke similar emotions and are perceived as analogous. (Ref. 4) In 1876 H.M. Bosanquet, a distinguished scientist and researcher on the scientific side of music, suggested that, in order to make the reading of orchestral scores easier, different colours should be used in printing the staves devoted to the various families of instruments. He found remarkable colour agreement between the musicians and suggested black for strings and voices, red for brass and drums, and blue for wood wind instruments. The principal of this association is not one of direct association, analysed it seems to be as follows, in music, strings are emotionally sober, brass thrilling, in colours, red is thrilling and black is emotionally sober. The vague general emotion aroused equally by a sound and a sight thus serves to link them. (Ref. 5) Writer and composer, Leonid Sabaneev suggested that the term klangfarbe [or tone colour] had some literal visual basis and that a definite correlation exists between talent for orchestration and possession of colour-sound association. He made a list of composers for whom associations between colour and sound were strong and those for whom it was weak. The first group included Alexander Scriabin, Rimsky Korsakov, Wagner, Liszt, Chopin and Debussy. Composers considered to lack the colour ear were Schumann. Rachmaninov and Brahms. (Ref. 6)

## Synesthesia based on pitch

The third type of synesthesia, that of colour associations based on pitch is quite common. This does not require a sense of absolute pitch. Spontaneous association of individual colours with specific tones is

rare. Experiments concerning the nature of absolute pitch have determined that attention to the individual sound of notes and not relationships between notes often results in increased ability to name specific pitches when heard. Many individuals consider low sounds or pitches analogous to darker colours and higher pitches to brighter ones. To prove this, opera composers set dark scenes in low registers and light scenes in higher ones. This is also true of film and television music. It is difficult to determine why there is agreement concerning the appropriateness of this association, whether there is some physiological process resulting in perceived similarity of dark colours and low registers or if composers and audiences are simply accustomed to certain conventions. In one examination by Sabaneev in 1929 of 250 students, 218 associated tonal registers and colours. In every case low register was perceived in dark colours and higher ones were visualized as lighter colours. (Ref.7) Another issue that disproves this form of synesthesia has to do with the behaviour of combined sounds and combined colours. The behaviour of sounds in combination; tones and pitches, is completely different from the behaviour of colours in combination. If one combines two notes they are clearly distinguished by the ear as two elements. The two notes remain what they were before; retain their two positions in the musical scale. But if one combines two colours, both of them disappear, in place is left a single new colour, i.e. from another portion of the spectrum or colour scale. Imagine the difference between combining all the colours of the spectrum, to give pure white and simultaneously sounding all the notes of the octave with all the innumerable pitches in between! (Ref. 8)

## Synesthesia based on tonalities

The fourth and final type of synesthesia, in which particular colours and tonalities are analogous, is fairly widespread among musicians. However, if these associations are as constant as musicians seem to imply it is difficult to trace any intermediate link of emotion aroused on the one hand by the colour and on the other by the musical effect as was possible in the case of timbre. An example of this form of synesthesia is Andrew Gretry, composer and founder of the school of French Opera-comique. He assigned colours to keys in the third book of his Memoires ou Essais sur la Musique in 1789. Even Beethoven referred in his sketch books to B. Minor as the black key, but there is no evidence to show he regularly associated tonalities and colour. (Ref. 9) Like all other forms of synesthesia, the pairing of colours and tonalities depends on individual experience. Alexander Scriabin considered the tonality of F. Sharp to be a bright saturated blue according to most sources, Rimsky Korsakov perceived that key as an indefinite grey green colour. Serge Kousevitsky, who conducted Scriabin's famous colour symphony Prometheus; the Poem of Fire, claimed in an interview: 'Rimsky Korsakov and many of us in Russia have felt the connection between colour and sonorities. Surely for everybody sunlight is C Major and cold colours are Minors. And F Sharp is decidedly strawberry red.' (Ref. 10) Attempts to resolve the issue of correct colour and key association have not been successful because each synesthete believes his particular system of correspondence is natural for everyone. In 1966 Nicolas Slonimsky stated that F Sharp is naturally associated with dark colours because that tonality is played on the black keys of the piano. G Flat somehow suggests a silvery hue because Flats look less substantial on paper than Sharps implying lighter colours. Leonid Sabaneev reported that for many of his subjects, colours corresponding to simple harmonies are almost pure, but Flat kevs 'connected with metallic, glittering colours, with lustre and reflections. The more complex the key... the more complex and fantastic is the colour associated with it.' This is certainly true for Scriabin and Rimsky Kovsakov. Each perceived tonalities notated in Flats as corresponding to dark colours and can be seen when the synesthetic perceptions of the two composers are compared. (Ref.11)

Major Tonality	Rimsky Korsakov	Scriabin
С	White	Red
G	Indefinite brown-green	Orange
D	Yellow	Yellow
А	Rosy	Green
Е	Blue with Glitter	Light Blue
В	Dark Blue, Steel	Whitish Blue
F-Sharp	Indefinite Grey Green	Blue, saturated
B-Flat	Dark Brown, metallic	Violet
A-Flat	Grey Violet	Purple
E-Flat	Dark Grey-Blue	Dark Blue
B-Flat	Dark Grey-Blue	Steel Metallic Blue
F	Green	Dark Red

#### Synesthetic Perceptions

One of the few specific agreements between the correspondence systems of Scriabin and Rimsky Korsakov is on D Major both considered it to be yellow. This was also Sabaneev's personal association and the same pattern was reported in 78% of his subjects. Much music scored from brass instruments sounds in the key of D. It is possible that the high percentage of agreement on the association of D and yellow may be due to a subconsious linking of the colour of brass with a frequently heard tonality played by trumpets and horns.

