PROCEEDINGS

Researching Music, Technology & Education

SEMPRE Day Conference
Saturday 18 September 2010

School of Arts & New Media
Scarborough Campus
University of Hull

EDITORS

Dr Andrew King
Dr Evangelos Himonides

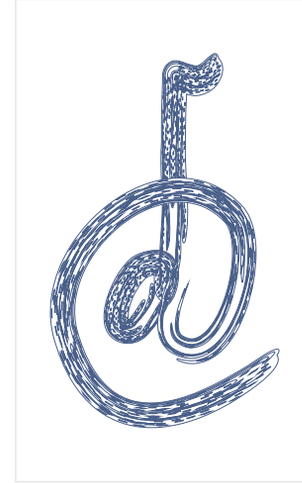

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Table of Contents

Conference Programme

9.15am Registration

[Calvinos, Ground Floor, Scarborough Campus]

9.55 Introduction & Welcome

Dr Andrew King, Conference Organiser

[Performance Studio 2]

SESSION 1 TECHNOLOGY & EDUCATION

[Performance Studio 2]

Chair: Dr Andrew King (University of Hull)

10.20 Tackling the isolated learning experience and its potential impedance of creative engagement with music technology at HE level

Diana Salazar (Kingston University, UK)

10.40 Towards a deeper understanding of secondary music students' computer-mediated compositional development

Philip Kirkman (University of Cambridge, UK)

11.00 The challenge of classroom group work in computer-mediated composition

Nick Breeze (University of Bristol, UK)

11.20 REFRESHMENTS

[Calvinos, Ground Floor]

11.45 KEYNOTE

[Performance Studio 2]

Chair: Dr Craig Gaskell (Dean, University of Hull)

Creativity and technical innovation: Learning from our heritage

Professor Michael Clarke (University of Huddersfield, UK)

12.45 LUNCH

[Calvinos, Ground Floor]

13.00 DEMONSTRATIONS & POSTER SESSION

[Performance Studio 1]

A musically-biased dynamic system for live interaction with an improvising musician

Oliver Hancock (Leeds College of Music, UK)

The "sounds of intent" project: Using web-based interactive technology in the study of children & young people with complex needs

Evangelos Himonides (Institute of Education, London, UK)

Interactive installations: Exploring collaborative working practice through blended learning and public engagement

Robert Mackay (University of Hull, UK)

"What's Cooler than being Cool?" Towards a new paradigm in the analysis of Popular Music

Julia Martin (University of Southampton, UK)

Understanding young children's cognition of musical time from steady tempo to ritardando
Yu Tai Su (National Dong Hwa University, Taiwan)

Computer program design for musical rhythm training
Jesús Tejada (University of Valencia, Spain)

Melotherapy in correcting child rhythm and fluency of speech
Iolanda Tobolcea (AI. I. Cuza University, Romania)

SESSION 2 TECHNOLOGY & COMPOSITION

[Performance Studio 2]

Chair: Dr Robert Mackay (University of Hull)

14.00 Electronic-Multi-Instrumentalist (e-MI) – Designing for Interactive Composing Systems
Vassilis Angelis (The Open University, UK)

14.20 Cultural perceptions, ownership and interaction with re-purposed musical instruments
Matthew Applegate (University of Suffolk, UK)

14.40 Acousmatic Composition under version control
Adrian Moore & Dave Moore (University of Sheffield, UK)

15.00 REFRESHMENTS

[Calvinos, Ground Floor]

SESSION 3 INDUSTRY & ENGAGEMENT

[Performance Studio 2]

Chair: Dr Evangelos Himonides (Institute of Education)

15.30 DIY musicology: Rethinking the musicological concept
Paul Oliver (University of Bolton, UK)

15.50 The value of placements to undergraduate BSc (Hons) music technology students
Roy Priest (Birmingham City University, UK)

16.10 Frameworks and affordances: A critical approach to music technology education
James Mooney (University of Leeds, UK)

16.30 Pupil perception of classroom music at key stage 3: Music, technology and me
Jo Saunders (Institute of Education, London, UK)

16.50 Plenary discussion

17.00 END

Michael Clarke

Keynote paper: Creativity and technical innovation: learning from our heritage

Abstract

Rapid advances in technology in recent years have provided new and significant opportunities for those of us working as composers using computers and guiding others in their compositional development. New possibilities have opened up: new ways of shaping sounds, new approaches to structuring compositions, new potential for interacting in 'real time' with sound. But how as a community do we share our knowledge about using technology *creatively*? How do we learn from others and pass on our own skills both within our community and to our students?

