GOLDSMITHS ELECTRONIC MUSIC STUDIOS: 40 YEARS

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ABSTRACT

This year marks the 40th anniversary of the founding of the Electronic Music Studios (EMS) at Goldsmiths, University of London. The 1968 studio placed Goldsmiths at the forefront of such developments in the UK university sector. 2008 also marks the launch of our *EMS Research Group*, which brings together a diverse range of interests and activities in computer music research, creative practice and music technology.

1. GOLDSMITHS: THEN AND NOW

The early history of the studio is closely linked to two British pioneers of experimental, electronic music: Hugh Davies (1943-2005) and Daphne Oram (1925-2003). Interest in electronic music at Goldsmiths can be traced back to 1966 and a visit by Oram, co-founder and director (1958-9) of the BBC Radiophonic workshop. (Her life and work is the subject of a current EMS research project, outlined below). A letter to Oram dated May 3rd 1966, from J.A. Gulland, Head of the Department of Adult Studies, thanked her for a recent lecture, concluding "I am not quite sure what we as a College do next about electronic music but you have certainly stimulated very great interest that may, in time, develop into a serious study of the subject here".

Interest developed quickly. In autumn 1967 Hugh Davies, following his two-year tenure in Germany as Stockhausen's assistant, proposed the establishing of a Goldsmiths electronic music studio to Stanley Glasser, who was soon to be Head of the Music Department. By January 1968 the 'Electronic Music Workshop' had begun evening classes. Davies writes "This appears to have been the first such regular class given in any academic institution in Britain, although others followed fairly rapidly." [1] [4]. Initial equipment consisted of "three Revox tape recorders, a stereo mixer, one air and a couple of contact microphones, a stereo amplifier and loudspeakers, followed a few weeks later by a sine/square-wave generator built from a kit." [4]. By 1976 this had expanded to include two VCS3 synthesizers, numerous Revox A77 tape recorders, a custom-made mixer, a range of ring-modulators, phase-shifters, wave-shapers, reverberation units etc., and a few years later the addition of a Roland 100M modular synthesizer (still working today). In the 1980s the studio acquired a Fairlight CMI series II computer music system, at the time extremely expensive technology (Figure 1).

Over the years there have been numerous composers and artists associated with the studio, as performers-in-residence, researchers and visiting tutors, including Don Banks, Anna Lockwood, Lawrence Casserley, David Burnard, Lily Greenham, Bob Cobbing (poet in residence, 1973-74), Richard Bernas, and more recently, Philip Mead, New Noise London, Max Eastley, Lawrence Upton, and Neil Heyde. Composer, Katharine Norman (EMS Director, 1998-2003), oversaw an extensive modernization of the studio and also established undergraduate and postgraduate courses that continue today.

Hugh Davies is sadly no longer with us, although his influence remains; one obituary noted that "in the 21st century, it seems that Hugh Davies's innovatory, do-it-yourself, lo-fi approach – which in several respects prefigured present laptop culture – is finding favour with a younger generation to whom this remarkable and iconoclastic innovator now appears as a significant father figure." [8].

The current *EMS Research Group* staff includes Ian Stonehouse (Head of Studio), Dr. Michael Young (Deputy Head of Department, Lecturer in Composition), Dr. John Levack Drever (Lecturer in Composition), Dr. Mick Grierson (AHRC Research Fellow), John Lely (Researcher and Technician) and Sebastian Lexer (Researcher and Max/MSP Course Tutor). The EMS website is www.goldsmiths.ac.uk/ems.

Figure 1: EMS Studio c.1982 (later, the Multichannel Studio). Chilton 24.8.2 desk (middle), Publison DHM89 digital delay/pitch shifter (bottom left), Fairlight CMI series II (right).

[1] A claim supported by Prof. Peter Manning: "...there were developments at York, Cardiff and Manchester underway by 1968 but Hugh's claim to be the first is sustainable" (email correspondence, 28/1/08).

2. CURRENT RESOURCES

The Electronic Music Studios comprises a suite of eight independent studios, offering a range of facilities for teaching and research.