To conclude chapters one and two I must say that synesthetic perception is indeed strange, unusual and fascinating. In them I have briefly outlined a number of experiments that determine several factors of synesthetic perception. The first major factor, as seen in the writings of Baudelaire and Rimbaud establishes that personal, often subconscious mental processes are responsible for synesthetic association. The second factor found in an experiment by Riggs and Karowski points out that the phenomenon originates in childhood and consists of a parallel arrangement of two gradient series. I have established that the most common synesthetic experience is the association of colour and sound, and through various research I have classified these experiences into four specific groups, synesthesia based on compositional style, timbre, pitch and tonalities. This leads the way for me to discuss in detail the synesthetic perception of one composer. Alexander Scriabin. As I have already mentioned both he and Rimsky Korsakov found colours and keys or tonalities analogous. In this paper I have only considered Scriabin because through one composition namely, Prometheus: the Poem of Fire he actually visualized his synesthetic perception. He was the first to ever write a colour symphony. Earlier than Prometheus, Rimsky Korsakov wrote the ballet opera Mlada in 1890. In its score it contained verbal instructions regarding colour changes in the stage lighting, which corresponded to Rimsky Korsakov's own colour hearing. Unfortunately he never claimed to have created a new art and his light music intentions went unnoticed.

Before I discuss <u>Prometheus: the Poem of Fire</u> I will briefly outline Scriabin's background and musical achievements in order to obtain a more

objective view of him as a composer. I will then analyse the symphony and show how it acted as a vehicle, not only for his synesthetic perception but for his philosophy of life. The final section of this chapter then looks at three examples of how the symphony was presented for public performances. CHAPTER THREE

#### Musical Background

According to Faubion Bowers' biography, Alexander Nicolaevich Scriabin was born on the sixth of January 1872 in Moscow into an aristocratic muscovite family. (Ref. 1) His father was a lawyer, while his mother was a gifted pianist, Lyvbov Petrovna. A year after Scriabin's birth she died and his father then spent the rest of his time abroad in the Russian Consular Service. Scriabin was left to be brought up by female relatives who pampered him endlessly and set his mind towards the fastidiousness and egocentricity of his latter years. At a young age he showed an aptitude for the piano, which was greatly encouraged. By 1882 he had joined the Moscow Cadet Corps. There he constantly wrote orchestral piano pieces and poetry. Six years later he joined the Moscow Conservatory, graduating in 1892 with the second gold medal. He promptly embarked on a career as a concert pianist and it is said that Chopin's influence was evident in his early style. (Ref. 2) In 1894 Scriabin was introduced to Mitrofan Belyayev, St. Petersburg's greatest patron and publisher of music. He took complete control of his musical affairs, paid for tours, compositions and seemingly took over the role of doting parent. From 1897-99, he married Vera Ivanova Issacovich, a Conservatory gold medalist, travelled extensively and produced his first symphony. The latter was in six movements which incorporated a choral finale; a setting of his own words in praise of art.

After his second symphony in 1901 Scriabin became increasingly preoccupied with philosophical and mystical ideas. They precipitated a radical change in his thinking, his life and his music. This new direction was represented in his third symphony <u>Le Divine Poeme</u>. He left the Conservatory, where he taught, to become more involved in orchestral music and philosophy, specifically Nietzsche. Scriabin planned a 'philosophical opera' based on Nietzsche's principals. He left Russia for six years and became involved with Tatyana Schloezer who was devoted to him. She stimulated his music and served to narrow his outlook, sending him further into an egocentric world where his own creativity and genius became his exclusive concern. In 1905 Scriabin encountered the Theosophical Society and this superseded his interest in Nietzschean philosophy. He filled notebooks with philosophical disjointed jottings and poems. One of these developed into the Poem of Ecstasy, Scriabin's fourth symphony. It was completed in 1908 and first performed in New York. That same year Scriabin met Serge Koussevitsky who eventually took over the role of patron after Belyayev's death. Returning to Russia the Poem of Ecstasy created extraordinary fervour which put Scriabin in the forefront of contemporary composers. Soon after, he began work on Prometheus: the Poem of Fire, his last orchestral work which embraced the play of coloured light in the score. It was his preliminary step towards the fusion of the arts and senses which was ultimately to be realized in a work called the Mysterium. After the completion of Prometheus in 1910, Scriabin returned to piano music, the works of his remaining years display a refining and perfecting of his mature idiom. His very last works move deeper into modernism leaving tonality well behind and preparing the ground for the still unwritten Mysterium. Before his untimely death at the age of 43, Scriabin managed to travel and taste the universal success of his orchestral works. When visiting London in 1914 Scriabin suffered a boil on his upper lip which led to blood poisoning. After a series of operations he died on the 27th April, 1915.

