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

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Listening Notes 4.4: Interaction, Process, Classical

This week's listening includes one interactive classical piece (the Tcherepnin) that use analog synthesis, three classics of American modernism (Davidovsky, Child, Babbitt), two extremely cool pieces emphasizing process (Young, Feldman), one very early electronic study constructed very mathematically and that is now available as a Max patch (Stockhausen), and one extremely cool piece with quite a name (Thaemlitz). Warning: some of these pieces are long, or demanding.

Ivan Tcherepnin—Santur Opera II (1977–)

Courtesy of The Tcherepnin Society. Used with permission.

Message to composition/theory class

I am not Allah
and cannot make you become composers
—I can't even try, since that is up to you
I assigned John Cage first, because he, more than any other composer,
writes in a lucid way how ANYone can be a composer
like MCDC saying, "Anything is beautiful if you think it is"
or Wittgenstein, "Beauty is in the use of our clickers"
It takes lots of work, discipline and persistence and self-honesty

to even GET to the place where a composition idea of value can be discovered

If friends asked you about your courses during vacation
and you were talking about the composition class
you would say that you studied melodies, phrasing and modes
The interrelation of text, melody and rhythm
the combination of several voices in polyphony
the use of the canon as a tool to organize multiple voices
the emergence of harmonic progressions from polyphony
and development of themes based on harmonic progression
the use of periods and sentences as tools to organize musical ideas (motives)
you were given oodles of music, music to study for technical and/or inspirational purposes
and so on.

You heard about the existence of a cave
or mine shaft to which composers, after much digging,
have access (not guaranteed to find anything in there, either)

You have listened to your own work and seen yourselves in the mirror of your music
and found the mirror to be uneven, sometimes opaque—
requiring more practice, more tooling, more facility
But beware. The tools, the facility, the techniques are not the goal
at best they can be facilitators; at worst deceivers, creators of an illusion
that you are able to compose without the most essential factor present
which has no name, no shape, no presence aside from your own consciousness and spirit

Whether it is Cage saying, “Hey, no sweat, anyone can do it, it’s free, it’s fun” or Schoenberg saying, “You have miles to go before you can even imagine what composition is all about, and even then, you will be light years away from knowing enough of the literature to create anything faintly original”

the art is in your hands, and through your awareness and craft alone will you create something
which can begin to breathe life, communicate awareness and transport the listeners

In some cases, you would do better to let go of wanting to master traditional practices and try to invent your own wheels; in other cases, that would be too much to ask to unlearn for the sake of music

In any case, you should always get back to basic human needs, primal feelings, unlearned patterns of perception and cognition, principles of life on the surface of the earth in this epoch, at the twilight of the 21st Century

too much looking back or fascination with the past is dangerous

better to leapfrog over the civilized past, leap back and forth between different parts of the earth, separated by time and place

* *

this is a prelude to the Modal Modules, which focus, as did canon, on a technical, theoretical means to organize multiple voices in musical compositions

There is no substitute for your own experimentation, mentation and persistent, disciplined digging into the musical earth

—Ivan Tcherepnin

Why Compose? The Unanswered Question

There are many reasons why one can compose. To put music down on paper. Or to show off one's intellect. Or to wear one's heart on one's sleeve. Or to be risqué or blasé.

One may wish to do it just to show off one's craftmanship. Or to express genteel emotions. Or to assert the spirit. Or for ascetic self-denial. Or for ecstatic self-denial. To develop the ego. To let go the ego.

To show disdain for the motives, emotions and mentalities of:

- the public
- the critics
- other composers
- the state
- the world

To protest. To make a political statement for:

- the right
- the left
- the middle

So that people can enjoy themselves. So they can improve themselves. So they can raise their consciousnesses. So they can feel more secure. Join a club.

Why compose? What is sought? The unanswered question. Probably for all reasons at all different times. Things are not forever static.

I've composed for many reasons: At first for joy. Then for work. Then to deny work. After all, the composition is the composer. The work is an affirmation of life.

Some lives can be grand. Others mousey. Most somewhere in between, with their own individuality. That individuality is a valued treasure, like life itself. Voicing that calling is called telling the truth. Truth and beauty are one.

