THE
MUSICAL
METACREATION
WEEKEND

Sydney, 15 - 16 June 2013

Improvising Algorithms
The Old Darlington School
Saturday 15th June: 5.30pm

Oliver Bown, *Zamyatin*
In a duet with Roger Dean (piano)

Zamyatin is a simple improvising system that has been creatively hacked together by its maker in a bricolage manner. It is part of an ongoing study into software systems that act in performance contexts with autonomous qualities. The system comprises an audio analysis layer, an inner control system exhibiting a form of complex dynamical behaviour, and a set of "composed" output modules that respond to the patterned output from the dynamical system. The inner systems consists of a bespoke "Decision Tree" that is built to feed back on itself, maintaining both a responsive behaviour to the outside world and a generative behaviour, driven by its own internal activity. The system has been tweaked to find interesting degrees of interaction between this responsivity and internal generativity, and then 'sonified' through the composition of different output modules. Zamyatin's name derives from the Russian author whose dystopian vision included machines for systematic composition, that removed the savagery of human performance from music. Did he ever imagine the computer music free-improv of the early 21st Century?

Oliver Bown is a researcher, programmer and electronic music maker. His research is concerned with creative computing (the tools and programming languages that enable the production of creative outputs), computational creativity (the modelling of creative processes using software) and the social role and evolutionary origins of music.

Oliver Hancock, *echo-system*
In a duet with Adrian Lim-Klumpes (prepared piano)

This is a group of computer agents, each one acting as a delay, and basing its playback on the rhythms of the live improviser, and all the other agents in the system. Together they behave like chorusing insects or frogs, with some degree of irregularity and unpredictability. Broadly the system matches the activity of the improviser, but it can blossom and race unexpectedly, carry on alone in a lull, or leave the improviser to play in relative isolation.

Oliver Hancock is an algorithmic composer working with creative technologies as well as conventional instruments. He lectures at Leeds College of Music and Edge Hill University, and directs LOLCoM: the Laptop Orchestra of Leeds College of Music.

His pieces are inspired by nature and the characteristic qualities of natural forms: irregularity, variability, self-similarity, and organic patterns of change.

These are explored algorithmically using ideas from the study of dynamic systems. His focus is systems *in the musical domain*. That is: systems with sounds as the basic elements; and perceptible sonic concerns governing their interactions. A recent interest is the potential range of human interaction with these largely autonomous systems.

His works include *Three Tolkien Miniatures*, released on the Contemporary Canterbury CD; *Stranger Dances* for solo piano, premiered by Ian Pace at the York Late Music Festival; and *chor-respondent*, a live algorithm presented to date by Finn Peters, Adrian Sherriff and Chris Sharkey. His latest piece *Surface to Air* for laptop ensemble was performed at the IFIMPaC Festival in Leeds in December. He is a lifetime member of the international vocal ensemble The 17 and has been described as 'the coolest gong player in New Zealand'.

Bill Hsu, *Figment*
In a duet with Laura Altman (clarinet)

Figment is a free improvisation for human improviser and the latest extensions to my automatic improvisation software system ARHS, which was documented in Leonardo Music Journal in 2010. The new extensions focus on the material that each agent works with in performance. Each agent has a (possibly) distinctive repertoire of gestures, which evolves periodically using transformations similar to Genetic Algorithm operations. As in ARHS, the intention is to capture some of the mechanics of how human improvisers listen and work with sonic materials.

Bill Hsu has built systems, tools, installations and compositions in collaboration with Peter van Bergen, John Butcher, James Fei, Matt Heckert, Lynn Hershman, Jeremy Mende, and Gino Robair, among other artists and musicians. He has performed in the US, Asia, and Europe, including NIME 2012 (Ann Arbor, MI), Festival art::archive::architectures (ZKM, Karlsruhe), NIME 2011 (Oslo), Steim 2010 (Amsterdam), Sound and Music Computing 2009 (Porto), and Harvestworks Festival 2009 (New York). His current work involves using gestural interfaces to control animation and sound synthesis, and building real-time audio-visual systems that interact with human musicians.

More information: http://unixlab.sfsu.edu/~whsu/art.html

Benjamin Carey, _*derivations*
In a duet with the composer (saxophone)

_*derivations* is an interactive performance system designed to facilitate possible modes of interactivity between an instrumentalist and the computer in improvised performance. As the name may imply, the system derives its sonic responses directly from an improvising instrumentalist; listening to, comparing and transforming analysed musical phrases stored in an expanding memory of past performer gestures. The system's generative capabilities are based upon a form of 'timbral matching', relating both the improviser's and the system's

current performance state to an expanding database of analysed and indexed phrases captured throughout performance. In addition, recent developments in the software have facilitated the use of multiple 'rehearsal' sessions with the system recorded prior to performance time. The premise is that a rich database of cumulative interactions between human and machine will deepen and complexify any eventual live performance through a consideration of the rehearsal/practice space in the system design. This also enables the performer to pre-define rehearsal databases with a great variety of material from other instrumental sources, enabling the creation of a rich sonic vocabulary for the system prior to the eventual performance-time interaction with the musician.

