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MUSIC-KINETIC ART MEDIUM: ON THE WORK OF THE GROUP 'PROMETEI' (SKB), KAZAN, U.S.S.R.

B. M. Galejev*

Abstract—The author describes the work of the Group 'Prometei' (SKB) at Kazan, U.S.S.R. on combining kinetic electric light art with music since the founding of the Group in 1962. Public performances have been given in which the motion and the colour of projected light images were manually controlled in an attempt to correlate them with either the individual qualities or the themes or with both of these aspects of music. The Group believes that the manual control of kinetic images to obtain such correlations offers more hope for this type of artistic medium than audio-kinetic art using electronic and electro-mechanical devices to control the correlations automatically.

Applications of the methods that they have devised in this domain for a proposed music-kinetic art concert hall and for outdoor spectacles of the *Son et Lumière* type are mentioned as well as future projects. The Group organizes periodic All-Soviet Union Conferences on 'Light and Music', the third having been held from 27 June to 4 July 1975 at Kazan.

I. INTRODUCTION

Our Group 'Prometei' (SKB), made up of artists, musicians and engineers, was founded in 1962 at the Kazan Aviation Institute. The main objective of the Group is to search for ways of developing the relatively new aesthetic reality of the medium in which kinetic art with electric light is correlated with the various qualities and thematic aspects of music. The group has continued the development of ideas of the Russian and Soviet school of music-kinetic art or 'light-music art' originated by the musical composers A. Scriabin and V. Shtcherbatchev and the artists V. Baranov-Rossine, G. Gidoni and others [1, 2]. The Group has been studying with much interest the works of their colleagues in this domain outside the U.S.S.R. as well [3, 4].

The Group, when it was organized, realized that the music-kinetic art medium (also called *colour music* and *colour organ productions* and by our Group *audio-visual music* or *light-music*) posed complex problems of visual and aural aesthetics and of the design of electro-mechanical devices for producing kinetic images of changing colour. The Group is carrying out analyses of these problems from several points of view. Perhaps the Group in this way will be able to explain why the results

obtained by the first pioneers did not lead to a sustained public interest in the medium, at least in Western Europe and in the U.S.A. In this respect the Group gives public performances with the devices that they have designed to appraise their effectiveness in giving spectators aesthetic satisfaction. The Group has limited itself mainly to the use of music; correlations of kinetic images with aspects of human speech, sounds in nature and 'noise' are not considered of interest.

In the manner of sound-cinema, the music-kinetic art medium is directed simultaneously to the eye and ear. In the latter medium, however, the kinetic (actually kinematic) images projected onto a translucent or opaque screen that we use are not representative of familiar actual objects, but are of a non-figurative kind. We consider our work with this medium as *instrumental choreography* of a kind, taking into account its close connections with music, painting and cinema. The kinetic light images are seen to change their shape, hue and brightness at varying speeds. Even when watching ballet, one may say that one can 'see' the music, but a human dancer is much more limited in the range of movements than are gravity-free light images. Although the light images that we use are non-figurative, they are basically derived from or indirectly related to gestures or to the motion and changes of colours of objects in reality, much as, we believe, music is based on the intonation of human speech and on sounds in nature.

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Since rules can be isolated for different artistic media that have reached a definitive stage of development, we believe that it is correct to search for such rules in the case of the music-kinetic art medium. We, however, do not believe that these rules will be in the form of the laws of nature that the sciences discover, because art, as manifestation of human social consciousness, cannot be understood solely in terms of physical, physiological and psychological factors. Some believe that the medium involves 'universals' for human beings that can be formulated as algorithms for the 'translation' of music into visual experience. Furthermore, in order to exclude subjectivism, which is inherent in art works, they believe that the 'translation' should be made by automatic methods. We do not sympathize with this mechanical approach.