Schoenberg lamented that people considered his music ugly. Yet he knew its truth and beauty. Much music sounds beautiful, but is ugly and untrue. I look for all the above. But above all, I'm wary of pitfalls... this world is certainly not ideal nor designed to make self-realization easy or desirable...

I look for some raw material of life, a living essence. If I'm lucky enough to be visited by that essence, it means that creation has taken place. Without that pinch of life, the music is like dead leaves.

—*Ivan Tcherepnin*

Personal journey: I've had a number of composition 'teachers'—my undergraduate degree was a specialized degree in composition, and my Ph.D. required partial admittance into the composition program. But Ivan was my only official teacher who taught me anything positive. The others just told me

how useless I was (and, come to think of it, I was). But (obviously) they weren't encouraging. Just reading the two excerpts above will give you an idea of how open Ivan was to ideas, to sounds, to music. (One of his main ideas of music was the difference between the 'body' and the 'breath' or 'soul' of a piece or sound.) My real composition teachers have been my teaching colleagues, especially Evan Ziporyn, and my students. No kidding. And, in a negative sense, Mario (see below).

Ivan was lecturer in music at Harvard since the early 70s (he died a few years ago, too young); he was never promoted to professor, such was the respect academics denied him, his music, and his teaching style. (Sometimes he would talk into his synthesizer, words barely perceptible, but the point was made in the delivery.) He developed quite a following, almost entirely undergrads, relatively dirty and scruffy, or oddly cool, for Harvard students; and as a result, one of his old studios still exists at Harvard. I did, and do, a lot of my work there, on the Serge Modular Analog Synthesizer. Serge is short for Serge Tcherepnin, his brother, and inventor of one of the first, and by far the best, modular analog synthesizer. Ivan wrote and performed many pieces using the Serge (pictured above).

This composition has Ivan playing the Santur—a Persian hammered dulcimer—with live response by the Serge. He always emphasized the live aspect to composition—if we made a pre-recorded tape, he would insist we walk on stage, press play, modify the mixer and EQ appropriately, press stop, and take a bow—almost embarrassing. A Max patch could do this composition's electronic part I guess, but without such character. Max would do it too perfectly. One great thing about analog synths is their unreliability. (I hope to have one in the near future for 21M.540. I'll at least bring my old stuff to school.) What sort of things are going on? Compare this with the other compositions this week that have a tape, rather than live interaction.

Peter Child—Ensemblance (1982)

The composer is faculty in this department (Music and Theater Arts). I've included it because it is a great example of chamber group plus tape, not as common a configuration as solo instrument plus tape. Here are his program notes:

"When I wrote Ensemblance I was concerned with composing music that is vivid and dramatic, using primary colors and broad, sweeping strokes, and yet intricate at the level of detail. It is a work in one movement, with sharply contrasting sections, and entrances of the electronic part generally articulate boundaries between those sections. At the beginning of the piece, pitched material emerges only gradually from unpitched, percussive sounds; toward the end of the piece, a closely woven tapestry of instrumental and electronic timbres provides a backdrop for a dramatic piano solo. Connecting these harmonically static areas, the middle sections are more directional, developmental, and polyphonic in

character.

“The recorded electronic sounds were generated by computer at the MIT Experimental Music Studio (which later was absorbed by the Media Lab at MIT) using the MUSIC 11 music synthesis language (today known as Csound). I designed computer “instruments,” using additive and subtractive synthesis and frequency modulation, that mimic the live instruments as well as explore their own more idiosyncratic sound world. Timbral correspondences between live instruments and recording frequently provide the basis for dialogue between the “natural” and the “mechanical” elements of the ensemble.

“Ensemblance was commissioned by the Boston Musica Viva to be part of a concert in 1982 that commemorated the centenary of the birth of Igor Stravinsky. In homage to him, the famous Sacre chord is prominently cited twice in the score.”

I asked Peter about his relationship with computer music now. (This piece is from 1980.)

