Harmony

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ARTIST TALK:

A HARMONIOUS SYSTEM?

ALICE IN EXILE

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ABSTRACT

Alice in Exile combines words, beats and noise in reflection of what appears to be a post-digital delusion surrounding technology, creativity and defiance.

The end of World War II left poets questioning mainstream politics and culture. Kerouac is said to have coined the term "beat generation" to describe the down-and-out status of himself and peers during those post-war years. Defying social conformity, mainstream conventions, and literary tradition was central to their work.

In 1981 Laurie Anderson's part-spoken, part-sung O Superman unexpectedly rose to Number 2 on the UK Singles Chart. Anderson claims the inspiration for the work was the crash of a military rescue helicopter during Iran hostage crisis of1 979-1980. Later that year she played pub circuits with William Burroughs and John Giorno. By the mid-1980/s Anderson debated whether there was much of an Avant-garde scene left to comment on anything.

Girltalk (2002-2014) produces mashups of unauthorized samples from other artist's songs. The New York Times Magazine (2008) has called these releases "a lawsuit waiting to happen". The name Girl Talk was chosen to stir things up, and embarrass overly serious borderline academic type electronic musicians. While mashups are nothing, what is music if it has nothing to say?

http://aliceinexile.bandcamp.com

MAKING IMPROVISED MUSIC FOR IPAD AND PERCUSSION WITH ENSEMBLE METATONE

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Figure 1. *Ensemble Metatone* in rehearsal.

ABSTRACT

Ensemble Metatone was founded by Charles Martin in 2013 to create a collaborative performance practice using custom iPad apps and percussion. This group combined aspects of established traditions of improvising contemporary percussion groups and laptop orchestras with the new affordances of mobile touch-screen devices. This paper outlines our strategies for assimilating iPads into the group, developing new musical works, and staging performances.

1. INTRODUCTION

Ensemble Metatone[1] is a group dedicated to making improvised and experimental music with custom iPad apps and percussion. The group of professional percussionists (Charles Martin, Christina Hopgood, Jonathan Griffiths, Yvonne Lam) was founded in 2013 by Charles Martin as part of research into collaborative musical performance on iPads. Beginning with a series of free-improvised studio rehearsals the group has performed several concerts including a live recording that was released in March 2014.

As *Ensemble Metatone* was formed to help fulfil the goals of a research project, the group's initial rehearsals and performances were consciously designed. Percussion groups have an established tradition of free improvisation and exploration of new and unusual instruments. The pioneering percussion group, Nexus, has had a long history of free improvised performance since their earliest concert (Cahn 2005), a practice emulated by ensembles around the world. Celebrated percussion works by composers such Xenakis, Cage, and Harrison include rough descriptions of invented instruments (e.g. the amplified wire coil in Cage's Imaginary Landscape No. 2) with construction left to the performer (Schick 2006). As experts in percussion performance, the members of *Metatone* were able to leverage these traditions for creating new music with the unfamiliar iPad apps that they were using.

Other aspects of the group were borrowed from the more recent tradition of the laptop orchestra. Laptop orchestras, such as Princeton's *PLOrk,* feature a large group of performers using identical hardware and software configurations and separate sound sources for each performer (Trueman 2007). This arrangement allows a natural diffusion of the ensemble's sound through the multiple loudspeakers and the development of a repertoire of works composed for the orchestra's laptop configuration. This arrangement was extended by Ge Wang's *MoPho* (Wang et al. 2008) who performed ensemble works with mobile phones and, later, iPads.

1.1. Setup

Four iPad 4s were used for *Ensemble Metatone*, loaded with prototype apps and loaned to the performers to practice. The group's rehearsal space (see **Figure 1**) featured four large monitor speakers in a quadraphonic

[1] http://metatone net

configuration. Sound from the headphone output (mixed down to mono) from each iPad was routed to the monitor speaker directly behind each player and also to an audio interface for recording.

Figure 2. Performance setup at the ANU School of Music.

In live performances (see **Figure 2**), the group used four Mackie SRM450 loudspeakers on stands. The iPads are either directly connected to the loudspeakers or routed through an audio interface for multitrack recording. In smaller venues, we have experimented with using loudspeakers on the floor and with using much smaller speakers such as KRK Rokit 5 studio monitors or Behringer B205D loudspeakers.

1.2. Apps

The iPad apps used by *Ensemble Metatone* are all designed by Charles Martin and strongly informed by his experiences performing and rehearsing with the group. The published apps, *MetaLonsdale*[1], *BirdsNest*[2], and the unpublished prototypes *MetaTravels* and *Singing Bowls* all feature a percussion inspired interface. The majority of the iPad screen is a performance surface with few graphical UI elements. Tapping the screen produces short sounds, either field recordings or percussion samples, with pitch determined by the location of the tap. Swiping creates continuous sounds with the velocity of the swipe directly mapped to volume.

The design of the apps was "percussionist-centred" (Martin, Gardner, and Swift 2014b), with a focus on providing a small number of sounds for the performers to explore alongside their existing percussion setups. It was envisioned that the apps would become "composed instruments" (Schnell 2002) with each app corresponding to a particular piece in the group's repertoire.

All of the apps used in the group use Pure Data and *libpd* (Brinkman et al. 2011) for sound synthesis and Apple's iOS frameworks for the interface. The apps were equipped with network features for logging touch interactions during performances and for inter-iPad communications. These features used OSC messages and took advantage of Apple's Bonjour zero-configuration networking architecture that allowed the apps to automatically discover each other and a logging server on a local Wi-Fi network.

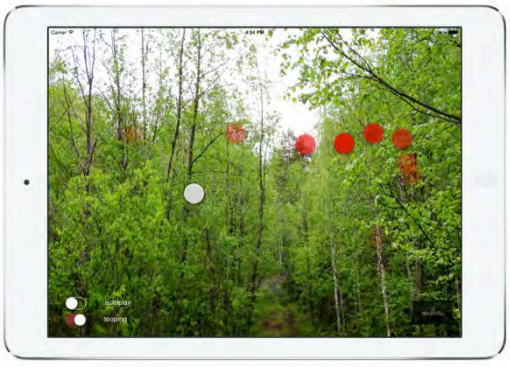

Figure 3. Screenshot of the *BirdsNest* app.

2. INITIAL REHEARSALS

Ensemble Metatone's early rehearsals took place in April 2013 and were designed to harness the members' training to define a vocabulary of musical gestures and modes of interaction with the iPads that could be used in subsequent compositions and improvisation. Over a number of sessions, the group followed a process of "Creative Music Making" (Cahn 2005) where freely improvised sessions were recorded, immediately played back, and discussed. In this early stage, no percussion instruments were used and the group played only the *MetaTravels* app.

After several iPad-only rehearsals, the group members were invited to choose a percussion setup to go along with the app. The members' choices, vibraphone, a standing drumset, terracotta pots and plates, crotales and woodblocks, reflected their personal tastes as well as inspirations from percussion works by composers such as Frederic Rzewski, Tōru Takemitsu, John Cage, and prolific improvisers *The Necks*.

In these rehearsals, the utility of the four large monitor speakers was immediately apparent. The performers had no trouble recognising their sound and balancing with the group through the touch screen as well as the iPad's hardware volume control. As the recording could be played back through the same speakers, the listening phase was strikingly life-like and quite fun!

This rehearsal series was thoroughly documented using not only audio and video recordings, but a log of touch-interactions sent to a server with OSC messages. This documentation allowed reproductions of the rehearsals, complete with animations of the iPad touch screens. A vocabulary of continuous touch-screen gestures was identified from these recordings (Martin, Gardner, and Swift 2014a) and has been used as a basis for a prototype gesture recognition system and scored compositions.

It was significant that even though performers were limited to the small number of sounds available in the *MetaTravels* app in this rehearsal series, the musical gestures and ensemble interactions that they developed

[1] http://metatone net/metalonsdale
[2] http://metatone net/birdsnest

allowed them to engage in long improvisations. This practice formed the basis for the group's subsequent performances.