### The Poem of Fire

According to all the sources I have read, <u>Prometheus: the Poem of Fire</u> was undoubtedly Scriabin's greatest symphony. Nothing in orchestral literature has approached its brilliance. It was written in 1909 and was scored massively, incorporating not only an expanded orchestra but also a solo piano, masses of trumpets, horns, specially designed bells, an organ, a wordless chorus and a colour organ or clavier et lumiere.

The composition itself lasts just half an hour and in that time Scriabin takes us on a journey through his doctrine or philosophy. The <u>Poem of</u> <u>Fire</u> is based on the story of Prometheus, who stole sparks from the gods' charriot wheels as they rode through the firmament, and gave the fire to man down on earth below. Satan and Lucifer along with Prometheus were idolized by Scriabin. He believed in these three archrebels because, by defying God they enabled man to equal and then surpass God himself. Scriabin, too, wanted to bring fourth fire and change. The symphony

comprised of ll themes. The orchestra represents the cosmos and the piano represents man. Through these themes Scriabin tells the story of how mankind, in the beginning lacked the Promethean spark; fire. Because of this he claimed humanity was without will or self consciousness. Prometheus then gave mankind the divine spark, bringing into existence the power of the creative will. But Scriabin warns that the gift of fire is both a curse and a blessing and there are those who use it for good, while others make it an instrument of evil. (For full explanation of the symphony see Appendix.)

It is obvious that Scriabin made his music an expression of his philosophy, a philosophy that found its origins in numerous teachings. After 1900 he was drawn to mysticism, especially that of Prince Trubetskoy with whom he attended meetings of the Philosophical Society. Those discussions impressed Scriabin profoundly. He became particularly interested in Trubetskoy's idea of the oneness of God and love. Two years later Scriabin was drawn to Nietzsche's philosophy which made him identify himself with the superman. This became the basis for his philosophical opera about a Nietzschean hero, who, through art, conquered the world. From Nietzsche he went on to theosophy and the teachings of Mmd. Blavatsky and pantheism. In his mind and his notebooks, dated 1904-5 Scriabin immersed himself deeper in the nebulous world of mysticism until he arrived at solipsism: the theory that self is the only object of real knowledge and that nothing but self exists. His creative ego became all important.

The eternal world is the result of my subjective spiritual activity. The world is nothing else than an antithesis of my personal consciousness. The "not I" which is opposed at will by the "I" is necessarily only so, so that the "I" in "I could create" can create.... I am the apotheois of creation; I am the aim of all aims. I am the end of all ends. (Ref.3)

Art, he became convinced, must be a 'transformer of life', a means of converting life into 'a kingdom on earth'. His vision was not merely a new kind of music but a new kind of Weltanschauung; a unity of all social, religious, philosophic and artistic thinking into a new system. 'Art',

he said 'must unite with philosophy and religion in an indivisable whole, to form a new Gospel which will replace the old Gospel which we have outlived. I cherish the dream of creating such a mystery.' (Ref. 4) This unity was to be realised in a symphonic event he termed the Mysterium. Prometheus, with its orchestration of coloured light was to act as a preliminary step towards Scriabin's fusion of the arts and senses. The Mysterium was to summarize the whole history of mankind from beginning of time to the final cataclysm which he felt would some day be at hand to purge the world and make room for a new race of nobler men. He wanted to use every artistic means at his disposal, dancing, music, poetry, colours and odours. He even thought of divising a new language for his mystery made up of signs and exlamations rather than words. For the display of this Mysterium, Scriabin envisioned a special globe shaped temple in India, but he realised the world was not ready for his concept. He was convinced that the human race as he knew it was doomed and he felt that his Mysterium would be the final expression of the dying race and the transition to the new race of man. Scriabin welcomed the outbreak of World War I, in it he saw the purification the world was waiting for. After which the new race could emerge and there was no doubt that he. himself was the Messiah pointing the way to a new world.

Scriabin never wrote the <u>Mysterium</u>, although it was planned for 12 years. However he did finish the text and some musical sketches called <u>L'Acte</u> <u>Prealable</u> [Preliminary Act] for it. These sketches were to have introduced Scriabin's entire philosophy in the <u>Mysterium</u>; a concept that penetrated more and more into his writings until it obsessed him entirely.

