CMMRlondon 2012
Music & Emotions

Music Programme

Wilton's Music Hall

Queen Mary University of London
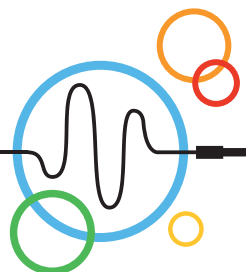
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New Resonances Festival at Wilton's Music Hall
19-22 June 2012

In partnership with the 9th International Symposium on
Computer Music Modeling and Retrieval (CMMR)
at Queen Mary, University of London

We are pleased that this year, for the first time, CMMR is partnering with Wilton's Music Hall in East London to present three evening concerts. These concerts take place at Wilton's during the CMMR conference on the evenings of 19, 20 and 22 June 2012. The concerts feature an exciting and diverse array of music selected and curated from over 70 submissions from around the world, making this year's New Resonances Festival marks the largest and most ambitious music programme yet for CMMR.

Tuesday night's concert (19 June) features music for piano and electronics. Highlights include the magnetic resonator piano, an electromagnetically-augmented acoustic grand piano using electromagnets inside the instrument to produce unusual new sounds; MuSA.RT, which creates live visualisations of tonal patterns including pitch, chord and key; Mimi, an interactive human-computer improvisation system; and a 21st-century mashup of Mozart and other Classical composers.

Wednesday night's concert (20 June) features pieces for live musicians and computer, including three striking and diverse pieces for solo performers with electronic sound, a piano trio synchronised with live video, a mixed instrumental quartet playing from scores generated algorithmically in real time based on principles of artificial life, and an improvised set for guitar, cello and synthesisers.

Friday night's concert (22 June) focuses on the expressive power of electronics in many contexts, ranging from dance to spoken word to rock music. The programme features two electroacoustic pieces for quadraphonic surround sound, a human-computer audiovisual improvisation based on chaotic dynamical models of convection, a piece for dancer with an electro-mechanical instrument and computer sound, a humorous (and true!) story for narrator and interactive typewriter, and an improvising quartet of vocalists whose performance is based on audience feedbacks from a specially-designed smartphone app. The evening will conclude with a performance from French rock band BBT ("La Belle, la Brute et le Truand") which includes novel wireless electronic drumsticks.

Additionally, **four interactive installations** are set up throughout the week around the Wilton's venue, including a virtual electronic ecosystem employing two screens and surround sound, interactive visualisation and sonification of biosensor data, a teapot that invites visitors to navigate the soundscapes of London's teahouses, and a musical ping-pong bat that pays tribute to Wilton's legacy of hosting ping-pong tournaments.

Wilton's Music Hall is the world's last surviving Grand Music Hall, and London's best kept secret. This stunning and atmospheric building is led by Frances Mayhew and produces an exciting programme of imaginative, diverse and distinct entertainment including theatre, music, comedy, cinema and cabaret. The building itself dates to 1743 or earlier, and concerts were presented in this space starting in 1839. After a period of closure in the mid-20th century, Wilton's reopened for concerts in 1997. In 2012 thanks to the generosity of SITA Trust, building refurbishments for Phase 1 of Wilton's Capital Project will begin.

The CMMR 2012 New Resonances Festival is one of the last events which will take place in the Grand Music Hall before its refurbishment this summer. We deeply thank Wilton's Artistic Director, Frances Mayhew, and Technical Director, Filippo De Capitani for making it possible, and for welcoming these new resonances within Wilton's walls. We hope you will enjoy this eclectic collection of pieces in this truly one-of-a-kind venue!

Andrew McPherson, Mathieu Barthet, Elaine Chew
CMMR 2012 Music Chairs and New Resonances Festival Curators

New Resonances Festival at Wilton's Music Hall

Concert 1: Tuesday 19 June 2012, 8pm

d'Amore, for viola and magnetic resonator piano   Andrew McPherson

     Bridget Carey, viola

Fantasy, for magnetic resonator piano   Jeff Snyder

     Lola Perrin, piano

Libby with MuSA_RT for piano and live tonal visualisation   Larsen/Chew/François

     Music from Libby Larsen's *Penta Metrics*
     Elaine Chew, piano / mathematical model
     Alexandre François, software development

<div align="center">--- Interval ---</div>

Mozart Reloaded, for piano and computer   Eduardo Miranda

     Lola Perrin, piano

Isaac with Mimi, interactive improvisation for pianist and computer   Isaac Schankler &
                                                            Alexandre François

     Mimi: Multi-modal Interaction for Musical Improvisation
     Designed by Alexandre François with input from Isaac Schankler, Dennis Thurmond
         and Elaine Chew
     Isaac Schankler, piano
     Alexandre François, software development

New Resonances Festival at Wilton's Music Hall

Concert 2: Wednesday 20 June 2012, 8pm

Responsorium, for soprano and computer Akira Takaoka

  Amanda Morrison, soprano

Cycling, for amplified flute Panayiotis Kokoras

  Carla Rees, flute

Livecell, for flute, clarinet, violin and cello with live score generation Kingsley Ash & Nikos Stavropoulos

  Carla Rees, flute
  Douglas Mitchell, clarinet
  Hilary Sturt, violin
  Ian Pressland, cello
  Kingsley Ash, computer

Rapsodia, for violin and electroacoustics Lidia Zielinska

  Hilary Sturt, violin

--- Interval ---

Tratado de imágenes, for violin, clarinet, piano and video Iñigo Giner Miranda

  Hilary Sturt, violin
  Douglas Mitchell, clarinet
  Iñigo Giner Miranda, piano

Lady Grey Experience, improvisation for ensemble and audiovisuals Lennie/Rosales/ Romeo

  Matías Lennie Bruno, electric guitar
  Eliana Rosales, cello
  Ernesto Romeo, synths

New Resonances Festival at Wilton's Music Hall

Concert 3: Friday 22 June 2012, 7pm

Atmospheric Railway, for dancer and computer	Di Mainstone & Adam Stark

      Hollie Miller, dancer
      Adam Stark, computer

Light and Sharpness, for 4-channel sound	Amanda Stuart
Time will tell, for 4-channel sound	Azumi Yokomizo
Slim Jim Choker, a recital in ten parts for speaker and interactive typewriter	Butch Rovan & Lucky Leone

      Lucky Leone, narrator
      Butch Rovan, interactive typewriter

<p align="center">--- Interval 1 ---</p>

Construction in Zhuangzi, for live audiovisuals	Ryo Ikeshiro

      Ryo Ikeshiro, audiovisuals

VoXP: Interactive Vocal Improvisation + Mood Conductor, for 4 singers and audience	Jamali/Adrione/Biaba/ Trouilloud/Barthet/ Fazekas/Georgi