There are three identical **Pro Tools Studios** based around a Digidesign Mbox Pro 2/Apple iMac system. The **Music Technology Lab** supports both undergraduate and commercial courses with 10 Mac and PC workstations running Sibelius, Cubase and Max/MSP. Other frequently used software includes IRCAM Forum software, MetaSynth 4 Pro, Soundhack, Ableton Live, and a range of plugins such as GRM Classic & ST, Pluggo and Waves.

Our **Teaching Studio** space houses another Digidesign workstation, in addition to a Yamaha Disklavier grand piano and a vintage Roland 100M modular synthesizer, which still attracts regular use. The studio is used for seminars, workshops, installation development and recording; an adjacent **Control Room** is equipped for multitrack recording, comprising Digidesign HD2 Accel/192 hardware, a Yamaha O2R desk, Genelec monitors, TL Audio Preamp & Compressor and TFPRO pre-amplifiers/stereo optical compressors. There are also tie lines to the Department of Music Recital Room for remote recording.

Figure 2: The Multichannel Studio today

There are three studios specifically for postgraduate/research use: The **Multichannel Studio** is the main facility, designed for eight-channel or 5:1 sound diffusion/spatialisation and digital sound processing/editing (Figure 2). It is based around an Apple G5 and Digidesign HD2 Accel system, with eight Adam active speakers and subwoofer with a dual Blue Sky controller. Additional software includes IRCAM SPAT real-time spatialisation, and a custom-made real-time eight-channel spatialisation RTAS plug-in. The new **5.1 Studio** is designed specifically for surround sound composition with an Apple Mac Pro, Digidesign HD2 Accel system, Adam active speakers and a Blue Sky controller. It also equipped for reel-to-reel tape transfer. The **Live Electronics Studio** is a facility for interactive performance and live signal processing. Equipment includes an Apple Mac Pro 3GHz Dual-Core Intel Xeon with a range of control surfaces and external equipment inlcuding a JazzMutant Lemur, Korg KAOSS pad, Kenton Control Freak, Phil Rees C16 and Soundbeam 2 system.

3. CURRENT RESEARCH

3.1. Interactive Performance/Composition

Interactive and generative music in performance is well represented in EMS, evidenced by the Live Algorithms for Music Network (LAM) as well as individual research projects.

3.1.1. Live Algorithms for Music

The *LAM* network was founded by Dr Michael Young and Dr Tim Blackwell (Department of Computing, Goldsmiths) with a grant from the Engineering and Physical Sciences Research Council Culture and Creativity Programme[2]. The vision for the network is the development of an artificial music collaborator in performance [1], and the main aim of the network has been to form an interdisciplinary community to identify theoretical and practical issues.

The community has been developed through a series of events hosted by EMS, which facilitated research workshops and concerts. During 2004-7 there were 40 presentations and 27 performances of live algorithm-inspired music (Figure 3). The network has some 100 members including performers, composers, software engineers and researchers in relevant sciences; computing, cognition, robotics. Although UK-based, there are many members from other European countries, Australia and the USA. The network has benefited from contributions by leaders in improvised and computer music including Prof. George Lewis (Columbia University, USA), Al Biles (Rochester Inst. Technology, USA) and Francois Pachet (Sony CSL). *LAM* established links with international conferences NIME 2006 and ISMIR 2006 and with IRCAM.

Figure 3: Evan Parker (left) and George Lewis performing with live algorithm systems, LAM Concert Dec 2006.

Interdisciplinarity has been nurtured in two ways. First, by bringing together people who might not meet in such a context, to encourage the identification of new subject domains. Second, by providing a reflective forum for researchers already working across domains. LAM has explored a rigorous interdisciplinary subject for study and practice, uniting them with a vision of what computer music might become.

Young's creative work in EMS has addressed this concept of live algorithms, in works that deploy live audio analysis, machine learning and stochastic

[2] gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=GR/T21479/01

techniques. This includes the oboe/electronics composition *argrophylax*[3], *au(or)a* (for any solo instrument and Disklavier) and *piano_prosthesis* [9]. Blackwell and Young have collaborated on an improvisation system using particle swarms, *Swarm Granulator* [2], based on Blackwell's extensive research in this field.

