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21M.361 Composing with Computers I (Electronic Music Composition)
Spring 2008

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21M.361: Composing with Computers I (Electronic Music Composition)

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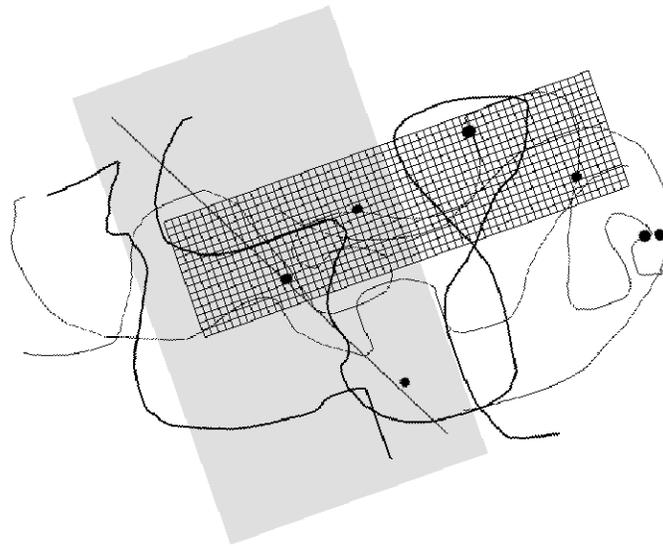
Spring 2008 OCW

Listening Notes 2.1: Whole Feedback Compositions

Max Neuhaus/John Cage—Fontana Mix – Feed (1965/68)

These are six realizations, each in a different auditorium or studio, of John Cage's Fontana Mix, by Max Neuhaus. From <http://www.medienkunstnetz.de/works/fontana-mix/>: "«Fontana Mix» consists of a total of 20 pages of graphic materials: ten pages covered with six curved lines each, and ten sheets of transparent film covered with randomly-placed points. In accordance with a specific system, and using the intersecting points of a raster screen, two of the pages produce connecting lines and measurements that can be freely assigned to musical occurrences such as volume, tone color, and pitch. The interpreter no longer finds a score in the customary sense, but rather a treatment manual for the notation of a composition."

Here is a mock-up of a superposition of something resembling the materials of the score, but in fact a fabrication entirely perpetrated by myself:



Drawing by Peter Whincop.

Before I reproduce the liner notes to the CD containing all versions (yay, permissions from someone!), I'll ask (and you answer): Who is the composer? Neuhaus is one of the most important sound artists (ever). He started life as a percussionist, and in this work we hear (and could have seen) him as both. For a bio, see http://en.wikipedia.org/wiki/Max_Neuhaus. Also check out his webpage, <http://www.max-neuhaus.info/home.htm>. Of particular interest to us are his brief essays, "Sound as a

medium,” and “Sound Art,” found by clicking on “Sound Works.” We’ve already talked about Cage.

The following text courtesy of Max Neuhaus. Used with permission.

“In 1963, while exploring ways of changing the timbre of percussion instruments through amplification, I had discovered a means of generating sound which I found fascinating—the creation of an acoustic feedback loop with a percussion instrument inserted inside it. Instead of the usual single screeching tones of acoustic feedback, this created a complex multi-timbred system of oscillation.

“At this time ‘electronic music’ had not quite been invented. True, there were endeavors. In the speech research department of Bell Telephone Laboratories, Max Mathews had gotten their computer to sing Bicycle Built for Two in a nasal ‘voice.’ Luening and Ussachevsky at Columbia University commissioned RCA [to] build a folly called the Mark II which generated combinations of wave forms designed for scientific experiments. [This was one of the first analog synthesizers. Later in the semester we’ll hear Mario Davidovsky’s Synchronisms No. 6, the sounds on the tape for which were produced on the Mark II.] It was also the beginning [of] the never-ending quest to avoid the rigors of creation by trying to capture and freeze-dry Schoenberg’s muse (his twelve tone method) into a computer algorithm.

“Electronic music-making was, in fact, confined to a studio where tape recordings were made and manipulated. These were then supposed to be played back to an audience sitting in a concert hall watching two loudspeakers. Except for Cage’s performances with phonograph cartridges, live electronic music did not yet exist. What I had found was something of quite a different order than the endeavors with recording tape in the studio.