      Sarah Jamali, voice
      Claire Trouilloud, voice
      Hervé Andrione, voice
      Landry Biaba, voice
      Mathieu Barthet, George Fazekas, Matthias Georgi, computers

<p align="center">--- Interval 2 ---</p>

BBT + Future Drums + Guests, Classic blues/rock set featuring augmented drumsticks with wireless technology	Medjane/Boro/ Niagara/ Kronland-Martinet/ Gondre

Farid Medjane, drums, vocals
Daniel Boro, guitar, vocals,
Niagara, bass, vocals
Richard Kronland-Martinet, Charles Gondre, computers

Media Installations at Wilton's (ongoing throughout week)

*Re:****Sitruuna ja meduusa*   Merja Nieminen &
                                                         James Andean

An audiovisual installation by visual artist Merja Nieminen and sound artist James Andean. The installation constructs a 'live' dynamic system, comprised of projected 3D graphics and projected sound, creating a virtual environment or ecosystem which changes and evolves in real-time. It explores the capacity of the spectator to create relationships – to build worlds – from multiple sensory information.

Cor Cordis   Clare Cullen &
                                                         Evan Morgan

Installation using wireless, wearable bio-sensors for interactive sonification and visualisation of processed physiological data. Up to four participants are asked to wear wireless sensor devices to monitor their heart rate and respiratory movements. This physiological data is processed in real-time to explore the dynamics of emotional and physiological covariance between participants during collaborative performance. This information is then mapped to a light sculpture which responds with real-time changes in light and sound, providing feedback to the audience and the performers.

Sound Mapping London Tea Houses   G.Hack
                                                         *(*Nela Brown, Ilze Black,
                                                         Alice Clifford, Kavin
                                                         Preethi Narasimhan,
                                                         Nicola Plant)

An interactive tabletop installation that invites visitors to navigate London through its contemporary tea culture. The soundscape recordings of different tea houses, made by members of G.Hack, are mapped to 33 London boroughs. By placing a technology enhanced glass teapot onto one of the boroughs, the soundscape from the corresponding tea house is played. The installation uses reacTIVision software to track the movement of the glass teapot. The map of London boroughs is constructed in Illustrator and made interactive in Processing, while corresponding sounds are driven by the interaction between reacTIVision and Max/MSP.

Musical Ping Pong Bat   Mathieu Barthet, Tadas
                                                         Sasnauskas, Adam
                                                         Whitfield

The first ever Musical Ping Pong Bat will be showcased in Wilton's Green Room letting table tennis players become music conductors in a mixed reality game.

Andrew McPherson: *d'Amore* for viola and magnetic resonator piano

The title *d'Amore* comes from the viola d'amore, a baroque instrument with six or seven bowed strings and an equal number of sympathetic strings. The sympathetic strings are not played by the performer at all but instead resonate sympathetically with the bowed strings, producing a warm tone with natural reverberation. In *d'Amore*, I use the magnetic resonator piano as a giant collection of sympathetic strings: notes played on the viola are sustained and reverberated by the piano strings, leaving behind perpetually-shifting harmonic clouds.

The viola soloist is differentiated from the resonance by an exaggerated vocal style of playing, emphasizing pitch bends, glissandos and microtonal inflections. In a way, this piece can be heard as a struggle between the individuality of the soloist and the mechanized nature of the resonance - a struggle which always resolves in favor of the soloist.

Andrew McPherson is Lecturer in Digital Media at Queen Mary, University of London, where he draws on his dual backgrounds in music and engineering to build new electronic instruments and work closely with performers and composers. As an undergrad at MIT, he was a double major in music and electrical engineering, studying composition with Peter Child, John Harbison and Charles Shadle and viola with Marcus Thompson. He completed an M.Eng. in 2005, working with Barry Vercoe at the MIT Media Lab. He finished his PhD in composition at Penn in 2009, where he studied with James Primosch and Jay Reise. He has attended the Tanglewood, Aspen and Cabrillo music festivals, and his music was featured on the 2010 Tanglewood Festival of Contemporary Music. His first CD, *Secrets of Antikythera*, will be released on Innova this year. He joined Queen Mary after two years as a post-doctoral researcher at Drexel University, where he worked with fellow MIT Media Lab alum Youngmoo Kim with support from the US National Science Foundation and Computing Research Association.

Jeff Snyder: *Fantasy* for magnetic resonator piano

Fantasy was written to explore MRP's microtonal possibilities, the notes between the traditionally playable notes on the piano. The form is primarily inspired by keyboard fantasies by John Bull and Orlando Gibbons, two of my favorite English composers from the Renaissance.

Jeff Snyder is a composer, improviser and instrument-designer living in New Jersey. He performs on analog modular synthesizer in duos with Sam Pluta and Eric Wubbels, and also leads a band as his electro-country alter ego Owen Lake. He holds a doctorate in music composition from Columbia University, and has a small business designing and manufacturing electronic musical instruments under the name Snyderphonics. He is currently the Technical Director of the Princeton University Electronic Music Studios, and the Associate Director of the Princeton Laptop Orchestra.

Elaine Chew, Libby Larsen, Alexandre François: *Libby with MuSA_RT*

This performance marks the concert debut of the MuSA_RT Mac App. Developed by Alexandre François, MuSA_RT animates a visual representation of tonal patterns – pitches, chords, and keys – in music as it is being performed. It applies music analysis algorithms based on Elaine Chew's Spiral Array model, which also provides the geometry for the visuals. MuSA_RT interprets MIDI information to determine pitch names, maintains and tracks short term and long term tonal contexts, each represented by a Centre of Effect (CE), and computes the closest triads and keys as the music unfolds in performance. In MuSA_RT, the virtual camera smoothly rotates to provide an unobstructed view of the current information. The release of the MuSA_RT Mac App is made possible in part by the US National Science Foundation.

Selections from Libby Larsen's *Penta Metrics* will follow a brief introduction to MuSA_RT illustrated by examples from JS Bach and PDQ Bach. These intermediate-level piano pieces are chosen especially for their illustrative use of musical scales. From the composer's notes:

I. This lighthearted movement explores the flow of the constant eighth-note within mixed meters. Taking its inspiration from the Bach two-part inventions, the piece features two voices moving in linear motion, with a legato touch throughout. The scales used are C major, D major, F major, F minor, Ab major, and Bb major.

III. This movement, in 7/8 meter, is a buoyant dance built around the repetition of a single rhythmic pattern: three beamed eight-notes, eight + eight-rest, eighth + eigth-rest. This rhythmic pattern is the basis for the melody - while the rhythm remains constant the notes constantly change. Scales used are Gb major, G mixolydian, E major, Ab major, C major, and Bb major.

