

Studio Report of The Centre for Music Technology, University of Glasgow

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Abstract

This paper describes the Centre for Music Technology at the University of Glasgow. It outlines the Centre's resources and facilities; it summarises some of its current and recent research and related activities; it describes undergraduate programmes and opportunities for postgraduate study; and it discusses plans for future development and expansion.

1 Introduction

The Centre for Music Technology at the University of Glasgow is an interdisciplinary framework for research and teaching. It provides a forum for collaboration between the Departments of Music and Electronics, and a resource pool for research and student learning at postgraduate and undergraduate levels. It also collaborates with the Department of Computer Science.

Research in the Centre broadly divides into three areas, namely timbral and gestural analysis for musicological applications (Dr Nick Bailey, Department of Electronics and Electrical Engineering), music information and metadata (Ms Carola Böhm, Department of Music), and electroacoustic composition and performance (Dr Nick Fells, Department of Music).

These diverse areas enable much sharing of approaches and ideas within the broad field of music technology.

2 Resources

Between its host departments the Centre is well-equipped for research and student learning. Among the resources available in the Department of Electronics and Electrical Engineering are a computer lab comprising 10 Mac G4s (dual-bootable with GNU/Linux or MacOS), a music technology studio, and an acoustics lab with anechoic chamber. The Music Department houses two electroacoustic music studios with recording booth and adjacent concert hall, a digital audio lab with 10 PC workstations (dual-bootable with Windows NT and NeXTStep, soon to move to GNU/Linux, each with 24-bit 16-channel audio capability), and various SGI and PC computer music research stations; the acquisition of a number of G4s is

planned. In addition, a multi-channel sound diffusion system based on Genelec and ATC speaker systems is used for electroacoustic performance. A recent addition to this system is a Debian GNU/Linux machine dedicated to real-time computer-based sound processing and spatialisation under Pd. There have also been a number of experiments exploring Pd as a distributed performance control system across the music network.

3 Interdisciplinary projects

The Centre maintains a healthy throughput of funded interdisciplinary research projects. These produce a wide variety of deliverable outputs, including software tools, contributions to standards definitions, and reports to governmental and educational organisations.

3.1 Circus

Circus is an international partnership-project that brings together artists, designers, performers, theorists and computer scientists to debate the research issues posed by the next generation of advanced information technology for the creative and performing arts, media and the electronic publishing industry. The project has examined and proposed a wide range of links between creativity and technology; it has also generated specific practical and experimental works together with theoretical papers examining different models and methodologies for the development of these connections. The circus research agenda has been led by the concept of creative pull, giving priority to the creative maker or user in the development of technological capability. **Circus** is funded through the European Commission's *Esprit* programme.

3.2 MusicWeb Connect

MusicWeb Connect aims to improve quality of music education, by exploiting multimedia and distributed network technology with potential benefit for distance learning. **MusicWeb** intends to support music education by offering a well-structured learning environment with a strong emphasis on musical relevance. The modular design and

reusability of tools and materials is designed to appeal to music professionals, teachers and students regardless of their technological background. MusicWeb is funded through the European Commission's *Connect* programme (part of Culture 2000).

3.3 OpenDrama

Also funded by the EC, **OpenDrama** is run in association with Opera North, the principal opera company in the north of England. It aims to investigate how multimedia technologies and techniques can best be applied to the presentation of recordings of opera and other musical-dramatic works.

Other projects have explored systems for music information retrieval and evaluation of music notation packages for educational contexts.

4 Composition and performance

The composition and performance activities of the Centre revolve around the Music Department's Electroacoustic Studios and associated sound diffusion system. The aim of the Studio is to nurture a rigorous critical approach to composition, and to support and facilitate experimentation with and development of compositional and performance tools. The production of high quality electroacoustic work (in terms of both process and outcome) and the expansion of the electroacoustic instrumentarium in the broadest sense are its main objectives.

This interrelationship between creative processes as expressed through artistic activity and through technological development lies at the heart of the Centre's work: the principle is realised through the Studio activities as well as projects such as *Circus*.