Benjamin Carey is a Sydney-based saxophonist/composer/technologist with interests in contemporary classical, improvised, interactive and electro-acoustic music. After completing a Bachelor of Music at the Sydney Conservatorium of Music in 2005, Ben relocated to France to study saxophone and contemporary music under Marie-Bernadette Charrier at the Conservatoire de Bordeaux. Ben is currently undertaking a PhD at the University of Technology, Sydney, where he also lectures in Electronic Music Composition and Contemporary Music. His practice-based doctoral research is focused upon the design and development of interactive musical systems for improvised performance. Ben has performed and exhibited work in Australia, New Zealand, France, Austria, the United States and Switzerland.

Andrew Brown and Toby Gifford, *Unity in Diversity*
In a duet with Andrew Brown (keyboard)

Unity in diversity is a duet form human and computing machine. Autonomous musical agents ideally display independent creative capacity, behaviour and intent. Often, however, performances with such agents are in an ensemble setting. What then of ensemble skills? As Goethe famously commented, musical ensembles are characterised by the interplay of individual partners integrated into a cohesive whole. Beyond displaying autonomy, musical agents should ideally seek to create unity in diversity. The Queensland Conservatorium music technology research group has created an autonomous musical agent, *CIM*, which performs in ensemble with humans. This duet performance with CIM combines 'conversational' interaction with 'inter-part elision' to simultaneously create both a sense of independent musical agency and cohesive ensemble unity.

Toby Gifford is a Brisbane based sound artist and music technologist, currently engaged in a PhD in artificial intelligence and music. He is an active acoustic musician with a special interest in improvised incidental music for theatrical performance, and in combining live acoustic improvisation with electronic sound design. His PhD project is centred around the creation of a 'jamming robot' – a computational agent that can listen to a live audio stream and provide improvised musical accompaniment in real-time.

Andrew R. Brown is an active computational artist working in music and visual domains. He is Professor of Digital Arts at the Queensland Conservatorium of Music, Griffith University, in Brisbane, Australia where his work explores the

aesthetics of process and often involves programming of software as part of the creative process. In addition to a history of computer-assisted composition and rendered animations, Andrew has in recent years focused on real-time art works using generative processes and musical live-coding where the software to generate a work is written as part of the performance. He has performed live coding around Australia and internationally including in London, Copenhagen, and Boston. His digital media art work has been shown in galleries in Australia and China. For more visit http://andrewrbrown.net.au

Agostino di Scipio, *Modes of Interference / 1*
Performed by Simon Ferenci (trumpet)
(Invited work)

A composed feedback loop between a miniature microphone (inside trumpet) and two speakers. In between are the trumpet's own tube, with its natural resonances, and a signal-processing computer (a PD patch). With high feedback gain, the loop results in the so-called Larsen tones. The performer explores the sonic potential of the system by interfering with the feedback loop in several manners (valve action turning the trumpet into a variable filter internal, feeble percussive sounds, "breath" sounds, etc. The computer incessantly adjusts the feedback gain, trying to keep the dynamical system in equilibrium at all times, avoiding saturation and extending some of the sounds emerging in the process. The overall system remains subject to fluctuations and perturbations from the surrounding environment. Commission ZKM, Karlsruhe, 2005-06.

Agostino Di Scipio (Naples, Italy, 1962). Composer, sound artist, and scholar, he explores several methods in the generation and transmission of sound, often involving phenomena of emergence and chaotic dynamics. Best known are his efforts include live-electronics works and sound installations where "man-machine-environment" networks are creatively elaborated (e.g. the *Audible Ecosystemics* series). Di Scipio mainly works in his own independent studio in L'Aquila, and occasionally joins institutional facilities. DAAD artist-in-residence (Berlin, 2004-2005). He is a professor in Electronic Music Composition at the Conservatory of Naples, formerly Edgar-Varése-Professor at Technische Universität, Berlin (2007-08), and lecturer in a variety of places, including CCMIX (Paris, 2001-2007), IRCAM (2013), University Paris 8 (2013), University of Illinois, Urbana (2004), the Johannes Gutenberg-Universität, Mainz (2004), and others.

More info and materials from http://xoomer.virgilio.it/adiscipi/

Musicians

Adrian Lim-Klumpes has used piano, prepared piano and electronics in solo and collaborative settings across the world for more than 15 years. Performing, composing and improvising in projects such as Triosk, 3ofmillions and now Tangents, his creations evoke ghosts of jazz, minimalism, experimentalism and post-romanticism.

