EASTMAN SCHOOL OF MUSIC

JOHN CHOWNING, COMPOSITION

Thursday, September 28, 2023
Hatch Recital Hall
7:30 PM

EASTMAN
SCHOOL OF MUSIC
UNIVERSITY of ROCHESTER

PROGRAM

Phonē (1981)   John Chowning
(b. 1959)

Sabelithe (1971)

Stria (1977)

Turenas (1972)

This concert is presented by the Electroacoustic Music Studios @ Eastman (EMuSE).

PROGRAM NOTES

All four compositions were originally composed in a quadraphonic format. MUSIC 10, a form of Max Mathew's Music IV, highly optimized to run on a DEC PDP-10, was coded by David Poole. Four channels of digital acoustic signals were composed and recorded on a disc. Then in a separate pass the samples were converted by a DAC to an analog signal and recorded on tape.

Phonē (1981)   John Chowning

The sounds in *Phonē* (from the Greek, meaning "sound" or "voice") were produced using a special configuration of the frequency modulation (FM) synthesis technique that allows the composer to simulate a wide range of timbres including the singing voice and other strongly resonant sounds. The synthesis programs are designed to permit exploration of and control over the ambiguities that can arise in the perception and identification of sound sources. The interpolation between timbres and extension of "real" vocal timbres into registers that could not exist in the real world — such as a basso "profondissimo" — and the micro-structural control of sound that determines the perceptual fusion and segregation of spectral components are important points in this composition.

The composer developed this technique of FM synthesis of the singing voice at IRCAM, Paris in 1979 using a DEC PDP-10. He coded the piece in the SAIL (Stanford Artificial Intelligence Laboratory) language at CCRMA in 1980 – 81, using the "Samson Box," a real-time, highly optimized computer/processor designed by Peter Samson. It was premiered in the Grande Salle of the Centre Pompidou by IRCAM, as part of Pierre Boulez's seminar *Le Compositeur et l'Ordinateur* from February 17– 21, 1981.

Sabelithe (1971)

Chowning's fist composition using a computer, *Sabelithe* represented all that he had learned and developed, since beginning in 1964, about composing sound in a quadraphonic space and about spectral modeling using FM synthesis, discovered in 1967. In addition to spiral trajectories, he composed a section where short percussive sounds followed a path — left rear-to-front, front-across, right front-to- rear — that was then followed by a second and then a third instance of the same. It was a spatial canon, in fact, for which there is a musical pitch-space analog, the 14th century caccia (chase or hunt), a precursor of the fugue. There is some irony in the fact that a 20th century technology would produce a form for which there is a 600- year-old metaphor.

The brilliant Stanford music historian, Imogene Horsley, found this fact amusing and somewhere mentions *Sabelithe* in her scholarly writings.

At various points in the composition there are timbral transformations. The most dramatic is near the end where a short, "noisy," discontinuous percussive sound is gradually transformed into a Risset inspired FM brass tone — a metamorphosis, for which there are analogs in the lithographs by M. C. Escher. It is a compelling example that demonstrates the richness of FM synthesis where a large timbral space is controlled by a small parameter space. An early form of Leland Smith's Score program, coupled with the composer's spatial processing subroutines, greatly facilitated the production of the score data.

Sabelithe, an anagram of Elisabeth (Chowning), was first presented at Dinkelspiel Auditorium, Stanford University, in May 1971.

Stria (1977)

Chowning received one of IRCAM's first commissions from Luciano Berio to compose *Stria* for the institute's first major concert series presented by Pierre Boulez, Perspectives of the 20th Century and premiered October 13, 1977 at the Centre Pompidou. Stria was composed using the SAIL language and realized in the summer-autumn of 1977 at Stanford University's Center for Computer Research in Music and Acoustics (CCRMA), following several years of planning while away from Stanford University.

Stria is based on the unique possibilities in computer synthesis of precise control over the spectral components or partials of a sound. Most of the music we hear is composed of sounds whose partials are harmonic or in the harmonic series. In *Stria*, a non-tonal division of the frequency space is based on a ratio that is also used to determine the relationships between the inharmonic spectral components. The ratio is that of the Golden Ratio from antiquity $(1.618\ldots = \varphi = (1+ \sqrt{5})/2)$, which in this unusual application yields a certain transparency and order in what would normally be considered "clangorous" sounds.

The composition of the work was dependent upon computer program procedures, specially structured to realize the complementary relationship between pitch space (scale) and spectral space (timbre).

In addition, these procedures are at times recursive allowing musical events that they describe to include themselves in compressed form similar to the fractal geometries of Mandelbrot.

PROGRAM NOTES

Kevin Dahan and Olivier Baudouin, in separate efforts, reconstructed the composition in 2007 from the original program and data, as described in The Computer Music Journal, Autumn-Winter, 2007 [CMJ 31, 3-4]. The reconstructions allowed Stria to meet current audio standards. This presentation by Kevin Dahan was realized in 2011.

