

Some Notes on my Electronic Improvisation Practice

Roger Dean asked me to write a few words about my improvisational electronic performance practice. I have been doing this sort of thing for many years, and have quite a few opinions about what works and what doesn't when playing electronic instruments in conjunction with acoustic ones. I'm sure there are many other valid ways to go about this work, but what follows are things that I have learned or have come to believe, probably a blend of authentic wisdom and crackpot prejudices. Take it for what its worth.

Most of my musical work over the years has been with live ensembles, either of all electronic/computer players (The League of Automatic Music Composers, The Hub) or in mixed improvisational electronic/acoustic ensembles. My improvisational music is in the San Francisco Bay Area tradition of improvised music, a genre with strong links to free jazz and European free improv, but with its own peculiar blend of these threads and others, from punk rock and "noise" to traditional Asian musics. For my improv performance rig -- the setup I use to play in ensembles with acoustic instruments -- I have changed neither the software nor the hardware for over ten years. This of course is an eternity in the world of computer technology, and I've certainly had ideas about extensions and changes I could make to my instrument. But as time has gone on I've gotten a little stubborn about the idea of keeping it the same, and by now I've come to think of it as a long-term experiment: how long can this instrument stay interesting to myself and others? When will I stop finding new things I can do with it? Is it rich enough to be responsive to the development of my own skill and performance practice, without technical tinkering?

One thing that's wrong with much live electronic music is that the performer doesn't really know how to play their instrument, which he may just have finished building five minutes before the show. Constant technical improvement means eternal unfamiliarity with the instrument. If every time a violinist came up against some difficult musical situation she decided to modify the instrument -- by, say, adding a new string to reach those high notes or adding a pedal-operated vibrator to improve vibrato, she would be evading the development of her own musicality, the spiritual task of becoming one with and adjusting to one's means of expression.

I certainly don't claim that my instrument has the depth of possibility of a violin, but I'll never really know what it's capable of if I'm constantly changing it. As it is, after years of playing it, I'm still finding new things it can do, and I'm not at all bored with the possibilities it affords for playing with others. My years of experience with it also offer the benefit of having a pretty large repertoire of behaviors I can get to very quickly, a vocabulary that gives me a nimbleness that lets me keep up with the acoustic instrumentalists, something unusual for computer players. (Or so I'm told by the people I play with.)

Physically my instrument is not particularly novel: An 80's era MIDI digital synthesizer; a laptop running MIDI processing software I've written myself; inputs from the computer keyboard and 16 MIDI sliders; a volume pedal and a wah-wah pedal. I have experimented off and on over the years with novel controllers: infrared sensors that let you wave your hands in the air; accelerometers, multitouch pads, mice and trackballs and pressure sensitive switches, ribbon controllers and squeezable rubber balls and guitarlike gizmos of my own and other's devising.

None of these things have made it out of the lab and onto the stage with me. Sticking with sliders and ASCII keyboards will never win me a prize for human-computer interface innovation, but for my purposes they are hard to improve upon. Sliders show you at a glance their current setting, and stay where you leave them. I can operate ten of them simultaneously with my fingertips if I wish, and while I don't think I ever have quite done that, I'm often moving three or four of them at once. For triggering musical events and making discrete parameter selections, single ASCII keyboard keystrokes work fine. A volume pedal is a direct and natural way to articulate phrases and control overall level, and the wah-wah pedal plays a curious and crucial role that I'll get into in detail below. Nothing exotic is going on here.

Likewise, there is nothing of real interest on my computer screen. It's not necessary. Does a piano have a display? Another gripe I have with much laptop music is that the musicians are off in their own world, mesmerized by a sophisticated GUI + mouse environment and taken out of the shared acoustic space the rest of us in the room are inhabiting. That's fine for certain styles of pre-planned and slowly changing music. But when trying to keep up with acoustic players, I want to live in the same aural + kinesthetic world that they are in, and not be off in the textual/visual world of the current standard GUI interface.

Besides, you would be hard-pressed to find a more awkward and unmusical controller than a computer mouse. Imagine the rich and complex control panel of an analog synthesizer, with a hundred knobs and sliders and patch cords to play with, and imagine you weren't allowed to touch them and had to poke them each one at a time with a stick. That's the mouse.

My instrument grew from the idea of creating a system that was partially unpredictable and uncontrollable; something that, even when playing solo, would provide a context for me to be required to react and respond to the unexpected, just as if I were playing with other people. The instrument, originally conceived as a computer-based composition called "Touch Typing", was based on a model of the behavior of genes in biological systems. Musical improvisation can be thought of as having certain properties in common with the process of biological evolution. I've used a simplified model of sex and mutation: A string of bits defining a sound event (a "gene") is randomly mutated--one bit, selected at random, is flipped--or the entire gene is cut in half and mixed with another one. These actions are all done under the control of keys on the computer keyboard, which either play events("express" the gene), cause a mutation to happen, or cause an event to be "bred" with another. This set of controls defines an instrument, which I freely play in the performance: I fill the role of natural selection, by choosing to keep some sounds and discard others, building up a "population" of sound definitions over the course of a performance. In addition, sliders provide control over the ranges over which random variation can take place, as well as direct control of certain performance parameters.

