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Letters

Music and Audio Technology Projects to Stir your Imagination

Here are a few off the top of my head....

Flexible Recordings

Assumption: Recordings are like snapshots of a given performance.

Consider the difference between a recording and a score. The recording reproduces many of the details of the original performance, and always in the same manner. Very little is required of the "player" of the recording. In contrast, a score is another kind of "recording" that leaves a lot up to the player—he or she must play the piece on the specified instrument. The score is much more open-ended, since it allows for an unlimited number of different interpretations, but it requires a great deal of skill to realize these interpretations. Devise a kind of score that is accessible to non-musicians, but still not cast in stone. What kind of technology would be required to realize it? Would several players be involved? What about a score that included both professional musicians and non-musicians? What would be the bandwidth of the variables? Would they be set once for the entire performance, set every now and then, or continually changing?

Alternatives to Electronic Sound in Computer Music

Assumption: Computer music must come from loudspeakers.

Mechanical instruments that "play themselves" were a novelty item long before computers were invented. Under computer control, such instruments are able to be controlled to an unprecedented level of detail. A modern example is the Yamaha Disklavier grand piano. Consider several other instruments and describe the mechanism and computer controls needed to realize them. How many control variables are needed, and what would be their bandwidths? What kind of sounds would be possible that would not be possible with a human player, and (in contrast) what aspects of the instruments are an immutable function of its physical construction? Write some music for such instruments.

Transposed Hearing

Assumption: Sound can go around corners.

Actually, sound's ability to go around corners diminishes with higher frequencies. Imagine if our range of hearing were ten octaves higher than it is now. What sounds of the world would we miss? In the high-frequency range, corners would effectively block sound, just as they block vision. How would our lives change to live in such a world?

Ethics of Technology

Assumption: Technology always makes our lives better.

Electronic mail, telephones, and faxes have made communication faster, but they have also added stress to our lives, as a result of expectations for immediate response. List ten essential technologies of modern life, and weigh their pros and cons. Don't make the mistake of considering only the more privileged segments of society. Consider the state of music today, freed from the confines of time (through recording) and space (through broadcasting), and compare it to the experience of a musician in Mozart's time.

What have we gained, and what have we lost?

The Confusion of Loudspeaker Sound with Live Sound

Assumption: A recording emanating from loudspeakers is an accurate picture of the original performance.

A live performance, involving a musician or multiple musicians performing on instrument(s), projects a nearly infinite number of different signals in a nearly infinite number of directions. These signals are reflected, defracted, and filtered by the walls, the ceilings, the seats, other people in the room, etc., multiplying many times the number of signals. Eventually, you as an audience member hear this sound with your two ears and brain. Your head does not remain rigid, but moves in a complex way as you respond to and follow the music you are hearing. A pair of loudspeakers, even in the most controlled conditions (e.g., your head is fixed exactly between the speakers), cannot represent this complexity. How many loudspeakers of what sizes would it take to create the richness of sound of a live performance? Are loudspeakers, which are designed to have a flat frequency response, the ideal mechanism for projecting such sound, or might it be better to have colored speakers, speakers that project sound in complex patterns, or some other mechanism entirely? Let's say you want to model the sound of an 80-piece symphony orchestra. How many loudspeakers would you use for each instrument? Describe one instrument from each family (wind, string, brass, and percussion) and the loudspeaker arrangement you would use.

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With respect to Adrian Freed's "think list" for the students, one of the projects—the carry-on baggage multimedia show—is something I've been doing for several years now, with quite antique technology. I've been using a Buchla Lightning MIDI controller and an IBM-PC-compatible 80286 laptop with a Roland Sound Canvas inside doing the sound and the MIDI. I use Jim Binkley's PIP software, which uses MIDI to display PCX-format graphics. The places I play in provide the sound system and the video projection.

I've received a grant from the Australia Council to spend a year making a traveling solo multimedia show. For the show I'll be moving, speaking, and singing (I was one of the founding members of EVT at UCSD back in the 1970s), and my movements will trigger sounds and graphics through the Lightning. For this I'll be moving up to (I hope) a Pentium-class laptop, and a portable video projector. The "topic" of this piece will be bioethics and biodiversity, as much as any contemporary post-Wilson, post-Muller piece can be said to have a "topic."

I just thought you'd like to know that one of those ideas is already being done. Actually, whenever I'm unfortunate enough to be in academia (and lucky enough to be drawing its steady salary), I always tell students to think of portability and performance practicality. I remind them that they're not likely to have access to institutional facilities forever, and that the nit-picky attitudes of "it's got to always be the highest possible fidelity" and "always the latest possible technology" are traps that will hamper their creativity forever. In the downwardly mobile world of serious exploratory art, making more with less is not a virtue— it's a necessity.

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