

Free Association: Snapshots of an Electroacoustic Musical History

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I want to thank Georg Hajdu and the other members of the Music in the Global Village crew for inviting me to give the keynote address today. I am very honored to have the opportunity to speak to all of you. The title of my talk—“Free Association: Snapshots of an Electroacoustic Musical History”—refers to the conceptual path I’d like to trace for you, a path that outlines part of my own history and experience of experimental music, focusing particularly on electroacoustic music. It is only one of many possible paths through this musical territory, of course, but it is the one that feels most relevant to my own work and will, I hope, help provide a context for some of the ideas we will share at this conference. Some of the examples I will discuss originate in acoustic music traditions and I include them because they have played an important part in my approach to working with electronics. The phrase “free association” in my title refers to both the connections between ideas I will be suggesting, and to the free association in computer network music between players, between notes, and between musical parameters. Captioned images of the computer technology I and my colleagues have used, starting from about 1977, will accompany my discussion.

I’d like to start with a few comments about the jazz artist and composer, Thelonious Monk. I first heard Monk’s music on an LP my older brother brought back

from New York in 1959 when I was 9 years old. He had heard Monk play with orchestra at the famous Town Hall concert recorded and released on Riverside Records. I immediately took to Monk's compositions and the sound of certain pitch intervals prominent in his music. (I later figured out that I particularly was attracted to parallel tri-tones supported by 10ths among other combinations.) From that time on I became a big fan of Monk's music. An important characteristic of his approach, which I feel has deeply influenced my own music and my approach to electronics in particular, is his seemingly unhesitating acceptance of his own physical characteristics at the piano—technical limitations included—and, more importantly, the way he used those characteristics in building a unique musical sensibility. It is as if the force of his musical personality forged a coherent statement out of the disparate elements he actually heard coming out of the piano when he sat down to play. Whether this is really the way Monk worked or thought about his work is of course debatable, but I think it is one way to view what he accomplished. My view emphasizes the empirical nature of musical invention, an embrace of the humanly and physically actual, imperfections and all, as a source of musical richness. I think Monk is a prime example of the gains that can be made by this way of looking at things. This approach is part and parcel of all improvisational traditions because with improvisation you have to start with yourself, with whatever characteristics and limitations you already have, and work outward. As you work outward and pay close attention, you may incorporate any number of personal features into the music—memory lapses, timing errors, recursion, even getting stuck—and make them work in the moment. This doing with what is—rather than planning for a better future, waiting for a more

perfect situation, or maneuvering yourself into better position—is the way I like to work and it has been a guiding principle of my approach to electronic technology as well.

An additional comment about improvisation: improvisation can be defined in part as an openness to internal and/or external influence at any moment. This image brings to mind a certain set of musical features: a merging of independent streams, momentary correspondences in tuning between parts, a uniting of different acoustic spaces, as well as being nudged off course, interruption effects, even sudden derailments, etc. Improvisation really means free association in the moment between players and free association between musical ideas—for the listener as well.

An openness to internal and/or external influence at any moment also brings to mind the music of Charles Ives. “The Alcotts” movement of his *Second Piano Sonata* (the “Concord”) opens with what can be described as a child’s reiterative practicing of the motif from Beethoven’s Fifth Symphony. As the motif is gradually elaborated, a sudden far off inclusion of bell-like chords is overlaid in the upper register. The insertion of this quiet chiming immediately expands the dimension of the child’s room to the limits of the surrounding town. It is as if someone opened the window and what was outside was brought in. Some of the harmonic complexity of Ives’ music can be viewed as an inclusive expansion of this kind—an incorporating of audible streams coming from the environment. I include mention of it here because the kind of distant pitch correspondence in the music of the computer network band, the Hub, can have a similar

quality. In that group, pitch material is often arrived at independently by each Hub player and therefore momentary pitch relationships between players can occur by virtue of simple proximity in time or as strict correlations that are the result of a data exchange. In either case, the sense of expansion of musical space—like in Ives, the room has just gotten a little bigger—seems like an apt way to describe the result.

