

CREATE 2003 Studio Report

Stephen T. Pope, JoAnn Kuchera-Morin, Curtis Roads, and Ioannis Zannos

Center for Research in Electronic Art Technology (CREATE)

University of California, Santa Barbara (UCSB)

email: {stp, jkm, curtis, iani}@create.ucsb.edu

Abstract

The Center for Research in Electronic Art Technology (CREATE) is situated within the Department of Music at the University of California, Santa Barbara (UCSB). JoAnn Kuchera-Morin founded CREATE in 1986 and serves as its director. The senior staff consists of Curtis Roads, Ioannis Zannos, and Stephen T. Pope. This studio report surveys the main activities at CREATE in the period from 2001 through 2003. The presentation will include numerous audio and visual examples of our recent output.

1 Introduction

It has always been the mission of CREATE to pay equal attention to artistic content production, technical research and development, and undergraduate and graduate education. The past two years have seen major new activity in each of these areas.

2 MAT Graduate Program

The UCSB interdisciplinary graduate program in Media Arts and Technology (MAT) is now in full operation; this is a collaboration between the departments of Music, Art Studio, Computer Science, and Electrical and Computer Engineering. We have 40 graduate students in a two-year Master's degree (MA or MS) program. The next stage is to extend the MAT MA/MS program to a full Ph.D. program; a proposal for this is currently making its way through the various required review stages in University of California administration.

We should note here that several recent CREATE students (e.g., Ken Fields, Dan Overholt, and Mark-David Hosale) have taken part in UCSB's unique Independent Interdisciplinary Ph.D. Program (IIPhDP), in which the candidate assembles his/her own thesis committee with faculty from different departments.

3 IGERT Funding

The partners in the MAT program are the recipients of a \$3 million five-year grant from the US National Science Foundation to fund Ph.D. student fellowships. This means that we can select and fully fund approximately 14 students per year for five

years. The first set of IGERT-funded fellowships will have started by the time ICMC 2003 takes place.

4 Concerts

CREATE organizes a regular schedule of concerts using the "Creatophone" many-channel projection system. We have been able to upgrade the components of the system so that the core is now an octophonic system using eight B&W Matrix 801 speakers powered by Threshold solid-state amplifiers; this is augmented by arrays of smaller Mackie powered monitors.

CREATE is also one of the sites of the annual "California Electronic Music Exchange Concerts," a collaborative effort between the six largest computer music centers in our state.

5 Special Concerts and Festivals

In addition to our regular concert schedule, CREATE has hosted numerous special events, festivals, conferences, and visits, including:

- 2003 *Primavera* Festival of digital media and new music;
- Luc Ferrari's *Cycle of Souvenirs*;
- Daroux, Sclavis: *Density 2001*; and
- Concerts at the 2002 *Beyond Noise* symposium

6 Conferences

As in the past, we host one or two medium-scale symposia and workshops per year.

In the Spring of 2002, we hosted a Workshop/Symposium on the topic of *Sensing and Input for Media-centric Systems* (SIMS) with invited speakers such as Roger Dannenberg, Guy Garnett, and Matthew Wright. See <http://create.ucsb.edu/SIMS> for the on-line proceedings

Later in the Summer of 2002, Ioannis Zannos organized the *Digital Arts Week* and *Beyond Noise Symposium* at CREATE, which included in-depth SuperCollider and MacroMedia Director workshops (see <http://create.ucsb.edu/beyondnoise>).

7 Visitors

CREATE has hosted a series of guests who have presented lectures, demonstrations, or concerts; these include:

- James A. Moorer: lectured on DSP
- Morton Subotnick: presented his recent pieces
- Ichiro Fujinaga: lectured on music databases
- James Ingram: lectured on music representation
- NTT Researchers Naotoshi Osaka and Takafumi Hikichi presented music research at NTT
- *WireWorks*: Georg Hajdu and Jennifer Hymer spoke on performance with live electronics
- Gareth Davis: gave a lecture/concert on advanced clarinet performance techniques
- Hideko Kawamoto lectured on acoustic and electronic composition and performance
- Gerald Errante: discussed processing of clarinets
- Nicholas Isherwood: spoke on the electric voice

8 R&D

With the influx of MAT students, several of the on-going development projects at CREATE have seen major advances, and a new set of tasks has been spawned.

