

# DACS

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Digital Arts Concert series

Richard Boulanger

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with Jana Saleh, Greg Thompson,  
Celesta Haraszti, Marilyn Shrude,  
Amy Packard Heritage, and members of  
Brave New Works

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Monday, April 14, 2003  
8 p.m. \* Bryan Recital Hall

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MidAmerican Center for Contemporary Music  
College of Musical Arts \* Bowling Green State University

## Program

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### **Radio Sonata** (1979/1990/2003)

for Radio Baton, Conductor Program & Yamaha TG77  
Richard Boulanger, Radio Baton

### **GrainStorm** (1993/2003)

for Radio Baton, Conductor Program & Yamaha TG77  
Richard Boulanger, Radio Baton  
Greg Thompson, real-time video sequencing

### **StarDust** (2003)

for Radio Baton, Video Baton and Max/MSP/Jitter  
Richard Boulanger, Radio Baton  
Jana Saleh, Video Baton  
Greg Thompson, RadioStatic and Radio Jitter Systems

### **Andante** from *Solemn Song for Evening* (1987)

for Radio Baton, Conductor Program and Yamaha TG77  
Richard Boulanger, voice and Radio Baton

### **Asleep in Wavel's Shadow\*** (1990/2003)

video by Jana Saleh  
original poetry and recitation by Steve Garrison

### **Virtual Encounters** (1989/2002)

for Flute, Clarinet, Violin, Cello, Piano,  
Radio Baton/TG77 and Max/MSP

- I. Reflections*
- II. Transfiguration*
- III. Permeation*

Amy Packard Heritage, flute  
Celia Eidex, clarinet<sup>s</sup>  
Maria Sampen, violin<sup>s</sup>  
Katri Ervamaa, cello<sup>s</sup>  
Marilyn Shrude, piano  
Richard Boulanger, Radio Baton

-INTERMISSION-

### **I Know of No Geometry** (1990)

for Radio Baton, Conductor Program and Yamaha TG77

- I. Intro to Geometry*
- II. First Proof*
- III. Second Proof*

Richard Boulanger, Radio Baton

## **Collage-0-Tron (2001/2003)**

for Radio Baton and Max/MSP/Jitter

Richard Boulanger, Collage-0-Tron System

Greg Thompson, Vide-0-Tron System

Jana Saleh, images

## **Shadows (1986/1987/2003)**

for Violin, Radio Baton, Conductor Program,

Yamaha TG77 and Max/MSP

*I. First Sight*

*II. First Kiss*

*III. First Fight*

Maria Sampen, violin

Richard Boulanger, Radio Baton

## **Trapped in Convert/**

**At Last... Free (1979/1999/2003)\***

for Dance, Video, Csound and Max/MSP/Jitter

Celesta Haraszti, choreography and dance

Jana Saleh, video and real-time video performance

Greg Thompson, real-time video capture and  
algorithmic processing

Richard Boulanger, real-time Csound performance

\*world premiere

§denotes member of Brave New Works

## **About the Technology**

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Developed by the "father of computer music," Max Mathews, the **Radio Baton** is a system aimed at providing a more expressive way of performing on computers. It allows the performer to freely move two "batons" (radio transmitters) in three-dimensional space above a sensor surface. The sensors trace the locations of the ends of the batons and send their X, Y and Z coordinates to a computer that is programmed to interpret the performer's gestures in a musically useful way.

The **Conductor Program** is a sequencer program that automatically supplies the sequence of pitches and durations of the notes to be played. However, expressive factors are not automated, but controlled entirely by the performer. Typically, the performer will beat time with one baton to control tempos and micro tempos. The other baton is often used to shape the overall dynamics, balance the loudness and brightness between individual voices, and shape the amplitude envelopes of individual notes.

Two of the pieces on today's concert, "Andante" from *Solemn Song for Evening* and *I Know of No Geometry*, are written in a new scale, the **Pierce scale**. This scale, which is based on 13 divisions of the tritave (a frequency ratio of three to one), as opposed to the standard 12 divisions of the octave (a frequency ratio of two to one). The scale steps analogous to chro-

matic half steps are thus larger: raising a tone by one Pierce chromatic step corresponds to multiplication by the 13th root of three (approx 1.088), while raising a tone by one diatonic half-step corresponds to multiplication by the 12th root of two (approx 1.059). The scale has a chord (the 3:5:7 chord) analogous to a diatonic major chord and another chord analogous to the diatonic minor chord. Thirteen different keys can be formed from subsets of the chromatic steps. Harmonic structures including modulations between keys are possible. The Pierce scale is a sort of analog of the standard diatonic scale. It has basic chords analogous to the familiar major and minor triad, and these chords can be used in constructing the other tones of the scale. Like the diatonic scale, the Pierce scale provides a basis for a tonal music, with the familiar resource of modulation. But, the frequencies of the notes are entirely different from those of the diatonic scale. In the diatonic scale, the major triad has frequencies in the ratios 4:5:6. In the Pierce scale, the ratios are 3:5:7. Also, while the diatonic scale "repeats" after a frequency ratio 2, an octave, the Pierce scale "repeats" after a frequency ratio of 3.

## About our Guests

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**Richard Boulanger** was born in 1956 and holds a Ph.D. in computer music from the University of California at San Diego, where he worked at the Center for Music Experiment's Computer Audio Research Lab. He has continued his computer music research at Bell Labs, CCRMA, the MIT Media Lab, Interval Research, Analog Devices and IBM, and has worked closely for many years with Mathews, Barry Vercoe and John Fitch.

Boulanger has premiered his original interactive works at the Kennedy Center, and appeared on stage performing his Radio-Baton and MIDI PowerGlove concerto with the Krakow and Moscow Symphonies. His music is recorded on the NEUMA label.

Currently, Boulanger is a professor of music synthesis at the Berklee College of Music, where he has been awarded the Faculty of the Year and President's Awards. He has published articles on computer music education and composition in major electronic music and music technology magazines, and has lectured worldwide. For the MIT Press, Boulanger has authored and edited *The Csound Book: Perspectives in Software Synthesis, Sound Design, Signal Processing and Programming*, and he is currently working on *Audio Programming in C and C++*, scheduled for release in 2003/2004.

"For me, music is a medium through which the inner spiritual essence of all things is revealed and shared. Compositionally, I am interested in extending the voice of the traditional performer through technological means to produce a music which connects with the past, lives in the present and speaks to the future. Educationally, I am interested in helping students see technology as the most powerful instrument for the exploration, discovery, and realization of their essential musical nature—their inner voice."

**Brave New Works** exists to promote new music. Dedicated to the work of composers across the entire aesthetic spectrum, its mission is to foster new music through its creation, its performance and by working with and on behalf of composers. BNW also seeks to expand the audience for new music through performances, workshops and collaborations with the arts.