The rapid technological advances have if anything inhibited this exchange of knowledge, since very often the temptation is to move on, to focus on what is new, usually with an emphasis on the technology in itself rather than its artistic deployment. Books and articles tend for the most part to concentrate *either* on the

technical *or* (less often) the creative, infrequently on how these two aspects can and must work together in tandem. It is rare to find studies that relate detailed technical descriptions to a deep consideration of the creative outcomes. This can be to the detriment of our art form. One of the most difficult things, especially for student composers, is to learn how to work creatively with technology and in this there is much to be learnt from looking at recent successful examples. We need to document and share experience of the creative application of technical innovation. This presentation will discuss an ongoing project which aims to help tackle this issue by examining a series of specific works in depth, focusing on how the creative and the technical interrelate and how technology itself can be used to present the findings using a new approach: *Interactive Aural Analysis*.

Vassilis Angelis

Electronic-Multi-Instrumentalist (e-MI) – Designing for Interactive Composing Systems

Abstract

This work explores how interactive technologies could add extra compositional elements in conventional music performances. "The creator of an Interactive Composing System (ICS) composes a mode of functioning for computer system and performer that, in operation, generates a new particular structure in every performance" (Joel Chadabe, 1983). The e-MI system utilises software and hardware technologies that analyse and/or interact with both gestural and compositional elements of an instrumental performance. On the one hand (i.e. compositional elements), a Markov chain model has developed in Max/MSP to statistical analyse the structure of the melodies played by the performer on a midi-keyboard. The same Max/MSP patch enables the performer firstly, to feedback in real-time chords composed by the Markov transition matrices and secondly, to control timing and dynamic elements of the chords. The performer could also participate in an improvisation session with the application. On the other hand (i.e. gestural elements), sensor technologies have

utilised to create a digital counterpart of the underlying gesture (e.g drumming), which is then mapped into different computational parameters, either to control or to compose electronic sounds.

Matthew C. Applegate

Cultural perceptions, ownership and interaction with re-purposed musical instruments

Abstract

This paper addresses the perceptions, ownership and interactions between users of re-purposed devices that now form musical instruments, how they are used, perceived and whether this owes anything to their original context as a games device. For the research specially designed software was created to mimic the performance of a musical instrument for use in a workshop setting. The software relies on groups of five or more players interacting together to perform music beyond that of simple experimentation and teach basic musicianship through the use of a familiar device. The initial workshop took place at The Box, FACT (Foundation for Art and Creative Technology) a multi-media arts facility based in Liverpool. The workshop on February 1st,2010 had participants answer multiple questionnaires, take part in audio and video recordings as well as interviews to ascertain the effectiveness of the design and potential of the concept.

Nick Breeze

The challenge of classroom group work in computer mediated composition

Abstract

This presentation reports on a particular aspect of a PhD study in which an empirical longitudinal investigation was carried out into the computer-mediated classroom composing of two groups of pupils aged 10-11 and 12-13. Taking a multimodal methodological approach, the study examined how aspects of the group work mediated the composing process and concluded that the ways in which the teachers orchestrated the learning environments not only had a profound effect upon the composing itself, but also upon the opportunities for learning made available to individual pupils. Two significant issues emerged from the study: (a) pupil roles, in particular how these were managed by the teachers, and (b) the joint negotiation of group outcomes and how this was affected by the organization of space, equipment and roles. Recommendations for music practitioners when using computers in the classroom suggest that not only might a considered appraisal of

how group work is organized enhance the learning outcomes for all pupils, but also that there might be much to be gained from the application of co-operative learning theory to this context.

Oliver Hancock

A Musically Biased Dynamic System for Live Interaction with an Improvising Musician

Abstract

An autonomous musical algorithm is described which interacts with a live improvising musician. It is called chor-respondent, and is a musically biased dynamic system based on perceptually significant sonic primitives and compositionally informed rules. At the heart of the algorithm is a test for harmonic consonance, which leads to the generation of evolving chordal textures that are responsive to the live improviser. The algorithm is a Pure Data patch which runs on a laptop computer, taking live input directly from a microphone and outputting only audio. It interacts, as much as possible, in the same way as a human musician.

Dynamic systems are briefly described with special reference to their connection with natural phenomena. The algorithm is described in terms of a tripartite structure of: 'listening module'; 'dynamic system algorithm'; and 'sound synthesis module'.