Ideas of this kind were especially popular among some artists in the 1950's and 1960's, during what might be called the 'cybernetic' boom. In the U.S.S.R., K. Leontyev [5, 6] and the 'Movement' Group [7] have published material on their approach to using electronic and electro-mechanical systems for automatically coupling visual and aural art. In view of the fact that the human eye and ear are very dissimilar organs and respond to the very dissimilar phenomena of light and sound, we are highly sceptical of the possibility that there are innate correlations between these two sensory modes. We believe, however, that objective rules correlating kinetic art with music (certainly not as simple as the adherents of analogism or 'translation' imagine it to be) can be developed much as has been done in artistic media such as ballet, opera and cinema. These rules will not correspond to the conventions developed by artists that must be learned by viewers in order for them to appreciate the aesthetic experience intended by the artists. Rather, audio-visual correlations, which have aesthetic, psychological and social content (origin), will serve as the basis for appreciation.

On the chance that there may be some correlations of general significance between vision and hearing, the Group has been interested in the statement by some people that they mentally experience colour sensations in connection with individual musical tones or even with a complex musical composition. To determine something about such 'colour hearing' or *synaesthesia*, the Group distributed in 1966-1971 a questionnaire among 25,000 Soviet writers, artists and musicians and the results of the survey are gradually being made available [8].

We also believe that such complex correlations between vision and hearing that are discovered should be applied manually rather than by automatic methods in music-kinetic art. Thus, beginning with the first shows arranged by the Group in 1962 the kinetic images have been controlled manually by means of devices of a keyboard type to follow an *image score* prepared by an artist to accompany a musical composition.

Since 1965 Yu. Pravdyuk has been giving music-kinetic art performances in Kharkov (in a specially designed hall since 1969). Recently similar halls for such performances were constructed at the A. Scriabin Museum in Moscow, in Odessa and in Tchkalovsk. In these performances the kinetic art accompanies music originally composed to be heard only. Our Group has used several approaches for correlating the kinetic images with such music, which I shall now describe.

II. APPROACHES TO THE CORRELATION OF KINETIC IMAGES WITH MUSIC FOR PUBLIC PERFORMANCES

A. Correlations with Individual Qualities of Music (Pitch, Key, Timbre, Harmony)

Our first performance (1962) with the medium was made to accompany Scriabin's composition 'Prometheus' (Op. 60, 1910). Electric light was projected through filters controlled by a manually operated keyboard to project areas of coloured light on an opaque screen in accordance with the special light projection score prepared by Scriabin for the music that he composed. Scriabin's light projection score is based on his choice of colours for the different musical keys that are used in his symphonic poem. During the season 1963-64, performances were given in the same manner, with musical compositions by Rimsky-Korsakov and image scores prepared by our Group. He did not provide a score for visual accompaniment, although he did like Scriabin, associate colours with musical keys, that is, he had what is called 'colour hearing'. In his operatic works, the choice of key is most often determined by the colours mentioned in the text of the libretto or presented in scenes.

The keyboard, or colour organ, for controlling the projection of uniform areas of colour on a translucent screen had the designation 'Prometei 1'. Two other instruments, 'Prometei 2' (1963) (Fig. 1) and 'Crystal' (1965) (Fig. 2), were constructed with the objective of obtaining experience with the correlation of: (1) light brightness with music volume or loudness, (2) hues with timbre and

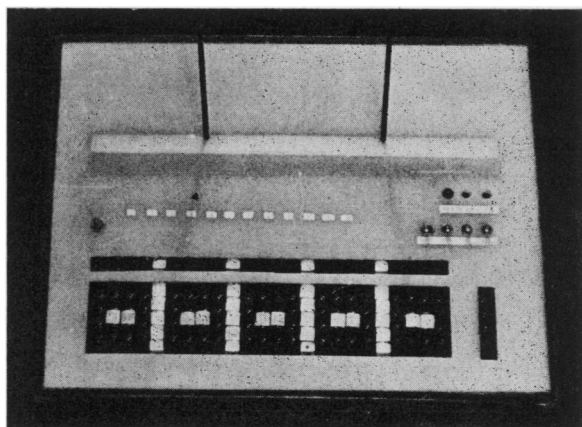


Fig. 1. One of five control panels for the music-kinetic art instrument 'Prometei 2', 1963.

chords, (3) structures of images with metre or rhythm and (4) spatial character of drawings with melody. With 'Prometei 2' luminous non-figurative shapes were produced on a translucent screen by operating behind the screen arrays of many lamps equipped with filters. With 'Crystal', the brightness and colours of the projected images could be varied by the operator by means of the image-producing device visible in Fig. 2. Performances with these instruments were held to the accompaniment of compositions by M. Musorgsky, I. Stravinsky, F. Yurallin and P. Boulez; of dance music; of organ music and of electronic music composed by means of the synthesizer ANS in the Scriabin Museum.

