**AHRC ICT Methods Network Seminar**

# INTERACTIVITY IN THE PERFORMANCE OF ELECTROACOUSTIC MUSIC

HUMANITIES RESEARCH INSTITUTE, UNIVERSITY OF SHEFFIELD, 13 DECEMBER 2007

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## Introduction

On 13 December 2007, the Humanities Research Institute at The University of Sheffield hosted a Methods Network sponsored seminar on interactivity in the performance of electroacoustic music. 45 attendees contributed to a number of very spirited discussions on interactivity and the nature of the 'live' electroacoustic performance. At the heart of discussion was the relationship between the composer / performer and the laptop computer and the relationship between the listener and the audio / visual experience. The day was organized around a series of papers and presentations, and the morning and afternoon sessions concluded with discussions. Simon Emmerson – an active participant, leading the final discussion of the day – in the preface and introduction to his book 'Living Electronic Music' (Emmerson, 2007) had already set out some of the questions that were clearly on participants' minds during the day:

- Exactly what does 'live' mean anymore? How do I know you're not just miming on stage? What clues are there? It's only a laptop and a mouse. You claim you are taking decisions and acting on the result – even based on how I (a listener) am 'responding' to you. Can I hear that?
- Does it matter how you get there or how the music got there? Did you make it? Or did the machine? Based on what? Are you just another icon? What do you and I take away from the performance and bring to the next one? (Emmerson, 2007, p. xv-xvi.)

## Interactivity, Flexibility, Pragmatism and Liveness

After a welcome and introduction from Professor David Shepherd (HRI, The University of Sheffield) and Torsten Reimer (ICT Methods Network), a team led by Dr. Ambrose Field (York University) presented the 'laptop orchestra'. This project, which received national press earlier in 2007, aimed to broaden the degree to which performers could interact with laptop technologies. The worldscape laptop orchestra employed some 50 performers but eschewed traditional notions of 'orchestra' looking at the 'scalability' of ensemble, how this affects the way a composer will work and how one, technically, might control a performance. The team tried also to eschew aesthetic, creating a more neutral, scalable and versatile interface. In terms of sound output, the individual members were seen less as 'instrumentalists' – and here comparison was made between the project at York and the PLOrk laptop orchestra at Princeton (Dan Trueman et al), which was seen as a more direct descendant of a traditional orchestral paradigm – and more as 'collaborators' towards greater global goals.

Therefore, performers at York were not required to be well acquainted with current music technology software. Angie Atmadjaja and Jethro Bagust talked about practice led research culminating in a piece using Google Earth as the interface. The work required performers to navigate towards a specific location with audio clues as feedback (so-called seeker music). This sound was fed back to participants but was different to the 'target music' which was explicitly for the audience and which presented a more global acoustic soundscape (with data concerning a country's area, its carbon emissions and population density being translated into an acoustic field).

Alex Harker presented his project 'swarms' for laptop orchestra. His research focused around what the laptop actually **is** and how it can best be deployed in an 'instrumental' or performance context. Harker was interested in using the webcam on each laptop – an interface that non-computer music specialists can use (and an interface that therefore affords a degree of theatricality in performance over and above a mouse/keyboard approach). The performance project was based around a client/server model with patches analysing data, controlling synthesis and enabling performance feedback at local and global levels.

Finally, Ambrose Field presented his own work '1906' where his role was that of 'conductor'. Field's role was similar to that of a traditional orchestral conductor but here he was controlling compositional content (such as timbral changes) by directing human performers. Discussion after this presentation focused upon the degree to which human agents were 'required' and the degree to which individual 'projects' were perhaps instruments – subject to multiple compositions – and not compositions per se. Comments also queried the communication between individual orchestral members. A large body of research already exists that deals with inter-ensemble communication. (One has to look no further than the Simón Bolivar Venezuelan youth orchestra during their 2007 Proms debut to see how clear visual communication confirms and augments creative expression and meaning).

