

Research Status Report #3

I must admit that this week I got a little bit off track with my research project. Since I was having trouble really nailing down my research topic, I decided to think back to the framework in which it was introduced. In light of the necessarily "entrepreneurial" aspect of the project, I began to think of what kind of "money-making" musical enterprises I have embarked upon. The first thing that came to mind were transcriptions of bluegrass that I've had published. Naturally, I was led to the prospect of researching computer/digital based auto-transcribers. Only minutes later, though, after a brief discussion in the hall with a graduate student from Israel, did I discover that the topic of computer based transcription was being investigated by another student. I was stumped again.

In keeping with the idea of computer realizations of music, I thought back to the seminal computer music experiment by LeJaren Hiller in his Illiad Suite. Perhaps instead of computer driven transcription, I could focus on computer based composition. Composition was, after all, the field in which I received my undergraduate degree. So I headed to the library and checked into some promising sounding titles by Todd Winkler and Phil Winsor. Unfortunately, true to the old saying, I couldn't judge a book by its cover. The books on computer music composition algorithms were of little interest to me. Even though developing compositional models on linear bluegrass forms would probably be a novel idea, I realized that I was basically opposed to the process of computer based music composition. Maybe "opposed" is the wrong term. Simply, I see no point in it. Phil Winsor validates the use of computers in music composition by arguing that they can be used to realize mathematical and computational formulas in music that no human could ever implement. To me, however, this argument shares the fundamental flaws that plague the writing process of atonal music: if compositional models are too complicated or foreign to the listener, the resultant pieces of music will be incomprehensible and thus unsatisfactory.

Accepting that my research project truly lies somewhere in the field of digital recording and reproduction, I turned to more of the reserve readings. With Digital Audio, I was pleasantly surprised to find an article for which I had been searching after reading P. J. Bloom's digital audio overview in the IEEE Journal. D. Stripp's article on a decade of digital audio at the BBC was enlightening and informative concerning the qualitative differences between digital and analog recorders. Speaking of analog machines, he writes, "...high-frequency crushing provides a subtle, mellow modification of the signal at just those high levels when the ear is getting ready to flinch at the onset of severe harmonic distortion or even clipping in other links in the chain" (pg. 218). Furthermore, he goes on to state that, "the lack of high-frequency crushing on the digital route may cause critics to accuse it of 'hard' or 'metallic' quality" (pg. 219). To combat this problem, the BBC used limiters and digital delays to forecast peaks in the signal and effectively prevent these peaks from creating the "high levels when the ear is getting ready to flinch." The question for me becomes: is there an aesthetic difference between the two modes of high-

frequency crushing, analog tape with its natural limitations and digital with its superimposed outboard limiters? As Stripp says himself, "Many defects are far easier to identify aurally than to measure, and they would never show up in exhaustive measurements unless pinpointed in a listening test." In other words, specification comparisons between machines are essentially not 100% comparisons between sound quality; moreover, a myriad of unspecified sonic problems may appear with new technology which can only be truly judged not through pure objective testing but through critical subjective listening.

Bibliography

Hiller, L. and L. Isaacson. Experimental Music. McGraw-Hill, Inc.: New York. 1959

Rumsey, Francis. Digital Audio Operations. Focal Press: London. 1991

Stripp, D. "Digital Audio--A Decade of on Air Operation." Digital Audio. Collected Papers from the Audio Engineering Society Premiere Conference, Rye, New York, 1982, June 3-6.

Winkler, Todd. Composing Interactive Music. MIT Press: Cambridge, MA. 1998

Winsor, Phil. Automated Music Composition. University of North Texas Press. 1989