We are of the view that this approach to kinetic art with existing music does not lead to sufficiently satisfying aesthetic experience, but it might be useful to students of musical composition by helping them to identify more quickly the various qualities that have been applied by composers in their works.

B. Correlations with Musical Themes

Attempts were made using instruments 'Prometei 2' and 'Crystal' to correlate the appearance of projected kinetic non-figurative images of changing colour with the themes of a musical composition. In the case of programmatic music, such as Beethoven's 'Pastoral Symphony', highly stylized images of human movements or of natural phenomena can be projected but not the figurative kind used in cinema film, for example in Walt Disney's 'Fantasia' for the same symphony.

Performances with these instruments were given by the Group in Kazan between 1963-67. Such approaches were used by Pravdyuk at Kharkov, S. Zorin at Poltava, the group at the A. Scriabin Museum in Moscow and the 'Dvizhenie' Group in Tbilisi.

Although we find this approach to the medium superior to the one described under A, above, a further improvement can be made by the approach described below.

C. Correlations with Different Qualities and Themes of Music

The tendency for some artists working with the medium has been to confine themselves to approach B that attempts to correlate the shapes and/or colours of kinetic images with musical themes. A combination of approaches A and B would permit correlations also with different qualities of music as described under A. The first Soviet colour film with the music-kinetic art medium, 'Prometheus', made by the Group in 1965, used the combined approach, but our first instruments were not of sufficient complexity and flexibility to permit an extensive exploitation of it.

D. The Polyphonic (Contrapuntal) Audio-Visual Intergration Approach

Those working with the medium have usually taken an existing musical composition and then 'dubbed in' the kinetic presentation following approach A, B or C. The second possibility is to