Laura Altman is a clarinetist, improviser and composer, born and based in Sydney. She has been an important voice on the Sydney improvised music scene since 2007, playing with groups such as The Splinter Orchestra and Prophets, and collaborating with Australian improvisers including Jim Denley, Dale Gorfinkel, Monica Brooks and Peter Farrar. Laura has toured Australia and Europe with a range of projects including the trio Great Waitress, featuring Monica Brooks on accordion and Berlin-based pianist Magda Mayas. Laura graduated from the Sydney Conservatorium of Music with a B.Mus Composition (Honours) in 2011, and composes both instrumental and electro-acoustic music.

Simon Ferenci is a Sydney-based jazz trumpeter. Since completing a Bachelor of Music (Jazz Performance) at the Sydney Conservatorium of Music he has performed around Sydney, Australia and internationally. He has been a finalist in the National Jazz Awards in 2003 and 2010, the most prestigious jazz award in Australia (it is held for a different instrument each year). Simon has performed with many top local and visiting jazz musicians. As a member of the Bell Award winning Jazzgroove Mothership Orchestra performances with international artists have included Chris Potter (US), Darcy James Argue (US), Maria Schneider (US), John Hollenbeck and Theo Bleckmann (US), Charles Tolliver (US), Bert Joris (Belgium), Florian Ross (Germany) and many more. Simon also leads and writes for the Simon Ferenci Quartet who have released their debut album in 2013. Also active in music beyond jazz, Simon has performed extensively with large improvising group the Splinter Orchestra as well as in many smaller improvising groups.

Roger Dean is a composer/improviser, and a researcher in music cognition/computation at MARCS Institute, Sydney. He founded the ensemble austraLYSIS, which has performed in 30 countries. He has worked in classical, new, and jazz/improvised music as double bassist, pianist and computer artist. His experience includes the Academy of Ancient Music; BBC Symphony Orchestra; London Sinfonietta; Nash Ensemble; Australian Chamber Orchestra; leading new music groups in London (1970s to 80s); and piano accompanying singers/instrumentalists, classical and jazz. Overseas, his improvising collaborations range from Curson, Stanko, Wheeler, Rypdal and Collier, to Evan Parker, Bauer, Bailey, and Prévost. In Australia he has played with an equally wide range of musicians, including Ambarchi, Avenaim, Buck, Denley, Evans, Ng, Slater, and White. Dean's work is on 50 commercial audio cds, and in many digital intermedia pieces. He is engaged in new media collaborations with artists such as Armstrong, Luers, and Hazel Smith. His creative work centres on keyboard/ensemble improvisation, and computer music composition.

Improvisation and computer-interaction merge in his solo MultiPiano Event (live piano, real-time audio processing, generative piano, and electroacoustic sound). Dean is one of two Australians to be subjects in both the Grove Dictionary of Music and of Jazz.

Benjamin Carey (see artist notes).

Andrew Brown (see artist notes).

Algorave
107 Projects, Redfern
Saturday 15th June: 9pm

Christopher Anderson, *GEDMAS*

The tracks in this set were generated by The Generative Electronic Dance Music Algorithmic System (GEDMAS), which stems from the Generative Electronica Research Project (GERP) of Simon Fraser University's Metacreation Agent, Multi-Agent Systems lab (MAMAS). GEDMAS generates full breakbeat style songs or tracks by probabilistically modeling a corpus of 24 fully produced breakbeat tracks. The tracks generated in this set contain top-level song form structures created using: a 1st-order Markov model and bottom-level instrumental sequences based on the probabilistic models of the analyzed corpus. GEDMAS as a system is a Max for Live patch housed in a custom Ableton Live session. The Live session is comprised of 16 channels from percussion to melodic and harmonic instruments. Each instrument channel contains 8 blank midi sequence clips that are fed data by way of the Ableton Live's API from the GEDMAS Max for Live patch. Through extensive human transcription, each corpus track was analyzed and quantified for form onsets, song structure, exact rhythms, pitches, harmonies, and timbre. This data was then parsed and stored in a variety of containers within the patch for further analysis. Probabilistic tables were then made from this corpus data and fed to the form and pattern generators.

Christopher Anderson is a recent master of fine arts graduate and current research assistant in the School of Contemporary Arts at Simon Fraser University (SFU). He is a composer and performer with a background in both traditional and electroacoustic music. His interests include exploring new approaches to electroacoustic analysis, interactive musical performance and the use of generative systems within composition. Much of his work explores the various interdisciplinary uses of music and technology and how they may function within societies and cultures. In assisting the Generative Electronica Research Project (GERP) within the Metacreation Agent, Multi-Agent Systems lab (MAMAS) at SFU, Chris has currently been exploring new approaches to electronica analysis and implementing this data into generative music systems.

Sick Lincoln, *Algoravethm for 31770*

A generative electronic dance music work, rather dark in its tonality and textures and showing influences of dubstep half time and slub double time. Designed to run for around 5 minutes, the work is an entirely self contained single SuperCollider program file.