3.1.2. Audiovisual Composition

Dr. Mick Grierson joined the EMS in 2006 to undertake a three–year Arts and Humanities Research Council funded project in audiovisual composition and cognition[4]. The project is multidisciplinary, and specifically technology led, combining film studies, electronic and computer music, performance, computer arts research, game theory, psychology, neuroscience and signal processing, with a view to exploring new possibilities and implications for computer-aided audiovisual experience.

After an investigation of new feature extraction methods for information retrieval [3], and the development of bespoke interactive environments [7], the project has moved into an experimental phase using signal processing to extract features from subjects engaging in a number of audiovisual stimulation tasks. EMS has acquired a GTEC eight channel EEG device, suitable for analysis of event related potentials, attention and sensory motor information. Using information retrieval methods, relevant features can be extracted from simultaneous time-tagged EEG responses. Recently, Grierson demonstrated real-time detection of p300b event related potentials for controlling the pitch of a synthesiser. Complex responses to audiovisual composites arranged in variable length sequences are the central subject of further research.

Through collaboration with the Sonic Arts Network, the London Philharmonic Orchestra, Whitefields Special Needs School and the South Bank Centre, Grierson has also developed a real-time sound visualisation system for those with multiple disabilities, including deafness. The software is being prepared for free distribution in 2008.

3.2. Phonography and Soundscape

The emerging field of soundscape studies is making an increasing impact on activities and research in EMS, spearheaded by John Drever, Chair of the UK and Ireland Soundscape Community (UKISC) and board member of the World Forum for Acoustic Ecology. In 2006 EMS hosted the UKISC second international conference Sound Practice 2006, and in summer 2007, Drever edited Earshot #5 "Noise: Debates, Strategies and Methodologies", including contributions from Ian Stonehouse, and EMS researcher Tsai-Wei Chen, whose study maps sonic geographies of Taipei sojourners' listening experiences in London. Critical reflection of soundscape issues has resulted in a number of paper publications [5] [6].

Drever's compositional output also reflects these interests with recent projects taking particular geographical sites as a subject, including Goodwin Sands, Orford Ness and Dartmoor. During Autumn 2007 he was a Visiting Scholar for the School of Creative Media, City University of Hong Kong, where he embarked on a number of environmental sound projects.

3.3. The Daphne Oram Collection

In 2007 the studio was fortunate to acquire the Daphne Oram Collection, an extensive archive of paper materials and tapes relating to the life and career of Oram. As a founder of the BBC Radiophonic Workshop, Oram influenced the growth of international, professional electronic music. She contributed key works to the canon of early 20th century British studio composition, including *Rockets in Ursa Major* (1962), *Pulse Persephone* (1965) and *Broceliande* (1969-70). She is one of the few women in history credited with the invention of a form of sound synthesis, *Oramics*. The collection demonstrates the scope and variety of Oram's work, including master tapes for her major electronic works, BBC radio plays, music for TV and sound effect submissions for cult sci-fi films *Phase IV* and *2001: A Space Odyssey*. There are experimental sketches, various recorded lectures and interviews, Oramics demonstration tapes, tape parts for live concert pieces and unlabeled montages of found material.

EMS received an award in 2007 from the AHRC Project Fund Scheme for Higher Education Museums, Galleries and Collections, to develop the archive as research resource. This project, initiated in collaboration with the Sonic Arts Network, employs two research staff and an audio technician to catalogue and digitize the archive: this comprises some 500 reel-to-reel tapes, over 1000 paper/photographic materials and a collection of floppy disks with audiovisual generative software written by Oram for the Acorn Archimedes and Apple 2 (some of the original equipment functions and is part of the Collection). Work on the digital transfer is under way, with approximately 20% of the collection archived (as of January 2008). The majority of the ¼–inch tapes are in good condition, and are being digitized via a ProTools HD system to 24-bit 192kHz BWF format. The project will culminate with the launch of an interactive webspace and a symposium/concert in 2008.