3. PERFORMANCES

Figure 4. Performance of *MetaLonsdale* at the ANU School of Art Gallery, October 2013.

Following the initial series of rehearsals, the group met less frequently and focused on preparing for concerts rather than open-ended exploration. The group's first performance was part of the 2013 Canberra International Music Festival. In this initial performance, the group performed with the *MetaTravels* app and percussion setups as used in the rehearsal series. Powered speakers on stands were substituted for the studio monitors and the players were arranged in an arc, rather than the circular configuration in the rehearsal studio.

3.1. MetaLonsdale

Figure 5. Performance of *MetaLonsdale* for iPad duo at Everything/Nothing Projects.

The next *Metatone* performance was a duo concert by Charles and Christina at the Everything/Nothing Projects Gallery in Canberra's "Lonsdale St Traders". For this event, a new app called *MetaLonsdale* was created that blends field recordings from the area's cafés and shops with the textures of tuned percussion. In contrast to the chromatic pitches available in *MetaTravels*, *MetaLonsdale's* pitched sounds were taken from a sequence of four scales. A single button in the user interface controlled the progression of scales and sounds. This app used the OSC messages between iPads to keep scales and other functions on the iPads in synch.

3.2. Research Recital

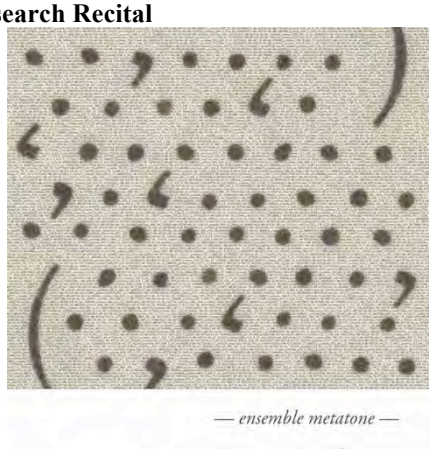

Figure 6. Cover art for *Metatone*'s debut release created by Benjamin Forster. The textured background is formed from an excerpt of the touch interaction log of the performance.

MetaLonsdale was brought back to the full quartet at a research recital held at the ANU School of Music (see **Figure 2**). The concept of this concert was to capture audio, video, and touch data in a live performance environment with an audience. *MetaLonsdale* was performed without percussion followed by a performance on the *MetaTravels* app with percussion setups similar to those used in the rehearsal series. The recording of the performance was later released digitally as a self-titled album[1] shown in **Figure 6**.

Several audience members commented at this recital that it was difficult to see the performer's interaction with the iPads in amongst the much larger percussion instruments. In a performance of *MetaLonsdale* at the ANU School of Art Gallery (**Figure 4**), we attempted to address this issue by standing in a close configuration without stands for the iPads. While this setup limited our two-handed dexterity, the audience was able to clearly see our hands and even the content of the screens. The close proximity of the group also created a relaxed and enjoyable environment for improvisation.

3.3. Touring to Electrofringe

Ensemble Metatone's first touring experience was at Electrofringe 2013 in Newcastle. In a trio configuration (Charles Martin, Christina Hopgood, and Jonathan Griffiths), we reduced our percussion setups to what would fit in one car along with the three performers. Vibraphone was replaced with the electronic MalletKat, crotales with singing bowls and bass drum with a floor tom.

The reduced percussion setup introduced limitations in our sonic palette forcing us to make up the gap with the iPad instruments. This fact combined with the installation style presentation in Newcastle's Hunter

[1] http://charlesmartin.bandcamp.com/album/ensemble-metatone

Street TAFE made this a challenging but worthwhile concert.

3.4. *BirdsNest* at PASIC 2013

The *BirdsNest* app (see **Figure 3**) was developed by Charles Martin for his US-based percussion group *Ensemble Evolution* with Maria Finkelmeier and Jacob Remington. This group was invited to perform a suite of works written in Northern Sweden at the 2013 Percussive Arts Society International Convention in Indianapolis, USA. With a similar interface to *MetaLonsdale, BirdsNest* included field recordings from Northern Sweden as well as percussion samples. Informed by Charles' experience with *Metatone,* this app was used in improvised trio performances alongside a table of handheld percussion instruments, twigs, branches, and birdcalls.

3.5. Expanding the Ensemble

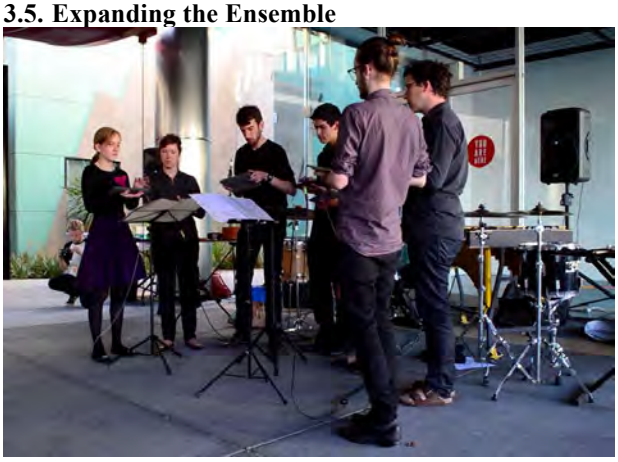

Figure 7. Performance of *Study in Bowls 1* at the You Are Here festival, Canberra.

The first *Ensemble Metatone* performance for 2014 was at Canberra's You Are Here festival at Canberra Museum and Gallery's entryway. This performance included a continuous set of *MetaLonsdale* and *BirdsNest* as well as a new app, *Singing Bowls*, and a new composed work *Study in Bowls 1*.

For this new work, three extra members joined the group to make an ensemble of seven players. *Study in Bowls 1* was a scored work where three groups of players perform repeated cells of semi-improvised touch gestures based on those identified in our rehearsal study. The *Singing Bowls* app presented each player with a setup of several pitches of synthesised singing bowls that can be struck with taps or continuously sounded with swipes. This new app interacted with our prototype gesture recognition software, automatically updating the setup of pitches in response to the changing gestures of the performers.

In this expanded ensemble configuration, the members of *Metatone* acted as section leaders, teaching the new players our vocabulary of touch gestures. Although working from the score is limiting compared to free improvisation, it opens the possibility of sharing our work with new players or with other groups around the world.

4. REPERTOIRE

The works performed by *Ensemble Metatone* have evolved from free-form explorations into a repeatable repertoire.

- *MetaTravels* for iPad and percussion quartet* http://youtu.be/nqB_TRsLS3U
- *MetaLonsdale* for iPad quartet* http://youtu.be/pYxEbKk7jPs
- *BirdsNest* for iPad and found percussion http://youtu.be/zqnffMAHbPA
- *Study in Bowls 1* for iPad ensemble http://youtu.be/ajC7XVWaVFo

(* Featured on the *Ensemble Metatone* digital release.)

5. CONCLUSION

In *Ensemble Metatone*, a hybrid iPad/percussion ensemble was created through a rehearsal series that focused on developing techniques for improvisation and exploring the new touch-screen instruments. In performances throughout 2013 and 2014, and an album release, the group presented a new take on improvised music for iPad and percussion, experimented with a number of performance configurations and met some of the logistical challenges of touring. Future projects will expand the group's repertoire with new improvised and scored works not only to develop *Ensemble Metatone's* practice, but also to share it with other performers and groups.

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Posters

DEVELOPMENTS AND LIMITATIONS IN MAPPING PHYSIOLOGICAL REACTIONS TO CHANGES IN MUSICAL STRUCTURE

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ABSTRACT

Musical affect experiments have shown that common physiological markers, such as heart rate, brain waves, skin conductance, and respiratory variance, are all affected by varying musical forms and structures (Ellis and Brighouse 1952).

Using a battery of biofeedback sensors, a neural network model can be trained to map physiological changes to the structural variables of a music generation algorithm. Once trained, the model can be used to control the music algorithm, predicting the response of the listener to the music generated.

