

## Concert of Orchestral Music with Computers

**April 19, 1984**

A composer at the University of California, San Diego has taken music composition out of the realm of pencil-licking notation, and has deposited it into something a little more high-tech.

Roger Reynolds, educated in engineering physics and a musical composer, has written music for orchestra and ensemble which employs eight channels of computer-processed, tape-recorded sound.

Two new pieces will be premiered this June: one at New York City's Lincoln Center and the other at the Los Angeles Cultural Olympics.

At 8 p.m. Monday, June 4, at Lincoln Center, the American Composers Orchestra will present a concert of orchestral music with computers, during which Reynolds' "Transfigured Wind II," will have its world premiere performance.

Also, during the Olympian Festival at the Los Angeles 1984 Cultural Olympics, "Transfigured Wind III," recomposed for 14 instruments, solo flute and quadraphonic tape, will be performed at 8 p.m., June 21, in the Japanese-American Theatre.

Another new piece, "Archipelago," a 32-minute piece for 32 musicians and computer-processed sound, had its American premiere in February during Soundshapes '84, a contemporary music festival held at the University of California, San Diego.

"Archipelago" was commissioned by The Institute for Coordinated Research in Music and Acoustics (IRCAM), Paris, part of the French government's Beaubourg Museum structure. Reynolds wrote the composition at IRCAM during residencies which spanned a two-year period.

During the creative process, Reynolds found his computer-manipulated musical sounds to be like specimens under a microscope: "One experienced the phenomenon of hearing a detailed structure in sound that you always knew was there, but couldn't actually hear before."

About "Archipelago," Reynolds said, "I now have a handle on sounds which appeared to be previously unmanageable.

"I can get inside notes that were seemingly inseparable and can change the aural experience humans are capable of having."

For example, he said, a note from an oboe can be digitally extended, broadened, or in some way precisely transformed within the confines of technology.

This oboe sound is manipulated and reverberated so that its elements are regrouped to take on other guises: in this instance, a cosmic soprano voice emerges from a redistributed partial structure. Hence, the feeling that the sound has expanded and separated while traveling in space.

"We haven't before had a way to get inside sound," according to Reynolds. "We can get inside ideas with words and we can scrutinize images with slow motion and close-ups, but we haven't had a way to hear the microstructure of sound."

Reynolds explained that the identity of an instrument doesn't reside in its message.

"What makes them differ is the microstructure, the partial components. The microstructure is enormously complex, and we had to accept it as being beyond manipulation," he said.

Reynolds employs several approaches in his musical transfiguration, the first being spatial. He circulates the instrumental sounds in space along certain sound flow paths. He also can make controlled horizontal "strata" cuts of a melodic line, separating parts of the sound with the computer. He calls it "slicing sound horizontally."

"It's auditory analysis and resynthesis," he said.

In a third approach, Reynolds can perform a vertical editorial process. "I take out snippets, not slices" of sound. By using digital "splitz" and "spirlz" algorithms, he says he has absolute control over this "editorial" procedure.

"It's a challenging field," he said, "since the computer does only and precisely what you tell it. It places on an artistic mind a set of problems which is sometimes uncongenial, always time-consuming and arduous."

Reynolds knows that to manage his resources successfully, and to foresee the opportunities and the perils, he has to have a plan to get the feel for a computer system, to begin to build tools for working on the real and the supra-real. "I don't like synthetic things very much," he said.

His transfigurations are not quite the same as synthesized music, he said. "I use real sounds and extend them in some way: put them in space, take them apart in horizontal slices, micro-slices. It's an intriguing conceit, to set the situation up without harming the music.

"Simpler synthesizers can do pretty good imitations of real sounds but they aren't the thing itself. I can actually recreate a sound in a way that it is indistinguishable from the original," he said.

Reynolds is the first composer to work with sounds in time and have them remain at their original pitch. "It has always been possible to slow down sound," Reynolds explains, "but in the process the sound will be lower in pitch."

What musical horizons will all this digitalizing reveal to us? Reynolds says it is first necessary to look for reliability in the transfiguration process. "Little by little, we will be able to create new entities; auditory illusions will present us with sound experiences that have no models in the natural world."

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