Curtis Roads is supervising research involving the sophisticated and computationally intensive matching pursuit wavelet analysis with Garry Kling. We are currently investigating new sound transformations based on manipulation of the analysis data produced by the LastWave software.

Chandrasekhar Ramakrishnan has developed an impressive real-time wavelet analysis/transformation application for MacOS X (see the companion papers elsewhere in these Proceedings).

Bob L. Sturm has been measuring and modeling the spectral characteristics of liquid-filled aluminum cans (sponsored by the Arizona Beverage Company).

As reported elsewhere in these Proceedings (two papers by Stephen Pope and Chandrasekhar Ramakrishnan) the Siren/Smalltalk and CREATE Signal Library (CSL) projects are quite active.

Ph.D. student Dan Overholt has been busy making (and performing with) new performance interfaces, including advances on his MATRIX interface, a new Wireless Interface and the "OvertoneKeyboard."

Ph.D. student John Thompson has developed a novel and powerful sampler using SuperCollider version3, and is using it for performance versions of John Cage's music for prepared piano.

Other R&D projects that have produced interesting recent results include:

- PulsarGenerator: new synthesis techniques
- Creatovox: new performance interfaces
- OSCar: network I/O for audio/visual interaction
- CRAM: support for developing and deploying large-scale distributed real-time systems
- MiXViews 1.28: tools for sound processing
- WoonGrams: music visualization and animation

- Occam: OSC/MIDI convertor
- Ouroboros: Flexible AudioUnit host

9 Publications

We are happy to announce the publication by the MIT Press of *Microsound* (book with audio CD) by Curtis Roads, and of the book chapter "Music and Sound Processing in Squeak Using Siren" by Stephen Pope in *Squeak: Open Personal Computing and Multimedia*. (book and CD-ROM), edited by Mark Guzdial and Kim Rose (Prentice-Hall).

10 Awards

Earlier this year, JoAnn Kuchera-Morin's work *Paleo* for bass violin and tape (premiered at the 2001 ICMC in Havana) was awarded the Grand Prize in Mixed Media by the International Society of Bassists.

In 2002, Curtis Roads was recognized for several of his compositions. L'académie Charles Cros gave the "COUPS DE COEUR" award to the compact disc *CCMIX Paris: Xenakis, UPIC, Continuum*, which contains two pieces by Dr. Roads; this also received "Five Best of 2001" citation from *THE WIRE* magazine. Dr. Roads was also the winner of the Award of Distinction, Digital Music Category at Ars Electronica for his work *POINT LINE CLOUD*.

11 Recent Performances

In addition to the performances of the authors of this studio report, recent student productions have been played and broadcast throughout the world, including new pieces by Anne Deane, Brian O'Reilly, Stefanie L. Ku, E. Nicholas Morgan, Dan Overholt, John Thompson, Kikuhiko Hibino, Bob L. Sturm, and Mark-David Hosale.

12 The Future

For the near-term future, we expect the MAT Ph. D. program to be in operation by the time of our next ICMC studio report.

Our most exciting future plans revolve around the establishment of the Digital Media Center in the California NanoSystems Institute (CNSI, currently under construction). The Center will encompass 12,000 square feet, and include collaborative laboratories for MAT faculty. More importantly, the CNSI will house a three-story spherical performance space that we intend to outfit with 12-channel overlapping video projection, 128-channel sound output, and a variety of input devices and sensors. The computational hardware for the CNSI Sphere will include a traditional vector-oriented supercomputer, a 1024-node Linux cluster, and a multimedia "rendering farm" (currently under design). Stay tuned for updates.

The CREATE web site is at <http://create.ucsb.edu>.