

Movement, music and magic
AES Cambridge, March 2011
Richard Hoadley and Sam Aaron

v0.12

Abstract

Transducers for converting physical data into digital data and algorithmic procedures for generating and controlling audio have existed for many years, but it has been only recently that affordable systems and products able to unite the two have become widely accessible. This paper examines the development of hardware and software systems designed to explore the nature of movement and gesture in musical creation, performance and expression.

Our experience suggests that when we move, resulting actions will reflect that behaviour. In digital systems that can detect these actions there is no direct causal link between event and action: any mapping has to be specifically implemented and has been described as 'metaphorical'. These implementations can include features that would be difficult or impossible to implement in reality. Such features have been described, metaphorically, as 'magical'.

This paper describes and analyses work seeking to investigate amalgamations of these two areas, where 'magic' and 'delight' equate with musical qualities usual considered to be aesthetic rather than technical. Music performance in particular uses unique methods of articulating and implementing expressive gesture through physical interaction with objects. Similar undertakings by other performers (such as dancers) and fine artists are also considered.

Through the analysis of simple gestures, the design of specific hardware artefacts and the implementation of metaphorical links between them it is demonstrated that direct and tangible experience of expressive gesture in music is possible: experience that can be augmented by playful, creative and 'magical' techniques.

- Richard Hoadley
- Affiliated to the Digital Performance Laboratory at Anglia Ruskin, a part of the CoDE (Cultures of the Digital Economy) Research Institute
- Member of Department of Music and Performing Arts
- Sam is...

Contact:

- richard.hoadley@anglia.ac.uk
- rheadley.net
- My part of the presentation is available:
- <http://rheadley.net/presentations>

Why?

- I'm an 'acoustically trained' musician
- I felt that electronic music was fascinating, but different
- There is a lack of performance and physicality in many (early, experimental) electronic media

Recent Developments:

- End-user programming environments: MaxMSP (Puckette 1988, etc.) and SuperCollider (McCartney 1996, 2002): not DAWs
- Physical computing developments allowing 'creatives' to experiment: Arduino, Phidgets, mBed, etc.
- These environments combined allow significant experimentation, both technically and musically

Two Cultures?

- The two cultures and music: technicality and musicality
- ‘Mainstream’ music: what is it?
- Performed music is a mix of technicality and musicality, procedural and declarative; physical, intellectual and expressive; patterned yet emotional

A new, different environment?

- This is what has separated computer music from 'mainstream' music
- Not all musicians care: some are very happy in the new environment - others, both listeners and performers are less so (also see therapy, later).
- Not better or worse, but *different*.

- **Work with dancers and interfaces**
- **Some examples...**

- HCI 2009



- MIST 2010



Triggered 2010



Demonstrations

- **Gaggle: multiple sensors**
- **Wired: simple (multiple) touch**
- **Gagglina/Melodia: specific example of non-trivial interaction**

Further work includes:

- Mapping and mapping structures, (e.g. Hunt et al 2000 & 2002, Fels et al 2002, Rovin et al 1997, and many more).
Key mapping issues focus on:
 - Design for declarative or procedural knowledge: how ‘conscious’ are our interactions with a musical instrument (Pascual-Leone 2001)?
 - How do we develop schemes for experimenting with declarative or procedural actions?
 - How do we actually define a ‘musical’ event: should there be a difference made between ‘technical’ and ‘musical’ events?

Many remaining questions:

- Is this a technical or creative activity?
- Is this creating instruments or composing?
- Are gestural controllers musical instruments?
- Are musical instruments tools?

Further creative developments:

- Metapiano: under construction - June 13th 2011, Kings Place, London...
- Touching Sound: creativity and therapy...

Thank you, and now over to Sam Aaron...