Another Ives' effect also worth noting in this context is the building of chord complexes by juxtaposing tonally distant triadic blocks on top of each other. Again, there are many ways to view the origins or source of this technique, but I like to think of it as Ives' way of expanding the sense of the musical present. If you imagine one triadic block as being originally located a beat forward or backward in time in such a way as to form more tonal, less dissonant, harmonies with their original coincident neighbors, then one can imagine Ives arriving at dissonance by shearing traditional harmonies and then slipping them in time to produce new, richly dissonant combinations. By so doing he has broadened our sense of the present by including parts of the past and parts of the future together, thus expanding our point focus laterally in time. The beam of our aural attention is broadened in the process.

This expansion of the musical present through the slippage of time can also be applied to the dimension of space. I once turned on the radio in the mid-1980s and heard what sounded like an experimental jazz band of some kind, but with a peculiar twist—I was sure each player was located in a different room and that the players could barely

hear one another. The indescribably unique style of tangential musical coordination reminded me instantly of the Hub. I was transfixed. It turned out it was Sun Ra and his Arkestra. I don't know how they did it, but the effect of musical linkage at some distance or displacement has continued to be a fascinating area of exploration.

To jump now into the electroacoustic arena, let's reflect for a moment on the example of David Tudor. Tudor pioneered the use of "live" electronics in music performance in the early 1960s. He envisioned electronic circuits as musical actors rather than instrumental tools. He bypassed many common assumptions about the role of electronics in music making. Tudor wasn't interested in extending instrumental colors with electronic processing, nor was he interested in conventional notions of electronic control and precision. What he did do was dig down into the micro-level of the circuit and try to release the instabilities that lay hidden there. He then cast these instabilities as self-modifying musical agents. What a source of musical richness! His performances were defined in large part by a new musical dynamic arising from unstable configurations of analog circuits: outputs were fed back into inputs, amplitude controls were set to operate in extreme parts of their range, and the slightest intervention by a human performer could send the circuit into new areas of sonic behavior. Tudor searched for circuit configurations which were super-sensitized and unstable, a completely different approach from most composers working with electronics at that time.

Looking back, we can see the gain in liveliness with Tudor's approach compared to music solely played back on tape. It's easy now to see how his electronics parallel the phenomenal richness of human-powered acoustic instruments in their micro-variability and sonic complexity, all available within each tone. But beyond that, Tudor's circuits structure the music not only at the micro-level—within each tone—but, with some human nudging, at the macro level as well. The character of the music, micro and macro, is tied to the circuit behavior itself. The circuit becomes the score, and the human performer is the interacting agent who explores the “score” and participates in the unfolding of the music.

A number of composers followed Tudor's example, among them Gordon Mumma. In thinking about Mumma's work, it is interesting to step back a minute and think about the nature of musical time and the way it was changed by the work of John Cage, someone who an enormous influence on both Tudor and Mumma. In Cage's work from the early-1950s on, he posits a kind of “observational” listener. In some sense the flow of traditionally-directed rhythmic time in these works is permanently derailed and we are placed at the center of a more internal progression of time, a position from which we can perceive sound events as forming constellations, partly in the present and partly in the past. Listeners are not carried along via a rhythmic flow as much as they metaphorically walk forward under their own steam and come upon sounds (or the sounds come upon them), sometimes waiting expectantly, sometimes surprised when events occur, but above all content to take what comes when it comes. Of course one can describe this type of

unfolding as a flow as well, though it is a flow more akin to a moving observer paying close attention to passing environmental features large and small. It is more like the flow of mental contemplation.

