

Methodology Soup: Diversity in NIME Research Practices

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ABSTRACT

This is a position paper that advocates for the initiation of a dialogue about research traditions and paradigms within the NIME community. I argue that although NIME is a strongly interdisciplinary enterprise, we have not done enough to acknowledge and account for the epistemological differences that are inevitable with such disciplinary diversity. The paper very briefly traces the origins of proto-NIME practice and writing before the NIME conference came into being, arguing that NIME is a discipline fundamentally rooted in practice and practice-based writing. A quick survey of NIME papers from the 2001, 2006, and 2012 reveals a decrease in the representation of practice-based research and a concurrent rise in scientific and technical reporting. I propose that an exploration and explication of the values, assumptions, and expectations that circumscribe legitimacy in practice-based research is needed in order to maintain and advocate for its relevance. As the scope of a position paper is limited, this paper is thus intended to serve as a frame around the inevitable suite of others in this session that will engage in just that type of exploration.

Keywords

paradigm, epistemology, science, methodology

1. INTRODUCTION

Participation in the NIME conference saw a precipitous rise in its first 5-7 years and has since effectively leveled off, suggesting that its constituency is stabilizing, and that the discipline should be reaching a more mature stage. As intellectual communities mature, they inevitably develop sets of norms and conventions which drive expectations and assumptions with regard to methodologies and research practices. As an inherently interdisciplinary community, NIME has drawn heavily from its constituent disciplines with regard to the ways in which we conduct research: the kinds of questions we ask, the methods we use, the metaphors we employ to understand the world, and the standards by which we assess legitimacy.

However, these have not coalesced into a dominant paradigm¹ for NIME research. Intellectual diversity is certainly

¹For an important critical analysis of paradigms in HCI that in many ways inspired this paper, see [4]

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not a bad thing, but it can be problematic when what Harrison et al. [4] call the “epistemological commitments” that a researcher carries are neither consciously understood nor made explicit. At times, the background expectations of one field are not met by research that derives primarily from another. In the worst cases, they may be in direct conflict.

The objective of this paper is to initiate a critical dialogue around what is and what ought to be considered a legitimate contribution to the NIME discourse. As our field matures, what are the traditions and modalities of research that we wish to draw upon to advance the state of knowledge and art? I specifically address the place of practice-based research (PBR) in the mix, and question whether increasing emphasis on the methods and conventions of scientific inquiry may be marginalizing practice-based research.

First, it is important to specify what I mean by “NIME.” In this paper, I use the NIME acronym to refer specifically to the Conference on New Interfaces for Musical Expression, the focus being on the written work presented in short and long papers. Although there is certainly a good amount of related work occurring outside the confines of this conference, the purpose for this somewhat narrow scope is to prompt reflection on the specific styles, conventions, and norms that this conference and its constituent community are in the process of establishing. Where I refer to research on the subject in general, or that which predates the conference, I use the lowercase form, “new interfaces for musical expression.”

2. WHERE DOES NIME COME FROM?

A critical examination of NIME research must begin with an understanding of the practical and intellectual contexts within which NIME emerged.

2.1 Practicing before NIME

The practice of creating new interfaces for musical expression—if we broadly include musical instruments in the grab-bag of interfaces—is an ancient art, as old as music itself. If we tighten the drawstrings somewhat, the notion of “interface” appears in the context of NIME to presume an electronic sound-generating system, the interface in question being a device that transduces changes in the environment to electrical signals which are in turn converted to acoustic signals, either directly, or with further mediation by a digital system. Thus, the practice of NIME has roots in a flurry of musical inventions dating to about the late 19th century, which took off in earnest after the invention of the triode tube around 1900. The first well known “NIMes”—the Theremin and the Ondes Martenot—appeared shortly thereafter.

As Jordà and others have argued, our practice can be viewed as form of lutherie [1, 5], which at least in the Western tradition, rose with the Renaissance. The orig-

inal luthiers and the instrument makers who followed—Stradivari, Guarneri, Sax, Boehm, Heckel—were skilled craftsmen. It is not difficult to connect the style and spirit of their craft to those of Theremin and Martenot, Moog and Buchla.

Chris Brown has highlighted that NIME practice (Brown was in fact referring to computer music performance in general, before the term “NIME” existed) can also be viewed as descending from the experimentalist tradition of Harry Partch [2]. Partch’s practice diverges from those of the early electronic luthiers, in that Partch himself composed and performed with his instruments. We can therefore trace another thread of NIME practice back to Partch, through the likes of Gordon Mumma, Daphne Oram, David Rosenboom, and Michel Waisvisz.

2.2 Writing before NIME

Where these proto-NIME craftspeople and artists intellectualized their practice in writing, the tendency was toward offering critical, theoretical, and historical underpinnings for their practice, as well as reflective accounts of their experiments intended to catalyze future creative endeavors, e.g. [6, 8, 12]. In other words, much of the inchoate writing about new interfaces for musical expression was what we might now call practice-based research. A number of other pre-NIME papers are similarly rooted in practice, e.g., [9, 10, 11].