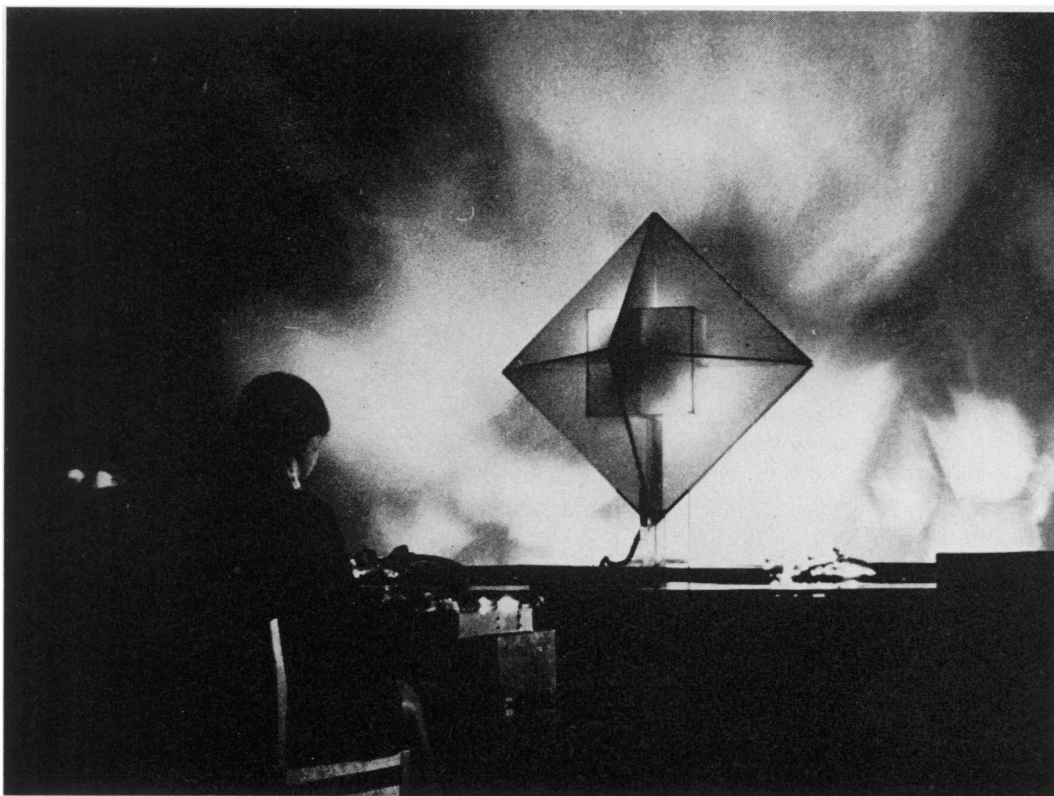


Fig. 2. View of music-kinetic art instrument 'Crystal' showing image-score operator, keyboard control, image producing device and kinetic picture on a translucent screen, 1965.

prepare an original integrated *music-image score*. Our first attempt with this approach was made in 1964 with a production entitled 'Mother'. The music for the integrated score was composed by A. Yustin, a member of our Group. In 1969 we produced the film 'Eternal Movement' in the following manner: Three separate films in black and white were made of a set of models painted in black and white. From these negative films, three positive monochromatic prints were made in purple, yellow and blue. These were then superposed to make a single multi-coloured positive film. Recordings of fragments from the musical composition 'Electronic Poem' by E. Varèse were incorporated on the edge of the film for sound reproduction by the optical technique.

That a true integration was not achieved in these first attempts is demonstrated by the fact that one may obtain aesthetic satisfaction from the music without seeing the visual presentations. We obtained better integration in the film 'The Miniature Triptych' (1975), which utilized a musical composition by G. Sviridov. (The film was produced at the Kazan Newsreel Studio by the author, the script was prepared by I. Vanechkina and the cameraman was A. Privin.) Scriabin dreamt of an integrated audio-visual art form and it is this approach to kinetic art with music that is our constant goal.

We call this approach *polyphonic (contrapuntal) audio-visual integration*. The term 'polyphonic' here for us means the independent development of audio and visual parts analogous to the way instruments and themes interact contrapuntally in music. Thus, sounds and kinetic images may be timed to occur either in unison or in a counterpoint manner. In the former case, the sounds and images are intended to support each other in an emotional sense. In the latter case, the two sensory modes are used to produce effects analogous to those used in orchestral music to obtain contrast and opposition. We think that a satisfactory music-kinetic art experience can be achieved only when polyphonic (contrapuntal) integration is introduced. According to the philosophy of dialectical materialism, only when a system obtains a high degree of integration (an organic whole) does it acquire the capacity for self-development. Thus, the music-kinetic art medium will acquire the

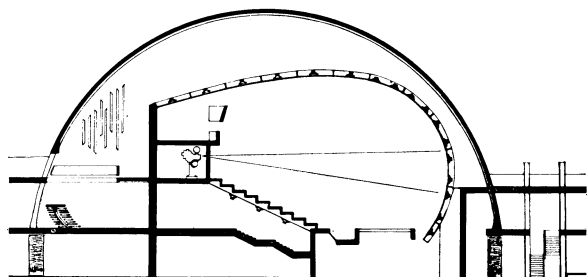


Fig. 3. Design of music-kinetic art installation for the future concert hall of the Tatar Philharmonic Society, Kazan, U.S.S.R.

characteristics and possibilities of an independent art only when such integration is achieved [9-12].

We are tackling approach D both by trial-and-error experiments and by theoretical methods, which have been reported on by our Group in Refs. 13 to 20. We are particularly interested in studies regarding what our Group calls the phenomenon of *inner polyphony*. Even in a musical work composed for a single instrument, there are 'lines' of development of volume, key, pitch, timbre and metre or rhythm that may occur in unison or in opposition. The problem is to present correlation of aspects of colour change and of changes in the motion of images with the 'lines' in music.

III. APPLICATIONS OF MUSIC-KINETIC ART

The development of the medium as a fine art is the primary objective of our Group. As a contribution to this development we are planning a concert hall for music-kinetic art for the Tatar Philharmonic Society (Fig. 3).