> “i don't make an effort to keep up with computer music. when we had a search specifically for a computer music composer--about 5 years ago--the results were disappointing. the miniaturization and affordability of the technology is of course a great boon, as well as developments like max/msp (did you know that msp is miller puckette’s initials? that it was his login name when he was an undergrad at mit?). i think that for me the computer was another instrument and did not fundamentally change the way i make my own music, except perhaps in one way--the fact that the tape is so inflexible challenged me to think about phrasing and ‘expressivity’ more carefully, which i think eventually affected my acoustic music. it highlighted, in a sense, how paramount this element is for me.
>
> would i do it again? i think about this a lot. the fact that csound can be operated from a pc, and in real time, is a huge change, and if i could figure out how to clear the learning hurdle i would definitely explore it again.”

One comment in particular echoes something from the section on Davidovsky, below: the effect of electronic composition on traditional composition.

Milton Babbitt—Reflections (1975)

More Babbitt. Extremely difficult to perform. Harvard’s music department put on a celebration of Babbitt’s 80th birthday in 1996, my first year there. The brilliant pianist David Horne performed this piece. I turned pages for him, and saw what was going on. David made half of it up, despite or due to being brilliant. (He is also a virtuosic composer.) After the concert, Babbitt told him it was the best performance of the piece he had ever heard! So much for all the math and detail that goes into this sort of composition. (As an aside, the performer of this recording and of the Davidovsky—which is a fairly simple piece to perform

adequately—is absolutely fantastic. His name is Aleck Karis.)

I've included on the class Stellar site an article that 'explains' this piece.

And the liner notes, which are sensible and wanting to be summarized

(source: Liner notes by Perry Goldstein - used by permission NWCR707, (P) 1996, © 2007 Anthology of Recorded Music, Inc. Available at www.newworldrecords.org or www.dramonline.org.)

There is a fundamental difference between Reflections and electronic works predating it, e.g. the Davidovsky: the relationship between piano and electronics is different. (The CD from which these pieces are taken involves only piano and electronics.) The electronic parts of Davidovsky's Sychronismss [sic.—it's hard to form a plural from a plural] are interwoven with the instrumental parts, and alter and extend what the piano can do—this is true too for Peter Child's piece; whereas the tape part of Reflections is a distinct instrument. The liner notes say this is due to the contrapuntal nature of Reflections. To some extent, I would disagree. The word and meaning of 'counterpoint' derives from the phrase 'punctus contra punctum': point against point, which can be taken to mean line against line. Musically we think of it as the implications of one line (akin to melody) being played/composed/heard simultaneously with another (how to explain this correctly is difficult: a nasty part of my dissertation). I personally do not hear much interaction or resulting, unified effect of the piano and tape parts; they seem to work independently, or they form a dense texture. The liner notes refer to the "dense contrapuntal fabric" of the music; I'd say that it is no longer counterpoint but temporal timbre or texture—my own idea, not really used in music theory or analysis (yet). Odd, the liner notes do say the tape part "tends to function as an independent 'instrument' rather than as a partner in the expansion of the piano." Yes. And that the "[p]iano and electronics each contribute several lines to the dense contrapuntal fabric of the music." Yes, except for the contrapuntal part.

The work is relentless, "especially [in] the seemingly mercurial (but minutely planned) juxtaposition of contrasting dynamics, registers, timbres, and gestures... in the opening half second, the electronics trace a movement from mf to ffff to pppp to ff." This sort of contrast also occurs in the piano part, which is a little ridiculous, given performance constraints. This modus operandi—favoring maximum contrast—characterizes the composer's approach to rhythm, registration, and timbre as well.

A couple of sentences from the liner notes: "Despite the intense foreground activity, the disparate parts gel to create a unified whole. The paradox of Babbitt's music is that discrete [and hardly discreet...] moments of extreme contrast compound to create larger gestures of unique lyricism, just as the differently shaped, colored, and textured bits of a mosaic may, in the hands of an artist with a vision, create a unified 'picture' when viewed from an appropriate distance."

Contrast this with the Davidovsky. (I know this isn't on the compulsory list, but it's certainly worth a listen.) And say something about the various statements, opinions, quotations, etc., in these notes.