3.4. Research Students

There are currently 12 PhD composers/sound artists working in the studio, helping to foster a lively, diverse and nurturing community. Recent successfully completed PhDs include "Hearing Voices: Sound Art Practice in a Cross-cultural Context" (John Wynne), "A Practice Led Investigation into the Relationship Between Computer and Live Performer in Multi-Media, Installation and Theatrical Settings" (Dominic Murcott) and "Organisational Strategies and the Music Experience" (Tim Bowman).

4. TEACHING, COLLABORATION, PERFORMANCE

EMS supports a broad range of learning and teaching activities in studio composition, live electronics, interactive performance, commercial sound production,

[3] Included in *Oboe+: Berio and Beyond*. Oboe Classics CD 2015. Chris Redgate, oboe.

[4] www.ahrc.ac.uk/awards/award_detail.asp?id=325825

sound-art and phonography. These courses contribute to BMus degrees in music and popular music and our MMus in Composition, for a department of some 300 students.

In 2007-8, recruitment to our postgraduate taught course increased with support from the Life Long Learning Network[5], which allowed development of the new **5.1 Studio** for postgraduate use. This network encourages practitioners and professionals active outside of education to undertake further study. For EMS this has helped widen our recruitment beyond 'normal' university channels, encouraging professionals with a commercially orientated background to explore experimental and innovative practice.

Interdisciplinary collaboration is seen as a vital mode of practice for studio based composers and is reflected in the staff's activities: Stonehouse has collaborated widely with film/video artists on soundtracks and art installations in the UK and recently contributed to, and edited, Ben Watson's Sonic Arts Network CD, *Frankfurter Ahnung*. Drever has worked closely with devised theatre company Blind Ditch, choreographer Tony Thatcher, artists Louise K Wilson and Rachel Gomme and sound poet Lawrence Upton. Young, as composer-in-residence at the School of Biological Sciences, University of Stirling 2007, collaborated with environmental scientist Dr Paul Adderley to create installation/exhibition events for National Science and Engineering Week.[6]

Accordingly our MMus fosters interdisciplinarity, and has established close links with equivalent courses in innovative theatre performance, screen documentary and film making, and the Laban MA in Choreography. We have research links throughout all the departments and centres at Goldsmiths, in particular Computing, Media & Communications and Drama. In collaboration with the Live Art Garden Initiative, EMS hosted the Artist Review Series, 2006-7, linking the themes of immersivity, art, architecture, sound and ecology. Presenters included Brandon Labelle, Christina Kubisch, John Gruzelier and Honor Harger. In recent years EMS has welcomed an impressive array of other guest speakers, including Catharina Dyrssen, Larry Austin, Trevor Wishart, Hildegard Westerkamp, Bill Fontana, Nigel Frayne and Brian Eno.

EMS regularly holds concerts at Goldsmiths, and shows work at The Shunt Vaults, a well-known, experimental theatre space located beneath London Bridge railway station. As host, EMS has supported many events, including the ongoing improvised music series *Interlace*[7] (dir. Sebastian Lexer), and, recently *The Future of Sound* (organised with the Screen School, Goldsmiths). The studio also has a resident *Electronic Orchestra Collective* (dir. Mick Grierson), which performs regularly and was included in the Sonic Arts Network Expo 2007. This is a laptop group that deploys live performers with audiovisual systems.

5. FORTHCOMING

The Department of Music has welcomed composer Dr Francis Silkstone as AHRC Fellow in Creative and Performing Arts 2007-2012.[8] His research specializes in inter-cultural composition, particularly with reference to N. Indian music. An EMS-based project in 2008, in collaboration with Young, will experiment with alaap improvisation and intelligent music systems. Other activities for 2008-9 include establishing a web-based journal for *LAM*, in support of other network events, and a new, collaborative undergraduate programme in computer music.

6. CONCLUSION

The paper illustrates the broad range of research, teaching and performance-led activities in EMS. Collaborative practice, phonography and interactive media are of special interest to the EMS Research Group. We hope that the inspiration and vision of Hugh Davies and Daphne Oram continues to be reflected in our future work.

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