Some advantages of a musically biased algorithm are evaluated. This system is found to reliably produce musically comprehensible output; and to be amenable to understanding and control based on musically informed listening. Both programmer and performer can relate to the system in intuitive and musical ways. Performances in London and Melbourne are presented and evaluated from the perspectives of composer and performer.

Evangelos Himonides[†]

The "sounds of intent" project: Using web-based interactive technology in the study of children & young people with complex needs

Abstract

This presentation outlines research in the final phase of the Sounds of Intent project, which explores musical development in children and young people with complex needs. This is being undertaken through observation and analysis using the previously developed 'Sounds of Intent' schedule (Welch, Ockelford, Zimmerman, Carter, and Himonides, 2009; Cheng, Ockelford and Welch, 2010), which was designed through amassing many hundreds of observations of children's engagement in musical activities, fused with the findings of mainstream developmental music psychology (for example, Lecanuet, 1996; McPherson, 2006) and zygonic theory, a psychomusicological approach to understanding how music makes sense to us all (Ockelford, 2005). The main output is a package of web-based interactive technology, which practitioners can use to assess their pupils/clients, record their attainment and progress and

[†] on behalf of the Sounds of Intent team: Professor Adam Ockelford, Professor Graham Welch & Angela Vogiatzoglou

download appropriate curriculum materials. There are three domains of musical engagement in the 'Sounds of Intent' model; reactive, proactive and interactive, and, for the first time the framework and interactive software will enable practitioners to map the proactive engagement, that is, the "performance" of pupils and clients.

Philip R. Kirkman

Towards a deeper understanding of secondary music students' computer-mediated compositional development

Abstract

The literature informs us that digital technologies can assist music students with their composing processes. Yet previous studies do not reveal how this process unfolds in a classroom context. Existing normative models of students' compositional development do not suitably account for the transformational potential of digital technologies.

This paper is based upon a PhD study that is working towards an understanding of compositional development which attends not only to the processes and products of composing, but also to the social and cultural contexts which shape composing processes.

Case studies of two students (age 14 –16) have been carried out over 12 months in music classrooms. For each student, changes in their composing processes are explored over time through the systematic mapping of their composing strategies. Student controlled video

stimulated recall interviews were used to position the students as collaborators in the research process. The identification of critical incidents provided a standpoint from which we scrutinized rich data generated from participant observations, video observations, MIDI recordings, semi-structured interviews, documents and computer files. The study employs a constant comparative method of analysis and activity theory to critically examine the data from multiple perspectives.

This presentation will share some findings and early conclusions.

Robert Mackay

Interactive Installations – exploring collaborative working practice through blended learning and public engagement

Abstract

Students within the School of Arts and New Media at the University of Hull gain a range of practical skills and knowledge related to their disciplines. Collaborative working practice is explored in several modules, but usually within the confines of the teaching environment. The third year module 'Interactive Technology 2' requires students to work in small groups to create interactive installations. The aim of this project was to extend the work with a 'real-world' focus, working alongside a professional interactive systems designer to give students experience of producing work to a specific brief in a public art gallery or museum. This would give students the additional experience of working to a strict timescale and specific budget, as well as developing their presentation skills (from original pitch to final product). The 'Charmed' installation was developed over 7 weeks, requiring students to perform research into a collection at Scarborough's Rotunda museum and then creating a

working audio-visual installation suitable for public display and interaction.

Julia Martin

"What's Cooler than being Cool?" Towards a new paradigm in the analysis of Popular Music

Abstract

Analytical scholarship of Popular Music has thus far polarised into that which valorises musical 'text', and that of socio-cultural context. In fact, study has struggled to resolve the binaries inherent in the study of Popular Music: mind/body, individual/collective, authentic/commercial. Dualistic barriers persist and academic frustration with this bifucation is reaching a crescendo, with no apparent resolution.

So what might resolve these persistent binaries? Indeed, can they even be reconciled? An epistemological and ontological interrogation of Popular Music encompassing: Philosophy from Heraclitus' notion of flux, to Spinoza's dialectics, Psychology of the senses and the notion of *habitus*, to the cultural evolution theory of the *meme* and Cybernetics proposes a new methodology in the analysis of Popular Music, that attempts to span these hitherto irresolvable dichotomies.

