Excellent!

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PAT 552 Interactive Media Design II
Paper 1 Review

In his chapter "Material-Oriented Musical Interactions" in *New Directions in Music and Human-Computer Interaction* (2019), Tom Mudd outlines two perspectives on the relationship between technologies and those creating with them. Communication-oriented perspectives, broadly, assume that an artist has access to some prior idea, emotion, or yet-to-be-realized artwork that they then realize via their tools. These tools may be perfect or imperfect, but they are media for the communication of an abstract and complete vision. Material-oriented perspectives, on the other hand, treat tools and technologies as significant contributors to the creative act and framers of the artist's conception of their own creative process; technologies, too, generate ideas. Mudd finds material-oriented perspectives underrepresented in literature around electronic musical instruments, and he aims to remedy this through a critique of dominant communication-oriented perspectives in the field of electronic music and a review of some traditions and scholars taking a more material-oriented approach. He delves into three models of agency implied by these two perspectives and outlines their implications for the design process.

good.

The communication-oriented perspective is the "'any sound you can imagine' paradigm," (Mudd 124). Per Roger Linn, "'you just think the music and it appears, and then everything else is an impediment'" (125). The implication is that "the music" already exists in the artist's reality and that any process or technology standing between the music and its reception in an external reality impedes it. Technologies are neutral instruments for that realization, a perspective Mudd terms "an instrumental approach to technology" (125). Mudd points out that this bracketing out of technology from the creative process does not align with contemporary art practices (125) and assumes music can exist independently of the specifics of its realization, a view that has been challenged by scholars including Fell, Haworth, and Feenberg (125). These scholars critique the idea that technologies can be neutral and point out their embeddedness in, and driving of, culture. Mudd explores a contradiction inherent in the instrumental approach, originally pointed out by Ihde:

Probably need to qualify that this is the 'dream'

> "'I want the transformation that the technology allows, but I want it in such a way that I am basically unaware of its presence… Such a desire both secretly rejects what

technologies are and overlooks the transformational effects which are necessarily tied to human-technology relations,' (Ihde 75)" (Mudd 126).

The feeling of non-mediation that artists may value in a tool does not correspond to actual non-mediation. The attachment of the electronic music community to this instrumental approach and communication-oriented perspectives in general, per Gurevich, Treviño, and Fell, reflects a specific, Western classical culture of music-making and impoverishes conversations about musical instrument design (127).

In contrast, material-oriented perspectives highlight the "bidirectional nature" of musical interactions with technologies (127). "Creative ideas, directions, goals, and outcomes are developed through an exploration of the specific properties of tools," (127). Technologies are materials that actively contribute to our creative processes and our understanding of how and what we create. Material-oriented perspectives value exploration of instruments and objects and their sound-producing capabilities; tools are sites of experimentation (128). A number of "post-Cageian experimental music and improvisation" traditions take this perspective (128), and Derek Bailey goes so far as to claim that "'this is the dominantly held view in all areas of improvisation'" (128). In contrast to the communication-oriented perspective's assumption that an artist's vision exists prior to realization, Mudd asserts that in a material-oriented perspective, "the sounding results are not necessarily fully anticipated by the musician," (128-129). Material-oriented music making involves unexpected discovery (129). Mudd contrasts two approaches to navigation described by Gladwin via Suchman as an illustration of the difference between material-oriented and communication-oriented approaches; whereas European navigators generated detailed plans to reach a destination, attempting to "dominate the situation," (129) Trukese (Micronesian) navigators began by setting out for their destination and adjusting their trajectory as needed along the way (129). The Trukese's "situated…interaction" acknowledges the effects of material realities on their desired outcome without removing agency and choice from the navigators, just as a material-oriented perspective to electronic music making acknowledges the role of the tools in the creative process without removing agency from the musician/composer/designer.

These two perspectives point to three possible models of agency in artist/technology interactions. Communication-oriented perspectives locate agency in the artist exclusively, with technologies functioning as neutral, transparent media. Material-oriented perspectives locate agency in both the artist and the technologies with

which they work, pointing to a form of interaction resembling a dialogue. Mudd points out that this model of agency still reinforces the notion of artist and tool as separate entities with individual existence (129) and that this dialogue-like, binary model of agency may not be adequate to reflect the "fluid relationship between the artist, the technology, and the final result," (129). Instead, Mudd promotes the model of intra-action proposed by philosopher of science Barad, wherein agency exists in the intersection of artist, tools, and the cultural and material conditions in which they are situated (124, 131). Agency does not exist in one individual component of the intra-action but in their nexus.

Mudd ends his chapter with a review of the implications of these two perspectives and three models of agency for the design of digital musical instruments. Designers in this context are creating limitations for their future users, and so they "cannot hide behind a guise of neutrality," (130). Mudd offers the example of a chain of design wherein a composer makes a piece of music with software built in SuperCollider, a software designer builds the software using SuperCollider, and the inventor of SuperCollider designs a new synthesis language based on the limitations and affordances of existing programming languages (130). In this three-tier chain of design, there is no one "set [of] problems being examined and solved. Problems emerge and shift during the process," (130). The creator of SuperCollider did not envision the piece of music eventually made by the composer. In this complex scenario, the idea of intra-action provides ways to think about the agency of the actors and technologies without resorting to an abstract notion of a single creative product living in the mind of an artist. It also acknowledges the cultural situation of the various creators and tools in the chain of design. Mudd claims that intra-action

> "navigates between an overly-idealist perspective that views the tool as an ideally neutral non-mediating transmitter of musical ideas on the one hand, and an overly technologically deterministic perspective where the artist is locked into the proclivities of the tool on the other," (131).