In 1967 we installed in a tower of the Kazan Kremlin automatically controlled equipment designed to project beams of light through red filters as the clock of the tower strikes. The idea was to make visible the Russian metaphorical expression 'crimson coloured chime', which also means 'rich, mellow chime'. In 1968, for the purpose of illuminating an exterior wall of the Kazan Circus building, we installed a system of floodlighting equipped with filters of different colours that could be changed in response to the changes in temperature, wind speed and humidity out-of-doors (Fig. 4). This kind of application is called by some *environmental art*, a new kind of applied art made possible by developments in science and technology. In 1970 a more complex presentation of *Son et Lumière* was prepared in Kazan in connection with the 25th anniversary of the victory over Nazi Germany. (It was the first *Son et Lumière* presentation in the U.S.S.R.)

We have also applied our music-kinetic art devices with various kinds of non-specially prepared music in environments where persons are not expected to

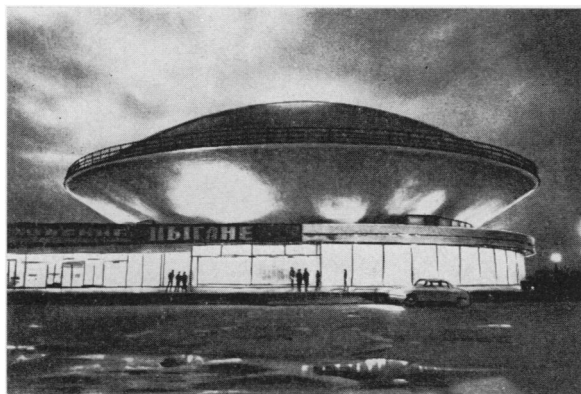


Fig. 4. Drawing of the Circus Building, Kazan, U.S.S.R., showing the kinetic picture projected on an exterior wall, 1968.

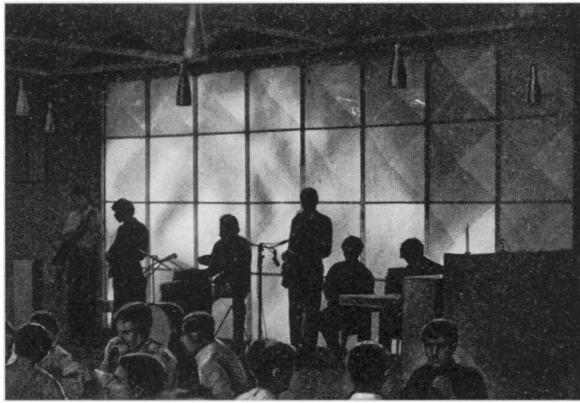


Fig. 5. Music-kinetic art 'light' wall, restaurant in the Tatarstan Hotel, Kazan, U.S.S.R., 1970.

give their full attention to the music-kinetic art production. In this case we adopted the procedure of attempting correlations between music and kinetic images by means of automatic devices. We believe that such *decorative* applications will be used more and more in our country, as has been done in several Western industrialized countries.

The Group has designed and constructed the following installations of applied art since 1970:

- a. A music-kinetic art 'light' wall in the restaurant of a Kazan hotel whose picture responds to the volume or intensity, timbre and range of pitch of music from a small orchestra (Fig. 5).
- b. A music-kinetic art presentation of an interpretation of the polar northern lights at the planetarium in Kazan (Fig. 6, cf. colour plate) and in connection with several astronomy demonstrations.
- c. Several prototype small music-kinetic art devices, called 'Idel', have been designed for use in television programme productions. In Fig. 7 is shown a model that was given to the Soviet cosmanauts and is now in the museum at the cosmanaut training centre.
- d. A music-kinetic art device, called 'Yalkyn',