More formally, this algoravethm is a hand coded rule-based generative system, with controlled variation. All live synthesised, the parameters of synthesis and event generation are fully under algorithmic control. An overall form is created of N sections, utilising M source points in algorithm parameter space. M < N, so

that the form can return to already presented thematic areas. Because SuperCollider is flexible to storing functions and patterns, a given parameter set can itself include particular sequence generators, not just absolutely fixed values.

Sick Lincoln performs dynamical datapop with algoravethms to make your mind and body spin. Unfortunately unable to attend in person, he sends a programmed proxy, an algoravemic avatar, to make all decisions in his place.

More info at http://sicklincoln.com/

Arne Eigenfeldt, *Breakbeats by GESMI*

GESMI is a fully autonomous computationally creative system that generates style-specific electronic dance music based upon an analysed corpus. At the moment, the corpus consists of 24 Breakbeat tracks that have been human transcribed. Aspects of transcription include musical details (drum beats, percussion parts, bass lines, melodic parts), timbral descriptions (i.e. "low synth kick, mid acoustic snare, tight noise closed hihat"), signal processing (i.e. the use of delay, reverb, compression and its alteration over time), and descriptions of overall musical form. This information is then compiled in a database, and analysed to produce data for generative purposes.

GESMI produces complete compositions, generating an overall form (using a genetic algorithm) that consists of specific pattern numbers for up to seventeen instrumental parts. These patterns are then generated using contextual information derived from the corpus, so that both monophonic relationships (i.e. how individual patterns develop over time) and polyphonic relationships (i.e. how parts interact with one another) are taken into account.

GESMI is developed as part of the Generative Electronica Research Project, within MAMAS, the Metacreation agent and multi-agent systems lab.

Arne Eigenfeldt is a composer of live electroacoustic music, and a researcher into intelligent generative music systems. His music has been performed around the world, and his collaborations range from Persian Tar masters to contemporary dance companies to musical robots. He has presented his research at conferences and festivals such as International Computer Music Conferences (Miami 04, Barcelona 05, New Orleans 06, Copenhagen 07, Belfast 08, Montreal 09, New York 10, Huddersfield 11), Society for Electroacoustic Music in the United States (Indiana 05, Iowa 07), New Interfaces for Musical Expression (Genoa 08), ArtTech (Porto 08), EvoMusArt (Tubingen 09, Torino 11, Malaga 12), Generative Art (Milan 09), Computational Creativity (Lisbon 10, Mexico City 11, Dublin 12), Sound and Music Computing (Marseille 06, Barcelona 10, Padova 11, Copenhagen 12), Electronic Music Studies (Leichester 07, Buenos Aires 09, Shanghai 10, New York 11, Stockholm 12), and has received major research support from SSHRC and NSERC/CCA. He teaches music technology at Simon Fraser University, and is the co-director of the MAMAS (Metacreation Agent and Multi-Agent Systems) Lab.

Renick Bell, *Live with Conductive*

This performance is carried out by using a software library called Conductive written by the performer in the Haskell programming language. It also involves hsc3 (Haskell bindings to the SuperCollider synthesizer) on top of a standard Linux system (ALSA and JACK) with Patchage for routing and Calf plugins and host for final audio output processing.

Interaction involves loading prepared code, editing it, and entering new code in the vim text editor. The performer sends code to the interpreter of the Glasgow Haskell Compiler (GHCi) using tmux (a terminal multiplexer) and tslime (a vim plugin). This allows the performer to manage concurrent processes that spawn events, controlling things such as:
- the number of running concurrent processes
- the events those processes are spawning
- the rate and rhythm of event spawning
- the manipulation of time-variable parameters

In this performance, events trigger the SuperCollider synthesizer to play short audio samples (averaging 250 K in length). An algorithm including stochastic elements is used with user-specified parameters to generate rhythmic phrases. Those phrases form the base of variations at a variety of algorithmically-generated densities. The performance largely involves generating and selecting sample sets and rhythmic phrases and moving between various density levels.

Renick Bell is a doctoral student at Tama Art University in Tokyo, Japan. His current research interests are live coding, improvisation, algorithmic composition, and other generative art. He strongly advocates open source software and the Linux operating system. He is the author of Conductive, a library for live coding in the Haskell programming language, and is currently using it to explore algorithmically-generated bass music. He has done doctoral studies at the Sound Media Representation Laboratory at Tokyo Denki University in Tokyo, Japan. He has a masters degree in music technology from Indiana University and an interdisciplinary bachelors degree from Texas Tech University. He has lived in Tokyo since 2006. Previously, he lived in Taipei, Taiwan (2001-2006), and New York City (1999-2001). He is from west Texas.

His website can be found at http://renickbell.net
He operates the label the3rd2nd with Jason Landers: http://the3rd2nd.com

Ben Swift and Andrew Sorensen, *Palle in Aria*

Palle in aria is a livecoded audiovisual piece in Extempore for two laptop performers, involving the collaborative development and manipulation of algorithms in real-time.

Andrew Sorensen and **Ben Swift** are a nascent live coding duo united by Extempore.