Elaine Chew is a newly arrived Professor of Digital Media at Queen Mary, University of London, and Director of Music Initiatives at the Centre for Digital Music. An operations researcher and pianist by training, she conducts research on prosody in music performance - making explicit through mathematical models and scientific visualizations what it is that musicians do, how they do it, and why. She performs widely as soloist and chamber musician, often showcasing eclectic contemporary classical repertoire, and integrating music technology that explain music structures and decisions. She received PhD and SM degrees in Operations Research from MIT and a BAS in Music (distinction) and Mathematical & Computational Sciences (honors) from Stanford, and FTCL and LTCL diplomas from Trinity College, London. She has been a faculty member at the University of Southern California, and visiting faculty at Harvard and Lehigh Universities. She is the recipient of NSF Career and PECASE awards, and a Radcliffe Institute for Advanced Studies fellowship. Her performance of selections from Peter Child's *Doubles* is featured on a recent Albany CD of the same name.

Alexandre François is a researcher and software developer who has recently moved from Los Angeles to London. His research focuses on the modeling and design of interactive software systems as an enabling step towards understanding perception and cognition. He was a fellow at the Radcliffe Institute for Advanced Study, where he co-led a music research cluster on Analytical Listening through Interactive Visualization. He has taught software development as visiting faculty at Harvey Mudd College and Tufts University, and served as research faculty at the University of Southern California. François received the Diplôme d'Ingénieur from the Institut National Agronomique Paris-Grignon, the Diplôme d'Etudes Approfondies (M.S.) from the University Paris IX - Dauphine, and the M.S. and Ph.D. degrees in Computer Science from the University of Southern California.

Libby Larsen (b. 24 December 1950, Wilmington, Delaware) is one of America's most performed living composers. She has created a catalogue of over 400 works spanning virtually every genre from intimate vocal and chamber music to massive orchestral works and over twelve operas. Grammy Award winning and widely recorded, including over fifty CD's of her work, she is constantly sought after for commissions and premieres by major artists, ensembles, and orchestras around the world, and has established a permanent place for her works in the concert repertory. As a vigorous, articulate advocate for the music and musicians of our time, in 1973 Larsen co-founded the Minnesota Composers Forum, now the American Composer's Forum, which has become an invaluable aid for composers in a transitional time for American arts. A former holder of the Papamarkou Chair at John W. Kluge Center of the Library of Congress, Larsen has also held residencies with the Minnesota Orchestra, the Charlotte Symphony and the Colorado Symphony. ~ Official biography from libbylarsen.com

Eduardo Miranda: *Mozart Reloaded*

Mozart Reloaded revisits the legacy of Mozart piano sonatas by means of present-day compositional approaches. The piece draws from an eclectic sonic melting pot of classic, electronic and pop music ideas. The composer chopped up the recordings of ten Mozart piano sonatas into short musical shreds. With the aid of a computer, the composer shuffled and recombined selected musical shreds to form new musical material. A number of electroacoustic techniques were applied during the recombination process, creating unusual sonorities, such as a stuttering piano, DJ-like scratch effects, sound 'sausages', and 'noisification'. For the acoustic piano part, the composer drew inspiration from pieces by composers other than Mozart, which share musical fragments with his sonatas. Whereas the first movement includes elements from a Beethoven sonata, the second movement includes elements from the music of Gluck and Haydn. The third movement features elements from a J. S. Bach sonata and a prelude. Sampled Brazilian percussion instruments, pop rhythms, synthesized voice and chanting monkeys add elements of Miranda's own previous compositions, granting the piece his characteristic musical trademark. *(Notes by Luciane Cardasi)*

Eduardo Reck Miranda is a composer working at the crossroads of music, science and technology. His repertoire has been broadcast and performed at festivals and concerts worldwide, by renowned performers and ensembles such as Ian Pace, Frances M Lynch, Luciane Cardassi, Scottish Chamber Orchestra (SCO), Orquestra Sinfônica de Porto Alegre (OSPA), Ten Tors Orchestra and BBC Concert Orchestra. His album, *Mother Tongue* with a selection of electroacoustic works was also released by Sargasso.

Isaac Schankler, Alexandre François: *Isaac with Mimi*

This performance features an electroacoustic improvised duo between pianist Isaac Schankler and Mimi. Designed by Alexandre François with input from Elaine Chew and Schankler, Mimi is a multi-modal interactive musical improvisation system that explores the impact of visual feedback in performer-machine interaction. The Mimi system enables the performer to experiment with a unique blend of improvisation-like on-the-fly invention, composition-like planning and choreography, and expressive performance. Mimi's improvisations are created through a factor oracle, a data structure for efficient pattern matching. The visual interface gives the performer and the audience instantaneous and continuous information on the state of the oracle, its recombination strategy, the music to come, and that recently played. The performer controls when the system starts, stops, and learns, the playback volume, and the recombination rate. Mimi is not only an effective improvisation partner, it also provides a platform through which to interrogate the mental models necessary for successful improvisation.

Isaac Schankler is a composer, improviser, and researcher living in Los Angeles, California. His chamber opera *Light and Power,* commissioned by Juventas New Music Ensemble with assistance from Boston Opera Collaborative and Meet the Composer, recently won Second Place in the US National Opera Association's 2010-11 Opera Production Competition (Professional Division). Other recent honors include grants from the American Composers Forum, the USC Sadye J. Moss Composition Prize, an Associate Artist residency at the Atlantic Center for the Arts, and the Damien Top Prize in the ASCAP/Lotte Lehmann Foundation Art Song Competition. Isaac is the Artistic Director of the concert series People Inside Electronics, and Artist in Residence of the Music Computation and Cognition Laboratory (MuCoaCo) at the USC Viterbi School of Engineering, where he researches human-machine improvisation and musical structure. He holds degrees in composition from the USC Thornton School of Music (DMA) and the University of Michigan (MM, BM).

Akira Takaoka: *Responsorium*

I have always marveled at the mastery of Renaissance composers. Responsorium is my first attempt, modeled after Missa pro defunctis (1605) by late Renaissance Spanish composer Tomás Luis de Victoria (1548-1611), to build a rule system, or a compositional algorithm, that makes possible the integration of a plainchant melody into twelve-tone harmonies.

The piece consists of "Cantus" sections and contrasting "Versus" ones. While harmonies are rather static in the Cantus sections, pitch-class sets are constantly transformed in the Versus sections according to the pitches of the D-Dorian melody. As a result, the compositional algorithm explores the entire twelve-tone pitch space, brings about various implication-realization patterns by way of constantly changing combinations of pitch-classes "resolving" to different diatonic sets, and thereby gives rise to various emotional responses. All the voice leading and the transformations are strictly regulated by the rule system implemented in my own Java program. The program generated score files for the sound synthesis and processing software RTcmix, developed by Brad Garton. And its channel vocoder, phase vocoder, and various filter instruments, written by John Gibson, process the vocal sounds and produce all the synthesized sounds.