This paper discusses relevant developments and limitations, including the expanding range of available biofeedback technologies, electroencephalogram (EEG), approaches to controlling external variables, consideration of individual responses and cultural backgrounds, social and commercial applications of automated music generation, creative ramifications for composers and performers, and methods for measuring success in such an undertaking.

1. INTRODUCTION

By exposing participants to a musical algorithm that uses randomised musical structures, and comparing the musical structures to the measured physiological changes in the participants, we are developing a system which can generate new musical material with enough foresight to invoke any requested human physiological change.

In order to build such a system, several different technologies must be successfully brought together:

- EEG and biosensor technologies
- A generative music algorithm with a broad range of music structures
- Data collection using participants
- A neural network
- A definition for success

1.1. Limitations

Recorded physiological reactions may be related to any underlying mental or bodily mechanic, but by controlling the external environment sufficiently, variations from a reasonably stable and well established neutral state can be obtained. Thus, if neutral states are observed appropriately, results are more likely to be a result of the biological musical phenomenon of the individual, (D. Ellis and Brighouse 1952). The project also relies on minimizing the irrelevant physical and mental factors affecting the participants, and managing conditions for the participants so as to promote engagement with the music.

Each model is trained to use a particular music algorithm. These music algorithms are simple, but are required to encompass a broad number of musical structures. Too many variables can create an almost limitless number of possible combinations, thus minimizing variables in musical algorithms is necessary.

1.2. Scope

From the point of view of a sonic arts researcher, whose specialisation is in electronic music composition, there are also inherent limitations of scope, such as expertise limitations in the multiple fields involved, ethical considerations, and technical limitations. It should be observed that the aim of this project is to use established and well documented technologies to create a composition system, not to pioneer new technologies.

2. BIOSENSORS

The value of different biosensors was assessed for musical relevance according to literature, practicality, non-invasiveness, ethics, and required expertise, in order to shortlist several appropriate biosensors. Developments in amateur electronic and consumer products continue to make such technologies increasingly accessible to those outside of specialist medical fields.

2.1. Electroencephalogram

Figure 1. Wearing the Emotiv Epoc

For electroencephalography (EEG), the *Emotiv Epoc*, with 14 electrodes, simple implementation, and massively powerful software suite was chosen over tedious and expensive medical grade counterparts, (Lang 2012; Duvinage et al. 2013; Badcock et al. 2013; "Legitimising Affective Suite" 2014; Miranda 2010; Miranda et al. 2003). Using EEG data alone has already shown some predictive potential. Collura provides an excellent overview of EEG technology, (Collura 1993).

2.2. Arduino Biosensors

Figure 2. Wearing the biosensors

Biosensors implemented using an Arduino are being investigated:

Heart rate and variance is measured using a simple open source Arduino pulse monitor, (See "PulseSensor - Pulse Sensor Amped!" 2014). Heart rate variance has been shown to vary greatly in relation to tempo and rhythmic variations, (Bernardi, Porta, and Sleight 2006; D. Ellis and Brighouse 1952; R. J. Ellis et al. 2009)

Galvanic skin response, famous for its use in lie detectors, is also implemented with two surface electrodes on the fingers, and a simple circuit, (Woolley-Hart 1972; Lykken and Venables 1971; Coutinho and Cangelosi 2011).

Respiratory rate has been shown to vary with musical stimulus, (Siwiak, Berger, and Yang 2009; Bernardi, Porta, and Sleight 2006; D. Ellis and Brighouse 1952). Respiratory rate and size is measured using belt with conductive rubber cord around the chest, which increases in resistance when stretched, (Coyle et al. 2009).

Finally, body temperature is easily measured using a single temperature sensitive component, the *TMP36,* (See "TMP36 Datasheet and Product Info" 2014).

There are a many other suitable biosensors that can be investigated for such a purpose, such as pupillary response, (Schlemmer et al. 2005), or even facial expression recognition, (Bettadapura 2012).

3. A GENERATIVE MUSICAL ALGORITHM

The musical algorithms are designed to produce music with varying (but controlled) musical structures, including time signatures, scales, set rhythms, forms, and where applicable, timbre, (Patil et al. 2012).

The algorithms, written in supercollider, accept an array of numbers, each index being a variable for a specific structural aspect of the music generated. The focus is achieving a broad number of structural possibilities, with as few variables as possible. Simple mathematical statements reliably recreate each stream of music, rather than long markov chains, chance, predefined blocks of notes, or any kind of self-analysis, which could involve hundred if not thousands of variables.

The algorithms are built to require as few variables as possible to minimize the large number of possible outcomes, yet aim to maximise the clarity of the musical structure. Initially, without a trained neural network model selecting pieces, the majority of the musical results are un-interesting, and often not musical at all.

4. DATA COLLECTION WITH PARTICIPANTS

Healthy normal participants are selected randomly, from both genders, both musically trained and untrained.

Each participant is given instructions to avoid participating on days of extreme stress, tension, or under the influence of any significant drugs or sleeplessness. Visual and aural distractions and interruptions are minimised, and air conditioning is set to a neutral temperature.

Once the biosensors are fitted to the participant, some time listening to music is spent without recording response data, in order to minimise the influence of situational novelty. Before and after each passage, a silent period of 20-30 seconds of bio-feedback is recorded in order to establish a neutral level. A single music passage is played (with randomised structure) in repeats for between 45 seconds and 2 minutes depending on its length and tempo.

To keep participants engaged in listening, participants are monitored for signs of boredom or sleepiness, and take frequent breaks. Generally a participant can‟t fully engage with listening for more than 15 minutes without a break.

The biosensor data is processed with Cycling 74‟s Max. The EEG software also analyses the EEG data, defining the proprietary „affective‟ measurements of engagement, meditation, frustration, and excitement, (See "Legitimising Affective Suite" 2014). The results of both these analyses are entered alongside the musical array that stimulated it into an SQL database. The raw data from each sensor (and each EEG electrode) is also kept in a key-named file to allow for deeper analysis later.

5. A NEURAL NETWORK

Feed forward artificial neural networks, well established as universal approximators, are uniquely suited to analysing this particular problem, (Hornik, Stinchcombe, and White 1989). Neural networks excel at finding complex relationships in data with a lot of variables, such as diagnosing potential cancer patients, (Bottaci et al. 1997), or predicting rainfall, (Wu and Chen 2009).

5.1. Architecture

The example shown in figure 3 and 4 involves data from an EEG-only experiment. A demonstration of the music produced from this experiment can be heard on Sound Cloud, (See Pitman 2014).

A neural network‟s nodes are divided into input layers, hidden layers, and output layers. Each input coincides with structural variable from the database, and the output nodes are associated with each physiological

variable. In this example the 5 „affective" values given by the EEG software"s inbuilt analysis are used as the outputs.

Neural Network Model Summary (SPSS example)	
Structure	
129 Inputs	
1st Hidden Layer 8 nodes	
2nd hidden layer 5 nodes	
Output layer 5 nodes.	
Sample Structure	
348 Total samples	
80% Training	
10% Testing	
10% Hold Out	

Error Summary	
Holdout Average Overall Relative Error	.279
Relative Error for Dependents	
frust	.340
medit	.177
exctShort	.273
exctLong	.368
engagement	.296

Figure 3. Neural Network Architecture

5.2. Training

As matching structures and reactions are entered repeatedly into the inputs and outputs of the network, successful mathematical pathways through the hidden layers are reinforced with each sample. With more samples, trends become more prominent. With each repeat, the model changes less and less until a relatively stable state is established, at which point the training is complete, and the model can make predictions.

6. MEASURING SUCCESS

The trained neural network model can now make predictions about the changes to the affective variables. This gives us the ability to search for appropriate musical passages without endlessly rendering and auditioning results.

We can derive a notion of success by simply listening to the results, however this only provides a rough and potentially biased measure, nor does it take into account the individuals dynamic mental state, environment, or time since the samples were recorded.