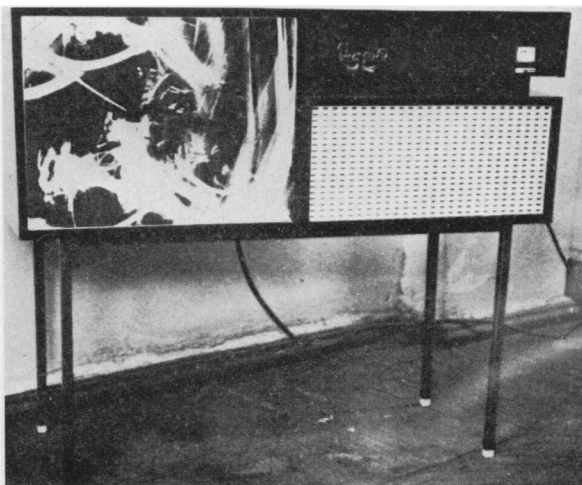


Fig. 7. Music-kinetic art device 'Idel-1' with automatic control, 1971.

has been constructed with a cubical screen of translucent plastic material (a polymethyl methacrylate product) (Fig. 8.) This device is intended to provide 'sensorial and visual gymnastics' for the eye and ear. In the Soviet Union other types of such 'gymnastics' have been tried as a means of restoring the capacity for work in the case of monotonous, routine labour, as in piece-work or in assembly-line manufacturing.

- e. Since 1966 several automatically controlled music-kinetic art devices have been constructed for installation in monotonous industrial environments where operators tend to suffer from loss of attention and of a sense of time and easily fall asleep. If something goes wrong with the industrial process, an appropriate message appears on the screen and a distress signal is sounded.
- f. Music-kinetic art devices have been constructed by the Group of an semi-automatic type that allows a certain amount of viewer participation in that the speed of images, order of succession of images, pitch-colour combinations and predominant colour can be varied by means of buttons and knobs as the music is heard. One designed for home use is shown in Fig. 9.
- g. In 1974 we began experiments with the music-kinetic art medium in which the sources of sound originate from several loudspeakers at different locations in different sequences and at different speeds in accordance with specially prepared scores. We call this 'three-dimensional' music. Such equipment would be installed in the planned concert hall mentioned at the beginning of Part III (Fig. 3).

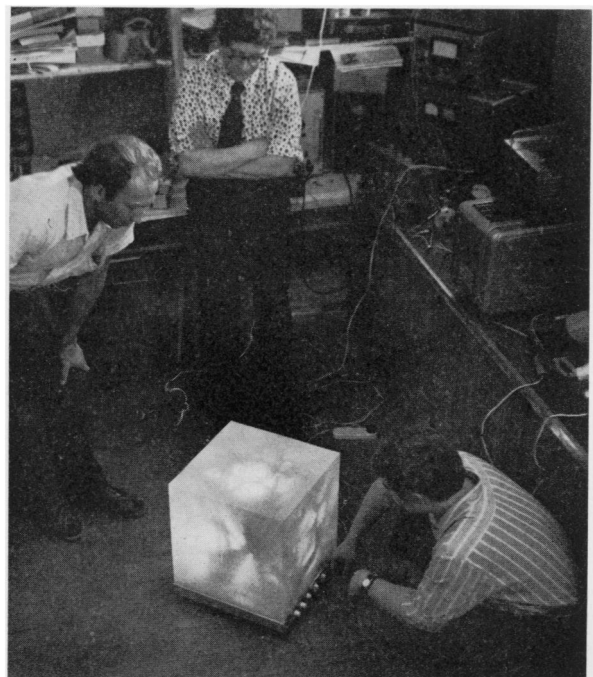


Fig. 8. Music-kinetic art device 'Yalkyn' with a cubic translucent screen, 1972.

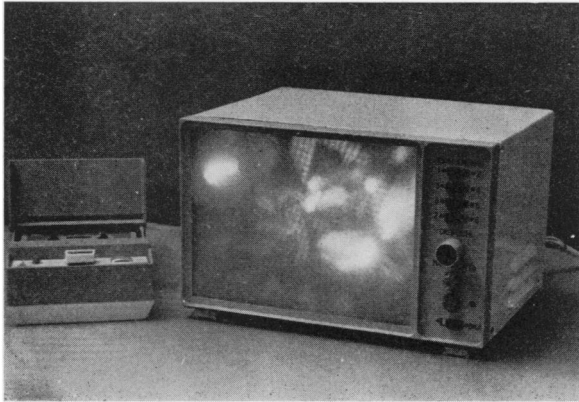


Fig. 9. Music-kinetic art device with semi-automatic control for home use, 1971.

