NOVARS RESEARCH CENTRE, UNIVERSITY OF MANCHESTER, UK. STUDIO REPORT

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Abstract — NOVARS is a new Research Centre started in March 2007 with specialisms in areas of Electroacoustic Composition, Performance and Sound-Art. The Centre is capitalising on the success of Music at the University of Manchester with the expansion of its existing research programme in Electroacoustic Composition with a new $\pounds 2.2$ million investment in a cutting-edgev new studios infrastructure. This studio report covers key aspects of architectural and acoustic design of the Studios, functionality and existing technology.

I. INTRODUCTION

The Studios were constructed by Harry Fairclough Construction Ltd, after a cutting-edge design by Cruickshank and Seward architects and acoustic design by ARUP consulting engineers. The sound system design and installation was provided by DACS-AUDIO and the project was managed by Stuart Lockwood, Estates Capital Projects Group at the University of Manchester and coordinated by David Berezan, Director of the Electroacoustic Studios at the Martin Harris Centre for Music and Drama and MANTIS.

The new Studios facilities were officially opened in November 2007 and incorporate three large postgraduate research studios (featuring 32-loudspeaker monitoring for sound diffusion performance research and multi-channel composition, 5.1-surround and 10-channel composition environments), a fourth multi-function studio for undergraduate teaching and work, a large 14-workstation computer cluster for teaching and student compositional work, supporting technical spaces, offices and computer/ network hubrooms.

II. BACKGROUND

NOVARS is named to reference and celebrate the seminal work by Francis Dhomont (Novars). In his own words 'a reversed version of Ars Nova' - New Art, New Science. Staff and postgraduate student research areas range from acousmatic composition to machine musicianship, sound spatialisation, performance practice, live interactive systems and cross-disciplinary projects.

In education areas, NOVARS is supporting and reinforcing an existing well-integrated music pathway at the University of Manchester, both at Postgraduate and Undergraduate levels, merging areas of electroacoustic composition, instrumental composition and music theatre; including experimental and contemporary performance practice. An added value to the NOVARS research focus is the strength of the School's performance programme and the joint pathway between Music and the RCNM (Royal Northern College of Music). Accessibility to highclass performers in residence makes the environment extremely appealing for composers willing to experiment on extended techniques, chamber groups or large scale instrumental forces in combination with new music technologies.

III. STUDIO DETAILS

A. General Design Features

The massing of the elevational treatment of the building is in direct response to Manchester City Planners desire

to improve the visual expression along Bridgeford Street, where the studios were built. The variety of contrasting materials that have been used separate the different functional and circulation elements of the building, and improve the visual form of the frontage.



Figure 1. Façade of the building hosting the NOVARS Research Centre

The corner of the building is also a key site feature, further enhancing the external appearance of the urban block. A sharp angular corner was incorporated with a pronounced overhang and the corner is also accentuated by steeply raking the zinc cladding out in this direction.

B. Acoustic Considerations by ARUP

To reduce the effect of noise contamination both to the isolated internal studios and to the adjoining street and neighbouring buildings, the air handling plant is attenuated and contained within the ground floor plant room with no externally mounted condensers or equipment. The building utilises chilled beams to cool the Studio spaces. With no moving parts, the cooling beams are extremely low noise. Attenuators were also installed in the main supply and return ductwork to the ventilation plant to prevent any noise breakout.

The nature of the occupancy requires that the studios are lobbied with acoustic doors and isolated structures within the building envelope. Sound incursion is therefore optimally reduced to a practical minimum. Three internal acoustic pods were constructed using slabs of thick precast concrete, and are separated from the floor via rubber isolating mounts to fully sound proof the area. The acoustic impact of the building occupancy on the site and surroundings is therefore also insignificant.

C. Studio Network

Using the latest Apple Mac Pro and iMac machines with Intel processors, the studios are networked using conventional gigabit ethernet. An Xserve is used for authentication and file storage, connected to the network on four gigabit ports using 802.3ad link aggregation. This server controls access to the client machines through its own Open Directory, as well as the university-wide Active Directory system. All studio computers are housed in a central hub room to eliminate mechanical noise within the studios themselves, with displays connected via optic fibre using Gefen DVI-to-Optical converters. Similarly, Firewire 800 and USB 2.0 are replicated in the studio spaces using a combination of converters over optic fibre and standard CAT5 ethernet. The audio interfaces themselves are housed in the same space as the computer systems, with bantam/PO-style patch bays providing complete flexibility over audio routing throughout the building.

D. Audio Interfaces

The primary audio interfaces are Digidesign 003 and 002 rack units, with the exception of Studio 1 which benefits from a Pro Tools HD2 system with a 192 I/O interface. All studios are also equipped with MOTU 828mkII interfaces for added flexibility. In the teaching cluster, 14 iMacs are available with a mixture of MBox 2 Pro and MBox 2 Mini interfaces. A custom switcher allows for audio to be routed to the cluster loudspeakers from any interface; a useful feature for demonstrating work in a teaching environment. All loudspeakers are manufactured by Genelec.

E. Working Spaces

1) Studio One: hosts 32-channel monitoring, and incorporates a suspended loudspeaker array on a custom made ceiling grid. This studio is mainly used for compositional, multi-channel and sound diffusion performance research. There are two sound diffusion tools: The DACS custom made MANTIS 32-channel control surface with an EtherSense device (IRCAM) and a tailor made GLUION FPGA 16bit ADC (designed by Sukandar Kartadinata) with 32 analogue inputs and 68 digital inputs/outputs for experimental purposes. A combination of MOTU 24io and 2408mkIII interfaces with Mac Pro computers serve the diffusion system.