Morton Feldman—Triadic Memories (excerpt) (1981)

Just beautiful, mesmerizing. One of my favorite composers. Just enjoy. Do read the content of the links:

http://www.cnvill.demon.co.uk/mfjack.htm (reviews by respectable London newspapers)
http://www.cnvill.demon.co.uk/mffafchp.htm (excellent liner notes to an excellent recording on an excellent label)

Terre Thaemlitz—Aunty Eddie's Pussy (from Maschinelle Stratageme) (2000)

The glitches are the composer's, not mine. Just extremely excellently excellent. Enjoy.

http://www.furious.com/PERFECT/terrethaemlitz.html (nice photo)

And, zomg, http://www.comatonse.com/thaemlitz/

Mario Davidovsky—Synchronisms No. 6 (for Piano and Tape) (1970)

Personal journey: Mario was my main 'official' teacher at Harvard. He hated my music, which was different from what it is now, though I think it was trying to be like it is now. He just stifled me, tried to lead me up his path, so I decided to give up composing. I then became TA for Ivan's old course, taught by one of his graduate students, Kurt Stallmann, and I was reborn. Kurt, if you are reading this for some reason, then Thanks! you contributed greatly to my musical elucidation.

Wikipedia has a well-written and accurate article on him. I'll paraphrase from it and add a fair amount.

Davidovsky is from a Jewish-Argentinian family, originally from Lithuania. My impression is that Argentines pride themselves on a number of things, among which are meat eating, and their non-American European-ness. The latter (though the former would often be a topic of conversation, him not knowing I have been a vegetarian half my life), along with the surrounding South American culture—a strong agrarian economy and catholic faith, etc.— shaped his growth and education. By the age of seven he was playing the violin (purportedly he was pretty talented), and he began composing when he was thirteen.

He pretty much invented a new style of composing for electronics: the tape part would be a quasi-performer. In this piece, it is as if the performer is responding to the electronics, and the electronics to the performer, rather like in Ivan's piece (where that is actually happening). But the electronic part of the Davidovsky is 'just' a pre-recorded tape.

Here's a decent quote from George Crumb, famous fairly radical American composer (courtesy of George Crumb, and used with permission):

> "Perhaps we might now review some of the specific technical accoutrements of our present music and speculate on their potential for future development. The advent of electronically synthesized sound after World War II has unquestionably had enormous influence on music in general. Although I have never been directly involved in electronic music, I am keenly aware that our sense for sound characteristics, articulation, texture, and dynamics has been radically revised and very much affects the way in which we write for instruments. And since I have always been interested in the extension of the possibilities of instrumental idiom, I can only regard the influence of electronics as beneficial. I recently participated in a discussion with Mario Davidovsky, who, in my opinion, is the most elegant of all the electronic composers whose music I know. [His views and music might be elegant, and he might be eloquent—he is—but calling the man himself elegant is pushing it a little....] Davidovsky's view is that the early electronic composers had a truly messianic feeling concerning the promise of this new medium. In those euphoric days of intense experimentation, some composers felt that electronic music, because of its seemingly unlimited possibilities, would eventually replace conventional music. Davidovsky now regards the medium simply as a unique and important language at the disposal of any composer who wants to make use of it, and as a valuable teaching tool for the ear. In any case, it is obvious that the electronic medium in itself solves none of the composer's major problems, which have to do with creating a viable style, inventing distinguished thematic material, and articulating form." [NB. the typical modernist attitude of "creating" a "viable' style.]

Davidovsky was working toward a solution to the "composer's major problems" mentioned by Crumb. Through electronic synthesis one could have control over the Urstoffe of sound: attack, sustain, and decay—which, some would (not entirely correctly) say had not been exploited in music (but think of Webern, Varèse, etc.). Back in the day, and for me that means 1988 but for Mario, a lot earlier, recordings on tape—big magnetic tape—would be cut up with razor blades, band aids close by, and put the pieces back together rather as we now do using Pro Tools. Composition could then be an ongoing process of aural feedback: the sounds and their ordering/layering could be heard immediately. In 21M.361 we

compose in such a different way (in general) than in conventional instrumental composition: we can hack our way through pieces if we like, and can change just about anything on the fly. Some argue that it is easier, and that it requires less training; well, perhaps at the outset, but definitely not when you delve deeper into it.

Davidovsky composed electroacoustic music, i.e., music with instrument(s) and tape, until the mid 70s, when he reverted to instruments and vocal writing. He briefly returned to electronic music, this time computer music, for his last Synchronisms, No. 10 for Guitar and Tape. The electronic part was realized at MIT, I believe, and he did not actually make the sounds, but, in the manner of artists and sculptors of centuries past, said what he wanted, someone did it for him, and he approved or disapproved. This is especially symbolic: Mario's initial electronic music practical experience was producing the sounds for, I think, Varèse.