Akira Takaoka, born in Tokyo, Japan, is a composer and music theorist, currently Visiting Scholar at Columbia University in New York and Professor of Music at the College of the Arts, Tamagawa University in Tokyo, Japan, where he teaches composition, atonal theory, advanced chromatic harmony, counterpoint, computer music, algorithmic composition, and Java programming. He is also Lecturer and Research Associate at the Graduate School of Science and Engineering, Chuo University in Tokyo, Japan, where he teaches music theory and directs research projects on music information retrieval. His compositions have been selected for performance at major festivals and conferences such as those of ISCM World Music Days, SEAMUS, and ICMC. As a music theorist, he specializes in algorithmic composition, atonal theory, and methodological issues such as that of metaphor and has read papers at professional conferences such as those of ICMPC and SMPC, and ICMC. He received a BA and an MA in philosophy from Keio University, Tokyo, and an MA, an MPhil, and a PhD in music from Columbia University, New York, where he was a Fulbright scholar.

Panayiotis Kokoras: *Cycling*

Cycling for solo flute is written for flutist Mario Caroli to be premiered as part of the project 'L' Arsenal wants you!'. The piece requires a 'virtuosité du son' in order to reveal its musical ideas. The so called 'classical' ordinary flute sound is not used often, simply because is one possibility among several other the flute can produce. The compositional procedure is based on sound to sound structures as well as the transformation strategies from one to another. The composition through a delicate, detailed and accurate 'écriture du son' delivers its sonic language through notation. More than 100 sounds were connected on a note-to-note basis. The sounds were further articulated in the piece in order to achieve the virtuosity of the sound the piece required. The structure of the piece takes account a timbre classification algorithm developed Magix, which is defining proximity relationships among the sounds.

Panayiotis A. Kokoras (Greece, 1974) completed his musical training in composition and in classical guitar, in Athens. Afterwards, he continued in England where he obtained a Master and a PhD in composition at the University of York. He is currently teaching Electroacoustic Composition at the Aristotle University of Thessaloniki. He is founding member and president of the Hellenic Electroacoustic Music Composers Association (HELMCA). Panayiotis Kokoras' sound compositions develop functional classification and matching sound systems written on what he calls Holophonic Musical Texture. His compositional output consists of 50 works ranging from solo, ensemble and orchestral works to mixed media, improvisation and tape. His array of achievements includes

commissions from the FROMM (Harvard University), IRCAM (Paris), MATA (New York), IMEB (Bourges), ZKM (Karlsruhe) and 42 distinctions and prizes at international competitions among others Prix Ars Electronica 2011 (Austria), Métamorphoses 2010 & 2000 (Belgium), Giga-Hertz Music Award 2009 (Germany), Bourges 2009, 2008 and 2004 (France), Gianni Bergamo 2007 (Switzerland), Pierre Schaeffer 2005 (Italy), Musica Viva 2005 and 2002 (Portugal), Gaudeamus 2004 and 2003 (Holland), Jurgenson Competition 2003 (Russia), Takemitsu Composition Award 2002 (Japan). Moreover, his works have been selected by juries at more than 120 international call for music opportunities and performed in over 160 cities around the world. His music appears in 30 CD compilations by Miso Records, SAN / CEC, Independent Opposition Records, ICMC2004, LOSS, Host Artists Group, Dissonance Records, Musica Nova, Computer Music Journal (MIT Press) and others.

Kingsley Ash and Nikos Stavropoulos: *Livecell*

Livecell is a system for the interactive real-time composition and performance of music for ensemble with or without electronics. Users interact with a touch screen to create and destroy cells in a continuously evolving artificial life simulation based on cellular automata. The state of these cells is continuously translated into a musical score, which is then transmitted over the network to the musicians' laptops to be performed by the string quartet live as it appears on their screens. Different areas of the interface correspond to the different instruments in the string quartet, and cells are able to grow and move between these areas allowing the composition and the instrumentation to evolve both under the direction of the user and with the natural evolution of the cells. Users are able to determine and change the rules used in the cell evolution calculations, as well as affect the form, rhythm and harmonic colour of the musical material produced. Through the system a single user can take on the roles of both composer, conductor and improviser to determine the textures, harmonies, tempo and other musical parameters of the emerging composition, mediated by the technology and performed live by the string quartet. The musical output is complex and the result of a careful balance between the influence of the user and the calculations of the algorithm, resulting in a very engaging experience for the user, performers and listeners alike.

Nikos Stavropoulos studied at the National School of Music and Nakas conservatoire in Greece. He graduated from the University of Wales with an MMus in electroacoustic composition and in 2005 completed a PhD at the University of Sheffield Sound Studios. His works range from instrumental to tape and mixed media, including compositions for video and dance. His music has been awarded prizes at numerous international competitions. In 2006 he joined the Music, Sound & Performance Group at Leeds Metropolitan University.

Kingsley Ash is a composer and performer of electronic music specialising in interactive computer music systems. He has performed in venues across Europe and the USA, with recent work at the International Computer Music Conference, Pixilerations Festival and the BBC Radio 3 Free Thinking Festival. Kingsley studied Astrophysics at Manchester University and is currently working in the Music, Sound and Performance Group at Leeds Metropolitan University.

Lidia Zielińska: *Rapsodia*

Rapsodia is a 10-minute piece composed in 2004 for my daughter and originated in man's plain need for rhapsodic expression. The piece was commissioned by the Edmonton Composers' Society (Canada). My daughter Anna Zielinska was the first performer within her ElectromAnia Project during the Gelderse Muziek Zomer Festival (Netherland) in August 2004.

Lidia Zielińska (*1953) is a Polish composer. She studied composition at the State Higher School of Music in Poznan. She participated in numerous courses in composition and electronic music in Poland and abroad ("Musicultura" in Breukelen, Max Deutsch Symphonic Workshop in Paris, courses organized by IRCAM in Krakow and by the Polish Section of the ISCM in Rydzyna and Wzdow).