In general, the Studio has focussed on the composition and spatial performance of computer-generated and acousmatic work in fixed media. Recent works in this idiom include Nick Fells' *Riversongs* and *Maha*, which exploit the transformation of soundscape elements using granular sampling objects developed for Pd, as well as a host of student work. In future, the focus will widen increasingly into the real-time domain; as mentioned above the resource base for creating and realising such work is expanding with systems currently based on GNU/Linux and Pd.

The public face of the studios is *Musica Electronica*, a series of concerts of contemporary electroacoustic music. Each year a call for works is issued, and the series has been well supported by composers around the globe. This year has seen the performance of a wide selection of works from widely recognised and less recognised composers alike. In addition, the Studio has been fortunate to welcome visiting artists including film-maker Robert Darroll from ZKM Karlsruhe and composer Manfred Stahnke of the Chaosma ensemble.

The season ahead sees much more emphasis on live performance with real-time sound-sculpting, with newly commissioned work from Scottish composer Bill Sweeney for cellist Robert Irvine of the Chamber Ensemble of Scotland and new electroacoustic performance projects for students. The Studio is also hoping to welcome composer John Cousins on a residency from Christchurch, New Zealand, as part of the South Pacific, North Atlantic contemporary music festival, held in celebration of the 550th Anniversary of the University. There are also plans to expand the performance output of the Studio in association with Glasgow's Centre for Contemporary Arts, a major public venue newly-refurbished with a £10m grant from the UK National Lottery.

5 Undergraduate programme

Research should of course be reflected in the nature of teaching and student learning in the institution. To this end, the undergraduate programme at Glasgow includes a degree in Electronics with Music accredited by the Institution of Electrical Engineers, the main professional association for electronics engineering in the UK. The programme is inter-departmental and wide ranging, including studies in audio programming, HCI issues, composition, sound synthesis and composition systems, and electroacoustic performance. There is an emphasis on teamwork and student-centred project work, and there are opportunities for work placements (most notably recently at Ircam and Universitat Pompeu Fabra in Barcelona). Many graduates gain employment in the music technology industry or go on to further research.

6 Postgraduate opportunities

The Music Department currently offers a broad range of research degrees, taken over one, two or three years full-time, including MMus, MPhil and PhD. Supervision is available in areas including electroacoustic composition and computer music, and research students gain substantial access to the Centre's resources. Taught courses in music technology and sonic arts are planned for the near future, enabled by the University's recent increased commitment to the expansion and development of the Music Department. As part of this development, there is a planned move in 2002 to bigger and better premises recently acquired next to Glasgow's beautiful Kelvingrove Park. The new building will house expanded studio and lab facilities with a focus on support for postgraduate studies.

The Department of Electronics offers a large number of fully funded PhD opportunities annually (twenty-three in the year 2001-02). These may be taken in any of the Department's main research areas, including music technology, and again students receive access to a wide range of resources.

7 Future directions

To summarise, plans for the near future include: increased integration of musical performance with technological development in the Centre, through the Musica Electronica series and the exploitation of links to other performing venues; new opportunities for postgraduate study in music technology, through larger and improved premises and the introduction of taught programmes; the expansion of resources for collaborative work between performers and composers to develop innovative music exploiting real-time technologies; and the continued attraction of external funding for collaborative research projects across the broad field of music technology.

Websites

Department of Music:

<http://www.gla.ac.uk/departments/music>

Department of Electronics and Electrical Engineering:

<http://www.elec.gla.ac.uk>

Ms Carola Böhm:

<http://www.gla.ac.uk/departments/music/staff/carola.html>

Dr Nick Fells:

<http://www.gla.ac.uk/departments/music/staff/nick.html>

Circus project:

<http://www.circusweb.org>

MusicWeb Connect:

<http://musicweb.koncon.nl/connect>

European Commission Esprit programme:

<http://www.cordis.lu/esprit/home.html>

European Commission Connect programme, part of Culture 2000:

http://europa.eu.int/comm/culture/cpconnect_en.html