Scott Wilson (University of Birmingham) encouraged participants to consider theories of 'liveness'. Research at The University of Birmingham into the composition and performance of acousmatic music is particularly strong, with an AHRC funded research project investigating issues of performance practice (including research into physical interfaces, computer programming, and audience perception of spatialization and performance) currently active. Wilson's talk focused upon the diversity of work in the community and the problem of making generalizations. Taking the example of 'diffusion as performance' it was clear that for many, (especially many of those present) there wasn't a problem at all with not 'seeing performance'. Wilson then proceeded to expand on various aspects of 'live' including:

- Embodied live – (the physical presence of being at a live event)
- Social live – (sharing and community activity)
- Ritual live – (being led through an experience)
- Programming liveness - (evolving tool sets) culminating perhaps in the art of 'live coding'.
- The liveness of aural feedback – clearly this process is 'common practice' in that in a vast majority of cases (in particular, in the analogue studio of the 70s and 80s) the composer is reacting 'live' to their real-time manipulations of sound and, for the most part, this 'liveness' is embedded into the sonic result. Opposing this (but perhaps arising from the need not to surrender control when working in real-time) is the constructed non-real-time csound score and orchestra.
- The liveness of authenticity – the 'here and now' of live performance which begs the question 'what is going on inside the laptop?' Wilson highlighted the clear differences between the laptop and the traditional musical instrument and again, literature here is readily available.
- Musicianly liveness and 'interactivity'.
- Pragmatic liveness – adapting music to particular spaces (something with which BEAST – Birmingham ElectroAcoustic Sound Theatre has considerable experience).
- Aesthetic liveness – focusing upon notions of improvization and experimental approaches to the concept of a 'piece' which requires repeated performance to 'remain alive'.
- Gestalt liveness – working at levels of visual and aural interaction. In the former, seen often at a simple level (triggering sound using a variety of sensor interfaces) and in the latter, heard at more complex, musical levels.

Wilson echoed the feelings of the audience, embracing diversity but encouraging active research.

Adrian Moore presented his current research beginning with a short performance using a laptop running Max/MSP and two interfaces: a graphics tablet and a small box of faders and dials. In this performance, ready-made audio files were triggered and scheduled alongside a more loosely defined set of instructions to 'play' the graphics tablet which had been set up with ready-made files containing known (and quite

diverse) electroacoustic material. The research question at the heart of his project asked if there was a middle-ground between the fully-fixed acousmatic work and less concrete live approach. Moore's discussion focused in particular upon the interface: the laptop and its screen clearly being seen as a visual – and therefore aural? – barrier; the graphics tablet offering more by way of visual/expressive freedom and allowing for a considerable degree of dynamic mapping as well as traditional triggering. The nature of the performance (especially its value as a 'work') and the performing environment was discussed with Moore seeing performance now as a more social, participatory, 'chamber' activity bringing him closer to a strong community of free improvisers working in the South Yorkshire region.

## Issues of Interface and Points of Contact

Although headed 'Issues of interface and points of contact with the audience' the discussion session prior to lunch enabled participants to share issues arising from the morning's proceedings and think about the changing nature of electroacoustic music, its involvement with technology and the notion of 'audience'. There was a noticeable division of opinion concerning the validity of the 'audience-performer contract' for a performer playing from a laptop. Clearly more research on the social and communicative aspects of laptop performance is required and it is quite clear that in the West, our understanding of composing, performing and listening, and the socio-cultural activity of paying for participation in a concert as an audience member is deeply rooted in our experiences of rock and classical music. The question 'what is the experience of a laptop performance?' drew upon research conducted at Leicester DeMontfort University on intention and reception in contemporary sound-based music (Landy and Weale, 2005) and the nature of participating in the musical 'contract' led Simon Emmerson (DMU) to call us all 'participants'. This democratization of musical activity opens up many new questions.

### The Changing Listening Paradigms of the Audience

The afternoon session began with a presentation by Professor Michael Alcorn (Queen's University Belfast) who reported on the changing listening paradigms of the audience and cited a number of 'interventions' between listening, performing and composing. One particular area of interest was the 'e-score' software which is a real-time score rendering program. Alcorn mentioned his work *Leave no Trace* which was developed in collaboration with the Smith quartet. The work calls for the players to react instantaneously to models prepared in advance and developed during performance by the composer. The players see what is to be played 'now' and also what is to be played 'later' so are also able to prepare their performance in a very similar fashion to a traditional quartet reading a score. Indeed, laptops for each player were placed on music stands.

As a result of this research, further projects have arisen including one looking at the organization of the thousands of performance gestures used during this work. The role of the performer/composer and his relationship with the string quartet was discussed. It was clear that the composer/performer was an improviser at times but required an intimate knowledge of the framework of the piece (not least, where to start). Moreover, this process of working 'live' was influencing the way Alcorn was beginning to work in other areas. Questions probed how the string quartet communicated with each other given that cues were distributed to individuals, each with a laptop. Alcorn responded by mentioning that the software catered for the synchronization and scheduling of events, enabling performers to listen carefully to each other and maintain a strong sense of ensemble. The performance software was reported to be open source and publicly available sometime during 2008.