“Here, beginning with the pickup of room sound by a contact microphone touching a percussion instrument, a loop is quickly created when the loudspeaker projects the amplified result back on the percussion instrument causing it to vibrate anew. I decided to create a realization with the mixture and interaction of four channels of these loops. The loops were created by resting contact microphones on various percussion instruments standing in front of loudspeakers. Using four loops multiplied the level of complexity enormously as each loop would, of course, interact with each of the others. It created an oscillating system which encompassed the whole room and everything in it including the audience. [Emphasis added to give us ideas.]

“The score I made from the Fontana Mix materials controls gradual changes in the

amount of amplification of each of the channels. Although the execution of the score is identical in each of these performances, the actual sounds that make up each realization are completely different as they are determined by which percussion instruments are used, the acoustics of the room and the position of the mics in relation to the loudspeakers and the instruments at each specific moment (the vibrations sometimes cause the mikes to move around).

“In spite of this, one might still expect the overall structure of these realizations to be similar as the score determines the amplification contour of each feedback channel over time. This is also not the case. The loudness of the work at any specific moment is determined by which channels are oscillating and how. As the amplification controls are gradually changed, the feedback channels suddenly break into different modes of oscillation; sound seems to swing through the room.

“The factors here are so complex that even if the piece were to be performed twice in the same room with the same audience, the same instruments, and the same loudspeakers, it would have completely different sound and structures each time. It seems [like] something alive.

“These realizations end not with gradual fadeouts, but by switching off the power amplifier directly, causing the feedback loops to collapse, disintegrate and die out.”

You've already answered the question about the composer. Now, do these work as pieces? Are they different pieces? Do you like the sounds? Do you like these pieces/realizations? (Explain.) Now just say something about them, or one in particular; be descriptive and imaginative. Do you feel they all come from the same score? (That would be better answered if you listen to all six pieces/realizations.)

Graham Woolley—one hundred mics (2006)

This was from a student in 21M.361 in spring 2006. It deviated a little from the rules, but the result was so good we didn't care. Feedback was created as per the rules of the assignment. A small fragment was taken, and put into a Pro Tools feedback loop (you'll do these in Lab 2.2 for Assignment 2.2) with delay and reverb. Reverb decay time was set to infinite, and the gain was occasionally tweaked to stop the feedback from 'blowing up.' Hence the constant fluctuation. I believe he made several iterations of this before the final product was arrived at. And I know that Graham went over this many many times before he came up with something he liked; so it is not just a lucky jam. I liked this piece so much, and understood its possibilities, that I initiated a project: a series of pieces by friends, based on it. I'll put these

up as they are composed. [Fall 2007: so far there are only three. Spring 2008: ditto.]

Just say something about the piece: descriptive and imaginative. Do you like it? (As usual, explain.)

Peter Whincop—0610 New (formerly Brass Orchids) (2006) and 0609 [jam2sp1.1] (2006)

Last semester I put up one of my feedback pieces—0609 [jam2sp1.1]—warning (as you'll see below) that it might not be too popular among the students. I was right. A couple really liked it, and the rest who wrote about it were not unabashed about bashing it. I've included that original piece in the listening, originally announced to the class as [untitled feedback boredom non-piece]. You don't have to listen to it; it's just there to show how boring I can be, and how I changed it into a slightly more interesting piece—0609 New [Fall 2007 update: I think I actually like the original feedback, and feel compelled to make further versions. Spring 2008 update: I have!] Here are my notes on the piece to the composer Paul Lansky:

the [original] title is taken from samuel r. delaney's dhalgren; a brass orchid is a protective weapon, i imagine, quite beautiful in appearance but somewhat deadly. the piece sounds metallic on the surface, and more subtle in the background, to me; and i've slowly been reading this long book all semester, only ever on my commute to teach at mit.