She also played the violin in the Poznan Philharmonic Orchestra and the Agnieszka Duczmal's Amadeus Chamber Orchestra of Polish Radio. Her works have been performed in dozen countries of Europe, Asia, Oceania and both Americas. She is a prize winner of 17 awards of composition contests (1st prizes: Jeunesses Musicales, Belgrade 1979; Internationale Wettbewerb für Komponistinnen, Mannheim 1981; ZAIKS, Warszawa 1982; The Max Deutsch Contest, Paris 1984, Künstlerhaus, Boswil 1986; L'Opera autrement, Avignon 1988). In 2007 Lidia Zielinska was honoured with the Polish Composers' Union Award for Outstanding Compositional Achievements. She has extensively written and lectured on contemporary Polish music, electroacoustic music, the history of experimental music, sound ecology and traditional Japanese music at various universities in Europe, Asia, South America, Australia, New Zealand, Manggha Centre of Japanese Art and Technology in Cracov, Centre for Contemporary Art in Warsaw, World Forum for Acoustic Ecology in Stockholm and Peterborough, as well as numerous academic sessions in Poland and abroad. She has taught and given summer courses, seminars and workshops in Poland, Belarus, Canada, Chile, Croatia, France, Germany, Holland, Japan, Moldova, Russia, Sweden and Switzerland. She is a juror, curator, expert and consultant of various musical, intermedial and educational activities in different European countries, including Eastern Europe, and The European Union units. She is a vice-president of the Polish Composers' Union and a vice-president of the PSeME - Polish Society for Electroacoustic Music. She was a member of the Repertoire Committee of the Warsaw Autumn Festival (1989-92 and 1996-2005), as well as the Artistic Director of the 'Poznan Musical Spring' Festival of Polish Contemporary Music (1989-92) and of the 'Child and Sound' International Festival in Poznan, a member of the Programme Committee of the ISCM World Music Days in Warsaw (1990-92) and the Polish-German 'Radio_Copernicus' (2004-06). Lidia Zielinska is a professor of composition and the director of the SMEAMuz Electroacoustic Music Studio at the Music Academy in Poznan.

Iñigo Giner Miranda: *Tratado de imágenes*

Tratado de imágenes ("Image treaty") -2009- is a piece for live trio -violin, clarinet, piano- and video track. It is a practical research on the possible relationships between sound and image, explored from a joint approach: sound was not considered to be something external to the image, nor was image complementary to the sound. The artistic intention behind this work is for both images and sounds to build the musical context together, instead of thinking one of them purely as a translation (or embellishment) of the other. Synchrony is therefore used exhaustively in the piece, as it is a powerful means of uniting the different media. This type of relation called for a composition process which would allow the composer to have a complete overview of all materials, and not just the sounding materials and a vague impression of the visual elements. The video track of the piece was therefore also prepared by the composer, comprising a series of excerpts from experimental 1920's-30's videos (La retour a la raison -Man Ray-, Ballet mécanique -Ferdinand Leger- and Regen -Joris Ivens-) as well as original images. All images either are or verge on the abstract, and thus favour a relationship with the music built on equal terms, where the visual can behave "musically", so to speak. At the same time the images used all present a different inner grammar, so to speak, that favours certain relations with the music, while hindering others. Thus, while the general relation of synchrony remains more or less unaffected for the whole piece, the actual relationships between both media vary according to the context proposed by both sounds and the image in every section.

Iñigo Giner Miranda was born in 1980 in Bilbao (Spain). He studied piano under the direction of Albert Nieto in Vitoria, then moved to Amsterdam in 2002, where he pursued his composition studies with Wim Henderickx as his main teacher, with a grant from basque government. He later completed his Master studies at the UdK Berlin with Elena Mendoza, researching on the implementation of extramusical materials in the musical discourse, a project for which he received a DAAD / la Caixa scholarship. He has received several prizes and distinctions in different competitions (among which the Injuve competition -Spain-, and the Hanns Eisler Prize -Germany-) and received commissions from different festivals and ensembles (such as Münchener Musiktheater Biennale 2012 or the Alicante Festival 2011). His work explores the inclusion of other disciplines and non-sounding

materials to conform the musical discourse. He is equally active as a pianist in the field of Musiktheater, performing at venues like Schauspielhaus Zürich, HAU Berlin or Teatro Real among others, and is a founding member of the interdisciplinary ensemble Die Ordnung der Dinge.

Matías Lennie Bruno, Ernesto Romeo and Eliana Rosales: *Lady Grey Experience*

Lady Grey Experience is a live electroacoustic performance, improvised with different compositional techniques and sound material specifically developed to generate emotional -spontaneous and undirected- responses in the participating public: diatonic sounds, tempered, not tempered and harmonic tuning scales, noise, inharmonic spectrums, audio clusters, etc. Additionally, a visual installation will be projected, generated automatically with the interactive participation of public, telling us what kinds of emotions generates each track to them through social network Twitter.

Ernesto Romeo. Born in 1968 in Buenos Aires. He is a composer, keyboard player and synthesizers performer. In 1988 he founded the electronic music group Klauss and in 2011 established a duo with the cellist Eliana Rosales. He performed concerts in Buenos Aires, Madrid, New York, Rio de Janeiro, Bogotá, Barcelona, Pretoria and Montevideo. He was part of the Tango Venus Tour in Japan, and he won the Gardel award for the live album in Tokyo "La vida y la tempestad". His CD "TangoNuevo 2.1" was nominated for the Latin Grammy Awards. He joined several rock bands as Espíritu, Pez and Cinerama, and several experimental music projects. He also composed music for art exhibitions, audiovisuals and art ś installations. He wrote, directed and performed live music for the show "Machitún" at National Arts Festival, South Africa. He worked with groups and artists like La Organización Negra, John Medeski, Marielouise Alemann, Babasónicos, MMW, Leopoldo Federico, Los Natas, Néstor Marconi, Gustavo Galuppo, NDI, Mariela Yeregui, Poseidótica, etc. Actually, he teaches at the Universidad Nacional de Tres de Febrero (UNTreF) and the ORT Technical School, being author of the curricula of the Electroacoustic Arts and he was coordinator for this schedule in the ORT Institute of Technology. He is studying for a Master in Technology and Aesthetics in Electronic Arts at UNTreF. www.klauss.com.ar

Eliana Rosales. Born in 1988 in Catamarca. She is a cellist and electroacoustic composer and audiovisual realizator. She presented his piece "Memoria de un espacio" in Concierto Imaginario 2011 at the Recoleta Cultural Center. She formed a duo of electroacoustic music in real time with Ernesto Romeo, appearing at festivals of contemporary music (Búsquedas Sonoras 2011, Universidad Nacional de General Sarmiento, Buenos Aires; CORAT 2011, Universidád de Córdoba), cultural spaces (Tecnópolis; Casa de la Cultura de San Javier) and several art galleries. She directed music videos for the installation "Tecnópolis Sonora / Casa de Sonidos" at Technopolis 2011. She also composed the soundtrack for the TV cycle "Microbio" at Canal Encuentro. She studies Electronic Arts at the National University of Tres de Febrero. www.myspace.com/elianarosalesmusica

Matías Lennie Bruno. Born in 1980 in Sao Paulo, among his latest works as a musician and producer, are: Official representative of Creative Commons in Argentina. Responsible for digital communication of Tecnopolis joven, music festival with the participation of major bands of Argentina. Creator of RedPanal, a web collaborative music community with more than 4000 members, 10,000 direct followers on social networks and presence in the mass print media, shown in events, seminars and workshops nationally and internationally, such as MediaLab-Prado Spain, World Social Forum Brazil, Webprendedor 2009 Chile, ArtFutura2010 and numerous events throughout Argentina. RP is a winner project of Buenos Aires.