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Composed Process
Recital Hall East, Sydney Conservatorium of Music
Sunday 16th June: 3.30pm

David Kim-Boyle, *Line Studies no. 1*

line studies no. 1 (2013), for piano and computer, continues the exploration of musical scores which are generated live during performance. Miquel's interest in such scores is motivated by a desire to explore unique musical forms and structures which cannot easily be realised through common practice notation or graphic notation systems. In a similar manner to his point studies (2012-13) series of works for various ensemble configurations and computer, in line studies no. 1, a musical space is articulated by concentric rings segmented into arcs of varying lengths and thicknesses. As the score is developed, these arcs are progressively drawn, extended, overwritten, rotated, and erased. Each arc denotes a pitch that is performed by the pianist, with arc lengths and arc thicknesses corresponding to pitch durations and dynamics respectively. As the pianist navigates through the score, they are accompanied by a computer-generated interpretation of the score consisting of pre-recorded piano samples.

David Kim-Boyle is a Sydney-based composer and new media artist whose music has received widespread recognition for its delicately nuanced sonic qualities and innovative use of technology. His work has been performed and presented throughout North America and Europe at various festivals and contemporary music events and he has been a guest artist at some of the leading computer music research facilities including the Zentrum für Kunst und Medientechnologie (Karlsruhe), the Sonic Arts Research Centre (Belfast), and STEIM (Amsterdam). Through his creative work, he has pioneered the development of various real-time score generation techniques and developed unique methods of spectral spatialisation. His research has been regularly presented at many of the world's leading forums for new music research including the International Computer Music Conference, the Digital Audio FX Conference, the New Interfaces for Musical Expression Conference and published in journals such as Contemporary Music Review amongst others.

Brian Kelly, *Phi*

Phi is an electronic work whose methods of sound derivation are based on the golden ratio, Phi (1.618...). Each overtone in the bell-like tones is produced by additive sine wave synthesis, the frequencies of which are obtained by multiplying the previous overtone by Phi. Phi is also represented in fundamental frequencies throughout the piece (eg 1,618 Hz). This work was composed using sound sources synthesized in SuperCollider and edited in ProTools, with the aid of an analog half-track tape machine.

Brian D. Kelly is a composer of multimedia sound works that are often both acoustic and electronic in nature. Sound, visuals, poetry, and drama are freely

combined in works that often explore social themes and challenge the status quo of Western ideals of culture, gender, theism, and sexuality.

Brian received his Bachelor of Arts in Music Education from Ottawa University (2011), his Master of Music in Composition from the University of Georgia (2013), and in the Fall will begin his PhD studies in Composition at the University of Utah. He has been the recipient of numerous commissions and awards, including first place in the 2012 Southeastern Composers League graduate student composition competition.

His preferred methods of sound and video generation include ProTools, SuperCollider, MaxMSP/Cyclops, Sibelius, Logic, Reason, and Final Cut. He currently lives in Athens, Georgia.

Micquel Parera Jaques, *neix_2013a*

"neix_2013a" is a software that randomly selects and mix 4 of the 16 semi-deterministic and algorithmic sound generators. These generators can operate independently, are drones and noises without rhythmic or melodic involvement. They create small compositions between 6 and 12 minutes, always different but with some similarity.

Miquel Parera Jaques (Barcelona, 1978). Psychologist and sound artist. For a long was involved in free improvisation, as a musician and producer in a small recording studio. Later turned to electronic experimentation as a member of RES group. Since 2008 he is actively involved in free licenses applied to electronic experimentation on internet (blog:http://musicnumbers.wordpress.com/), and the semi-deterministic process research and code improvisation (livecoding) with SuperCollider software.

Ivan Zavada, *Algosonic*
Performed by Rebecca Cernec

Algosonic consists of an aleatoric and algorithmic structure evolving over time generating rhythmic cells and beats to create the foundational layers of an electronica oriented sound track. The structure, transitions and beat changes are controlled by a visual score system designed in Max to generate semi-predictable and aleatoric beat structures. Rhythmic sequences respond to visual cues set during the pre-composition phase and control sonic aspects through image causing improvisatory interplay between perceptual and sensory channels. Visual projections determine the resulting sonic structures and have a direct impact on the way the audience interprets the music, being guided by visual cues as well.

Ivan Zavada is a composer, multimedia programmer and designer who lectures in computer music composition and electroacoustic theory at the Sydney Conservatorium of Music. His research focus is on the interactive relationship between image and sound within the realm of electroacoustic music. Zavada is

developing a computer application to represent and generate melodic motifs in three dimensions based on their geometric properties and is also involved in network music performance. Originally from Montréal, Ivan Zavada moved to Sydney in 2004 to establish himself as a composer and lecturer at the Sydney Conservatorium of Music, The University of Sydney, Australia.