Electroacoustic music has had a significant effect on conventional instrumental writing, as Crumb notes, and Peter Child does, above. As I can attest to (and so can, it seems, the person who wrote the Wikipedia article), this is especially noticeable in the attention one pays to the quality of attack, sustain, and decay of the instruments. There is a resulting demand on performers (though Davidovsky's music itself isn't so difficult). For an odd take on /off of / fake of this piece, see http://www.youtube.com/watch?v=XO32U3DUv7g.

Final comment: Mario taught me perhaps my most important lesson in composition, albeit negative. One of the first things he told me was that electronics can only produce boring sounds, so they have to have interesting attacks, decays, etc., and either be sustained rather pure tones, or percussive sounds. After my break from composing, I returned to making electronic sounds, with an emphasis on making interesting and beautiful sounds. All my percussive sounds are created by analog synthesis (as were his) or by digital glitches (unlike his—he was not a big fan of errors). [Update Spring 2008: I create percussive sounds methodically now.]

See also a random review of a concert that included this piece: Rosenfeld, Jeff. "Seriously Passionate." *San Francisco Classical Voice*, May 9, 2004. (http://www.sfcv.org/arts_revs/fleezanis_5_11_04.php, accessed June 9, 2008)

La Monte Young—The Well-Tuned Piano 81 x 25 (excerpt) (1988)

Image courtesy of Rae Zucker. Used with permission.

Yup. That's him for real. Well, an artist's impression. Caveat auditor: when I was ripping the CD, a ton of glitches were introduced by accident—my computer was dying. I kind of like the effect, so I've kept this version; besides, I've returned the CD. This is actually a hour from a five-hour rendition of the piece; a DVD has just been released that is eight hours long. (The work is improvised.) Here is the title of an ongoing installation, a 'sound environment,' I have been to several times in the Dream House in NYC, which you should visit if you have the chance (on Church St., hours very restricted and closed most of the time):

The Symmetries in Prime Time from 288 to 224 with 279, 261 and 2 X 119 with One of The Inclusory Optional Bases: 7; 8; 14:8; 18:14:8; 18:16:14; 18:16:14:8; 9:7:4; or The Empty Base (1991-present), including The Symmetries in Prime Time When Centered above and below The Lowest Term Primes in The Range 288 to 224 with The Addition of 279 and 261 in Which The Half of The Symmetric Division

Mapped above and Including 288 Consists of The Powers of 2 Multiplied by The Primes within The Ranges of 144 to 128, 72 to 64 and 36 to 32 Which Are Symmetrical to Those Primes in Lowest Terms in The Half of The Symmetric Division Mapped below and Including 224 within The Ranges 126 to 112, 63 to 56 and 31.5 to 28 with The Addition of 119 and with One of The Inclusory Optional Bases: 7; 8; 14:8; 18:14:8; 18:16:14; 18:16:14:8; 9:7:4; or The Empty Base (1991)

All those sine waves at once. Here is another fantastic title:

The Gilbert B. Silverman Commission to Write, in Ten Words or Less, a Complete History of Fluxus Including Philosophy, Attitudes, Influences, Purposes (1981)

Surprisingly or not, he is the true father of minimalism, not in the awful Glass/Reich sense. He's fantastic.

The CD set comes with a long, full-size book. Here are [not] some excerpts [because we couldn't get a response from him so I've paraphrased]:

1. Take a Bösendorfer Imperial Grand piano
2. It is a 9'6" extended range instrument
3. It possesses the "rich tonal quality and sensitive action required by the composer"
4. Retune and rebuild it
5. Previous entry carried out by "the Bösendorfer technicians in Vienna under the supervision of the composer"
6. Wow
7. The composer designed the special tuning (no, it's not out of tune)
8. "[He] continues to supervise the maintenance of the instrument's tuning by his assistants and apprentices"
9. The tuning is 'just,' which means small harmonic ratios are used to build scales and intervals
10. Such intervals have been approximated historically by various means, speaking of which, including 'mean-tone' tuning. The description in the book with the CD gets its history of tuning a little wrong, or skirts around the issues, or summarizes it to the point of misrepresentation. Anyway, our modern western intervals approximate just intonation: our scale is based on the division of the octave into twelve equal parts. The intervals so formed are pretty close to just ones, so we still sense a kind of consonance and dissonance. And when we hear things justly tuned, we might react negatively and think they are out of tune. Equal temperament was first used by the Chinese, and in the west probably by players of fretted instruments (go figure...), though it was not until J. S. Bach that ET was solidified. In fact, in his "Well-tempered Clavier" (the 48 preludes and fugues). Hence the name of Young's piece
11. Various intervals are reminiscent of tuning of many non-western musics.

See the booklet for details of the tuning (or http://www.kylegann.com/wtp.html—take note of the last sentence on that web page, which is “For more information on The Well-Tuned Piano, see my article ‘La Monte Young’s The Well-Tuned Piano’ in Perspectives of New Music Vol. 31 No. 1 (Winter 1993), pp. 134–62; we have JSTOR access). It isn’t a simple just intonation, i.e., it isn’t merely 9:8 and 4:3 type harmonic intervals, but some harmonically more remote ones, such as 288:147. Also, in just intonation, fairly striking dissonances arise: I gave an example in class of stacking four perfect fifths (3/2 ^ 4) minus two octaves (4/1) and comparing it to what would be the ‘same’ interval arrived at directly, a major third (5/4)—‘same’ to the 12-tone equally tempered ear. The difference, 81/80, compounded with familiar ratios, will produce fairly odd sounds to our ears, hence the out-of-tune effect (which I imagine to the composer sounds perfectly natural).

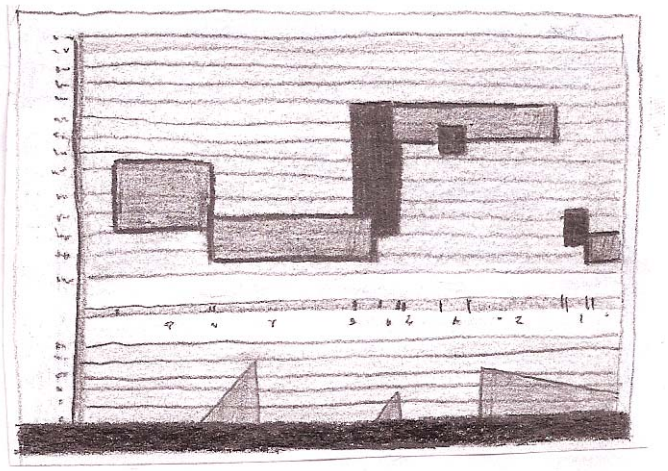
The CD book has a quote from a psychoacoustician, which I will contort in form but not in meaning, to stay clear of potential legal problems:

We can be experientially linked in a unique was to “a primordial evolutionary basis for human sensations and perceptions.” Psychoacoustic phenomena (the psychoacoustician calls these “neural physiological phenomena”), such as the ‘missing fundamental’ are exploited in a pioneering way by the composer (http://en.wikipedia.org/wiki/Missing_fundamental). The man or woman brain-sound expert likens this kind of effect or research (I am not sure which) to the early impressionist painters who studied prevailing theories of color at the time (still current): http://en.wikipedia.org/wiki/Opponent_process and http://en.wikipedia.org/wiki/Trichromatic_theory.

(While I’m surfing, look at and listen to this: http://www.youtube.com/watch?v=jtsfidRq2tw. Funny name, trippy phonemes, and mad scientist-y man, but pretty cool anyway.)

The form of the piece, improvised, is sectional, with names like Introduction to Cloud in the Magic Chord and The Homage to Brahms Variation of The Theme of the Dawn of Eternal Time in the Deep Pool.

Karlheinz Stockhausen—Studie II (1954)



Drawing by Peter Whincop.

Available as a Max patch: http://www.georghajdu.de/MAX/StudieII.html, also in the examples folder of Max/MSP.

The construction of this work is very complex, both in composition and in realization. A very detailed account is given in the liner booklet to the CD, the same CD that has Gesang on it. Summary: everything is about the number 5. The picture above is my interpretation of his score. (I didn't have the requisite implements.)