So while all this all sounds very groovy and sophisticated (at least it seemed so 15 years ago!) another hard-won nugget of wisdom is that clever algorithms such as this really don't mean all that much musically: the algorithm doesn't define the perceptually important aspects of the music. Now I don't wish to discount the value of this aspect of the system *too much*: these mechanisms do work, and often do allow me to hit that "sweet spot" between control and randomness where all the action is. It certainly is good to be able to control the level of randomness, to be able to choose when to be surprised and when **not** to be surprised.

But of far more importance are the choices made about the actual physical properties of the sound, the mapping between performance gestures and sonic qualities, and the particulars of the sounds' dynamic evolution. In trying to build a playable instrument, I'm not really attempting to simulate any real-world instrument -- what would be the point of that over playing the real instrument itself? -- but there does need to be an appealing kinesthetic quality, the sense that the sounds, like the sounds made by an acoustic instrument, are somehow a trace of a plausible physical process. And I don't really think that much about this process of sound design can be automated or abstracted: it's a matter of making very particular and arbitrary decisions. There's no substitute for time and taste, in trying, listening, rejecting and accepting, following intuitions about what sounds good.

In my case, I find particularly fascinating those sounds that have fast articulation, right on the edge between what we can perceive as pitch and what we perceive as rhythm. This is the twittering realm of birdsong, a time scale that seems to live in a gap in our perceptual abilities: at these double-digit Hertz rates things are happening too fast for us to parse individual events, but still slow enough not to meld in our awareness to the perceptual summaries we call timbre or pitch. This is also the time rate at which the articulations of human speech stream by, as well as the upper limit of the performance abilities of virtuosic instrumentalists. For all these reasons, I think, sounds which change and move at these time scales imply a feeling of energy, skill, and intelligence just a little beyond understanding -- all qualities which make for interesting music.

By working at these time scales, I can invoke a "virtual virtuosity" in my playing that provides a good match to the **actual** virtuosity of the players I work with. I noticed early on, in playing a duo with a violinist, that when a very cheesy synthesized "violin" sound plays in counterpoint with a real violin, it can quite convincingly seem as if two violins are playing. It's as if all the cues we use to define the reality of the violin sound -- little chiffs and squeaks and timbral irregularities -- don't adhere all that strongly to one pitch stream or the other. They both benefit from these features, and sound "real". This "virtual virtuosity" effect is a similar phenomenon.

What kind of roles can an electronic player take in an acoustic ensemble? Again, I speak only about my own practice -- but first and foremost, I want to spend most of my time being a *player*, a single instrumental voice among others, not as an orchestral backdrop. With my particular range of sounds, I can at times be part of the wind section, be part of the percussion section, provide noise textures or quiet tones or chords that set a mood without necessarily being consciously heard. Or sometimes just make wild-ass electronic sounds that are frankly like nothing an acoustic player could do.

Sometimes I think of what I do as erasing, actually thinning out or simplifying confused textures. If two players are playing things that don't really hang together very well, and I'm able to insert an electronic element that somehow melds their voices, so that the three of us sound like aspects of one unified process, I've actually "erased" something, turned two voices not into three, but into one.

I've never been interested in live sampling of other players, and never really enjoyed playing in ensembles where someone else is sampling me and playing back modified versions of my own voice. If I'm making a particular sound in an improv, and I decide it's time for that sound to stop, I want it to stop! I suppose it's possible to make live sampling interesting, but only in very specific contexts, and most of the times I've heard it I've felt it was an obnoxious gimmick. Often sampling not only needlessly muddies up the group sound, but seems impolite, overstepping each player's own sonic center. Just because something is technically possible doesn't mean it's a good idea.

My computer ensemble work, for example with The Hub, involves continuous mutual "sampling" of a sort, wherein individual computer players are always reporting to each other information about their instantaneous state. So this may sound like an aesthetic contradiction: to be so opposed to sampling in the acoustic ensemble context, while pursuing a form of it to an extreme degree in the electronic ensembles! I can only say that the difference is context, and that in the Hub context, the very notion of individual voice identity is being questioned and examined: the whole raison d'être of that music is the exploration of different modes of interactive influence, and exploring new forms of social and man/machine interaction. In the acoustic ensemble work, I have a much more traditional attitude, and seek to create an atmosphere that respects the "working space" of individual players.

