

Some Opportunities for Practice-Based Research for NIME

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1. INTRODUCTION

This paper argues for symmetrical consideration of new musical instrument/interface¹ design and creative musical practice. In NIME research, music as an art-form is often spoken of as if it were a static field, where the roles of composer, performer and instrument are well-defined, uncontroversial and unambiguous.

The reality, however, is that all of these terms are contingent and dynamic. ‘Instruments’ based on digital technologies can, and often do, change their form and behaviour radically from moment to moment – potentially from millisecond to millisecond – leading to a redefinition of what it means to be ‘virtuosic’. ‘Composers’, rather than producing scores, may instead produce interactive systems – instruments of a kind – which structure improvisation. Finally, ‘performers’ using NIME systems seem to consider virtuosity an increasingly irrelevant concept, and focus instead on exploration and discovery, with, and for, audiences.

With these observations in mind, I argue for a symmetrical approach when we examine what happens when a new instrument is created and used. This means we need to consider fully the reciprocal relationship between the new instrument and creative practice, not just how well it supports existing practices which are implicitly assumed to be static.

The advantage of this symmetrical approach is that it can help to make visible the full network of interdependencies between instrument designers, instruments and composer/performers. The challenge is that if everything is contingent and dynamic we have no fixed frame of reference against which to judge our work, ‘evaluate’ systems and techniques and derive ‘criteria’ for design.

2. FOR OR AND?

I would first like to consider the title of this conference, ‘New Interfaces *for* Musical Expression’. I italicise the ‘for’ here because I believe it highlights an interesting issue. ‘For Musical Expression’ indicates that the purpose of the instrument/interfaces is to support or enable musical expression. Given this is the case, a logical approach to practice-based

¹It would be good to have one word for instrument/interfaces, but ‘instrufaces’ seems unlikely to catch on. Therefore I’ll just use ‘instrument’ in this paper for brevity.

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research would be to construct instrument/interface prototypes and attempt to determine how well or badly they support musical expression, probably by having people try to use them for musical purposes and conducting some form of evaluation.

Where the aim is to use new technologies to perform existing repertoire or in established styles – where ‘expression’ has to an extent been stabilised and ‘black boxed’ as a concept [4] this approach is unproblematic. However, how sure are we that musical expression is a stable, defined entity? To what extent is performance practice, particularly in these times of rapid technological change, actually concerned with questioning what ‘expression’ means?

At the very least I make this point: if we consider musical expression as a stable construct which we can design for without further consideration, we miss opportunities to explore, and document, the continual exploration, even redefinition, of musical expression through practice.

When we give a new instrument to an artist, or create one for ourselves, we have the opportunity to ask a number of questions. If we take the position that musical expression is stable and unproblematic, then we can simply ask how well or badly the instrument/interface supports it. However, if we instead are open to the idea that musical expression is contingent and dynamic, we can begin to examine the relationship between this new instrument and the artist’s personal approach to expression. In addition to considering its effectiveness at supporting the creative work of the artist, we are also able to use the instrument/interface as a kind of probe [3] or provocative prototype [6] to explore the nature of that work – for that artist at that time.

An additional implication of accepting the fact that defining musical expression is problematic is the recognition of the problems of ‘evaluation’. Essentially we have two choices: either take a position that for the purposes of evaluation musical expression will be explicitly defined in order to assess the instrument/interface’s effectiveness; or accept that evaluations should become broader ‘studies’ which simultaneously consider the characteristics of the instrument, the creative practices of those who use it and the mechanisms which link the two.

Given all this, I argue that ‘New Interfaces for Musical Expression’ should, in our minds if not in actuality, be renamed ‘New Interfaces *and* Musical Expression’, in order to promote a more symmetrical view which fully acknowledges the complexity of a situation where creative practices are provoked, challenged and disrupted by new instruments/interfaces and therefore bring about new approaches to musical expression.

3. COMPOSED INSTRUMENTS

The notion that digital musical instruments are fundamentally different to traditional, physical instruments is not

new. As Schnell [7] points out, digital instruments are as much composition as instrument, as their behaviour, appearance and responses to input are able to change over time. While the sound and feel of a Stradivarius violin may change over many years, every aspect of a digital instrument can change – radically change – over the course of a performance. Thus the instrument is itself material which can be composed, and the space between instrument and composition becomes a continuum [2].

Embracing the implications of this situation leads to the identification of a number of under-examined areas in NIME research. One obvious question is: what are the compositional techniques and structures which are employed when instruments change during performance? How are the experiences of performer and audience shaped by the shifts in instrumental behaviour and appearance? Are there common structures or trajectories of interaction which align with more traditional compositional forms such as the sonata or theme and variations for example?

