Basic Electroacoustics 2009
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This class will focus on three aspects of contemporary art: the combination of sound and image, interactive performance, and modern compositional techniques and styles. This is a "tools" class where we will explore and use many software applications and will focus particularly on Cycling 74s MAX/MSP and Jitter software as well as the free Processing language. There will be four main assignments – one will be a sound and image piece, the second an interactive work, the third a recorded or sampling based piece, and the fourth a synthesis piece. We will cover the basics of all of the software needed to create these works. Before you begin work on the three main compositions you will be required to create a smaller "test pilot" that shows you have mastered the skill sets required to accomplish your own work.

In general we will be working with MAX/MSP for interactivity, Jitter and Processing for video work, Logic and Reason for sequencing, sampling and synthesis. We will use Amadeus for our audio editor and either Quicktime Pro or iMovie for video editing.

Classes will meet in the Computer Music Center's Recording Studio, room 317. The weekly sessions are divided into lecture days – Thursdays, and lab days - which will be on Tuesdays in room 313.

Tentative Schedule

Tuesday, Sept. 8 - Studio basics, booking time, door codes, etc. Basic recording using Max and Logic.
Listening – Pierre Schaeffer and Pierre Henri – *Symphonie pour un Homme seul* (1950).

Thursday, Sept. 10 – How to use the samplers. Editing audio files using Amadeus Pro and using Re-cycle.

Tuesday, Sept. 15
Listening – *Poeme Electronique* – Edgard Varese (1958). More examples of *musique concrete*.
Assignment 1 – record a 1 to 2 minute study on at least three separate tracks.

Thursday September 17 – A look at MAX/MSP, how it works, triggering samples, using rewire to control Reason or Logic with MAX/MSP.

Assignment 2 – create a simple MAX patch to trigger samples.

Download sample patch 1 & 2

Tuesday, September 22 – Manipulating movies in Jitter. Listening – *Gesang der Junglinge* and *Electronic Study No. 2* – Karlheinz Stockhausen. From the archives – an actual Stockhausen lecture about Gesang on tape.

Thursday , September 24 – Basic Mixing in Logic, applying effects in Logic and Reason. Importing MIDI files and audio samples to Logic, Reason and MIDI.

Tuesday, September 29 – Triggering samples using Gregory Taylor's LFO tutorial patch. Listening – Paul Lansky (1990s) – *Table's Clear, Not Just More Idle Chatter, Night Traffic*

Thursday , October 1 – Recording/Sampling Project due.
In-class presentations of compositions.

Tuesday, October 6 – Otto Luening and Vladimir Ussachevsky. Selections from early days of the Columbia-Princeton Electronic Music Center. Dave Soldier Interview with Vladimir Ussachevsky.

Thursday , October 8 – Digital audio fundamentals, classic synthesis techniques, exploring timbre. A look at the basic wave forms using Logic's ES2 synthesizer. Creating and controlling a simple FM player in MAX.

Assignment 3 – create your own simple FM patch in MAX.

Tuesday, October 13 – Sound design using Logic's ES2 Synth. Understanding modulation and the routing matrix. Pieces created on the Buchla Synthesizer: Morton Subotnick – *Silver Apples of the Moon*, Pril Smiley - *Kolyosa*
Download Darwn Grosse's synthesizer patch tutorial.

Thursday , October 15 – More on synthesis using Reason or Logic. Controlling midi control change messages with MAX.

Tuesday, October 20 – Using physical/natural data as compositional material. Mapping audio to openGL using Jitter. Using physical models in MAX and Logic. Charles Dodge – *Profiles* and *The Earth's Magnetic Field.* Maxfield – *Sine Music.*

Thursday , October 22 – Using outboard controllers with MAX to control patch parameters: Wacom tablet, Peavey box, Yamaha Disklavier, Diem Dance suit. Risset's – *Duets for One Piano: Eight Sketches* for Disklavier (1989).

Tuesday, October 27 – John Chowning – *Stria*, The RCA Mark II synthesizer – Milton Babbitt – *Philomel* and Charles Wuorinen – *Times Encomium*, J.C. Risset – *Sud.*

Thursday , October 29 – Synthesis Project due

Tuesday, November 3 – no class – election day

Thursday , November 5 – Creating a short .gif animation. Using QuickTime Pro as a basic video/audio editor. Composing to picture in Logic. Mixing to picture using Mainstage.

Assignment 4 – create a very short animation using a scanner, Photoshop, and QT Pro.

Tuesday, November 10 – Understanding FFT analyisis. Sound re-synthesis using FFTs. Jonathan Harvey – *Mortuos Plango, Vivos Voco.* The movies of Stan Brackhage and Robert Breer.

Thursday , November 12 – Controlling QT movies/live camera input with Jitter. A look at Jitter expert Andrew Benson's Video Processing System. Working with FFTs in MAX/MSP.

Tuesday, November 17 – Installations/Movies by the Open Ended Group. Using psycho-acoustics in a sound design to create movement.

Thursday , November 19 – Introduction to Processing. Download Processing.

Tuesday, November 24 – An overview of work created with Processing. A look at Processing code. Controlling processing from Max with Maxlink.

Thursday , November 26 – no class – Thanksgiving holiday

Tuesday, December 1 – Sound/Image Project due.

The HUB, PGT, and Plork.

Thursday , December 3 – Albert S. Bregman – Auditory and Musical scene analysis.

Tuesday, December 8 – Group Improvisation Day. The class will conduct improvisation exercises.

Thursday , December 10 – Last class, a look at RTCmix and the next semester with Brad Garton. iPhone applications using RTCmix.

Thursday , December 17 – Interactive Project due.

Some helpful texts:

Auditory Scene Analysis – Albert S. Bregman
Computer Music - Charles Dodge and Thomas Jerse

Computer Music Tutorial – Curtis Rhoads
Music, Cognition, and Computerized Sound – Perry Cook
Elements of Computer Music – Dick Moore
Capturing Sound, How Technology Has Changed Music – Mark Katz
Mastering Audio – Bob Katz
Notes From the Underground – Heinrich Taube
Master Handbook of Acoustics – F. Alton Everest
Audio-Vision - Michel Chion
In The Blink of an Eye – Walter Murch
Point and Line to Plane – Wassily Kandinsky
Interaction of Color – *Josef Albers*
Mixing Engineer's Handbook – Bobby Owsinski
Good Vibrations, A History of Record Production – Mark Cunningham
TapeOp, The Book About Creative Music Recording – Larry Crane