Emprende 2008 program, with institutional support from Ministerio de Ciencia y Tecnología de la Nación, Secretaría de Cultura de la Nación, Embajada de Argentina en España, British Council and Agencia Española de Cooperación Internacional. The project was also pre-selected in International Young Music Entrepreneurship, LaRedInnova and TechCrunch.

Di Mainstone, Adam Stark: *Atmospheric Railway*

Di Mainstone and Adam Stark were commissioned to create this performance for an event at The National Portrait Gallery. This wearable interactive electro-mechanical instrument titled 'Atmospheric Railway' was inspired by a portrait of 19th Century civil engineer Isambard Kingdom Brunel, who was famed for constructing engineering icons such as Clifton Suspension Bridge and the Great Western Railway.

Whilst investigating his portfolio of work, the duo were mesmerized by the mysterious and unresolved Atmospheric Railway. This novel mode of travel involved carriages propelled by air pressure in pneumatic tubes. Brunel's visionary design was blighted with problems and was eventually closed after rats nibbled away at the seals that kept the carriage-cylinder airtight. Sadly, this was the end for Brunel's 'atmospheric caper' a project that many felt was too costly and outlandish. Aside from the novelty of this concept, Di and Adam were drawn to the word combination 'Atmospheric Railway', which they felt conjured up a contrast of heavy industry versus otherworldly magic. Inspired, they began the construction of an electro-mechanical instrument of the same name. This device creates atmospheric soundscapes, which are activated by the journey of traveling objects (ball bearings) through a system of tubes. The bearings ricochet off bells causing them to chime. The resulting sounds are harvested (via microphones) and fed back into the room as a series of atmospheric echoes. The user (or movician) can then sculpt the pitch, mood and intensity of the resulting soundscape through the manipulation of a soft module, which is embedded with movement sensors. The performance promises to provide the audience with an unforgettable and enthralling journey through sound. For more information on the Atmospheric Railway performance contact Di and Adam.

During the performance, our dancer Hollie Miller will be inhabiting the work. Using travel as a metaphor for the life cycle of Isambard Kingdom Brunel, the performance will take the audience on a visual and sonic journey. The adventure begins from birth and the opening of a traveling wardrobe. Strange otherworldly objects are extracted one by one, each representing a different vital organ and memory in Brunel's life cycle.

Di Mainstone creates body-centric sculptures, designed to initiate movement and storytelling. Many of these wearable artefacts are inspired by technology. Some of them release sound when handled. Often, they can be modified to create new silhouettes, environments and functionalities. All of them tell a story.

Di's body-centric devices have been performed at home and abroad, most notably at The V&A, The Barbican, The National Portrait Gallery, Eyebeam NYC and the Swedish National Touring Theatre. Each happening is unique, revealing openings for audience and performer encounters. Di's work can also be seen in films, which she writes and directs.

Di's studio can be found up a windy stairway, amidst the reclaimed tube trains that roost on top of Shoreditch's Village Underground. Here her sculptural adornments are brought to life with dancers and musicians. As Artist in Residence at Queen Mary University, Di collaborates with Scientists to incorporate new technology into her body-centric creations.

Adam Stark is a researcher at the Centre for Digital Music at Queen Mary University of London. He has written a PhD on using digital technologies to create new forms of interaction in live music performances and art installations. He has worked with artists including Di Mainstone, Imogen Heap and Sarah Nicolls. He is also co-founder of interactive arts technology studio Codasign and performs regularly as a musician, using interactive technology as part of a six-piece instrumental band.

Amanda Stuart: *Light and Sharpness*

This electronic piece was inspired by the painting "Light and Sharpness" by Paul Klee (1935). Klee analysed musical composition methods and translated them into "polyphony painting". In this piece I have reversed this process in the way I took inspiration from the colours and shapes of his work to directly affect the sounds and structure of the piece.

Klee uses a limited palette of 4 colours. I chose two percussion instruments for each colour and two to create the pointillist effect: Orange - Finger Cymbal, Wind Chimes; Pink - 2 Glockenspiel samples; Yellow - Wood Block and Guiro; Light Blue - Djembe and Low Tom. Pointillism - Rainstick, Maracas. These were recorded and transformed into 36 samples using such programs as Metasynth (where the picture itself was used to transform the samples), and High C (where the shapes within the picture dictated the contour of the sound). The timings and hit points of the piece correlate directly to the size and shapes of the picture.

Amanda Stuart's varied commissions include compositions for the London Festival Orchestra (Composer in Residence for the Cambridge Festival), BskyB (Sky By Day Morning Chat Show), Anglia TV and BT. After being the Performing Rights Society Composer and Music Animateur for the City of Peterborough, Amanda took a parenting break. She is now back studying for her Masters in Creative Music Technology at the Royal Welsh College of Music and Drama. Her passions are writing for image – stills, videos, film, animation, dance and theatre.

Azumi Yokomizo: *Time will tell*

"Time will tell" means that sooner or later something will become known or be revealed. We can feel a variety of sounds, as the time carries the hidden facts. I composed this work using pre-recorded sound material such a flow of water, a toy guitar, a festival music (played on traditional Japanese instruments) and some of the bells differing in pitch. In addition, there were synthesized using Max/MSP and Audio Sculpt.

Azumi Yokomizo (b. 1987) is a Japanese composer. She studied composition and computer music under Yuriko Kojima at Shobi University and received her master's degree in composition from the Graduate School of Informatics for Arts of the university in Japan. Additionally, she is currently enrolled in Toho Gakuen College Music Department.

Her works have been accepted by International Computer Music Conference (2010 /New York, 2012/Ljubljana), Spark Festival (2010/Minnesota), Asia Computer Music Project (2011/Tokyo), Ars Musica (2012/Brussels) and Computer Music Modeling and Retrieval (2012/London). She is a student member of International Computer Music Association and Japanese Society for Sonic Arts, and has been awarded a scholarship by the Roland Foundation for 2010 school year.

Butch Rovan and Lucky Leone: *Slim Jim Choker*

1. The Typing
2. The Endings
3. The Haiku
4. The Actions
5. The Story, part 1
6. The Nouns
7. The Reverse
8. The Story, part 2
9. The Consonants
10. The Poem

Slim Jim Choker is based on an absurd but true story about an unusual event that takes place one summer night. The content of the brief story is represented from a variety of perspectives in the ten movements, each of which reflects on the materiality of the telling.