He believes this model of intra-action strikes the right balance.

The communication-oriented perspective described by Mudd is exemplified in a required reading from the Introduction to Music Production course taught here in the PAT department, a chapter from Thom Holmes' *Electronic and Experimental Music* (2008) entitled "Tape Composition and Fundamental Concepts of Electronic Music." In this chapter, Holmes presents the "Seven Fundamental Traits of Electronic Music," opening with

It's worth noting that the 'any sound you can imagine' idea goes back to the earliest days of digital synthesis, eg Max Mathews' original article on Computer Music, probably even earlier. It is certainly bound up in post-war techno-optimism.

Ronald Kline's book 'The Cybernetics Moment' is a good reference for the bigger picture.

> "1. The sound resources available to electronic music are unlimited… 'The composer…sees himself commanding a realm of sound in which the musical material appears for the first time as a malleable continuum of every known and unknown, every conceivable and possible sound'… In electronic music, sound itself becomes the material of composition….The ability to get inside the physics of a sound and directly manipulate its characteristics." (Holmes 155)

This language of "commanding" sound, "unlimited" resources, and "every conceivable and possible sound" fits neatly into the "'any sound you can imagine' paradigm" (Mudd 124) while also erasing the role of technology in the "direct manipulat[ion]" of the physics of a sound. The chapter assigns agency solely to the composer using the electronic media. Holmes does allude to sound as a material, and his perspective is probably more nuanced than a caricature of the communication-oriented perspective, but his language implying that a composer should realize a vision through the neutral technologies of the recording studio places Holmes inside the communication-oriented camp. This is one of the first required readings in an introductory course about electronic music, so at least this institution has sanctioned that attitude toward artists working with technology.

In contrast, Michael Hamman's 2002 article "From Technical to Technological: The Imperative of Technology in Experimental Music Composition" emphasizes the role of the computer in "allow[ing] the composer to explore, more deeply, the very conceptual frames in which musical ideas might be imagined and realized," (93). Not only does the tool help produce work, it reframes the work and the possibilities for work. yes!

> "'Composition becomes a form of system design and musical artifacts become traces of that design (Briin 1969, 119),' The musical work, per se, includes the acoustical trace (the acoustical "artifact") plus the technical means by which that artifact is imagined, realized, and conceived." (110)

Hamman subsumes creative output and the interaction of the artist with the tool into a larger entity, the composition, which is the design of a musical system. The composition includes the material and cultural context of its creation as well (110). This could be an example of Barad's intra-action, with agency and creativity located at the nexus of the composer, tools, artifacts, and context. The phrase "the technical means by which that artifact is imagined, realized, and conceived" implies that technology generates ideas and contributes to the realization of those ideas, placing Hamman in the material-oriented camp.

→ you may (or may not) also want to check out my NIME '17 paper, which touches on some related ideas.

Mudd and Hamman's material-oriented perspectives provide a contrast to the anything-goes, transparent-media ideas about computer-based technologies that I've been presented with (and accepted) in the past. It's a relief to think that I don't have to conceive of a complete idea on my own, start to finish, before I make an instrument this semester. I can let sensors, circuits, my own prior areas of experience, etc. guide me and change the direction of the project as it progresses. Last semester, when we made audio games, I found myself fighting against the touch sensor I was trying to use, and that experience taught me about the frustration of trying to force a material into a role rather than responding to limitations it reveals. Choosing materials and sensors with degrees of freedom that correspond nicely with those of the body in motion will partly define what I make for this semester's class. Also, I don't want the tool I create to be transparent; I want it to offer the right balance of resistance and agreement with the in-the-moment ideas of the performer. A material-oriented perspective will give me a fresh set of ways to approach designing and iterating on my project.

good observation. Mudd is using a very Cagean definition of experimental music.

While I draw inspiration from Mudd's material-oriented perspectives, I feel myself resisting some of his generalizations about experimentalism and improvisation. He cites "the deliberate avoidance of overt self-expression found in experimental music," (128), which does not align with my own experiences participating in experimental music communities, some of which celebrate self-expression and some of which don't. Some of the improvised music communities I've engaged with take "pro-instrument" and some take "anti-instrument" (128) stances, and this often varies artist to artist. Mudd says,

> "A material-oriented perspective and a focus on exploration suggest alternate attitudes to control. The instrument is sounded experimentally, and the sounding results are not necessarily fully anticipated by the musician. The possibility of finding something unexpected becomes an important factor." (128-129)

I've encountered experimental musicians who would agree with this, experimental musicians who speak about absolute control of their instrument, and experimental musicians who would not tie the idea of experimentation on a large scale to experimentation with a specific tool. I don't have a theoretical grounding in scholarship about musical experimentation, but my experience indicates that "post-Cageian experimental music and improvisation" (128) are broader and more conflicted than Mudd describes. The two scholars Mudd cites on this point, Alvin Lucier and Derek Bailey, are both European, and Derek Bailey's book on improvisation, while influential, is controversial in

indeed. It'd be worth expanding on why it is controversial.

improvised music circles. I would enjoy seeing Mudd more thoroughly analyze communication- and material-oriented perspectives in a variety of experimental and improvised music contexts. ↑ this is a great point. There are many non-Cagean experimental aesthetics. I think the basic argument still applies, but it would be more convincing and broadly meaningful if the domain were expanded.

Works Cited

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