A more reliable measure of success can be established by withholding some of the data samples, and comparing the model"s predictions to the known results. As these withheld results are from the same time period, environment, and individuals, they provide a relevant comparison.

In figure 3, the relative error for each affective value is given. The graph in figure 4 compares predictions on the *y* axis, to the known results on the *x* axis for each affective value. Variation from the line of *x=y* implies error. While some variation is seen, a general trend is also apparent, indicating some success.

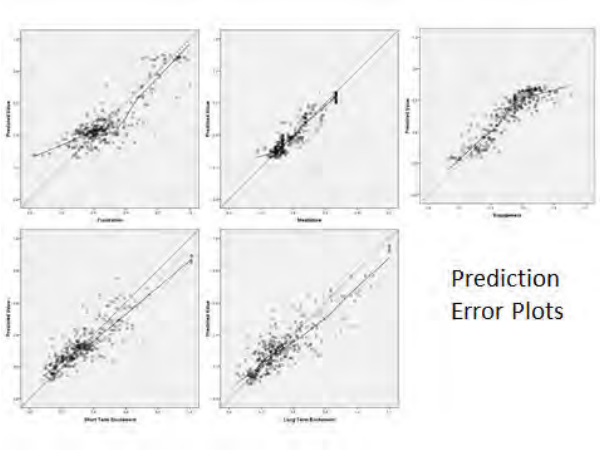

Figure 4. Prediction Error Plots

6.1. A Context for 'Success'

It is straightforward to suggest that there is no one correct answer to asking, "How will people react to this music?" Thus, we could argue that some prediction error, which might hinder a laboratory scientist, might be considered „appropriate" here.

We can consider these results as an extrapolation of the participants as individual entities, or as a unique group, at a particular time in their lives. Music generated in this way inherits a human context, despite being generated algorithmically.

6.2. Composition

The composer now has the ability to compose music in a novel medium, where only the physiological end result needs to be specified, and music is generated accordingly. This has some interesting performance and composition ramifications, especially when combined with performers wearing biosensors, driving the system in real-time. A score might be as simple as having a performer wear biosensors,

- Think of the worst moment of your life for 3 mins,
- Breathe very fast for 30 seconds,
- Look at the provided images of puppies for 30 seconds,
- Think of a very embarrassing fact about your childhood for 20 seconds,
- Tell the audience your embarrassing fact,
- Hold a water pistol to your temple for 10 seconds, pull the trigger…

While the algorithm and neural network are tasked with generating music in real-time to match or counter the physiological states of the performer.

6.3. Implementation

A system such as this could be designed to generate appropriate music in real-time for games, movies, or other media, following instructions passed from the media itself, (e.g. high frustration, sweaty palms)

This system could also be implemented for medical or therapeutic uses, even surgery, if for example, lowering heart rate is absolutely essential to an operation.

While certain effects are well documented and succinct, such as the relationship between tempo and heart rate variance, other effects are far more elusive and complex, (Hevner 1937). This type of system might prove an invaluable resource for understanding the biological musical phenomenon.

7. FUTURE DEVELOPMENTS

While success in producing art or music can be argued, striving to reduce predictive error and is still essential to the concept. Further development in this area is required before the system could be implemented practically.

The aim is to not only decrease the prediction error to within more statistically acceptable margins, but also to allow more complicated and engaging executions of generated music.

It is likely that future generations of this system will be implemented for use as programming libraries or with APIs that will allow the system to be imbedded inside media projects such as games or movies.

As development continues, more biosensors, better auditioning procedures, other methods of analysis and prediction, and refinements to the music algorithm are investigated.

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SPIN-SPIN - A PHOTOSYNTHESIZER TURNTABLE

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ABSTRACT

Record playing turntables have been present since the dawn of music recording and have been used to manipulate and create new music over the last several decades. They are a familiar interface which many can relate to: the results of scratching (physically moving a playing record back and forward) are almost as intuitive as plucking guitar strings or striking keys on a piano. This paper describes the use of the Arduino [1] microcontroller along with a selection of sensors, motors and grey-scale patterns to construct a turntable device for creating and manipulating sound that is both intuitive and visually appealing.

1. INTRODUCTION

As undergraduate electronics engineering students at Victoria University of Wellington, authors Sean Pierce and Josh Boyes have developed Spin-Spin, a new interface based on a turntable and the principles of encoders. Phototransistors provide a way to read trigidhe shade on an object above it and, via analog to digital converters and software, allow it to be turned into control signals to manipulate sound. Through this technology, a new approach to a programmable sequencer was developed in the form of a turntable, a device intuitive to many users. Spin-Spin is a motorized dual-turntable with a separate control box for altering the speeds of each turntable. The patterns of each turntable can be changed to provide variation in performance and even black and white photos can be used for noisier or more random input signals.

This paper begins with a review of related works, followed by technical review of Spin-Spin, focusing on the component choices made in its design. Section 4 presents experiments, evaluating Spin-Spin's component's performance. Section 5 examines the design and construction of the interface. The paper concludes with a discussion of performance applications of Spin-Spin.

2. RELATED RESEARCH

A number of other workers have explored alternative turntable-based interfaces. This section presents a sample of such interfaces and outlines how Spin-Spin differs from them.

Berlin-based studio The-Product created a similar interface in 2012 called 'soundmachines' [2] featuring optics and turntable technology. This interface however does not allow direct manipulation of the rotating disks and the resulting music produced is exactly timed and very computer-like. By designing Spin-Spin so the disks are directly accessible by the user, music with more abstract and asynchronous timing can be achieved.

SpinCycle [3], a colour tracking turntable installation, was presented at NIME 2006, featuring user programmable patterns via placement of fluorescent tinted plexiglass disks on top of a platter. Video analysis of the rotating platter provided data for audio-visual events. This approach offers freedom in sequencing, though at an increase in cost of materials and the greater complexity of video analysis.

In light of these related works, a human-controlled interface capable of non-metric output was deemed worthy of investigation.

3. TECHNICAL DETAILS

This section seeks to detail the technical means by which the objective of a new augmented turntable interface was fulfilled.

The interface's electronic components were sourced from Sparkfun electronics [4]. Components used in Spin-Spin included an Arduino Uno, Phototransistors, DC-Motors, Force-Sensitive-Resistors, and a Potentiometer all detailed in the rest of this section.

The Arduino microcontroller, along with its programming software, is used as the analogue to digital converter between the sensor circuitry and the computer running ChucK [6]. The analogue inputs of the Arduino are utilized to connect the sensors, via voltage dividers, giving full control from the sensors. Two pulse width modulation-enabled digital pins are used to control the motor speed.

Phototransistor sensors have two parts: an infrared-emitting LED and a phototransistor; the LED's light is received by the phototransistor and its intensity measured. This component can be used to measure both distance, or how reflective different surfaces at a constant distance are. In Spin-Spin, the sensors are used to measure a constant-distance object of varying color. Black ink absorbs much of the infrared whereas white paper reflects much of it back, providing a way to measure the shade of the grey-scale patterns above the sensors.

Spin-Spin also uses Force Sensitive Resistors (FSRs). FSRs exhibit a lower resistance when an increasing external pressure is applied. Internally, a matrix of conductive leads are brought into contact when pressure is applied, thus changing the device's resistance. Practically, these can be used in as a button whose analog voltages change with increased pressure. In Spin-Spin, a simple voltage divider circuit was used with the FSR.

In Spin-Spin, a rotary potentiometer is used to control motor speed for one of the turntables by varying the output PWM to the motor.

DC motors are the mechanical component to which the turntable platters are mounted. The motors are switched with a MOSFET. A diode was used across the motor to protect the rest of the circuit from any back voltages induced by the motor when changing speeds.

4. EXPERIMENTS

A series of evaluations of the sensors were conducted prior to the fabrication of the Spin-Spin chassis, allowing the authors to verify the suitability of the sensors.