Turenas (1972)

This widely presented composition makes exclusive use of frequency modulation synthesis, discovered by Chowning in 1967. FM synthesis, which is integral to Turenas, was a gift from nature and hence the title derived from its possessive form. Turenas also makes use of a program, developed by the composer over a period of four years, for creating the illusion of sounds in motion through a quadraphonic sound space.

Present at the premiere of Turenas in Dinkelspiel Auditorium, Stanford University on April 28, 1972, were the composers Martin Bresnick, Andrew Imbrie, Gyorgy Ligeti, Loren Rush, Leland Smith, and Ivan Tcherepnin, who wrote the following notes in 1973 for a concert at Harvard University.

This computer-generated tape composition makes extensive use of two major developments in computer music pioneered and developed by John Chowning, working at Stanford's Artificial Intelligence Lab. The first involves the synthesis of moving sound sources in a 360-degree sound space, which takes into account the effects of the Doppler shift. The second was a breakthrough in the synthesis of "natural" (as well as almost "supernatural") timbres in a simple but elegant way, using accurately controlled frequency modulation. This is the technical background, but the piece is not about that background.

The title "Turenas" is an anagram of "Natures" evoking the way sounds "tour" through the space, transparent and pure, produced by the most technologically sophisticated means yet tending to sound perfectly natural, as if a dream could come true.
- Ivan Tcherepnine (1943-1998)

ELECTROACOUSTIC MUSIC STUDIOS @ EASTMAN (EMuSE)

Mikel Kuehn, director
Logan Barrett, Cory Brodack, Tucker Jonson, Ko Muramatsu,
& Connor Simpson, teaching assistants

MEET THE COMPOSER

John Chowning was born in Salem, New Jersey in 1934, spending his school years in Wilmington, Delaware. Following military service and four years at Wittenberg University in Ohio (B. of Mus), he studied composition from 1959-61 in Paris with Nadia Boulanger. He received the doctorate in composition (DMA) from Stanford University in 1966, where he studied with Leland Smith. With the help of Max Mathews of Bell Telephone Laboratories and David Poole of Stanford, in 1964 he setup a computer music program using the computer system of Stanford's Artificial Intelligence Laboratory. Beginning the same year he began the research that led to the first generalized surround sound localization algorithm in the digital domain. Chowning discovered frequency modulation synthesis (FM) in 1967. This breakthrough in the synthesis of timbres allowed a very simple yet elegant way of creating and controlling time-varying spectra. Inspired by the perceptual research of Jean-Claude Risset, he worked toward turning this discovery into a system of musical importance, using it extensively in his compositions. In 1973 Stanford University licensed the FM synthesis patent to Yamaha in Japan, leading to the most successful synthesis engine in the history of electronic musical instruments. An interview about FM synthesis was recorded Jun 17, 2015, in Barcelona, https://rwm.macba.cat/en/sonia/sonia-212-john-chowning

He taught computer-sound synthesis and composition at Stanford University's Department of Music. In 1974, with John Grey, James (Andy) Moorer, Loren Rush and Leland Smith, he founded the Center for Computer Research in Music and Acoustics (CCRMA), which remains one of the leading centers for computer music and related research. Although he retired in 1996, he has remained involved in activities at CCRMA. In 2019 he initiated a long term project to recreate, by means of computer modeling, the acoustics of the Chauvet Cave in France as they were when the exquisite 32,000-year-old wall paintings were created.

We acknowledge with respect the Seneca Nation, known as the "Great Hill People" and "Keepers of the Western Door" of the Haudenosaunee Confederacy. We take this opportunity to thank the people whose ancestral lands the Eastman School of Music of the University of Rochester currently occupies in Rochester, New York.

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UPCOMING EASTMAN SERIES CONCERTS

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Tickets for all series concerts can be purchased at EastmanTheatre.org

FACULTY ARTIST SERIES
Eastman Virtuosi
Kilbourn Hall
Saturday, September 30, 2023 at 7:30 PM

FACULTY ARTIST SERIES
Alexander Kobrin, piano
Hatch Recital Hall
Sunday, October 1, 2023 at 3:30 PM

Over the course of eight concerts, Professor Kobrin will present all 32 of Beethoven's piano sonatas throughout the 2023-24 academic year. Kobrin will perform on a Shigeru Kawai piano, generously on loan to Eastman for this concert series.

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UPCOMING STUDENT ENSEMBLE CONCERTS

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All student performances are free unless otherwise noted.

Musica Nova
Kilbourn Hall
Wednesday, October 4, 2023 at 7:30 PM

Music of Douglas Lowry, Philippe Manoury, and Wolfgang Rihm

MELIORA WEEKEND
Empire Film and Media Ensemble
Kilbourn Hall
Thursday, October 5, 2023 at 7:30 PM

MELIORA WEEKEND
Music in the Main Hall
Lowry Hall
Friday, October 6, 2023 at 2:30 PM

MELIORA WEEKEND
Eastman Saxophone Project & Brass Guild
Kilbourn Hall
Saturday, October 7, 2023 at 2:00 PM

For the most up to date information on Eastman concerts and events, scan this code to visit our online calendar.

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