2) Sheila Beckles Studio: dedicated for audio in multimedia production and composition, it incorporates a 5.1 Genelec monitoring system, with one Quad-core Mac Pro featuring two Dual-Core Intel Xeon processors, a 30 inch Apple Cinema Display, two additional 20 inch Cinema Displays, and other equipment. This facility is mainly designed for postgraduate and staff audio visual and compositional research.



Figure 2. Postgraduate students working in Studio One

3) Studio Three: Studio Three: a 10-channel monitoring system for postgraduate and staff multichannel compositional research. It contains 8 + 2 loudspeakers with two subwoofers (all Genelec), one Quad-core Mac Pro featuring two Dual-Core Intel Xeon processors and other equipment.

4) Studio Four: 5.1 monitoring and composition environment and also serves as a recording and teaching space, mainly for undergraduate work.

5) Studio Cluster: consists of 14 new imac workstations for group teaching and guest lectures, undergraduate and postgraduate access.

IV. MANTIS FESTIVAL

Another key aspect of NOVARS Research Centre's creative umbrella is its Music Festival called MANTIS. Each year MANTIS (Manchester Theatre in Sound) presents several concerts and encounters in areas of electro-acoustic music and sound-art. It provides a dynamic and appealing meeting-point for composers, artists and scientists who are willing to exchange and showcase practice-led and cutting-edge computer music research. It also promotes, disseminates and performs new works from composers based at The University of Manchester.

The University's Martin Harris Centre for Music and Drama is the focal point for MANTIS concert activities, featuring a large surround sound diffusion system in the Cosmo Rodewald Hall – a 350 seat concert space, which includes box-office and support personnel who run an average of 80 concerts and events per year. Additionally, it also has other smaller venues, such as the John Thaw Studio Theatre (a black-box space specialising in drama productions) and the seminar room G16. The core of the MANTIS System consists of a 40-Genelec loudspeaker surround setup and a custom-made software and spatialisation control interface.

MANTIS has run the Festival in partnership with organisations such as Sonic Arts Network EXPO and LICA (Lancaster Institute for Contemporary Arts), both in the UK, taking the festival to numerous venues in the North of England (ie. the Victoria Baths). MANTIS has featured music from several guest composers including Jonty Harrison, Simon Emmerson, Rajmil Fischman, Pete Stollery, Rodrigo Sigal, Francis Dhomont and Gerard Bennett. In November 2008, MANTIS will be celebrating its 10th festival in 4 years with guest composers Annette Vande Gorne (Belgium) and João Pedro Oliveira (Portugal).



Figure 3. Idoia Zabaleta (KLEM) dancing Drosophila by Ricardo Climent at MANTIS: South-North 2007

Two very special Festival editions occurred in 2006, when MANTIS hosted guest composer Francis Dhomont for his 80th birthday and in 2007, when MANTIS celebrated the launch of NOVARS with five specially curated concerts by D. Berezan (Berezan, Bennett, Dhomont, Casken), UK (by J. Harrison), Canada (by G. Gobeil), Germany (by L. Bruemmer/F. Hein) and USA by R. Climent (with virtuoso performers Esther Lamneck and Elizabeth McNutt).

The Festival has also focused on themes such as MANTIS: South-North 07, including music from Latin American composers. The first MANTIS call for pieces received 186 submissions from all over the world. The Festival has gained the sponsorship of Arts Council England; Goethe Institute, Manchester, Sheila Beckles Foundation, Embassy of Mexico, UK; Council for Cultural Affairs, Taiwan and the Secretaria de Relaciones Exteriores in Mexico.

V.CURRENT AND FUTURE ACTIVITY

In the first year of its operation the Centre has hosted research seminars, masterclasses, workshops and fora covering electro-acoustic composition, sound diffusion technique and practice, sensors development, analysis and interdisciplinary work. Undergraduate and postgraduate course-unit teaching and work in areas of electroacoustic composition, aesthetics and acoustics have been supported, in addition to the research of 10 PhD students, 2 full-time members of academic staff and associate researchers. The KAIROS Electroacoustic Ensemble has performed in several concerts, and in 2007/08 MANTIS delivered concerts series and events in Manchester, Lancaster, Edinburgh, Brussels and Valencia. MANTIS is currently working towards a number of festival and conference events in collaboration with guest composers, artists and other institutions.

A program of Research Assemblage Groups has been established by postgraduate students and academic staff. Formulated groups focus on Sound Spatialization; Aesthetics and Analysis; Dissemination, Performance and Music Musicianship; Phonography; Synthesis and Software and Impossible Research.

NOVARS launched two Residency Schemes for Artists to undertake work in the studios (currently open to music composers) and for Engineers and physical Scientists to procure the advancement of existing or new areas of research. In 2008 NOVARS's resident artists are: João Pedro Oliveira (Portugal) sponsored by the Calouste Gulbenkian Foundation and including the commission of new work; Pippa Murphy (UK) -freelance residency- and Thomas Bjelkeborn (Sweden) sponsored by The Society of Swedish Composers and the Helge Ax:son Johnson Foundation. On the Engineering side: Sukandar Kartadinata (Germany) sponsored by the Pump Priming Fund, Manchester University, in the area of FPGAs and sensors technology; Stefan Bilbao (Canada/UK) in the area of Physical Models and Matlab and Patrick Sanan (USA) also in Physical models and Sound-art. In the next year the Centre aims to commission new creative work, continue with the organization of workshops and consolidate the efforts of the Research Assemblage Groups.

VI.ACKNOWLEDGEMENTS

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For Further details visit http://www.novars.manchester.ac.uk/