There are definite limitations in Scriabin's work. For example in many of the biographies I have read his philosophical ideas seemed to be generated by others. In general he took philosophers' concepts like those of Neitzsche, Mmd. Blavatsky and Trubetskoy and interpreted them into his way of thinking. For Scriabin, his final symphony the <u>Mysterium</u> was to represent a last expression of our dying race and would act as the transition to a new world. I believe it was naive of him to try to create through music a new futurological utopia, especially as it seemed that his audience, the world, would have to train their imaginations and focus on his philosophy of life. He was an idiosyncratic man, convinced of his

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Fig.2. First page of Alexander Scriabin's symphony, <u>Prometheus</u>: The Poem of Fire. The tastiera per luce part for coloured light appears at the top of the score.

own divinity and so touched by his own creativity that he became enveloped in his own private utopia.

Scriabin's ideas were extreme and inordinate, but it is true to say that at the beginning of the century artists were called upon not to withdraw into the guild of one particular art. 'Russia is a young country and its culture is synthetic' wrote Alexander Blok. (Ref. 5) It seemed the entire artistic atmosphere of the time was imbued with the idea of synthesis. For example, the Ballets Russes of Sergei Diaghilev, the theatrical experiments of Vsevolod Meyerhold and Kruchenykh or the theoretical revelations, theatrical productions and films of the young Serge Eisenstein. Scriabin's music and his philosophical ideas can be attributed to this intellectual climate of Russia.

#### Scriabin's Synesthetic Perception

Aside from his philosophy in <u>Prometheus: the Poem of Fire</u>, Scriabin wrote, in the orchestral score a play of coloured light. This was the direct result of his synesthetic perception of sound as literal colour.

You know I have lights in Prometheus. Lights. It's a poem of fire. Here the hall has changing lights. Now they glow; now they turn into tongues of flame, listen how all this music is really fire. (Ref. 6)

To interpret his synesthetic perception in a visual format Scriabin included a light keyboard or tastiera per luce. He prescribed this light keyboard to comprise of 12 notes 'colour tuned' as it were to his own colour scale. He intended that the pressure of each key should not produce a musical sound but an intense light. This play of light in the score was indicated by ordinary musical notation in two parts on the top stave of the score. (Fig.2) It was not elaborate, never using more than two colours in combination, and often using only one. The colour changes were very slow in comparison with the speed of the music, and the same colour often accompanied many bars of music. Changes in the coloured light were not made arbitrarily or as a mere interpretation or enhancement of the emotional changes of the music, since the part

of the tastiera per luce often coincided with some note or notes in the musical score. It has been generally suggested that the 'luce' line in the score resembled that of a line for two horns, in which a composer has tried to use those instruments as a binding harmonic element against the quicker motion of the other parts. Indeed Scriabin intended both is compositions, that of music and light in <u>Prometheus</u> to be written as two separate pieces, but when played together would complement and enhance each other. Here is Scriabin's colour scale for the tastiera per luce in Prometheus. (Ref. 7)

C	Red
C Sharp	Violet
D	Yellow
D Sharp	Steel
E	Pearly White
F	Dark Red
F Sharp	Blue
G	Rosy Orange
G Sharp	Violet Purple
A	Green
A Sharp	Steel (Glint of Metal)
В	Pearly Blue

When Scriabin envisaged his colour symphony the whole auditorium was to be engulfed in colour including the audience. Even the chorus was to be robed in solid white so as to allow the coloured light to bleed over and around them.

The combination of a number of points outlines Scriabin's synesthetic perception. Firstly, his associations between colour and music sprang from discussions with Rimsky Korsakov and Rachmaninov in Paris in 1907, where they talked about the connection between colours and keys. Rimsky Korsakov is known to have perceived a relationship between specific colours and tonalities as early as 1867. Scriabin suggested that colours in a symphonic work could act as a powerful psychological resonator for the listener. Secondly, it is clear that both Scriabin's and Rimsky Korsakov's associations were subjective rather than scientific. In general Scriabin stated that when listening to music he had only a feeling of colour. Only when that feeling was very intense did he give it the image of colour. He spontaneously only recognised three colours red, yellow and blue that corresponded to the tonalities of C, D and

F Sharp. The third point established in an interview with Scriabin by Professor Charles Myers in 1914, states that he used colour to underline the tonality of his music and make the tonality more evident. (Ref.8) Therefore he used coloured light to make the tonality more evident in Prometheus by pairing particular tonal levels with colour according to his pattern of synesthetic perception. Sometimes colour or a change of colour appeared to him before he was aware of a change in tone of the music. This confirms the point that personal, subconscious mental processes were responsible for Scriabin's synesthetic perception. A final point that outlines his theory is that Scriabin assumed the colours of the spectrum, arranged from red to violet, were parallel with the ascending circle of fifths. Beginning with C Major, which he considered red and a fifth up the scale, G Major which was thought of as orange etc... So when Scriabin heard tonalities in the ascending circle of fifths it became habitual to associate each of the keys with colours of the spectrum in ascending order. In Professor Myers' report Scriabin clearly stated that a single note had no impression of colour, only when he heard a sequence of notes especially in the major keys of C, D, B and F Sharp did he associate strong colour sensations.

