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Andrei Smirnov

Theremin center

The Theremin centre is tne first attempt in Russia to fill the vacuum in tne fieia or various trends of electronic, computer and other forms of experimental music, united by the notion of Electro-acoustic music.

Analogous centres exist in all big conservatories and colleges of Europe and America. Although the greater part of them is financed by the state, many conduct independent research, train composers and programmers, organize musical actions and are sponsored by various foundations and companies, interested in new ideas, innovations, beta-testing and prompt training of future professionals to work with their equipment.

We try to follow the latter model.

The Theremin centre, founded in 1992 in Moscow by a group of composers and specialists in electronic and computer music, headed by Andrei Smirnov, and financed from private funds of its founders, was called after Lev Theremin, the Russian inventor of one of the first world-known electronic musical instruments.

The centre is independent, but collaborates with the Moscow Conservatory, being located in its sound recording laboratory and, since October 1992, implementing an active creative and academic program.

We organize an annual course of lectures, practical classes and seminars, as well as individual studio work with composers for students of the Moscow Conservatory and f,or all who are interested in our research, The major emphasis is made on the result-oriented academic activity: a composer, who has attended the centre, after many hours in the studio will necessarily create new music (not necessarily a masterpiece), a. programmer will write a new program etc. Most interesting works are submitted to festivals and competitions. This adds to the prestige of the centre and the Russian music in general and creates a precedent in the world musical practice.

We organize regular concerts, radio-broadcasts ("Radio Orpheus", "Contrasts", "Radio Russia" etc.) and establish contacts with the television.

Our major task is to find and support gifted young musicians, sound directors and programmers.

The Cross-Media Project

The Cross-Media project is our next step, It is a provocation.

Our goal is to create a cross-road, where representatives of most diverse trends in the arts, different artistic shops, schools, aesthetics, studios etc. will inevitably meet.

We hold cross-media seminars, organize projects, involving both artists and composers; currently we are setting up a multi-media studio, which will join in a single computer network; a studio of computer music, computer graphic and video, In other words, the Cross-Media project is an attempt to create a working environment, which will unite young musicians, composers, multi-disciplinary artists, animators, programmers, constructors, who shows interest toward the use of the latest electronic technologies in art, Probably, it will result in a creative symbiosis, or, more likely, in the unity and struggle of the opposites; in any case we will provoke an exchange of ideas, concepts, experiences, co-

operation and co-creation. Our sphere is multi-media in the broad sense of the word, Virtual reality, cyberspace, interactivity...

The common notion of VR often seems to be reduced simply to the computer game "Doom", and interactivity is often understood as a mirror reflection or the possibility to change TV channels with the help of a remote control device. Anyway, I hear this word mentioned by representatives of visual arts more often, than by musicians.

However, interactivity was one of the major subjects of research in all leading music centers, such as IRCAM in Paris, CCRMA at Stanford, STEIM in Amsterdam. Musicians were the first to create interactive programs and languages, allowing to create sophisticated interactive systems, whose behavior changed in accordance with the performer's mode of action.

We use various optical detectors, light harps, infra-red detectors, various electromagnetic, volumetric and other electronic systems, gloves like PowerGlove, systems of registration of bio-potentials of muscles and brain, Besides academic activity, creative consultation and studio work with artists and composers, the Theremin centre conducts interdisciplinary research and develops new technological means and programs within creative projects in electro-acoustic music and multi-media, specializing in real-time interactive systems.

The Meta Control Laboratory

works on Meta Dance and Meta Voice projects. In the Meta Dance project the musical form is not a fixed composition, but is created in the evolution of a self-organized dynamic system. Its major paradigm is the sound environment, which depends on the dancers' plastic and the dynamics of their interaction, showing itself in the form of correlation of the plastic gesture. The essence of the composition's structure is to model the process of acquiring language. The performer's gesture is analyzed by the computer and is interpreted into sound structures depending on the stochastic evolution of the adaptive interactive system. The Meta Dance is an attempt to create a situation, where the sound language syntax would depend on the mode of sound perception in the context of a stage performance.

In the Meta Voice project the performer's voice is analyzed by a computer-linked voice decoder. The system identifies the performer's characteristic intonational patterns and articulations, interpreting them and influencing the mode of the sound stream self-organization in time, crossing several structural levels.

Bio-Music

The idea of bio-music may be traced back to poet Reiner Rilke, in whose essay “The primal sound” (1919) he speaks of reading information from the brain curves with the help of a special sounding rod, analogous to the recorder's needle.

Early attempts to use in music the nerve and muscle bio-electric signals (bio-potentials) were conducted in the late 1960s - mid 1970s in the context of experiments with biofeedback: you react to the external sound or visual signal, the machine registers your reaction and alters in a certain way the signal, which, in result, reacts to your reaction, you

react to the alteration etc. There was created at that time a number of interactive systems, which made use of the principle of biofeedback.

In 1990 at the seminar on new music in New York was demonstrated a four-channel Bio-musical instrument, programmed to play the "air violin". The interactive composition was in that the performer imitated playing an imaginary violin, which, thanks to the analysis the performer's muscular bio-potentials, resulted in a quite adequate sound. The early experiments made do with a simple registration of parameters, but soon it became evident, that a more complex statistical analysis of biopotentials, in particular of the EEG, yields more significant results. In 1972 David Rosenbaum produced the composition "Portable Gold and Philosopher's Stones" for four performers in real time, in which, through the function of auto correlation, he singled out the moments of EEG coherence for each performer in different frequency bands, and also cross-correlation between pairs of performers. The time of the performer's EEG coherence defined the band of direct control over the musical material. With the expansion of correlation the performer's influence over the sound grew stronger, defining the spectral composition of the music. The body temperature and KGR also influenced the tonality of the musical material.

The Theremin Centre projects in this field continue the works, began in mid 1980s in the Institute of Psychology of the USSR Academy of Science within the project "Emosaurus", the task of which was to create a computer complex of self-regulation of man, based on the principle of biofeedback. Andrei Smirnov worked on a controlled by brain biopotentials synthesizer of natural noises, which was part of a system, incorporating elements of computer game, computer graphic and music. The Theremin centre composers use a number of interactive instruments, such as Radio Baton, given to the centre by its inventor Max Mathews, or PowerGlove, given by composer Richard Boulanger.

Translated by Irina Kolesnichenko