The typewriter itself plays a role, producing in its sounds an alternative text that interrupts and counterpoints the speaking voice. The main interactive interface – an augmented vintage typewriter – controls real-time processing and synthesis.

Butch Rovan is a composer/performer at Brown University, where he co-directs MEME (Multimedia & Electronic Music Experiments). Prior to joining Brown he directed CEMI at the University of North Texas, and was a *compositeur en recherche* at IRCAM.

Rovan has received prizes from the Bourges International Electroacoustic Music Competition, the Berlin Transmediale International Media Arts Festival, and his work has been performed throughout Europe and the U.S. His research has been featured in *Trends in Gestural Control of Music* (IRCAM 2000), and appears in the book *Mapping Landscapes for Performance as Research: Scholarly Acts and Creative Cartographies* (Palgrave Macmillan 2009).

Lucky Leone is a professional artist whose work ranges from Sculpture to Painting to Video to works that use elements from all three disciplines. Lucky employs humor is almost all of his work, and is especially interested in pieces that work on many levels.

Lucky Leone received a BFA and an MFA from the Rhode Island School of Design and an MFA from San Diego State University. Lucky has exhibited widely, mostly in academic galleries and museums. Lucky currently teaches interactive art and robotics at the Rhode Island School of Design

Ryo Ikeshiro: *Construction in Zhuangzi*

Construction in Zhuangzi is a simultaneous sonification and visualisation of a modified Lorenz dynamical system, a three-dimensional model of convection that is nonlinear, chaotic and sensitive to initial conditions. It is implemented in Max/MSP/Jitter. A performance takes the form of an improvisation on a set of instructions involving the modification of parameters of the dynamical system, these human interactions being indicated by momentary colour-inversions. The real-time, generative audiovisuals establish a perceptual feedback loop between the performer and the near-autonomous algorithm, or perhaps a duet/duel between these two elements due to the 'butterfly effect' and the emergent behaviour of the dynamical system.

This also yields interesting results as audio, either as signal data in nonstandard synthesis or control data such as rhythm, pitch and panning (no pre-recorded samples or conventional oscillators are used apart from sine waves) and as OpenGL 3D visuals. Being representations of the same data source, coherence between these two domains are maintained without either being subservient to the other as it is neither the audio triggering the visuals nor vice versa as is often the case. The outcome is an integrated audiovisual, real-time, generative, interactive and live performance.

Ryo Ikeshiro is a London-based electronic and acoustic musician working in the fields of audiovisual composition, improvisation, interactive installations, soundtracks and theory. He graduated from Kings College London and Cambridge; he is currently studying for a PhD in studio composition at Goldsmiths College. He has presented work at: Sound Travels (NAISA), Toronto; Redsonic, London; Seeing Sound 2, Bath; Xenakis International Symposium 2011, London; CONTEMPORANEA 2011 Festival di Nuova Musica, Udine; ICMC10, New York; re:new 2010, Copenhagen. As an events organiser, he runs a series entitled ABA. He is also a visiting tutor.

Website: www.ryoikeshiro.com

Sarah Jamali, Herve Adrione, Landry Biaba, Claire Trouilloud, Mathieu Barthet, George Fazekas, Matthias Georgi: *VoXP: Interactive Vocal Improvisation + Mood Conductor*

VoXP is "musical laboratory" composed of four musicians, vocalists/performers (Sarah Jamali, Herve Adrione, Landry Biaba, Claire Trouilloud**)**, from different cultural and musical origins. Using the various sounds from their voices, they create a totally improvised music, from experimental noise music to a strange unknown melody. During the VoXP performance, members of the audience will be able to interact with the performers by sending them some emotion-related directions using the web application Mood Conductor. Mood Conductor was developed by researchers and software developers Mathieu Barthet, George Fazekas (Queen Mary University of London) and Matthias Georgi (SoundCloud). Mood Conductor can run on smartphones, allowing its use in concert halls and venues with wireless networks.

The following WIFI network is available for public use at Wilton's:
WIFI network name: Mahogany Bar
Password: savewiltons
Mood Conductor web application URL: http://isophonics.net/content/moodconductor
(Click on the "**Start Mood Conducto**r" button to launch the application. Please don't forget to set your smartphone to the silent mode).

Music improvisation is a spontaneous phenomenon, a perpetual dialogue with the moment, constantly evolving. It is also an infinite field of experimentation. The voice, due to its physiological and acoustical bases, and its communicative role, is a fundamental instrument for emotional expression. If numerous studies have been conducted on music emotions and vocal expression, only few works have focused on *improvised* music so far. "VoXP" is a free improvising vocal band. It experiments the possible intersections between music and the audience using different approaches and tools. What types of emotions are received and elicited in the audience? Is there a close correlation with what singers feel? How different is the emotional impact of improvised music between live performances and recordings? These are some of the questions "VoXP" addresses with an artistic perspective. The VoXP + Mood Conductor performance will explore the relationships between performers and audience, in an interactive way.

Mathieu Barthet started musical acoustics ten years ago in Paris at the research centre Lutheries Acoustique Musique (CNRS, Pierre et Marie Curie University). After his PhD thesis on expressive music performance and timbre at the Laboratoire de Mécanique et d'Acoustique (CNRS, Marseille, France), he joined the Centre for Digital Music at Queen Mary University of London. He currently collaborates with the BBC and I Like Music to develop new emotion-based music recommendation platforms for audio/visual post production. He is also a regular music "hacker" and developed several music applications: Hotttabs, a guitar tuition web service, SonicMuse, a music score visualiser (at the Music Hack Days in London, Barcelona and Cannes), as well as the Musical Ping Pong Bat, showcased at Wilton's for the first time (CMMR 2012 installation). He is the General Chair of the 9th International Symposium on Computer Music Modeling and Retrieval "Music and Emotions" (CMMR 2012) held at Queen Mary and Wilton's Music Hall on 19-22 June 2012.

György Fazekas is a post-doctoral research assistant at Queen Mary University of London, working at the Centre for Digital Music (C4DM), School of Electronic Engineering and Computer Science. His main research interest includes Semantic Web technologies and the development of semantic audio technologies and their application to creative music production.

Matthias Georgi is a musician and programmer trying to combine these two interests in the most exciting ways since 20 years. During his day job he builds backend systems for SoundCloud.

Farid Medjane, Daniel Boro, Niagara & Richard Kronland-Martinet, Charles Gondre:
BBT + Future Drums + Guests

French Rock band **BBT** ("La Belle, la Brute et le Truand") is composed of drummer Farid Medjane, guitarist Daniel Boro, and bassist/singer Niagara. BBT will showcase the Future Drums' instrument developed by Richard Kronland-Martinet and his team at the CNRS – Laboratoire de Mécanique et d'Acoustique (Marseille, France). The Future Drums augment traditional drum playing techniques by letting drummers play remotely from the drum kit, thanks to drumsticks equipped with wireless technology.