Initial experiments of passing various printed shades of grey across the phototransistor yielded repeatable patterns of varying analog to digital data (ADC) through the Arduino analog pins. The digital range of the analogue inputs on the Arduino ranged from 0 to 1023. The printed shades a few millimeters above the sensor gave a range from approximately 40 to 1000, utilizing almost the whole available range. This confirmed the ability of the sensor to be used to measure the shade of printing.

5. CONTROLLER DESIGN

In order to produce repeatable musical patterns, it was decided a turntable system could be employed to rotate patterns over the phototransistors. Patterns with various widths and shades of grey were printed on paper then glued to old second hand store 7-inch records. Figure 1 shows these patterns.

Additionally, greyscale photographs were overlaid onto more records, allowing the images' tonal variations to be converted to audio signals.

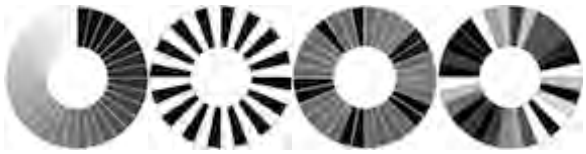

Figure 1. Examples of patterns used on disks.

A control box was designed and built alongside the main turntable interface. Altium PCB design software was used to design and implement the circuits for the sensors on an Arduino "shield", a printed circuit board that can be plugged in on top of the Arduino board.

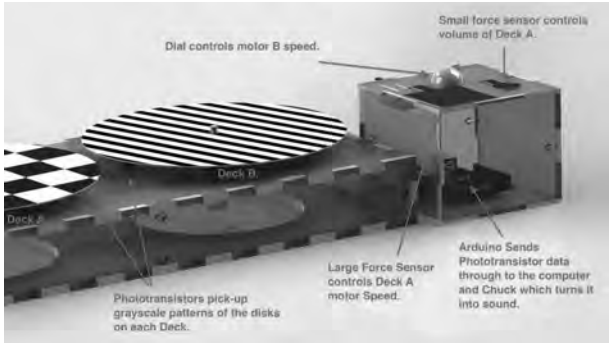

Figure 2. Turntable and Control box

DB9 cable hardware was used to connect the turntable and the controller as the cable and connectors were on hand and provided enough lines to connect the two

interfaces. The cable provided power to the turntable DC motors and access to the ADC pins on the Arduino for the phototransistors as well as necessary grounding for these components.

Figure 3 displays how the circuit was implemented on a custom milled Arduino shield. The sensors were connected to this board and along with the Arduino, were mounted inside the control box.

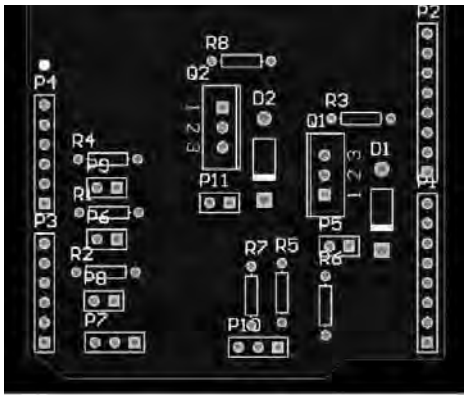

Figure 3. Control box Arduino shield.

5.1 SolidWorks Design

The enclosures for both the turntable interface and the control box were designed in the SolidWorks CAD program to be laser cut out of 6mm and 3mm acrylic and fastened together with M3 and M2 screws. This offered a high level of accuracy, which would make the boxes robust and also reduce possible axial alignment errors in the platters that held the disks (which would affect the phototransistor read values).

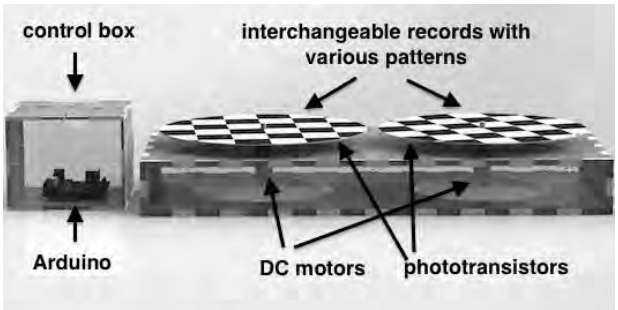

Figure 4. Rendering of the complete interface.

5.2 Sound Design

After completing structural and electronic design, Spin Spin's sound design could be explored.

All the data used for sound generation came from the phototransistor of each deck. Data from deck A controlled the frequency of a synth sound. Deck B triggered an envelope of white noise, which created a rhythm. The user could interact with these sensors in several ways. Firstly the user could actually physically spin the disks with their hands to input data via these sensors. The second way was via the other sensors on the control box. The large FSR was used to control the speed of deck A and the pot was used to control the speed of deck B. The small FSR was used to control the volume of the synth sound. Figure 5 shows the system flow of the whole interface.

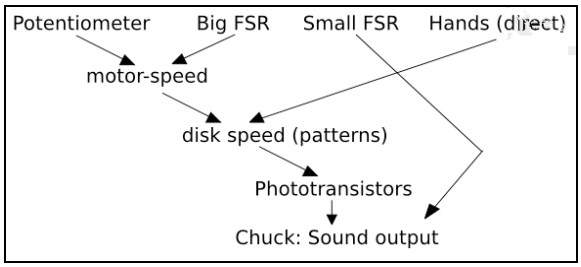

Figure 5. System flow.

5.3 Software

This section details how the ChucK and Arduino software was implemented in Spin-Spin.

The Arduino code allowed full control of the motors via the controls on the interface. The full range of the pot and large FSR were mapped to a reduced range of motor speed so the maximum and minimum settings of the sensors gave sensible extremes of motor speed. By doing this, the sensors had more control over the desired range where the audio output sounded best. Pulse width modulation from the Arduino via a MOSFET transistor circuits on the shield controlled the motor speeds as explained above in the technical section.

The Arduino code also sent data from the sensors to then be manipulated in ChucK via serial over USB.

The ChucK software design took data from the two phototransistors and the small FSR. The phototransistor of deck B triggered an envelope of white noise and a bass note square wave. This formed the rhythmic component of the musical system.

The data of the deck A phototransistor was split into ten bands over the full range. Each band corresponded to a MIDI note in an array. Several MIDI arrays were created to give different scales. The root of the scale determined

the pitch of the bass note triggered by deck B. The MIDI to frequency function was used to allow the MIDI scales to determine the pitch of a triangle wave oscillator whose gain was controlled by the small FSR.

6. MUSICAL PERFORMANCE

The Spin-Spin interface was exhibited at the 2013 New Zealand School of Music Sonic Arts Engineering Expo (SAEE). During its exhibition, viewers interacted with the sensors in a variety of ways. The familiarity of turntable-style interfaces meant the viewers could instantly connect with the device and start using it. Such intuitive control held true for the knob-style potentiometers. Audiences appeared to find the FSRs more unfamiliar: it was not immediately clear to the new user what effect they had on the outputs. Because of the common use of touch screen devices, people often thought the large square FSR was an X-Y track pad.

The ability to trigger MIDI notes rather than just using the input of the phototransistor directly as a frequency appeared to give the interface improved playability. Rather than creating an atonal sound, a tonal scale could be chosen. This functionality allows for non-musicians the ability to play in a key and mode of a scale. People of any musical skill level could interact and add to the music.

Figure 6. Spin-Spin at exhibition.

7. CONCLUSIONS AND CURRENT DEVELOPMENTS

The interface worked well, and the sonic results surpassed expectation. There is also scope to develop the interface further. Slower geared motors would enable longer loops to be made and more sturdy motor shafts would increase the accuracy of the sound produced. The audio software could also be further developed. Further exploration could be taken in using the controller to interface with Ableton Live or Max/MSP.

While the current software system is suitably functional, editing and changing parameters is not user friendly as any changes to the generated musical scales need to be made in the code. In development is a user interface built in Max/MSP [7] to allow users to: choose the number of divisions the phototransistors map to, adjust the ranges of those divisions and then translate the sensors' data from those divisions to midi note/control messages. This will allow the device to be a much more versatile tool for creating music with a computer.