the principal sound is feedback. i love feedback; it's also an important part of my teaching (in fact, noise in general). i used a small but excellent electret condenser mic (part of a binaural pair) with a genelec near-field monitor (such a clean sound), with intervening analog filterbank (snd-14--alllrc circuits; the only solid state components are two germanium transistors, at the pre- and final amp stages) and vacuum tube wave distorters (no longer made, by metasonix). i also sneakily fed sine tones (clearly an a440 at one point, i forget the other ones) into the loop, and controlled the feedback with max and all the knobs of the outboard devices. (i love outboard devices.) i improvised for, it seems from my files' timestamps, around twenty hours (so much for my dissertation), and chose two jams. i thought they were pieces in their own right, so i played one to my students. a couple really liked it, but too many complained of the tedium. well, i like that sort of tedium, but i didn't want to subject everyone to it. and i trust my some of students more than i would most people. so i combined the forty minutes from the two takes into a single take, the length of this piece. i then spatialized it using spat (a favorite, especially misusing it).

i like a lot of things subtly happening, so that every time you hear the piece, there's something new and sometimes surprising (this is true for

most of my pieces--i don't know how successful i am). i took some more ambient sounds i had been working on. their history is long, but involve serge modular patches from several years, the seattle noise musician atlatl, a max patch with sine tones shaped by envelope following of the noise/click component of a denoised/declicked (arbitrary) recording, convolution, and careful filtering (i have learnt that filtering is an extreme art, though I'm a bit clumsy at it). i allowed the feedback occasionally to steer the more ambient sounds.

and a fairly good mood.

Here is the blurb to the original piece(s), some of this repeats the email to Paul above:

"Sorry to put another one of my pieces in the listening. It will happen again, just a couple of times. Certain modules of this course were designed around my way of composing (which is fairly varied, so it's not like I'm teaching you to compose in some specific style), and I thought my pieces would make good exemplars. I can imagine some of you will definitely not like this one. This piece is very recent. It is more minimalist than the Neuhaus pieces (and far more minimalist than works of the famous minimalist composers such as Glass and Reich); any variation is very subtle, and the main sound is fairly persistent. You have to have a pretty high threshold of boredom to get through it.

"The feedback loop is not a speaker-mic one, rather the signal path is initiated by a 440 Hz sine wave—I opted for perhaps the commonest electronic signal. It is fed into two external pieces of equipment, both very rare (only 20 each of them exist and they cost \$1200 a piece): a Metasonix Hellfire Modulator, and a Metasonix Pentode Filterbank. Both are vacuum tube devices, very idiosyncratic, no longer made. The first generally messes with the signal: distortion, internal feedback, low frequency oscillation, pulse width modulation. The second is a filterbank of five pentode vacuum tube filter circuits, with narrow frequency ranges, a voltage-controlled amplifier, and early-onset self-oscillation. Certain types of filter self-oscillate once a certain gain has been reached if the resonance is high enough. The signal from the two devices (the modulator is mono->stereo, the other is mono->mono) is then both fed to the final output (so I can hear and record the result), and fed back into itself, crossing over en route. My controls are twofold: (1) the amount I feed the modulated/filtered signal back into the filterbank/modulator, and (2) the various controls of the two devices (too hard to explain, and I have little idea of what they do, e.g. on the modulator I can control the "beam screen" and L1 and L2 among other things; I have no idea what those mean). A slight delay is introduced into the signal path, since Max/MSP and the soundcard have some latency.

"To make the [feedback parts of the] piece, I practiced for hours, decided on certain things, i.e., came up

with a mental score, and performed the final product, which was exactly as I had wanted it. If you listen very hard, you will hear a lot of minute pitch changes in the non-A440 sounds; and minute changes to the timbre of the sometimes-sine A440.”

Are these changes enough for you? Do you get used to the ‘scale’ of change? How are you dealing with the long pieces I’ve put on the listening? How does this piece compare with the Neuhaus pieces/realizations? Do the feedback and more ambient sounds merge or contrast well, or are they misfits?

Max Neuhaus/John Cage/Peter Whincop—Fontana Mixes Feed 1–6 (2007)

Most students, a cat, and I thought the Neuhaus/Cage pieces were a little harsh. I was also skeptical that they came from the same score—well, they might have, but they didn’t sounds as if they did. To see this (visually), I layered the six versions in Pro Tools, and they seemed fairly unrelated structurally. Brilliant (and obvious) idea: play them all at once! I adjusted the volumes, and reverbed each track individually. I quite like the result as a piece, plus I’ve used it as material for other pieces (especially in cases when I’m desperate for material, like for my Fall 2007 Anime project....) Am I in any way a composer of this piece?