This paper takes the first steps in belatedly addressing Pop's enduring binomial by examining how musical taste evolves. We ascribe significance and value in the fluxional dialectic process of 'performance' at the micro-level, driving wider musical taste cultures at the meta-level, resulting in the cybernetic process driving the industry. What perceptually exists in the space between the musical and the extramusical and what are its possibilities within a burgeoning new paradigm of Popular Music scholarship?

James Mooney

Frameworks and Affordances: A Critical Approach to Music Technology Education

Abstract

This paper outlines a simple but powerful model for framing our interactions with technology. The study of music technology must involve a critical engagement with the technologies. In this paper I will present the 'frameworks and affordances' model as an effective way to achieve this pedagogical aim.

A 'framework' is any entity, construct, system, or paradigm that is used to realise musical output. The concept is deliberately broad, and includes physical objects such as instruments; pieces of software and hardware; general designations such as 'recorded sound' or 'synthesised sound'; and conceptual constructs such as 'Western classical notation.' Every framework offers up specific 'affordances' to its user and, therefore, engenders particular ways of working. Frameworks are not transparent, neutral, mediators of artistic expression, but exhibit certain intrinsic 'biases.'

In applying this model, the creative process is regarded as one in which a composer or performer works with (or within) a number of frameworks. When we seek to discover the affordances of each framework, we begin to understand the the creative process more critically. This method can be usefully applied as a way to help students of composition and performance reflect upon their work, and is also useful in the study of the aesthetics and the musicology of electronic music.

Adrian Moore
Dave Moore

Acousmatic Composition under version control

Abstract

Acousmatic composition begins with source material that is processed and reflected upon. Given a set of concrete sources and a set of build instructions it is theoretically possible to compile a composition from a limited number of critical initial sounds.

This is analogous to the build process for software. By modifying existing compositional tools such that decisions and parameters are recorded, we construct a set of build instructions that reproduce the finished work from original source. Using version control with this methodology to track and record development it is possible to explore a trace of the composition process and use some of the features of the latest version control systems such as branching, tagging and merging.

We demonstrate a methodology for composition that enables the composer to use version control effectively.

Paul Oliver

DIY Musicology: Rethinking the Musicological Concept

Abstract

Due to the technologisation of the music industries there has been a postmodern shift in the way that musicians think, feel and create their art. Musicology is no longer confined by traditional categorisations and historical exclusivity. The Internet has given local musicians the freedom to express themselves independently as well as allowing them to connect with others and become more visible on a global scale. Through this do-it-yourself (DIY) ethic, artists are able to manage their creative activities on a low budget, working under their own umbrella 'micro business' within small virtual and physical communities. The lines, within which local musicians work, have long become blurred as a result of people who are highly motivated pushing the boundaries of creativity by using the resources at-hand through creative activities, such as home recording, small-scale events, DIY art and self-publishing.

The aim of this paper is to help define the concept of DIY musicology in relation to local music scenes and DIY communities, demonstrated in the form of case studies.

The findings of this paper illustrate that various aspects of local music scenes provide a more accessible understanding of musicology, cherry-picking elements of ethnomusicology and popular musicology as a vehicle for developing DIY musicology, which is a single strand of a much broader musicology.

Roy Priest

The value of placements to undergraduate BSc (Hons) Music Technology students

Abstract

This paper explores the potential for learning of a placement year for students studying BSc (Hons) Music Technology at Birmingham City University. Following a mixed methods case study paradigm, material drawn from interviews and questionnaires was analysed along with the statistical analysis of individual student achievements in module results.

Issues addressed:

- How do students perceive the placement year?
- To what extent do students benefit from a placement year?
- How appropriate is the current approach to the assessment of the placement year in terms of maximising the learning experience?

Key findings:

Students and employers are very positive about the benefits of placements, in particular in terms of employability and networking. Although widely seen as beneficial to academic performance, statistical analysis comparing the marks of non-placement students with ex-placement students is inconclusive.

The current approach to the assessment of the placement year is seen as appropriate in terms of maximising the learning experience although improvements could be made. Research has highlighted the importance of reflective practice as a tool for deeper learning. The use of online tools for the sharing of placement experiences was perceived to be a useful area for further exploration.

Diana Salazar

Tackling the isolated learning experience and its potential impedance of creative engagement with music technology at HE level

Abstract

The presentation will consider some of the issues that arise from teaching composition with music technology at HE level in an era when students spend a significant proportion of time working independently at computer workstations. I will highlight some of the ways in which increased isolation in creative music technology degree programmes may impact on a student's development of compositional practice. In particular, it is proposed that the dependency of self-study and assessment of creative practice on isolated working environments may stifle rather than enable the development of creative skills.