Rebecca Cernec completed her Bachelor of Music (Composition) with first-class Honours at the SCM in 2012. In October 2012 Rebecca presented an interactive sound installation using networked computers to generate and transform sounds to enable real-time processing of acoustic instruments. She recently coordinated an installation for the 2013 SCM Open Day; this collaboration used networked computers to organise/manipulate layers of samples of custom-built metal bells. Currently Rebecca is using Max/MSP to recreate and implement the technological system designed by Bozidar Kos' in *Modulations (1974).* She works as a research assistant to Dr Ivan Zavada and at the Australian Music Centre.

Between the concerts an installation by Anisha Thomas will be running in the Conservatorium atrium.

Anisha Thomas, *Kundaliktra*

'Kundaliktra' in sanskrit or Moving in Circles, is a sound installation exploring Indian raga. The installation also explores the phenomenon of Indian classical voice's timbral and technical capabilities in its interpretation of Indian raga. The concept of 'cycles' and moving in a circular motion, is a strong facet of Indian Classical music, and is a heavily explored idea within this installation. Since each raga has a unique personality of its own, audiences are invited to attend two 'sessions', where they can be immersed by the sounds of two different ragas.

- Raga Bhairavi: 2pm-3pm
- Raga Bageshri: 4pm-5pm

Studies in Autonomy
Recital Hall East, Sydney Conservatorium of Music
Sunday 16th June: 5pm

Roger Dean, *Serial Identities*

The system is under continuing development, and uses time series analysis models of music perception and performance (interrelating pitch, timing, intensity, timbre, and perceptual and affective parameters of listener responses) developed by the author. It uses these generatively, based on a seed sequence of musical events. A time series model active in the system can also take in real-time MIDI data and generate realtime output from it. Randomised inputs can be provided, and the parameters of the models can be algorithmically changed to enlarge the continuous variation.

Roger Dean is a composer/improviser, and a researcher in music cognition/computation at MARCS Institute, Sydney. He founded the ensemble austraLYSIS, which has performed in 30 countries. He has worked in classical, new, and jazz/improvised music as double bassist, pianist and computer artist. His experience includes the Academy of Ancient Music; BBC Symphony Orchestra; London Sinfonietta; Nash Ensemble; Australian Chamber Orchestra; leading new music groups in London (1970s to 80s); and piano accompanying singers/instrumentalists, classical and jazz. Overseas, his improvising collaborations range from Curson, Stanko, Wheeler, Rypdal and Collier, to Evan Parker, Bauer, Bailey, and Prévost. In Australia he has played with an equally wide range of musicians, including Ambarchi, Avenaim, Buck, Denley, Evans, Ng, Slater, and White. Dean's work is on 50 commercial audio cds, and in many digital intermedia pieces. He is engaged in new media collaborations with artists such as Armstrong, Luers, and Hazel Smith. His creative work centres on keyboard/ensemble improvisation, and computer music composition. Improvisation and computer-interaction merge in his solo MultiPiano Event (live piano, real-time audio processing, generative piano, and electroacoustic sound). Dean is one of two Australians to be subjects in both the Grove Dictionary of Music and of Jazz.

Kerry Hagan, *Morphons and Bions*

Morphons and Bions is a real-time Pd composition that explores noise-based synthesis techniques and random processes to create the impression of living mechanisms. These mechanisms live and grow independently until reaching a critical mass, when they become a single organism. The morphologically independent sounds combined with the sounds that behave together as a single organ give rise to the title. As a real-time piece, the details of each realisation changes from performance to performance. However, the consistent timbres and overall form of the work retains the piece's identity.

All sounds in the work are synthesised. The sound sources rely fundamentally on white noise and digital noise mediated by classical synthesis techniques and random processes. Since the work is built on a substrate entirely made of noise, the piece is situated within certain philosophical and aesthetic issues surrounding noise, its use, and its definition. This piece is not, however, 'noise music.' Despite the acoustic groundings in noise, the sounds exhibit harmonic and quasi-harmonic behaviors, especially as the sounds develop in the course of the work. Ultimately, the piece crosses back and forth over the thin line of "sound" and "noise," where both are valid musical materials.

Kerry Hagan is a composer and researcher working in both acoustic and computer media. She develops real-time methods for spatialisation and stochastic algorithms, and studies the aesthetics and history of electronic music. Recent works include a real-time stochastically generated work for computer alone and bass solo. Current music projects include a piece for clarinet and computer, saxophone and computer and computer music from large, complex data sets. Current research includes real-time stochastic methods for music composition and sound synthesis, spatialization techniques for 3D sounds and electronic/electroacoustic musicology.

She holds a Ph.D. in Composition from the University of California, San Diego, where she worked with Roger Reynolds, Chaya Czernowin, Miller Puckette, and F. Richard Moore. She also worked with Marc Battier at the Sorbonne as a Visiting Researcher. Currently, Kerry is a Lecturer at the University of Limerick in the Digital Media and Arts Research Centre. At UL, she built the Spatialization and Auditory Display Environment (SpADE), a 32.2-channel environment for composition, auditory display and psychoacoustic research. Kerry also founded ISSTA, an organisation whose mission is to foster collaboration between artists, musicians, scientists and researchers in Ireland and to promote the work of Irish-based or Irish-born practitioners abroad.

