Touching Sound: technologies for mediated interaction in music therapy

7th Nordic Music Therapy Congress

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Sam Aaron (Cambridge University Computer Laboratory)
Ian Cross (Centre for Music and Science, Cambridge University)
Satinder Gill (Centre for Music and Science, Cambridge University)
Tommi Himberg (Jyväskylä University)
Richard Hoadley (Anglia Ruskin University)
Helen Odell-Miller (Anglia Ruskin University)
Rob Toulson (Anglia Ruskin University)
Also affiliated

Phil Barnard (MRC Brain Unit)
Bonnie Kempske (Sculptor)
Jane Turner (Choreographer)

Involving

Therapy, musics, composition, technology, engineering, programming, psychology, research, sculpture, dance...
Contact

• richard.hoadley@anglia.ac.uk
• My part of the presentation is available at http://rhoadley.net/presentations
Why?

- long term relationship between music, music technology and music therapy at Anglia Ruskin University. Interest (and determination) to see what this might produce

- linking of music, technology, therapy, creativity, aesthetics, techniques, style

- links between many pathways

- not just two cultures, but many cultures, can make this difficult, but also very intriguing
What?

• investigates ways in which gesture-based digital technologies can be used to facilitate cooperative action in dyadic musical interactions

• explores how technology can aid cooperation by analysing patterns of non-verbal interactions between pairs of individuals who are jointly using a single, non-standard musical interface
What?

• outcomes have the potential to be applied in performance and education, but in the first instance will be applied to the development of tools that help music therapists orient the behaviours of clients towards more effective modes of social engagement.
Helen
Related work: technology

• Miranda et al, “Brain-Computer Music Interfacing”, Music and Medicine, (0(0), 1-7, 2011)

• Magee et al., “Using Music Technology in Music Therapy With Populations Across the Life Span in Medical and Educational Programs”, Music and Medicine, (3(3), 146-153, 2011)

• Aaron et al., “A principled approach to developing new languages for live coding”, Proceedings of NIME 2011
Related work: mapping improvisation

• Luck et al., “Modelling the relationships between emotional responses to, and musical content of, music therapy improvisations”, Psychology of Music, (36(1), 25-45, 2008)
Related work: synchrony and entrainment


Related work: creative scenarios

• ICMC, NIME, too many to mention...
creative scenarios: BCS-HCI (2009)
http://rhoadley.net/music
creative scenarios: MIST (2010)
http://rhoadley.net/music
creative scenarios: Triggered (2009-2012)
http://rhoadley.net/triggered
Gismos

• Generic Interfaces for Socio-musical Orientation

• Computer Supported Cooperative Work
First Prototype Gismo
Gismo pilot

• not just about therapy, or music, or technology, but **cooperative interaction** with technology as the bridge

• primarily to provide foundation data for a more comprehensive study (below)
Gismo states

• The primary function of this gismo is to investigate people’s mediated interactions with each other through the device.

• The states and timings are recorded, and this data can be used to visualise, analyse and if necessary reconstruct the data (example)
## Gismo states

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Gismo visual state map
Extended gismo state map
Gismo history and visualisation

• The states and timings are recorded, and this data can be used to visualise, analyse and if necessary reconstruct the data (example)
Pilot study: questions and analysis

• Do different sounds change our behaviour?

• How long did it take participants to realise that synchrony had something to do with it?

• Did participants play with differing time intervals of syncing their hands?

• What range of gestures do participants use to explore the Gismo?
Pilot study: questions and analysis

• At what point do participants realize that the palm or whole hand needs to be at the surface or just above the surface and not just fingers?

• Is there implied interplay between gestural coordination and sound?

• One unintended result of the functionality lead to a common held view that one person was the 'leader', in 'charge' as one of the hands seemed to activate sound more than the other.
Pilot study: videos
Next steps

• Refining the gismo to account for or extend some of the above observations

• Planning a more complex set of projects and devices based around these concepts

• Planned devices include use of movement, sculptural forms, conductive fabrics, etc.
Thank you and any questions