Gordon Mumma, in his piece *Hornpipe* from 1967, expands on this observational listening stance. The horn player in Mumma's piece plays somewhat the role of lab technician, inputting information into the acoustical environment in the form of tones and impulses and then observing and/or responding to what the environment gives back. In Mumma's case, the electronic circuit in interaction with the player and the environment defines the music. Expanding on Tudor's circuit functionality, Mumma adds an analysis stage to the front end of the electronics and then in performance executes a prescribed sequence of actions—play, listen, change location, play again, and so on. Each playing cycle feeds new information to the analysis component and as the played tones are mixed with the reflected audio response from the room, the combined result further guides the circuit's sonic output. An elaborate informational, rather than audio, feedback system is what Mumma has constructed. The required sequence of actions is not only sonically necessary for the piece to fully operate, it also gives the performance a specific theatrical contour. In "Hornpipe," the composer/listener is projected as scientist/experimenter, though of course not really a scientist in the strict sense. Contemplation and appreciation of the larger system—including initiator and environment—in all its detail as it acts in time, becomes the aesthetic object. Again, as in Cage, the role of observer is inserted into

the flow of musical time. By prying this kind of opening in musical time, all manner of imaginative listening has room to exist.

Two of Mumma's colleagues—Robert Ashley and David Behrman—also took advantage of just this kind of opening. Their work with electronics in the 1970s suggested new electroacoustic ways of structuring music. They created circuits to detect and enhance correlations between parts, to demarcate freely occurring structural points, and to elaborate natural contours within sounds. The electronics often highlighted correspondences between parallel streams of sonic material. In Ashley's *String Quartet Describing the Motions of Large, Real Bodies*, random string impulses produced by the quartet are delayed and coupled electronically with original impulses in such a way that coincidences between the two trigger further material. David Behrman's work from around the same time focused on pitch detection schemes where real-time melodic choices by an instrumentalist trigger clusters of harmonic change. The two parts, acoustic and synthetic, proceed together in beautiful symbiosis. Behrman's pitch-matching pieces from the late 1970s, such as *On the Other Ocean*, were made on some of the first computers to become available to the general public. They are a wonderful bridge between the self-propelled analog circuits of Tudor and Mumma and the live computer music made by the next generation of composers.

Let's think for a moment about the advent of computer technology and its effect on the experimental music community I'm discussing. The switch to computer-based

electronics is a profound one for many reasons, one of the most important being the loss of the rich failure modes characteristic of analog devices which were so important to the liveliness of Tudor's and Mumma's output. Of course composers since the arrival of the digital devices have based pieces on the operational edges of the new technology as well, and there have been some beautiful results. But in the long run I feel the shift to digital has necessitated a more methodical approach to lively interaction and Behrman's example is an early sign of such development. His elegant synthetic harmonies which change under the melodic influence of a solo player focus our attention more on periodic structural correspondence than on the continual micro-level volatility of audio generation itself. Another way of putting this is that some of the musical heat is taken off the timbral dimension and is distributed outwardly away from the micro-present into a broader time scale, creating a more stately sense of forward momentum—a momentum which is nudged forward by surprising instances of pitch alignment and sudden harmonic change. In Behrman, the feeling of physical agency, human or electronic, is still there but in a less charged form. Some have not been attracted to this cooler world, but I find Behrman's example liberating. His work helped to lessen the constricting forces of the long-dominant timbral obsession in electronic music and open the field up to other kinds of organizing structures. He created a more methodical, self-aware music where neighboring components seem to talk to one another, decide their fate in the moment, then move off together or separately. This model could be applied to other parameters as well, and elaborations and diversifications of this kind of musical structuring are a chief feature of the computer network music form as practiced by the League of Automatic Music

Composers and the Hub. Of course, Behrman was a part of the former group for a period of time. The listening perspective in Behrman again expands upon the Cagean observational stance I've described, but this time there is a more specific focus on tuned correspondence, the noticing of which informs, in part, the musical structure.

I feel Behrman's pitch-detection algorithms invited harmony back into live electronic music with a new perspective. The swing from Tudor-esque noise to Behrman's droning harmonies was, of course, part of a larger trend toward the drones and minimalism of Behrman's generation. The computer is cast as harmonic mediator in a new open-ended landscape. It isn't so much which harmonies occur, or in what order, but more when they change that matters. Behrman's opening up of the subject area of interactive electronics to include harmony is a perfect example of what I referred to earlier as the Cagean "prying an opening in musical time," an opening that allows all manner of experimental listening and structuring to occur, not just the ones that Cage imagined or was interested in.