In spite of the potential for future iterations, Spin-Spin represents a complete turntable-based music performance system. This system not only features an input device, but also motorized feedback and audio production facilities.

9. ACKNOWLEDGMENTS

We would like to thank the technicians at Victoria University of Wellington, specifically Sean Anderson and Jason Edwards for the laser cutting and PCB milling which were integral parts to this project.

10. REFERENCES

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[2] the-product, sound machines, <http://www.the-product.org/soundmachines>

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[4] Sparkfun Electronics, <https://www.sparkfun.com>

[5] Altium Designer, <http://www.altium.com/>

[6] G. Wang, 2008 "The ChucK Audio Programming Language: A Strongly-timed and On-the-fly Environ/mentality." vol. PhD: Princeton University

[7] Cycling '74 Max/MSP <http://cycling74.com/>

PITCH INTERVAL DETECTION AND CLASSICAL FLUTE PEDAGOGY: AN 'ELEMENTARY' CONNECTION

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ABSTRACT

Pitch is our perceptual evaluation of frequency. Detecting pitch is an important step in determining and assessing music performance. To that end, we propose that distinguishing pitch intervals and their relationship to harmonic content may aid in self-assessment of music performance techniques. This paper describes the implementation and initial findings of using offline pitch interval detection to help flutists learn and refine their comprehension of pitch and harmonic relationships.

1. INTRODUCTION

Technological tools, such as computational music analysis (CMA) and music information retrieval (MIR), are integral components for music assessment. These research tools help to advance our knowledge and study of music, both perceptually and cognitively.

The flute is one of the oldest known musical instruments. It provides a rich resource for music assessment because of its monophonic, sinusoidal-like waveform. The flute also has a long-standing pedagogical foundation from which to extract and to study key performance techniques. In this short paper, we investigate the use of offline pitch interval detection in flute performance to inform a musician of his or her performance technique with regard to the specifics of pitch or frequency.

2. BRIEF STATEMENT ON PEDAGOGY

Pedagogy involves how we tutor or teach a subject, which, for our purposes, is the study of flute instruction. This encompasses many aspects of learning how to play the flute, including hand positioning, articulation, breathing, and technique, to more advanced concepts, like music theory. (McBrearty 2010) Our preliminary study focuses on music theory, with special attention to the perceptions of pitch and pitch intervals. This research applies to an intermediate level player; one who has already mastered the basics of producing a decent tone on the instrument, knows most or all note fingerings, and knows how to decipher beginner-level music. While an intermediate player can produce notes, the flutist might not be able to perceive pitch intervals within a musical phrase or to comprehend their relationship to the musical phrase. The ability to detect pitch intervals becomes essential in music training, to develop pedagogical training from beginning to intermediate level.

2.1. Table of Pitch Intervals

A pitch interval is the ratio between two pitches (or frequencies). Flute players use equal temperament for tuning, as opposed to just intonation. This means that each successive pitch is mathematically derived using the 12^{th} root of 2 (see **Table 1**).

Interval	Pitch ratio
Unison	1.000000 : 1
m2^{nd}	1.059463 : 1
M2^{nd}	1.122462 : 1
m3^{rd}	1.189207 : 1
M3^{rd}	1.259921 : 1
Perfect 4^{th}	1.334840 : 1
Aug 4^{th} Dim 5^{th}	1.414214 : 1
Perfect 5^{th}	1.498307 : 1
m6^{th}	1.587401 : 1
M6^{th}	1.681793 : 1
m7^{th}	1.781797 : 1
M7^{th}	1.887749 : 1
Octave	2.000000 : 1

Table 1 Equal Temperament Pitch Interval Ratios

3. CMA & MIR IMPLEMENTATION

Music Information Retrieval (MIR) is the science of retrieving and assessing music information, such as melodic, rhythmic and harmonic aspects, often using digital signal processing (DSP). Computational Music Analysis (CMA) is also the study of gathering music information, but with an emphasis on the human

component of assessing the analysis component, such as with algorithmic evaluation.

3.1. Pitch Interval Detection

We use the MIRToolbox (Lartillot, *et al*. 2008) as a basis for our system. Pre-recorded solo flute music is used for training and initial testing of our pitch interval detector. First, we call a custom, sample-based onset detector using `mironsets()` and iterate through `frames{i}`, derived from the number of onsets. Within that iteration, we extract the `mirpitch()` after an `mirautocorr()` and `mirpeaks()` assessment. We store the most recent and the current pitches, and then calculate their interval through ratios and use **Table 1** to compute the intervallic relationship between the pitches. By modifying the arguments taken in by each function, we can improve the analysis.

4. DISCUSSION & CONCLUSION

In this short paper, we speculate about the relevance and the importance of interval detection within the scope of self-assessment in music performance. We describe the pedagogical as well as the musical implications of our research.

Although initial results take place offline, as opposed to in real-time, they provide a valid basis for further investigation. We propose a more comprehensive, long-term evaluation, as well as an exploration of CMA and MIR assessment tools beyond the MIRToolbox. Using this proposed system in real-time, an intermediate flute player will be able to interact with and self-assess pitch intervals, thus extending his or her playing technique and knowledge of pedagogy.

5. REFERENCES

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Programs
And
Concert Notes

ACMC 2014: Concert 1 – Wednesday July 9 at 8PM
VCA Federation Hall

Brigid Burke - Shine

For Solo Bb Clarinet, live electronics and Visuals - 12min

Shine explores a palette of extended clarinet techniques and real time granulated electronic spacialized sound, focusing particularly on breath and timbre. The pitch organization is drawn from a twelve-tone spiral with a converging and diverging whole-tone scale. The clarinet part is also scored in graphic notation that indicates the contour and duration for use of the scale throughout the piece. The visual elements consist of delicate lines and bubbles crossing between greys, blues and sepia gradations. These intersect with the timbres of the clarinet, granulated textures for the electronic part and the angular contours of the musical phrases.

Brigid is an Australian composer, clarinetist, visual artist and video-maker. She has had works performed extensively both nationally and internationally. Most recently, she has performed in the ICMC International Computer Music Conference Perth Australia, Echofluxx14 Festival Prague, IFIMPAC 2014 FESTIVAL FOR ARTISTIC INNOVATION Leeds UK,Generative Arts Festivals in Rome & Milan Italy, Asian Music Festivals in Tokyo, The Melbourne International Arts Festival, Futura Music Festival Paris France,
Mona Foma Festival Hobart, The International Clarinet Festivals in Japan and
Canada also Seoul and Australian Computer Music Festivals/Conferences. She was Artist in Residence at ADM NTU Singapore. She has been a recipient of an Australia Council Performing Arts Music Project Fellowship. She also curates Seensound Visual/Music series at LOOP Bar Melbourne Australia.
Her involvement in many audiovisual performances has led her to integrate real time sound, visuals, and theatre in her performances to create innovative use of sonic objects, speakers, video cameras, computers, clarinet, animations, notation, original prints, drawings, digital animation and free improvisation.
She has received commissions from the Australian Broadcasting Commission ABC, Australian Asian Foundation, Japanese Printing Corporation, ANAT, South Australian Govt. and Australia Council. Universities have supported Brigid in her performances, compositions and artwork. She has a Master of Music in Composition from Melbourne University, Australia and is currently in the late stages of completing a PhD at UTAS University of Tasmania with a Tasmanian Post Graduate Scholarship.

Sang Mi Ahn – Convergence

Convergence was written for saxophonist Heidi Radtke Siberz. I was interested in the interaction between the intrinsic qualities of electronic and acoustic mediums. In this piece, I used the electronics and saxophone as equal partners to take turns in background and foreground roles and to create timbral illusions. I also explored the altissimo range (very high notes) on the saxophone, which can provide unique timbral effects and is technically challenging.