IV. CONCLUDING REMARKS

Recently the art writer F. Bentham stated that the development of the music-kinetic art medium in Britain required more concentration on practical results. To give an example, he pointed to the situation in socialist countries, writing: '... London might have had her equivalent of Prague's specialist theatre, the Laterna Magika' [21].

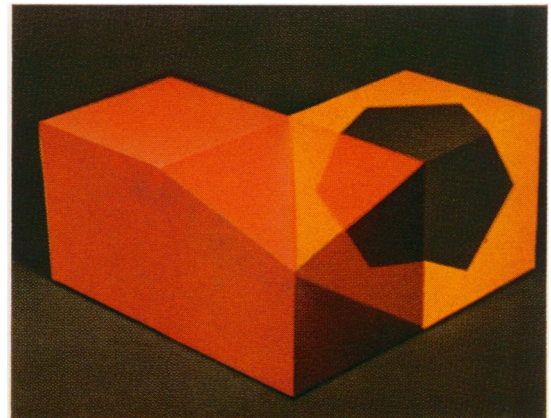
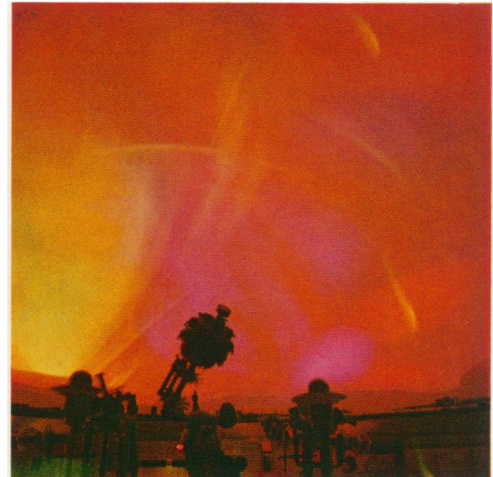
Scriabin's idea of the synthesis of music and visual art has been followed up in the U.S.S.R. not only by our Group but also by others working in Moscow, Leningrad, Kharkov, Odessa, Tchkalovsk etc. The two main cinema-concert halls of the U.S.S.R., Rossiya at Moscow and Octyabrskiy at Leningrad, are provided with 'light and music' equipment. A permanent installation of *Son et Lumière* was recently put into operation at Samarkand and its reception by the public has been enthusiastic. Water fountains provided with the 'Light and Music' medium are in operation on city squares in Yerevan, Krivoy Rog, Pyatigorsk, Mineralnye Vody and Rostov-on-Don. Many books and articles on the medium have been published in the U.S.S.R. in recent years. The Third U.S.S.R. Conference on 'Light and Music' was held at Kazan from 27 June to 4 July 1975 and the Proceedings of the Conference have been published [22, 23]. Preparations have begun for the holding of the Fourth Conference.

Our Group 'Prometei' (SKB) is interested in developing contacts with those in other countries who are interested in the music-kinetic art medium

in order to advance its development both as a fine art and in applied art form. Contact with the Group can be made by writing to me.

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Top left: Michel Schmidt-Chevalier. 'Cheminement, No. 9' ('Play of Water'), smalti, rosy quartz, 90 × 120 cm, 1974. (Photo: Studio Raphael, Aix-en-Provence, France.) (Fig. 4, cf. page 187.)

Top right: Group 'Prometei' (SKB). 'Northern Light', music-kinetic art medium, the Planetarium, Kazan, U.S.S.R., 1972. (Fig. 6, cf. page 181.)

Bottom left: Royal Canadian Theatre (RCAT). 'Dome', balloon sculpture, Vancouver, B.C., Canada, 1975. View showing posing of canopy over the lighthouse beacon. (Fig. 2, cf. page 227).

Bottom right: Seven-piece figure, transformation II-4. (Fig. 7, cf. page 194.)