Farid Medjane is currently one of the best rock drummers in France. He brings together an extraordinarily precise and powerful drumming style with a great sense of showmanship and communication with the audience. Farid is the drummer with the French hard rock band Trust (more than 4 million records sold). He also plays in The Chris George Band, who are endorsees of Marshall amplifiers and represent the brand at the world's leading trade fair for musical instruments Musikmesse, and on their international tours and musical clinics.

Farid Medjane launched his career as a drummer when he joined the Norwegian hard rock band TNT in 1982. He acted in the television series "The Last Five Minutes" (Gérard Gozlan), playing the role of a musician. He was then recruited in 1983 by the Océan band, with which he toured and recorded an LP entitled "Spécial Polar". The same year, Farid joined the band Trust for their "Hundred Days" tour. Before the band eventually split up he recorded the album "Rock N Roll" with Trust in Switzerland.

Farid was then recruited by Eric Lévi (ERA Musical Project, more than 12 million albums sold). He moved to New York, formed the band "Paris" and recorded an album there. After three years of performing throughout the United States, Farid was invited back by the manager of Trust to play on the live album "Paris By Night" (Bercy Sports Arena, Paris). The Trust tour that followed gave birth to the album "Pending". In 1990 Farid started his own band Face To Face and recorded the album of the same name in 1992 with ex-Trust Frédéric Guillemet on bass. Farid was then spotted by the famous French bassist Jannick Top (Magma), who invited him to play drums for Michel Berger, one of the most popular French singer-songwriters of the 1970s and 1980s.

Farid is currently back playing with Trust since their regrouping in 2006 and continues to tour regularly with The Chris George Band. He collaborates with many musicians including Mohamed Chemlak (ex-guitarist from Trust), Emmanuel Ducloux (bass), and Eric Traissard (guitar). He also started a teaching project and was involved in the development of successful study methods for drums, bass, and guitar. He has given many drum master classes in various music schools (e.g. Institut des Musiques d'Aujourd'hui, Metz), and festivals. In keeping with his innovative spirit, Farid developed a live solo show in European discos and beyond, in which either alone or accompanied by a DJ, he gives an highly original mind-blowing performance.

He recently started the band **BBT** ("La Belle, la Brute et le Truand") in the tradition of classic English blues-rock with Boro (alias "Dan Rock") on guitar and Niagara, a tremendous bassist/singer.

<u>**Detailed Notes for Installations**</u>

Merja Nieminen and James Andean: *Re:****Sitruuna ja meduusa*

Re:****Sitruuna ja meduusa is an audiovisual installation by visual artist Merja Nieminen and sound artist James Andean. The installation constructs a 'live' dynamic system, comprised of projected 3D graphics and projected sound, creating a virtual environment or ecosystem which changes and evolves in real-time. It explores the capacity of the spectator to create relationships – to build worlds – from multiple sensory information.

The completed work runs live in the Processing and MaxMSP programming environments. The visuals are constantly being freshly generated by Processing, and output to two projectors in the gallery space; being live, the work never presents the same scene twice – each and every visual moment is entirely unique. The sound consists of banks of prepared soundfiles, multiply triggered by MaxMSP, and diffused in the gallery using a system of ten loudspeakers plus subwoofer. Max analyses its various audio outputs, and sends information on envelope and spectral content to Processing, which uses this data to control the motion and movement of the projected visuals.

These relationships are kept in a delicate balance between clarity and obscurity. Are visible behaviours triggered and controlled by sound, or do their behaviours create sound? Are we listening to their actions, or are we watching them respond to the sounds of their environment? This projected universe operates on its own laws; familiar, but somehow elusive. These laws appear to be based in sound, or to emit sound: objects turn; the projected world turns... while sound events strike, scurry past, or resonate...

Clare Cullen and Evan Morgan: *Cor Cordis*

Cor Cordis is a four-channel installation work using wireless, wearable bio-sensors for interactive sonification and visualisation of processed physiological data. Up to four participants are asked to wear wireless sensor devices to monitor their heart rate and respiratory movements. This physiological data is processed in real-time to explore the dynamics of emotional and physiological covariance between participants during collaborative performance. This information is then mapped to a light sculpture which responds with real-time changes in light and sound, providing feedback to the audience and the performers.

The real-time audio environment is a generative 'audible ecosystem'1 measuring and highlighting the interrelationships between the performers, the space, the audience and the technology. It is a self-organising system, which instigates changes in the music when it recognises patterns and variations in the biofeedback of the participants.

The work explores to what extent physiological phenomena can be used to develop or enhance collaborative performances, allowing participants to 'engineer' changes through breathing and heart-rate which trigger musical events, working together to harmonise the system, or causing it to break down.

Mathieu Barthet, Tadas Sasnauskas and Adam Whitfield: *Musical Ping Pong Bat*

Come and try the first ever Musical Ping Pong Bat in Wilton's Green Room and become a music conductor while playing ping-pong! The Musical Ping Pong Bat embeds Arduino technology and sensors which transmit information on players' gestures and rhythm to a computer via Bluetooth. The data is processed using Cycling'74 Max/MSP and Ableton Live to trigger sounds and/or control musical variables such as tempo in real time. The faster table tennis players play, the faster the music is! Demonstrations of the Musical Ping Pong Bat will be given on Wednesday 20th and Friday 22nd June with table tennis player and coach Olav Stahl.

Mathieu Barthet is a researcher in music informatics and music perception working at the Centre for Digital Music at Queen Mary University of London. Regular music hacker (Hotttabs, SonicMuse, Mood Conductor), he is also passionate about table tennis since his teenage years thanks to his Dad, and currently plays in London's Central League. He is the General Chair of the 9th International Symposium on Computer Music Modeling and Retrieval "Music and Emotions" (CMMR 2012) held at Queen Mary and Wilton's Music Hall on 19-22 June 2012.

Tadas Sasnauskas is a software engineer with a passion for space and cats.

Adam Whitfield is an osteopath and musician who studied ethnomusicology at SOAS, during which time he did ethnographic music research in Zimbabwe with assistance from the National Sound Archive. He plays drums and mbira, and his interest in woodwork and music are reflected in this project.
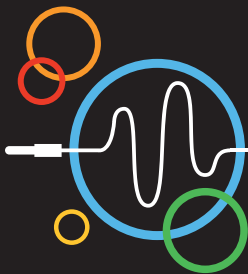
www.wiltons.org.uk

www.cmmr2012.eecs.qmul.ac.uk