Red	Orange	Yellow	Green	Blue	Violet
С	D	А	E	В	F #

This diagram represents Scriabin's relationship between notes and the colour scale of the spectrum.





Fig.3. The light instrument manufactured for Scriabin by his friends in 1911. Now in the Scriabin Museum, Moscow.

This diagram represents Scriabin's ascending scale of colour in relation to notes on a musical stave.

Apart from the spectral colours all remaining keys were believed by Scriabin to be extra spectral; either ultra violet or infra red. For example he said that the key of F is 'on the verge of red giving often the effect of a metallic lustre.' (Ref. 9)

Because synesthetic perception was so natural for Scriabin, he never created a logical mathematical order for his associations between colour and sound. There have only been two major reports published, one by Professor Myers, the other by Leonid Sabaneev two months before the premier of Prometheus that outline Scriabin's synesthetic perception. A major discrepancy exists as to whether Scriabin said F Sharp was 'bright saturated blue' in the case of Sabaueev or 'violet' in Myers' report. At any rate Scriabin claimed it was so natural for him to associate literal colour with tonality that he never bothered to explain the colour significance in the published orchestral score. But it would seem as though he used colour purely to enhance a musical effect. T+ is important to note that the experience Scriabin had with Prometheus subsequently led him to reject the idea of duplicating music with colour, an audio visual unison. He turned instead to the idea of organising colour into complex spacial patterns that interacted with music in complex harmonic relationships. This new type of synthesis was to be realised in the Preliminary Act, the first section of his Mysterium.

### The Visual Performance of Prometheus

Scriabin never saw a performance of <u>Prometheus</u> with the coloured lights, except in his inner eye and a small hand machine devised by Alexander Mozer which consisted of a circle of light bulbs. (Fig. 3) It has rarely been done well with the accompanying lights. The first performance incorporating a light keyboard was given by Modest Altschuler on the 20th March 1915 in New York. Unfortunately the colours were displayed feebly on a white movie screen hanging over the orchestra at Carnegie Hall. The sequence of two individual colours outlined in Scriabin's score for the luce invariably blurred into a murky neutral grey. A day

before Altschuler's performance he contacted Preston J. Millar, a specialist in electrical lighting. Miller was then assigned to supervise the construction of a colour projection instrument, later named the Chromola. Over a period of three months two versions were built. Special lamps were manufactured by General Electric as the instrument projected 12 separate colours. It was operated from a keyboard with 15 keys, the extra keys repeated the first three colours of the scale. When key contacts were closed a low voltage D.C. circuit activated the 110 volt A.C. circuit to one of the projecting lamps. Unlike previous devices, the Chromola was not built to demonstrate a particular association between colour and sound, it was intended solely for the performance of Prometheus. The production in Carnegie Hall using the Chromola met with disfavour. One critic dismissed the coloured lights which were flashed on the small white screen, as a 'pretty poppy show'. For various reasons, the Chromola was considered one of the instruments of the orchestra rather than equal in effect to the combined instrumental and choral forces as Scriabin intended. Technical problems and inappropriate theatre facilities were also to blame for this unsuccessful performance. A report in the New York Times in 1915 indicated that a successful private presentation of the colour symphony accompanied by the Chromola took place in the Century Theatre. (Ref.10)

Scriabin's concept for a colour organ that accompanied a symphonic work probably stemmed from a demonstraion given by Wallace Rimmington. In 1895 Rimmington presented a private performance in London of his colour organ. It was accompanied by a piano, a normal sound producing organ and a full orchestra. This was the same orchestration that Scriabin had called for in Prometheus. His instrument, which was patented in 1893 is the best known example of a colour organ in the nineteenth century. Rimmington was an inventor and Professor of Fine Arts at Queen's College in London. In 1911 he outlined his colour theories and organ in a book titled Colour Music, the Art of Mobile Colour. Rimmington was convinced that physical analogies of some kind existed between sound and colour. In his book he repeatedly compared the two phenomena, claiming that both were due to vibrations which stimulated the optic and aural nerves. Rather than attempting to show an exact parallel between vibration frequencies of light and sound he divided the spectrum into intervals of the same proportions as occur in a musical octave. The ratio between



Fig.4. Wallace Rimmington with his colour organ in 1893.

two light waves approximated that for a corresponding interval in sound. Each octave contained the same colours, and registral placement of colours was directly proprotional to saturation, for example higher octaves contained more white light.

The organ itself stood over 10 feet high. It contained 14 arc lamps and filters varnished with aniline dye. (Fig. 4) It required a power supply capable of providing 150 amps. The five octave keyboard resembled an ordinary organ and was connected by a series of trackers to a corresponding set of diaphragms in front of special lenses. Stops were built to control the three variables of colour perception, hue, luminosity and chroma [colour purity]. One stop allowed the performer to spread the spectrum band over the entire keyboard instead of one octave. Proof that Rimmington had a flexible attitude concerning the analogy between particular colours and tones. Like all earlier devices Rimmington's instrument was not capable of producing any sounds. He did recommend, however, that compositions played in colour be performed simultaneously on sound-producing instruments for increased enjoyment of the colour. To do this he did not need a separate notational system because musical compositions were played on the keyboard in a normal manner and thereby translated into coloured light. Rimmington's device attracted considerable attention and subsequently many models were made. In 1895 he gave four public performances of compositions by Wagner, Chopin, Bach and Dvorak. No other presentations were made until after his book was published. In 1914 he was contacted by Sir Henry Wood who proposed a performance of Prometheus using Rimmington's organ. But World War I broke out and prevented it from happening.