There are two main ideas: trills or noodling figurations, and sustained notes. These are mutated into each other throughout the piece. The overflowing of recorded saxophone sounds at the climax is morphed into the live saxophone at the end. Most of electronic sound materials used in the piece are a manipulation of saxophone sounds pre-recorded by Heidi. The piece is dedicated to Heidi, whose passion for new music inspires me.

Susan Frykberg - Remembering Robin

for 'Cello and EA'

Remembering Robin, for 'Cello and EA, tells of a tragic pregnancy and is the last in her series called The Audio Birth Project, featuring interviews with her mother and sisters on birth-giving, combined with soundscape, electroacoustic sound/processing and live instruments. The Audio Birth Project was funded by the Canada Council. It is performed by 'cellist Lachlan Dent. Susan Frykberg is a New Zealand composer who spent many years in Canada. She currently lives in Melbourne. Her music can be found at http://earsay.com/earsay/artists/frykberg/

Warren Burt - Two Pieces From Touch Screen Suite: Lucas C Right Drone And Hexy Bouncer

The Touch Screen Suite is a set of eight compositions for iPad and Windows laptop using control surfaces made with Lemur software. Each one uses the Lemur differently, performing each piece in a unique manner. The two movements performed today reflect this diversity.

Lucas C Right Drone uses a specially designed microtonal keyboard, made with Lemur, controlling the LinPlug Spectral softsynth. Here the microtonal scale, based on Erv Wilson's "The Scales of Mt. Meru" papers, is divided into groups of 5 and 7 notes each. The keyboard is divided horizontally, with keys on the right sustaining drone notes, while keys on the left act like normal musical keys over a 5 octave range. I made two different keyboards, each of which uses a different dividing of the scale into 5 and 7 note subsets.

In Hexy Bouncer, the Lemur sends MIDI commands to a Windows laptop running Jacky Ligon's XEN_FMTS2 free softsynth, playing one of Ervin Wilson's microtonal "Mt. Meru" scales. On the Lemur surface there are 6 "bouncing ball" controllers, which have a natural entropy causing them to slow down and stop. Each "bouncing ball" controls some parameter of 3 voices - pitch, duration, dynamics, etc. Without my intervention, the piece will decay to silence in a matter of seconds. However, once I move my finger on a ball, changing its speed and direction, the musical results are frequently a surprise to me. So the performance is a navigation through a musical "play space" which will be almost as much of a surprise to me as it is to the audience.

Michael Terren - -ecstasy

for soprano clarinet and laptop

–ecstasy was composed primarily out of developing ideas relating to mediality in music—observing the relationship between the work and its medium. Here, a medium I'd never previously engaged with (the soprano clarinet) is explored by way of its historic perception as a subordinate instrument, and the ever-present connotations of the "for instrument and electronics" continuum.

ACMC 2014: AV Concert – Thursday July 10 at 11:45AM
VCA Federation Hall

Charles Nichols, Amber Bushnell - Sound Of Rivers: Stone Drum

Charles Nichols, music
Amber Bushnell, video
Nicole Bradley Browning, choreography
Mark Gibbons, poetry and narration
Allison Herther, dance

Sound of Rivers: Stone Drum is a fixed media version of a live performance, a multimedia collaboration between choreographer Nicole Bradley Browning, animator and video artist Amber Marjorie Bushnell, poet and narrator Mark Gibbons, dancer Allison Herther, and composer and electric violinist Charles Nichols, that illuminates research by scientist Mark Lorang, into how insects navigate the ecosystem of floodplains, by the sound of rivers.

After reading Mark Lorang's scientific research and discussing his hypothesis about the migration of the stone fly in relation to the sound of water, poet Mark Gibbons returned to the source, to experience the sounds of water in creeks and rivers. Inspired by both the sounds and images he rediscovered on the Clark Fork River and Petty Creek, he began writing. He knew man had to come into the poem, so the fisherman in him came to the poem. While sound obviously dominates, it was the death of Dave Brubeck that brought actual musicians into the poem and helped it all come together. There is no explaining writing a poem, but he was inspired by the actual experience of going to water, listening to it, watching it, reading the scientific research, and allowing his own memories and tastes in music to enter the poem.

The choreography is divided into three sections representing River: under the river, Animal: in the river, and Human: with the river, with Animal comprised of Insect, Fish, and Bird. The dancer interacts with a large cyclorama, a sheet of elastic and reflective fabric, stretched across the width and depth of the stage. At the back of the cyc is a skirt sewn into the fabric, that allows the dancer to insert themselves into the sheet. The dancer is at times under the fabric, pushing and grasping at the cloth, and at other times attached to the sheet, twisting, stretching, billowing, and plucking the expanse.

The projection and animation is divided into three parts. The first, a panel at the back of the stage, that contains striations that undulate in response to a live audio feed from the music, and a colored shadow based on a live video feed of the dancer. Around the panel, also projected on the back of the stage, is intricate animation composed of hand-drawn water diatoms, river plants and trees, insects, and animals, that grow and move in symmetrical patterns, throughout the piece. These river elements were chosen specifically to reflect the health of the river ecosystem, and are interconnected as they are in the environment. Projected on the cyc, that the dancer interacts with, are animations built from insect and bird wings, and fish scales, that grow in density and modulate in color, as they pass over the surface.

The music is divided into three textures. The piece starts with processed spoken text, recordings of the poet reciting his poem, that have been stripped of their harmonic spectrum, stretched in time, and granulated into jittery textures. These soundfiles, based on words, echo the live narrated text, and cascade in parallel along the sides of the audience, through a quadraphonic sound system, encircling the auditorium. The second texture is comprised of filter banks, built from spectral analysis of recordings taken at the field station and on river floats, that filter recordings taken above and below the water, into surging harmonies, that ebb and flow. These harmonies accompany bowed-string physical model synthesized sound, that uses the data of river depth to drive pitch, river velocity for amplitude or loudness, wind

speed from the North for bow pressure, and from the East for bow position, creating a sonification of the environmental data. Finally, a violinist performs passages, that combine the scales and rhythmic motives, of the music and instrumentalists mentioned in the poetry, into original melodies, processed with multiple layers of phaser and delay effects, that sweep and echo in the four-channel sound system.

Sound of Rivers: Stone Drum is based on work supported by the Montana Institute on Ecosystems award from NSF EPSCoR Track-1 (INSTEP 3) program under Grant # EPS-1101342 at the University of Montana.

Amber Bushnell finished her MFA in Media Arts (Integrated Digital Media option) at the University of Montana in May 2011. Currently, along with being an artist, she works as an online adjunct instructor for the University of Montana's Media Arts Department, a freelance designer, and works full-time as the Graphic Artist/Designer for the University of Montana's College of Visual and Performing Arts. She has also worked as the Lead Designer / Creative Director for 2 of YouTube's New Original Channels: SciShow & CrashCourse Biology. Amber Bushnell's focuses and interests are in illustration, color theory, installations, experience design, live visual performance (VJing), 3D projection mapping, animation, public art, interactive design, and collaboration. Her work combines digital and analog art methods, and she pays close attention to color. Bushnell weaves scientific, historic and cultural details within each of her designs in an abstract style. Throughout her ongoing projects she strives to positively influence the audience by initiating discovery and curiosity. Visit Bushnell's online portfolio at www.amberstudio.net

Composer, violinist, and computer music researcher, Charles Nichols (www.charlesnichols.com) is an Assistant Professor of Composition and Music Technology at Virginia Tech, and has earned degrees from the Eastman School of Music, Yale University, and Stanford University. He has presented his compositions, including acoustic and electroacoustic music, and research, including telematic musical performance over Internet2, haptic musical human-computer interface design, and wavelet audio analysis and resynthesis, at national and international conferences and festivals. He has received support from the National Science Foundation, National Endowment for the Arts, and Prop Foundation, and recognition from the National Academy of Music, La Fundación Destellos, Institut de Bourges, New Music USA, ASCAP, and the Montana Arts Council. Recently he was a visiting scholar, at the Sonic Arts Research Centre at Queen's University Belfast, N. Ireland, a visiting composer, with the Namaste Ensemble in Città di Castello and Rome, Italy, and a resident, at the Ucross and Brush Creek Foundations, in Wyoming.