Other projects documented during Alcorn's presentation included an ongoing partnership between SARC and numerous international institutions focusing upon distributed network performance. Alcorn saw the network as both a challenge and a facilitator for a broader spectrum of musical communication.

Neal Farwell began by presenting his work *Chaconnes* for violin and computerized sounds. The *Chaconnes* computer part comprised some 150 files triggered sequentially and in parallel, enabling a much closer collaboration between performer and 'computerist'. Though clearly a 'live' performance, the staging is intimate and reminiscent of a 'chamber' music environment. The interaction model (after Bongers) between performer and system is rooted not so much at a technical level as at a musical level, with the computer part resembling the piano part of an accompanied sonata movement, acting both as accompaniment and soloist; listening and responding, yet leading and influencing. The 'computerist' triggers the soundfiles and maintains an appropriate balance between the un-amplified violin and the electronic sounds. These sounds are also meant to be of equal 'musical' weight to the virtuosic violin part. Compositionally, Farwell argued strongly for the closed score as an ideal means of performance in this area of electronic 'chamber music' and as a descendant of a strong European chamber music tradition. Farwell continued by presenting his work *Shroud* for piccolo / alto flute and live electronics. The instrumental music - notated through proportional and metric notation - is amplified by microphones placed strategically and delicately around the soloist. In this instance the 'computerist's' role is less demanding than in *Chaconnes* as a greater part of the processing is in real-time. The computer, though not aware of the performer, fuses more concretely the sound of the flute and the electronics. In conclusion, Farwell envisaged further research into chamber music performance and its development within the electronic music tradition.

## The Future of Live

The final discussion of the day was chaired by Simon Emmerson, who immediately yielded the chair, reorganized the room. This facilitated a very open discussion and reiterated the desire to 'get rid of the binaries' and not be overly judgemental about the degree to which practitioners work with computers. He also suggested that the discussion should not be overly speculative. Emmerson asked us what we should be looking at through practice? Debate began by discussing the experience of laptop performance and the 'performance environment'. Participants were reminded that there were no right or wrong examples but that each example created numerous consequences.

A number of relatively simple solutions alleviating the visual barriers of the laptop screen, the compact performance gestures of most live laptop performances and the comedic stage presentation of performer sitting behind a desk were mentioned. These included video projection, showing the screen more fully, lighting the face and placing a webcam on the hands.

However, some suggested that the laptop had evolved a tradition of its own; a tradition largely misunderstood. At the root of the discussion was the interplay between visual reference and acoustic result. Bizarrely, this dilemma has been faced by the acousmatic music community for over 50 years and remains unanswered. It was suggested that a more coherent explanation of what exactly is happening during a performance is required, through clearer performance 'mappings', better interfaces and an increased public presence from practitioners in general - and academic practitioners in particular - through texts and other supporting materials.

There was a deep-seated concern that the computer is not an instrument yet it is the sound producer. Haptic technologies requiring effort and resistance, bringing the performer closer to the traditional instrumental paradigm providing mechanical as well as aural feedback was debated.

Emmerson asked that we continue to search for new interfaces and that we accept a paradigm where physical realities are not important.

Technology itself was a major point of discussion in relation to ideas concerning establishment, virtuosity and tradition. Given the rapid advancement of technology it was deemed inappropriate to adopt these metaphors yet historical 'baggage' and cultural 'traditions' were continually referred to, often as a

foundation upon which new practice-led research was constructed. This argument may possibly continue until Moore's law concerning computer processing speeds ceases to function.

Finally Emmerson asked participants to consider the word 'interactivity': where is it, what does it mean to you and how valuable is it? Whilst the word is generally used as an umbrella term, a distinction was made between interactivity and 'engagement'. All music is interactive if listening is taking place and, for many, the concert hall was seen as an appropriate venue. John Young reminded participants that much of what is called 'interactive' could also be seen as being 'responsive'. It perhaps depends upon where the 'intelligence' is coded. In fixed media works, clearly a considerable proportion of the creative act is sealed with the music. In other works, a degree of control (whether strongly prescribed or not) is given over to real-time realization in performance. Ironically, in a laptop improvization using a prepared patch in Max/MSP, the 'intelligence' is coded within the patch, and improvizations reveal creative potential in much the same way as the sounds coded to a CD reveal creative potential when diffused in concert.

Human interaction through music, informal feedback on the ICT Methods Network seminar event and the possibility of future discussions concluded the discussion and the event.

## Bibilography

Simon Emmerson (2007), *Living Electronic Music,* Aldershot: Ashgate.