One of the more successful public performances of <u>Prometheus</u> was given in 1967 by Gyorgy Sandor and the Rochester Philharmonic Orchestra in New York. (Ref. 11) Alex Ushakoff, a Russian film producer and designer of space simulation systems for astronauts developed a light modulation device which scattered the correct colours throughout the auditorium in keeping with Scriabin's ideas. A more recent performance was given at the Leeds Festival of Music in 1983. It was organized by Dr. John Warrack, Professor of Music at Oxford University and Hugh MacDonald, an authority on Scriabin. MacDonald, who worked his own colour keyboard and Dr. Warrack both found Scriabin's instructions ineffective and ended up altering them fairly freely in certain places. The coloured lights from the keyboard were projected onto a maze of dangling strings which were suspended above the orchestra. These strings then picked up the light in a kind of three dimensional projection. Such was their intention, but according to Dr. Warrack the strings got hopelessly tangled and they spent the rest of the night untangling them! To the best of my knowledge this symphony has never been performed in Ireland.

To summarize this chapter, it is clear that aside from being an accomplished writer of orchestral and piano works, Scriabin was an unusual advocate of the ideas of synesthesia. His unique concept of audio visual unison in the symphonic work, <u>Prometheus</u>, was the direct result of his synesthetic perception. As I have established synesthesia essentially involves the pairing of two gradient series. In Scriabin's case, the gradient pairs were tonalities arranged in ascending fifths which he tended to associate with colours of the spectrum. During his last years Scriabin dreamed of an art form which would unite dance, coloured light, poetry and music in the ultimate development of synesthetic experience. This work was to have been titled the <u>Mysterium</u>. Scriabin's premature death in 1915 prevented the fulfilment of his vision which would have undoubtedly placed him among the most important predecessors of today's multi-media artists.

My fourth and final chapter considers the direct effect Scriabin and Prometheus had on the Soviet School of Music Kinetic Art. CHAPTER FOUR



Fig.5. M.K. Ciurlionis, Sonata of the Pyramids : Allegro, Tempera, 1908.

#### The Fire of Prometheus: Music Kinetic Art Experiments in the U.S.S.R.

During my research I discovered that Scriabin's ideas of audio visual unison laid the theoretical foundations that inspired the Soviet School of Music Kinetic Art. According to the author of one article these experiments in music kinetic art still remain 'blank spaces' for Western readers. (Ref.1) With the limited information available I found that Scriabin's significance for this 'New Art' lay not so much in his light score for <u>Prometheus</u> but in his subsequent ideas. These ideas, of organizing colour into complex spatial patterns that would interact with music in complex counterpoint relationships, inspired artists, scientists and musicians to create devices which were a synthesis of new media. Instead of dwelling on traditional forms like photography, radio and cinema, they looked to visual components of artifical origin, namely projected light with electrified sound. Aside from Scriabin the first tangible steps towards this art of the future in the Soviet Union were by M.K. Ciurlionis and Vassily Kandinsky.

Ciurlionis was a Lithuanian composer and artist who created strikingly picturesque canvases that aspired to music. Some of his canvases were titled A Fugue, A Prelude, A Sonata; consisting, like read sonatas, of four parts, Allegro, Andante, Scherzo and Finale. (Fig. 5) But his work remained in the realm of realistic figurative art. His contemporary, Kandinsky took a desperate step and abandoned figurative representational art to turn painting into genuine 'music for the eyes', musique oculaire, by using colourful abstract forms. Here too the titles of his opuses reflected musical aspirations, Coupositions Improvisation. Kandinsky documented his 'music for the eyes' in On the Spiritual in Art. He experimented with his abstract paintings by trying to animate them, uniting them with word, gesture and music on a theatre stage. He termed this synthesis 'monumental art'. His best example of this lies in the composition Yellow Sound, published in 1914 in Der Blaue Reiter. But Kandinsky overlooked the idea of easily controlled light projection and instead tried to make heavy scenery mobile. Kandinsky finally reached a deadlock but during the years after the revolution he acted as the co-head of the Institute for Artistic Culture in Moscow. There he explored monumental art and the regularities of the synthesis of music



Fig.6. A model of G.I. Gidoni's light monument to the revolution, 1928. The globe is a hall for thousands of spectators.

and painting. Later in the West he was unable to realise his plans but music kinetic art is indebted to him for anticipating, like Scriabin, methods of audio visual harmony.