With this in mind, it seems clear that framing NIME research as a search for ‘optimal mappings’ is a flawed strategy. Mapping has been a key concern for NIME work for many years, and is likely to remain an area of significant interest, especially where researchers are concerned with supporting more traditional forms of music. However, broadening the scope to consider the links between particular mapping strategies and performer and audience experiences in the context of composed instruments seems a fruitful way to explore the use of interaction as a material for composition.

4. DESIGN AND MUSICALITY

Donald Schon describes design as a “reflective conversation with the situation” [8]. In the case of new musical instruments, as we have discussed, it is also a conversation with creative musical practice. Design draws on creative practice, supports creative practice and, importantly, changes creative practice. Creative practice is not always an existing, fixed constraint within which we must confine ourselves. By creating NIMEs we change practice.

Bruno Latour argues, to put it very simply, that physical objects and humans ought to be treated as if they are not ontologically distinct [5]. Objects in this view, have agency and participate in dynamic networks made up of other objects and people.

Whether the objects ‘really’ have agency is not the issue. What is important is that *in effect* both objects and people act as if they do. Designed objects in particular have embedded in them features and affordances which in effect act to shape the behaviour of the people who interact with them.

Human practices which appear to be stable and unchanging are kept that way through constant human activity and through designed objects intended to act as intermediaries² [5]. When we design a new instrument, the affordances and constraints we give it embed particular views on what music and expression is into that instrument. An instrument which can only play notes of the equally tempered scale will shape the music it produces dramatically. The examination of this instrument, the design process and/or its actual use, can reveal these embedded biases or ‘scripts’ [1]

NIME papers tend to focus on either the instruments themselves as technical artefacts with novel characteristics or on creative practice. If we consider instruments and cre-

ative practice together, in complex, mutually dependent relationships then this separation appears artificial. We can conceive of practice-research which considers instruments, their design and technologies, and creative practices together in a complex network. One purpose of the research in this case would be to make visible the connections and processes by which the whole assemblage of artefacts, performances, designers, composers, performers, etc is held together.

Questions which arise when this paradigm is applied include:

- If technologies have mechanisms embedded in their design which ‘enforce’, or at least shape, particular conceptions of creative practice, what are these mechanisms? How do they shape practice?
- If technologies are appropriated and reconfigured by users [9], how do these users (in our case performers, composers, ourselves) respond? How are the features and affordances of the systems ignored, accepted, subverted or otherwise responded to?
- What are the creative ‘visions’ which drive the development of particular technologies? How do these visions (individual and collective) shape technologies and, conversely, how do existing technologies shape our visions?

I believe these kinds of questions open up possibilities for new kinds of NIME practice-based research. I do not, it should be clear, argue that this is a new paradigm to be applied at all times. However, I do strongly believe that there is a need to actively maintain diversity in our methods and, especially, to recognise the richness, complexity and interdependence of technology, design and creative practice.

5. REFERENCES

- [1] M. Akrich. The De-scription of Technical Objects. In W. E. Bijker, editor, *Shaping Technology / Building Society: Studies in Sociotechnical Change (Inside Technology)*, pages 205–224. The MIT Press, 1992.
- [2] O. Bown, A. Eldridge, and J. McCormack. Understanding interaction in contemporary digital music: from instruments to behavioural objects. *Organised Sound*, 14(02):188–196, 2009.
- [3] B. Gaver, T. Dunne, and E. Pacenti. Design: Cultural probes. *interactions*, 6(1):21–29, Jan. 1999.
- [4] B. Latour. *Pandora’s Hope: Essays on the Reality of Science Studies*. Harvard University Press, 1999.
- [5] B. Latour. *Reassembling the Social: An Introduction to Actor-Network-Theory*. Clarendon Lectures in Management Studies. OUP Oxford, 2005.
- [6] P. Mogensen. Towards a provotyping approach in systems development. *Scandinavian Journal of Information Systems*, 4:31–53, 1992.
- [7] N. Schnell and M. Battier. Introducing composed instruments, technical and musical implications. In *New Interfaces for Musical Expression (NIME-02)*, pages 138–142. University of Limerick, Department of Computer Science and Information Systems, 2002.
- [8] D. A. Schön. *The Reflective Practitioner: How Professionals Think in Action*. Basic Books, 1983.
- [9] L. A. Suchman. *Plans and situated actions: the problem of human-machine communication*. Cambridge University Press, New York, NY, USA, 1987.

²The disturbances which occur when designed objects intended to act as intermediaries actually function as more complex and unpredictable ‘mediators’ is a key concern of Actor-Network Theory.