In general electronic music will tend to muddy up the sound -- in a hall with bad acoustics, the electronic sounds lose their definition more quickly than acoustic ones, in my experience. Of course the electronic player can overcome this effect with sheer power, or by using a hyper-articulate PA system, but this is almost invariably to the detriment of a good blended group sound. I almost always play through my own amp, sitting on the stage near me, so that my sound is localized and, again, as much like that of an acoustic player as possible.

The wah-wah pedal is a crucial part of my performance setup. It's not there for Jimi Hendrix style psychedelia or funky "Shaft" chunka chunka riffs (although that can be fun from time to time.) A wah pedal is a peaky low pass filter, essentially a band-pass filter, that limits the acoustic energy of one's playing to a particular band. Electronic music is often a "bad neighbor" playing with acoustic players, since high quality audio systems offer flat reproduction across the entire audible spectrum. The synthesist takes up the full spectrum, leaving nothing for everyone else.

Scientists who study the acoustic ecology of natural environments have found that birds and insects modify their calls in different locations of their natural range to fit into the acoustic "landscape" of a particular location. They find a way to share the available bandwidth so that everyone can be heard. I use the wah to do something similar in an acoustic ensemble. I can always make fine adjustments to the filtering of my sound to exploit sonic peculiarities of the room, get out of the way of other players, or emphasize resonances that they are exploring. Acoustic instruments generally have distinctive formant structures, and I think families of instruments in any particular music traditions have "co-evolved" to share the spectrum with each other, to create a beautiful ensemble sound. The wah pedal lets me participate in this timbral harmony in a very intuitive way, making continuous adjustments to my overall instrumental formant nearly unconsciously.

Trombonist George Lewis -- echoing a similar remark by Thelonious Monk -- told me once that the whole point in improvising together is to make the other guy sound good. This is a beautiful philosophy of music, and I try to keep it in mind as much as possible when playing. I've evolved my ensemble instrument and practice over the years to serve this aim as well as I can.

-- Tim Perkis, May 2008

BIO: (shorter)



TIM PERKIS has been working in the medium of live synthesized sound and video for many years, performing widely in North America, Europe and Japan. He is also a well known performer in the world of improvised music, having performed on his electronic improvisation instruments with over 100 artists and groups, including Chris Brown, John Butcher, Eugene Chadbourne, Fred Frith, Elliott Sharp, Leo Wadada Smith and John Zorn. Ongoing groups he has founded or played in include the League of Automatic Music Composers and the Hub -- pioneering live computer network bands -- and Rotodoti, the Natto Quartet, Fuzzybunny, and XPW. Recordings of his musical work have

appeared on over a dozen European and American recording labels. He is also producer and director of a feature-length documentary film about the San Francisco Bay Area free music scene, *Noisy People* (2007, noisypeople.com).

BIO:(longer)

Tim Perkis has been working in the medium of live electronic and computer sound for many years, performing, exhibiting installation works and recording in North America, Europe and Japan. His work has largely been concerned with exploring the emergence of life-like properties in complex systems of interaction. In addition, he is a well known performer in the world of improvised music, having performed on his electronic improvisation instruments with hundreds of artists and groups, including Chris Brown, John Butcher, Eugene Chadbourne, Fred Frith, Gianni Gebbia, Frank Gratkowski, Luc Houtkamp, Yoshi Ichiraku, Joelle Leandre, Roscoe Mitchell, Gino Robair, ROVA saxophone quartet, Elliott Sharp, Leo Wadada Smith and John Zorn. Ongoing groups he has founded or played in include the League of Automatic Music Composers and the Hub -- pioneering live computer network bands -- and Rotodoti, the Natto Quartet, Fuzzybunny, All Tomorrow's Zombies and XPW.

His occasional critical writings have been published in *The Computer Music Journal*, *Leonardo* and *Electronic Musician* magazine; he has been composer-in-residence at Mills College in Oakland California, artist-in-residence at Xerox Corporation's Palo Alto Research Center, and designed musical tools and toys at Paul Allen's legendary thinktank, Interval Research.

His checkered career as a researcher and engineer has brought him a variety of interesting projects: designing museum displays, creating artificial-intelligence based auction tools for business, building social websites, consulting on multimedia art presentation networks for the SF Art Commission and SF Airport, writing software embedded in toys and other consumer products, and creating new tools for sound and video production, research and analysis.

Recordings of his work are available on several labels: Artifact, Limited Sediton, 482, Lucky Garage, New World, Praemedia, Rastascan and Tzadik(USA); EMANEM(UK); Sonore and Meniscus(France); Curva Minore and Snowdonia(Italy); XOR(Netherlands); Creative Sources(Portugal).

He is also producer and director of a feature-length documentary on musicians and sound artists in the San Francisco Bay area called NOISY PEOPLE which premiered in 2007 to a sold-out house at Berkeley's Pacific Film Archive and has been screened at festivals in Europe and the US. (www.noisypeople.com)