Another strain of writing about new interfaces for musical expression emerged in the nascent computer music community in the late 1970s and early 1980s. A review of the earliest relevant papers from the International Computer Music Conference² shows that these are dominated by what we might call engineering reports: technical descriptions of novel digital music system designs, often including engineering block-diagrams and accounts of specific components involved in the designs. Some of these papers include cursory critique of the systems’ limitations and future directions for development. Although the inherent value of these papers appears to be in their novelty, the texts of the papers themselves do not extensively advocate for the novelty or improvement of the state of the art of the systems they document—these implicit qualities were presumably adjudicated by peer review—nor do they tend to draw out universal or generalizable principles. There is also typically no explicit formal evaluation. In sum, while this style of paper is decidedly technical, it is anything but scientific.

A few seminal papers that predate NIME begin to sow the seeds of interdisciplinarity, drawing on concepts from other disciplines to explicate contemporary issues or advocate for approaches to research and practice, e.g., [3, 7]. It is difficult to precisely place this class of papers in a particular research tradition, but I would argue that they are fundamentally philosophical, in that they rely on logic, argumentation, and principles or practices established by others to advance a perspective or a way of approaching the subject.

Scientific writing about new interfaces for musical expression emerged almost simultaneously to the NIME conference itself, largely owing to Wanderley’s seminal research on the analysis of performance gestures, e.g., [13]. I will not continue to exhaustively enumerate the intellectual traditions in which relevant pre-NIME writing appears, except to say that there are certainly additional examples to be found in humanistic disciplines (musicology and cultural studies, most notably), as well as in the social sciences. My primary point here is to highlight that authors have long reported on research on new interfaces for musical expression from

diverse perspectives, practice-based ones being particularly prominent.

3. NIME’S GENESIS

What much of the early writings on new interfaces for musical expression have in common is that they were published in music- and music-technology forums for audiences of music practitioners and researchers. Yet NIME began as a workshop in a very different intellectual community—Human Computer Interaction—with its own paradigms that reflect a different set of priorities and commitments. It is difficult to say whether NIME’s genesis in the ACM CHI conference has had an indelible effect on the expectations for NIME research, but it is worth highlighting that CHI itself was undergoing a series of contemporaneous soul-searching exercises regarding, among others, the utility of scientific usability research, the role of ethnography in relation to design, and the phenomenological relevance of laboratory study to situated human activity.

3.1 An Epistemological Melting Pot

It should not be surprising then that NIME would struggle to forge a coherent intellectual identity. Most would agree that NIME should not possess a dominant paradigm—its richness in part derives from its diversity—but nor should we ignore that such diversity exists. What has been missing therefore is frank and reflective discussion of the spectrum of epistemologies that coexist in NIME and the commitments that they entail, and a safe opportunity to acknowledge that individuals more comfortable in one tradition or another may be ill-equipped to assess research emerging from another. In particular, NIME (like CHI) must reckon with how scientific methods can coexist with research that does not yield quantifiable outcomes.

4. A BRIEF ANALYSIS OF NIME RESEARCH PAPERS

For the purposes of this paper, I consider five genres of NIME papers, each of which, although there is admittedly some gray area between them, implies a different set of background assumptions, expectations, and conceptions of legitimacy.³ **Practice-based research (PBR)** papers are those which report on specific interfaces or novel NIME systems, and whose primary contribution is either manifest in the design itself or a theoretical/philosophical position that the design articulates. PBR papers frequently include some amount of technical reporting, but differ from what I consider a pure technical report. **Technical reports** either: 1) describe a technique or technology in the abstract and not the experiences gained through a particular instantiation of it, or 2) describe the technical implementation of a design without any theoretical framework or experiential reporting. Purely **theoretical/philosophical** papers provide theoretical or philosophical positions not rooted in or articulated by a specific interface design or technology. **Scientific** papers report on the outcomes of experiments or laboratory research with quantifiable results. **Qualitative research** papers report on ethnographic or experimental research studies with descriptive results.

A survey of the papers presented at the first NIME workshop shows that 10 of 14 (including my own) were practice-based. The remaining 4 were theoretical/philosophical, with 1 of these advocating scientific methods but not reporting scientific results itself.

²A collection of such papers has been compiled by Marcelo Wanderley, to whom the author is grateful for sharing.

³Note that musicological papers are absent. In the 3 years of papers surveyed, none adopted a musicological perspective.

By 2006, the balance had shifted. At NIME 2006 there were 40 short and long papers (excluding demos and posters), of which 18 were practice-based, 15 were technical reports, and 7 were theoretical/philosophical. Although a handful papers included some kind of evaluation or user study, none had a primary focus on scientific or qualitative research.

At NIME 2012, the papers had skewed heavily toward technical and scientific reporting. Of 31 long and short papers, 16 were technical reports, 7 were practice-based, 5 were scientific, 2 were qualitative research and just 1 was theoretical/philosophical.