This next section briefly outlines some principal experiments in the development of music kinetic art in the post revolutionary years. 1922 saw the inventor and musician L.S. Termen develop his <u>Diamond Fund</u> alarm system. As soon as one's hand approahed the antenna, a generator produced a sound signal. If you moved your hand in a smooth pattern the device changed into an instrument. Lenin was very interested in this extra-ordinary music he said was coming 'from the air'. (Ref. 2) This instrument became known world wide as the <u>Terminvox</u>. Termin usually performed his electronic music concerts in combination with light.

Later in New York he set up an instrument called a <u>Tepiston</u> which created music in response to a dancer's movement. (Ref. 2)

Many light grand pianos were invented, such as G.I. Gidoni's in 1928, who also wrote <u>The Art of Light and Colour</u>. He set up a laboratory bearing the same name where he designed a model of a huge light monument to the revolution. It was a semi transparent globe placed on top of a structure made up of a cog-wheel, a hammer and a sickle. Spectators were to be able to perceive audio visual music from within and without this gigantic globe. The realization of this project was too vast and it only appeared in a few exhibitions, even then on a much smaller scale. (Fig. 6) 1934 saw the development of the <u>Kinemachrome</u> system in Leningrad. It was made for use in the huge Palace of the Soviets of U.S.S.R.. In the assembly hall, capable of accommodating fifteen thousand spectators, lumia concerts [the art of luminous sounds] were to be performed.

These three examples differed from Scriabin's audio visual polyphony because they used electronically generated music in conjunction with light. Whereas Scriabin displayed his light through a keyboard in conjunction with a full orchestra. His light sequence was played using a notation staff in the orchestral score. These new devices depended on a movement from either a hand or a body to produce their electronic sounds.

Another example is E.A. Murzin's photo electronic music synthesizer, made in 1957. Unlike Termin's device, Murzin's machine drew music like engraving on glass. He named it ANS in honour of Scriabin. It is interesting to note that Scriabin's daughter designed lighting equipment for the performance of the <u>Preliminary Act</u> in 1948. (Ref. 3) She set up her device in a room in the Scriabin Museum, Moscow. (Fig. 7)

The cybernetic boom of the '60s led engineers to speak seriously about the possibilities of machines engaging in creative activities. A laboratory of colour music was set up at one of the institutes of the Academy of Science in Moscow. Its director K. L. Leontiev maintained that composers and artists were no longer necessary, one only needed to 'input' into his apparatus the music of Scriabin or any other composer and the computer would put out the single most reliable version of the light accompaniment. He overlooked the fact that it was a human being who prepared the computer programme he used for his compositions. After a few years Leontiev relinguished this idea and his performances of Prometheus in 1962 and 1975 were given under normal control in keeping with Scriabin's score. During the '60s many people both in Europe and in the Soviet Union believed in the idea of music kinetic art created by a machine. Some automatic psychedelic toys are left over from this period of electronic expansion, for example, devices used with dance music in discos.

In 1962 the group 'Prometei' [Prometheus] was formed in Kazan. After an initial performance of the <u>Poem of Fire</u> they presented a series of lumia music concerts with compositions by Scriabin, Rimsky Korsakov and others, and lumia music films. The most recent was Space Sonata in 1981 which was accompanied by electronic music. The films were unusual not only because of their images but because of the techniques used; although black and white objects were shot using standard black and white film the resulting positive film was multi coloured. (Fig. 8) In 1979 Prometei established a studio and music kinetic art museum in Kazan. A unique spatial music device was installed in the main hall, where sound shifts smoothly along any conceiveable trajectory within the hall in response to the movement of one's hand over the control panel. Prometei have used light in the design of some new architecture and have produced



Fig.9. A model designed by Prometei showing the music kinetic art design for the exterior of the Kazan Conservatory, 1975.

countless decorative music kinetic art devices. (Fig. 9) They have also continued to research into synesthesia and experiments with children 'painting music'.

In the last two decades music kinetic art concerts have been held in Paris as well as the Soviet Union, and on a much smaller scale in the United States. Several documentary films have been made on music kinetic art, for example, Colour and Music by Scriabin [Moscow].

Scriabin could hardly have foreseen all that modern technology has made possible today. In the <u>Mysterium</u>, he dreamt of bringing his acts not merely into the open air but into heaven and the clouds. A similar aspiration was present in the laser experiment conducted at the recent World Festival of Youth and Students. The symbol of that festival, an ox-eye daisy, was projected into the night sky and rotated over thousands of people. (Ref. 4)

It is important to point out that both in Europe and the Soviet Union music kinetic art, the art of light, has not become an accessible everyday phenomenon and its achievements leave much to be desired. It is, however, a new art still in its early stages of development and there is a noticeable need for a research centre to co-ordinate all of the individual theoretical and functional pieces of music kinetic art. CONCLUSION