I will examine how tackling the development of critical and communication skills may counteract the aforementioned issue, by promoting greater engagement and development of skills in musical composition. It will be proposed that via minor adjustments in curriculum, lecture content and assessment strategies, crucial skills of critical evaluation and self-reflection may be

embedded and reinforced. A number of examples will be drawn from my own teaching practice, outlining their potential benefits and challenges. Alongside this, I will identify some of the difficulties faced when facilitating such techniques in short lesson times with large groups, and this discussion will lead into the examination of online technologies as an alternative to classroom interaction.

Jo Saunders

Pupil perception of Classroom Music at Key Stage 3: Music, Technology and Me

Abstract

Interviews were carried out with Year 9 pupils (n=147), aged between 13 and 14 years old, that revealed patterns in their experiences of the music classroom and the activities they encountered as part of their last year of compulsory music education. The patterns in pupil response were used to describe seven types of musical engagement. Pupils (n=78) and their class teachers (n=3) completed rating scales that described their perception of (i) their own musical abilities and (ii) the skills set and/or knowledge base necessary for success at post-compulsory level music education (GCSE). The tendency for a pupil to engage with Key Stage 3 Music was linked to (i) the pupil-teacher relationship, (ii) perceived task-based competency, (iii) perception of risk, (iv) peer support and (v) the dominant school-based genre. This paper explores the part played by technology in the class-based experiences of pupils in relation to these five aspects. In addition, the potential impact of such experiences on both musical identity and

subsequent engagement in the learning process is considered.

Yu Tai Su

Understanding Young Children's Cognition of Musical Time from Steady Tempo to Ritardando

Abstract

The purpose of this study was to investigate how children responded to musical time from steady tempo to ritardando through an Alternative Instant Notation Program (AINP). Six years old Taiwanese children (N=12) participated in the study. The music excerpt started with steady tempo, and just before the end of the music, the tempo gradually decreasing. While listening to the music excerpt, participants were asked to count the beat by clicking a mouse which has been connected to AINP so that their clicking performance could be recorded as red and blue dots. The distance between two dots indicates the duration of the notes. Data included: (a) the first, second, and the last AINP records with each participant (N=36); and (b) researcher's field journal during employing the project. According to the analysis, the researcher found: (a) preparation and practice can equip children to familiar with the tempo of the music; (b) Children are able to aware the tempo gradually decreasing. Their response strategies included keep-the-same-beat, listen-reaction,

and fist-rolling; (c) children have multiple ways to define their own "beat", a beat as a quarter note, a half note, or an eighth note. Once they decide the duration of the beat, they are able to maintain the tempo through the end.

Jesús Tejada

The didactic elements of a computer program design for musical rhythm training

Abstract

This work in progress, part of a more comprehensive study, presents in form of poster the didactic elements of a computer program design for musical rhythm training (perception, production, and representation) at conservatories of music. First of all, it adopted a model of computer-program-based rhythm training (TACTUS) designed in an earlier study. This training model was prepared with several information sources: music education methods, teaching practice and conservatory teachers' opinions and perceptions. By means of a technical checklist obtained with this model, commercial rhythm training software was analyzed. The poster approaches several problems detected in the software. As consequence, a didactic design of a new computer program was carried out, which included new progressions (contents, didactic approach), activities, didactic devices, evaluation, user custom levels and technical characteristics, all of them elements from the TACTUS model. The software so designed intend to help professors at Conservatories to reinforce pupils' rhythm

skills; that is way, a new and different way from the conventionalisms offered at conservatories of music as a part of Solfège, which include perception-production and reading with real music (not generated by computer), visual helps, approach bottom-up, approach experimentation-symbolization, no conventional notation, customized evaluation, etc.

Iolanda Tobolcea

'Melotherapy' in correcting child rythm and fluency of speech

Abstract

The main objective of this study was the evaluation of the efficiency of using melotherapy, compared to the classical treatment techniques of children with rythm and fluency defficiences (stammering). Methodologically, the use of melotherapy was put in practice following a certain schedule, in a receptive, active or direct form, pursuing well defined objectives. Statistical software evidentiates significantly better results for the children in the experimental group, treated with melotherapy, compared with the witness group. The conclusions of the study presents the advantages of using melotherapy for correcting speech more efficiently and actively, and the positive influence it exerts on the personality development of the children under study.