Benjamin O'Brien, *Densité*

Densité was written in the audio software languages of SuperCollider and Paul Koonce's PVC. *Densité* documents the interactions between the density of samples being selected and the dimensions of the space in which they are realized. Depending on particular sets of heuristics, different exponential models and soundscape audio files determine percussion sample playback parameters which are, in turn, recorded. These audio segments are then convolved with varying types of impulses responses, resulting in different sonic spaces. *Densité* focuses on subverting the inherent sonic qualities of percussion instruments as a result of temporal sequence and their individual placement within particular spaces.

Benjamin O'Brien composes and performs acoustic and electro-acoustic music. He is currently pursuing a Ph.D in Music Composition at the University of Florida. He holds a MA in Music Composition from Mills College and a BA in Mathematics from the University of Virginia. Benjamin has studied composition, theory, and

performance with John Bischoff, Ted Coffey, Fred Frith, Paul Koonce, Roscoe Mitchell, and Paul Richards. His compositions have been performed at national and international conferences and festivals including ICMC, EMS, NYCEMF, SCI, SuperCollider Symposium, Linux Audio Conference, Colloqui di Informatica Musicale, and Musica Viva Festival. He received the Elizabeth Mills Crothers Award for Outstanding Musical Composition, and is a WOCMAT International Electroacoustic Music Young Composers Awards Finalist. His work has been published by SEAMUS and Taukay Edizioni Musicali, and he has a chapter in *The Oxford Handbook of Music and Virtuality* (Oxford University Press) forthcoming. He performs regularly with the international laptop quartet Glitch Lich.

Kenneth Newby, *The Flicker Generative Orchestra*

As much a theory of music — its form, materials, methods and processes — as it is a compositional system, the Flicker Generative Orchestra is an experiment in the application of a variety of generative processes that result in music that resembles that of large symphony orchestras playing in a contemporary idiom. A generative grammar builds rhythmic elaborations on seed phrases, or *rhythmicles*, to several, increasingly complex, levels of detail. It's similar to a token rewrite system such as Lindenmayer-Systems. These rhythmic phrases are defined as proportions of time with 1 being the basic "bar", equivalent to 2 2, or 4 4 2, or 6 6 6 4 4, or 18 18 6 6 16 4 16, etc. Subsequent generations of rhythmic complexity are created by recursively acting on the last generation. The melodic gestures are made from an encoding of a technique Lou Harrison described in his Music Primer (1971) using melodicles for composing and varying melodic materials. Again, relatively simple abstract melodic shapes such as 0 6 5 or 0 0 1 give lovely results when varied with the classical procedures of transposition, inversion, retrograde and retrograde-inversion. These melodicles are abstract in the sense that they describe steps within a mode or scale. This can be any arbitrary set of pitches, not necessarily periodic. Kenneth is fond of Messiaen's Modes of Limited Transposition.

Kenneth Newby is a media artist, composer-performer, educator, interaction designer, and audio producer whose creative practice explores the use of technology to enable media performances and installations that are rich in aural, visual and cultural nuances. His work is widely presented in exhibitions, concerts, festivals, and radio broadcasts throughout Canada, Asia, Europe, and the USA. These works include compositions of media performance, electro-acoustic and acoustic music; interactive computer systems for live performance and installation; software tools for composition of music and animation, new composition for Javanese and Balinese gamelan ensembles; interdisciplinary collaborations with composers and artists in various disciplines (film, video, dance, theatre, poetry, shadow play) and participation in improvisational ensembles.

His SSHRC funded Computational Poetics research project has resulted in the development of sophisticated media diffusion techniques that enable the

creation of singular audiovisual installation works that explore the expressive potential of sculptural forms of multi-channel audio and visual images. Kenneth's current art research involves interdisciplinary collaborations with several researchers in the creation of computationally based audiovisual installation and performance works that represent complex images of multi-cultural identity in an ecological context. These works feature both situated content and generative techniques that explore the fundamentals of creative process.

Shlomo Dubnov, *Nomos ex Machina*

Creative and research team: Shlomo Dubnov and Greg Surges, UCSD
Performed by Peter Farrar (saxophone)
(Invited work)

In Greek mythology, Nomos is the daemon of laws, statutes, and ordinances. In today's society, the meaningful order, or nomos, is imposed more and more by technology. As our actions are recorded, interpreted and modified by computers, the essence of human experience becomes a blend of man made utterances and those produced by the machine. New meanings are artificially derived from human ideas, augmented by machine intelligence.

This piece employs the Audio Oracle algorithm that analyzes the live input of a human performer to generate more musical expressions. The computer listens to hidden structures and repetitions in the human input and uses them to produce variations in the same style. The order imposed by the oracle results in creative processes that blend musical ideas of the performer with those by the artificial music companion. The computer operations range between mirroring the ambiguity of the original live materials, to more stylistically free re-injections by the computer, resulting in a combined machine augmented performance.