#### Conclusion:

In an effort to establish why musicians found music and colour analogous I discovered that any associations between them stemmed from their synesthetic perceptions. These perceptions were analysed by psychologists and found to be the result of two things. They stated that the phenomenon firstly, originated in childhood and secondly consisted of a parallel arrangement of two gradient series. This series was established as tastes, odours, temperatures or colours, which were then paired with letters, words, numbers, intensities, pitches, tonalities or anything else of interest to the synesthete. This is why many examples of synesthetic perception occurred not only in music but in literature during the late nineteenth and early twentieth centuries. Psychologists firstly considered these perceptions to be the result of personal, often subconscious, mental processes but by the 1930s they were able to establish patterns that explained the phenomenon. In my research I found the most common synesthetic experience was the association of colour with sound. By referring to examples from musicians, scientists and composers it was possible to class these synesthetic perceptions in music into four specific groups. Synesthesia based on compositional style, timbre, pitch and tonalities. These four groups established the most important point, that in cases of synesthetic perception in music, colour impressions were based entirely on subjective sensory responses to music. Whether, in the case of pitch subjects perceived low sounds analogous to dark colours and vice versa, or, in the case of timbre where musicians connected certain colours to instruments, it established that these responses were personal and not based on any scientific fact.

In Scriabin's case he perceived tonalities arranged in ascending fifths to be analogous with colours of the spectrum. As a direct result of his synesthetic perception he wrote a play for coloured light to be incorporated into his symphonic work <u>Prometheus</u>: the Poem of Fire. This was notated on the top stave of the orchestral score and called the Luce line. Scriabin conceived his music and coloured light in <u>Prometheus</u> as two symphonies but when played concurrently they were to act as binding harmonic elements. In this way Scriabin probably intended his audience to integrate their sensory perceptions by seeing this particular

formal organization of coloured light while simultaneously hearing a different formal organization in the music; a remarkable demand on human abilities. After <u>Prometheus</u> Scriabin dreamed of creating an art form which would unite dance, coloured light, incense, theosophical poetry and music in the ultimate development of synesthetic experience.

Even though effective implementation of his synesthetic ideas was not possible during his lifetime, Scriabin's concepts were taken on by a different group of people. Through <u>Prometheus</u>, he had asserted the significance of audio visual harmony and this led to the development of the Soviet School of Music Kinetic Art. Their experiments in music kinetic art are encouraging signs that the idea of synthesis is not waning.

Scriabin will be remembered not only for his orchestral works and his strange philosophical ideas but, most importantly, for his synesthetic perception and his anticipation of audio visual harmony before the development of cinema or television. His obituary read.

The Gods have not pardoned Prometheus, and the Gods have not pardoned *Prometheus* for bringing the people the fire of the New Art. APPENDIX

#### Appendix:

The following is a section taken from Faubion Bowers' biography of Scriabin, p.207-8, Chapter 13, Volume II. It verbally takes you through the themes and colour changes in Prometheus: the Poem of Fire.

The symphony begins with Chaos, the inchoate ooze of the formlessness of the world - blue and green inertia of matter. The opening chord sounds the "active beginning".... that mythical Prometheus which serves to open the symbol on this first state of consciousness. Here the orchestra represents the cosmos as it was before Karma, before lives have been lived and deeds accumulated predestination. Out of this long sustained chord dimly rises the melody of the Creative Principle. Then, a muted trumpet sends up the Will theme (blue vanishes). Languor ensues, and the "contemplative" harmonies of the theme of Reason appear. Over this sweetly sings a solo flute - "the dawn of human consciousness" (green flashes back over the blue, and shortly vanishes). The piano (Man) enters imperiously, almost marchlike, and expresses his firm existence (the colour of steel). At the second repetition of the end of the piano's initial figure, the color of glowing red envelops both piano and orchestra.

Almost immediately the piano changes into the "Joy of Life" section (the blue of chaos is obscured by the sun-color, yellow). Sex too emerges and it is immediately associated with sorrow - the first sad note of the music - but gradually it turns into passion, ravishment, ecstatic delight. After the appearance of "intense desire", the solo violin sings of human love (pearl blue and blood red). Man now asserts himself, singing the beautiful cry of selfrealization, "I am!". Scriabin described this passage as the "Ego", and it is a majestic glorification of the Creative Principle heard at the very beginning.

The center climax is reached with an ecstatic orgy of harmonies - scattering, falling and sinking. Soul descends into matter. The reprise begins at midway point with red waves enveloping the

music's "tones of blood." As the mystery of this struggle and mystical complexity clarifies itself, the yellow of the sun begins to glow "joyously". The yellow persists until the sun becomes the moon again, and moonshine's pearly blue dominates. The Chorus, representing myriad forms of life in multiplicity, now emerges. The world's beginning and the original blue mix into moon color.

The final cosmic dance of atoms begins. The piano issues lashings of (violet and blue) fire which sputter and sear the mind's ear. The music becomes delirious. The coda is lost in vertigo. Although the world is now formed, life's symbols expressed, and man has been fired with wisdom, the color of *Prometheus* ends as it began - veiled in blue mystery. REFERENCES

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# Fig.

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