Although this survey is itself unscientific,⁴ it bears out what many of us will know anecdotally: there is an increasing expectation for demonstrable technological advances or quantifiable outcomes in NIME research. NIME 2014 has in fact seen the explicit introduction of “science” into the discourse; the NIME paper track is now known as the “scientific programme,” and one of the 4 review criteria for paper submissions was “scientific contribution.” This tendency is understandable: quantifiable outcomes are less likely to be controversial, and science is a language that more of us are likely to understand, even if we aren’t fundamentally scientists; it is easier to arrive at consensus in assessing scientific or technological contributions than experiential or theoretical ones.

5. THE FUTURE OF PRACTICE-BASED RESEARCH

As Harrison et al. [4] advocated in CHI, multiple paradigms can (and should) coexist, but to do so peacefully and productively requires explicating their epistemologies, their priorities, and the kinds of questions and methods they expect. Without such an explicit reckoning, PBR may be increasingly and unnecessarily be seen as in conflict with scientific and technological research. As Harrison et al. argue, “one cost of work” outside of a dominant paradigm “is precisely the need to explicate what is legitimate” [4]. If practice-based research is to remain legitimate, it behooves us to circumscribe what legitimates practice-based research.

This is at least a two-stage endeavor.⁵ The first is for those engaged in PBR to collectively examine the goals, expectations, and parameters of PBR with the goal of clarifying what could constitute legitimacy within the PBR community. My goal for a workshop on PBR would be to collectively establish such a value statement for practice-based research in NIME (or at least devise a plan for doing so), which would hopefully also challenge other research traditions in NIME to do the same. The nature of PBR is such that methodological innovations are frequently necessary, thus simply enumerating acceptable methodologies is not a viable course or action. Yet, it seems plausible that we could arrive at a framework for understanding and assessing PBR. Having achieved this, the second challenge would be to situate PBR within the larger NIME community; to clarify and advocate for its legitimacy with specific reference to other research traditions.

A larger objective, once again echoing Harrison et al., would be to encourage every paper submission to NIME to explicitly situate itself with respect to NIME’s constituent disciplines or paradigms, thereby making its epistemological commitments and methodological assumptions explicit. Such a development will hopefully engender a more equi-

table and productive review process as a result of both greater transdisciplinary understanding and perhaps more suitable review assignments.

Ultimately, the community must collectively decide whether and how diverse research practices can all play a role in NIME. A first step will be a more detailed and nuanced exploration and explication of the natures of these practices, how they interface with each other, and what constitutes legitimacy among them. As practice-based research does not possess such a readily identifiable or universal set of principles and methods as does science, those of us who engage in this enterprise face an arguably more difficult task.

6. REFERENCES

- [1] B. Bongers. Electronic musical instruments: Experiences of a new luthier. *Leonardo Music Journal*, 17:9–16, 2007.
- [2] C. Brown, J. Bischoff, and T. Perkis. Bringing digital music to life. *Computer Music Journal*, 20(2):28–32, 1996.
- [3] C. Cadoz. Le geste canal de communication homme/machine. la communication ‘instrumentale’. *Technique et science informatiques*, 13(1):31–61, 1994.
- [4] S. Harrison, D. Tatar, and P. Sengers. The three paradigms of HCI. In *CHI Extended Abstracts*, 2007.
- [5] S. Jordà. *Digital lutherie: Crafting musical computers for new musics’ performance and improvisation*. PhD thesis, Universitat Pompeu Fabra, 2005.
- [6] H. Partch. *Genesis of a Music: An Account of a Creative Work, Its Roots, and Its Fulfillments*. Da Capo Press, New York, 1974.
- [7] J. Pressing. Cybernetic issues in interactive performance systems. *Computer Music Journal*, 14(1):12–25, 1990.
- [8] D. Rosenboom. *Biofeedback and the Arts, Results of Early Experiments*. Aesthetic Research Centre of Canada, Vancouver, 1976.
- [9] W. A. Schloss and D. A. Jaffe. Intelligent musical instruments: The future of musical performance or the demise of the performer? *Journal of New Music Research*, 22(3):183–193, 1993.
- [10] A. Tanaka. Musical performance practice on sensor-based instruments. *Trends in Gestural Control of Music*, pages 389–405, 2000.
- [11] D. Trueman and P. Cook. BoSSA: the deconstructed violin reconstructed. *Journal of New Music Research*, 29(2):121–130, 2000.
- [12] M. Waisvisz. Riding the sphinx – lines about ‘live’. *Contemporary Music Review*, 18(3):119–126, 1999.
- [13] M. Wanderley. Non-obvious performer gestures in instrumental music. In A. Braffort et al., editor, *Gesture-based communication in human-computer interaction*, number 1739 in Lecture Notes in Artificial Intelligence, pages 37–48. Springer-Verlag, Berlin, 1999.

⁴Paper genres were determined by the author, as objectively as possible, yet may of course be subject to debate. Nevertheless, the trends that emerge are clear.

⁵The author is grateful to the reviewers of the initial version of this paper for highlighting this distinction.