Written largely in a three part variation form, the piece opens with a short solo where the human musician is given a chance to introduce his ideas first, only to have them immediately picked up and re-interpreted by the machine. Themes, counter-themes and solo improvisations appear through the work, establishing behaviors that alternate between human and machine leading of the musical development, listening to each other, diverging and converging.

Shlomo Dubnov is a Professor in Music Technology in UCSD. He holds a degree in music composition and doctorate in computer science from the Hebrew University in Jerusalem, and served as a researcher at IRCAM in Centre Pompidou, Paris. His works include creative, technical and cultural research, with several of his developments being implemented in popular music and multimedia software. Dubnov's research interests include machine learning for music and the arts, artificial creativity and how to allow computers appreciate aesthetics. He is also a producer of interactive and participatory performances. Dubnov currently serves as a Director of the Center for Research in Entertainment and Learning (CREL) at UCSD's Qualcomm Institute (Calit2).

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Miles Thorogood and Philippe Pasquier

Audio Metaphor

Soundscape composition is the creative practice of processing and combining sound recordings to evoke auditory associations and memories within a listener. Thorogood and Pasquier present *Audio Metaphor*, a system for creating novel soundscape compositions. *Audio Metaphor* blends concepts from natural language queries derived from Twitter with semantically linked sound recordings from online user-contributed audio databases. They used natural language processing to create audio file search queries. An audio file segmentation algorithm based on general soundscape composition categories is used to cut up the results. A multi-agent composition engine processes and combines cut up audio files for representations of natural language queries.

This implementation of *Audio Metaphor* is a four-channel sound installation with the real-time projection of the natural language processing.

Miles Thorogood is a doctoral researcher at the School of Interactive Art and Technology, Simon Fraser University, exploring relationships between machine learning, artificial intelligence, soundscape, and creativity. His works have encompassed sound installation, locative media, and variety of generative a/v manifestations shown in Australia, Europe and North America. These works have been included as part of Vancouver Olympics, Nuit Blanche in Toronto, as well as on going public art installations. He has developed and run programs for creative coding at leading education centres in Vancouver, and held workshops for the Banff New Media Centre in Canada. He has published work on mutli-agent systems, artificial life, creative crowd-sourcing, and electronics hacking. As well, he has been published internationally in leading technology and arts magazines.

Fredrik Olofsson

low-life

low-life is a collection of little audiovisual pieces. The common idea behind them is that the syntax that describes the systems is used as input for the systems themselves. So far the series consists of seven pieces. some are destined to halt, others to run indefinitely, and some crash the hosting supercollider programming language (the program used to create the pieces).

Fredrik Olofsson is educated in music composition at the Royal Music Academy in Stockholm and at the Music College in Piteå. He writes software for interactive installations, fiddles with electronics and performs audiovisual pieces under the alias redFrik. Alongside commissions, residencies and live performances he is doing contract work for the project rhyme.no in Oslo and teaches computational art at Universität der Künste in Berlin.

Arne Eigenfeldt and Ajay Kapur

Roboterstück

A tongue-in-cheek homage to Karlheinz Stockhausen's famous total-serialist *work Klavierstück XI*, in which the performer glances at a sheet of music and randomly chooses to play from 15 notated fragments. In this case, agents negotiate a texture – from 16 possible combinations – based upon the following features: slow/fast; sparse/dense; loud/soft; rhythmic/arhythmic. When the same texture has appeared three times, the performance is complete. Unlike all of Eigenfeldt's other multi-agents works, *Roboterstück* makes no attempt at anything human-like, either in conception, or performance, by *the NotomotoN* (an 18-armed robotic percussionist).

Arne Eigenfeldt is a composer of live electroacoustic music, and a researcher into intelligent generative music systems. His music has been performed around the world, and his collaborations range from Persian Tar masters to contemporary dance companies to musical robots. He has presented his research at conferences and festivals such as International Computer Music Conferences (Miami 04, Barcelona 05, New Orleans 06, Copenhagen 07, Belfast 08, Montreal 09, New York 10, Huddersfield 11), Society for Electroacoustic Music in the United States (Indiana 05, Iowa 07), New Interfaces for Musical Expression (Genoa 08), ArtTech (Porto 08), EvoMusArt (Tubingen 09, Torino 11, Malaga 12), Generative Art (Milan 09), Computational Creativity (Lisbon 10, Mexico City 11, Dublin 12), Sound and Music Computing (Marseille 06, Barcelona 10, Padova 11, Copenhagen 12), Electronic Music Studies (Leichester 07, Buenos Aires 09, Shanghai 10, New York 11, Stockholm 12), and has received major research support from SSHRC and NSERC/CCA. He teaches music technology at Simon Fraser University, and is the co-director of the MAMAS (Metacreation Agent and Multi-Agent Systems) Lab.