As I mentioned earlier, the atmosphere of contingent linkage in Behrman's early microcomputer music is diversified and expanded in the computer network music of the League of Automatic Music Composers and the Hub. All manner of experimentation in constructing such linkages between musical parameters went on in these groups, though largely through the means of digital communication rather than analysis of analog audio inputs. The links were often simple exchanges of a small number of digital bits. With

Behrman, the “demonstration” aspect of the linkage—a magical element in his music—is a featured concept, a highlight each and every time the pitch correspondence happens. In Hub pieces, the links are often numerous and happening on different time scales and between different parameters simultaneously so that any kind of “demonstration” effect is minimized. The Hub constructs a more global web of multifaceted coordination that is intuitively felt rather than tracked by a listener.

So here we are at the Hub, a group which is still active today after a short hiatus. The Hub manifests all of the features I’ve been describing: do-with-what-is-available-now rather than wait for a more perfect technology; use an empirical approach that pays close attention to emerging behaviors of the network; define pieces by unique configurations of components; open parallel audio streams to alteration from outside information; encourage an observational listening stance, improvisation, etc. I don’t mean to say the Hub is a culmination of these historical practices but more to point out part of the conceptual context in which the group arose and to outline some of the approaches that have informed our thinking.

Network music has allowed us an alternative style of social connection. In the Hub, the essence of each piece is the data exchange protocol which in our group is referred to as the piece “spec,” short for “specification.” It’s the definition we all start with when beginning work on a piece. In the social dimension of the group, the spec is not only the common starting point but also I think a welcome social insulator between

band members—it eliminates a lot of the somewhat awkward upfront verbalization about what we are going to do. Each player can develop their own musical response to the spec without running it by the other players. In the best pieces, the spec is the mediator between players which allows multiple approaches to exist concurrently in a coordinated musical space. Our faith in the spec to handle coordination duties allows each of us to focus on the development and integrity of our own part. The Hub's music really relies on the strength of independent development to work properly. You can't come in empty-handed and borrow someone else's code and expect to get the same result. A developed electroacoustic musical viewpoint is a requirement of the music—I'll build my own musical continuity, you build yours, and the data exchange will take care of a critical part of the coordination between us.

I've often thought of network music as a kind of expanded polyphony where instead of multiple melodic lines that form harmonies, you have multiple musics aligned through diverse parameter correspondences: a sonic fabric knit together of independent musical personalities. It is as if each Hub part declaims its own idea of what music is, and it is the interaction between these declarations—the agreements, disagreements, oblique agreements, interruptions, merging, diverging, ignoring, cajoling, attending—and the resulting musical shapes and contours, that are the focus of the form. It is also important to allow for non-structure as you listen to the Hub. Only then can we appreciate the coalescing of momentary structures within the music and the surprising instances of odd correlation.

In the early days of the League back in 1978, we imagined that once people discovered network music it would take off like wild fire. All we can say now, at this late date, is that the cat is most definitely out of the bag—and has already eaten a few small birds while we weren't looking! I look forward to hearing what everyone is up to over the next few days of this conference. Thank you.

Discography:

The Thelonious Monk Orchestra at Town Hall, Concord Records, Catalog No. OJCCD-135-2.

Ives: Second Piano Sonata "Concord Mass", Pierre-Laurent Aimard, pianist, Warner Classics, Catalog No. 60297.

Three Works for Live Electronics, David Tudor, Lovely Music CD 1601.

Mumma: Live-Electronic Music, Gordon Mumma, Tzadik TZA 7074.

String Quartet Describing the Motions of Large, Real Bodies, Robert Ashley, Alga Marghen (Italy) Catalog No. A 10NMN.030.

On the Other Ocean, David Behrman, Lovely CD 1041.

The League of Automatic Music Composers on Lovely Little Records, Lovely LP 101-6, 1980; *The League of Automatic Music Composers 1978-81*, upcoming release date in Fall 2007 on New World Records.

Wreckin' Ball, the Hub, Artifact Recordings ART 1008; *Boundary Layer*, the Hub, upcoming release in January 2008 on Tzadik.