Luca De Siena - Concrezione

Concrezione is an audiovisual work by Luca De Siena (music) and Antonello Belgrano (video). It is an attempt of human exploration of the depths generable within a cathodic domain. This work deals with the raw edges of human perception, manipulating phenomena of retinal persistence and psychoacoustic thresholds. We are surrounded by a universe of architectures, materials concretions of thoughts that should be the extensions of our senses. *Concrezione* uses abstraction as a sum of not-immediately-identifiable shapes even though still human in the way of being assembled and perceived. These audio-visual landscapes are microscopically explored, unravelled, untangled and subsequently re-established.

Luca De Siena graduated *cum laude* in Electronic Music at the Conservatory "L. Refice" of Frosinone under the guidance of prof. Alessandro Cipriani. The questions underlying his research are about the relationship between tradition and innovation and between art's functionality and rituality in modern society. He attended workshops and master classes with Alvise Vidolin, Leigh Landy, Mary Castro. He studied intermedial art with Alba D'Urbano at the HGB Leipzig (Germany). His acousmatic pieces have been selected in several festivals and concerts in Italy and abroad. His audiovisual work "Concrezione" (video by Antonello Belgrano) has been selected by many international festivals including the International

Computer Music Festival 2012 of Ljubljana (Slovenia) and the WOCMAT of Taiwan. Together with HEKA he is also the author of electroacoustic soundtrack for the silent film "Il Piccolo Garibaldino" commissioned by Nuova Consonanza as a part of the celebrations for the 150th anniversary of the unification of Italy.
As a mastering engineer he has worked on the s post-production of some electronic music records released by some foreign independent labels.

Timothy Opie - Roar

Roar uses the musical composition technique eco-structuralism to manipulate and blend the sonic structures within the roar of waves and the roar of a fire. Eco-structuralism is musical composition technique whereby field recordings are analysed to determine underlying structures, which are then used as musical constructs to create abstract musical works, thereby blending abstract music with natural sound.

Josh Simmons - bitPushIntersection

"The art of meditation is a way of getting into touch with reality, and the reason for it is that most civilized people are out of touch with reality because they confuse the world as it with the world as they think about it and talk about it and describe it. For on the one hand there is the real world and on the other there is a whole system of symbols about that world which we have in our minds. These are very very useful symbols, all civilization depends on them, but like all good things they have their disadvantages, and the principle disadvantage of symbols is that we confuse them with reality, just as we confuse money with actual wealth." - Alan Watts

David Hirst - The Shape Of Water

Duration 7:30
The Shape of Water is a video music work created in the studio by the composer/video artist for a fixed medium. The Shape of Water actually re-shapes water sounds in a percussive duel with sampled, metallic percussive timbres, and creates semi-abstract imagery from video of water images. The sounds and images were recorded in, and around, Melbourne's arts precinct. The Shape of Water is the title track from an album just released on iTunes, available at:
https://itunes.apple.com/au/album/the-shape-of-water/id868097395
The Shape of Water video can be downloaded from Vimeo at:
https://vimeo.com/92104698

ACMC 2014: Diffusion Concert – Thursday July 10 at 5:15PM
VCA Founders Gallery

Surround sound system supplied by Mark Pedersen @ Chailight Productions: www.chailight.com

Matt Hitchcock – Canopy

The multichannel (8) work is inspired by many years spent in tropical rainforests. Spending extended periods of time in small one-man tents, climbing rock faces, abseiling down the sides of waterfalls, tramping through creeks, sleeping under the stars when possible, absorbed in the varying sounds of life and nature from the thundering tones and melodies of massive waterfalls, bird songs, trees and branches creaking and bark 'popping' and 'crackling' under wind pressures, water drops hitting different surfaces, the strikingly different spatial properties of different types of undergrowth, natural canopies of forest life and terrain and how these elements processes sound. Emotionally, the work responds to the vibrant and constantly changing contrasts between darkness and light which change moods and perceptions, causing perceptual focus to change, the real and surreal blending into amorphous clouds of experiential waves of 'moments' in time. This piece takes natural sounds such as bird songs and morphs and treats them so as to obscure their true source while still contributing important aspects to the overall soundscape – other grains of sound are manipulated to emulate but not replicate natural sources, done in such a way as to distort perceptions and completely blur the real and surreal. Extra-musically, this composition uses spatialisation techniques that focus on isotropic phantom images created between equidistant speakers thereby creating an immersive depth of field using pair-wise planes.

Haruka Hirayama - Myth II

Haruka Hirayama is a composer from Niigata, Japan. She studied composition and computer music with Cort Lippe and Takayuki Rai at Sonology Department, Kunitach College of Music in Tokyo and received a BA and MA.
She was awarded the Residence Prize at the 32nd International Competition of Electroacoustic Music and Sonic Art (IMEB/Bourges, France) in 2005, and the Pauline Oliveros Prize at the Search for New Music by Women Composers Competition (IAWM/US) in 2012.
Her activities as a composer are diverse including composer-in-residence at the Institute for Electroacoustic Music in Sweden (EMS), a commission from Chaotic.moebius (Plattform für neue und experimentelle Musik in Basel), and many works have been selected and performed at various international festivals and conferences in Spain, US, France, Sweden, Germany, Canada, UK, Australia, Switzerland, Netherlands, South Korea as well as Japan.
Currently she has been researching at NOVARS research centre of the University of Manchester as a PhD student under the supervision of Dr. Ricardo Climent, and also active as a member of an ensemble of NOVARS.

Antonio D'amato - Sphere Within A Sphere

Sphere within a sphere is a short piece inspired by one of Arnaldo Pomodoro's sculptures bearing the same name. It was moulded in 1991 and placed in the square in front of the United Nations Headquarters in New York. The piece describes a complex machine which reveals by degrees and only partially his working, by means of a gradual disclosure of its inner microstructures. Sound elements, both continuous and impulsive are elaborated, mixed and overlapped several times in order to give birth to a visionary sound landscape where a monolithic and smooth shape conceals deep stratified discontinuities like linked cogwheels.

Antonio D'amato is intoxicated by music. He graduated at conservatory in Piano, Harpsichord, Music for multimedia, Instrumental music teaching and Electronic music. He also studied composition for eight years, bassoon for three years, baroque organ and audio engineering. In 2010 he was Ondes Martenot student in Strasbourg and Paris. At university he was student in Media and Communication. At the moment his main interest is joining traditional

composition procedures and the wide opportunities of computer-based music. Some of his instrumental works are published by Forton Music, U.K. His first electronic composition was selected for a performance during the ICMC 2012 Conference. Other works were performed in Australia, Brazil, Italy, Taiwan and USA.

Joao Pedro Oliveira – 'Aphâr

Electroacoustic music (8-channel)

'Aphâr is a Hebrew word that means "dust".
This piece is inspired on the dream of Jacob, described in the Old Testament (Genesis Chapter 28):

Jacob had a dream: He saw a stairway erected on the earth with its top reaching to the heavens. The angels of God were going up and coming down it and the Lord stood at its top. He said, I am the Lord, the God of your grandfather Abraham and the God of your father Isaac. I will give you and your descendants the ground you are lying on. Your descendants will be like the dust of the earth.

To climb Jacob's ladder is a very difficult process. Each step you take is harder than the previous one and takes more time and effort to accomplish. These steps are heavy, and the dust in your feet is spread around, and finally disappears. If you reach the top of the stair, everything else is gone, and a door closes to the rest of the world, you have reached infinity.

Matt Hitchcock - Breathing Light

The multichannel (8) work is inspired by the concept of moving air and different ways of interrupting air-flow. Motivated by a violent storm and a subsequent four-day blackout, candle power, heavy winds and lots of sitting in the dark, the sounds are created using storm detritus and implements used in the storm recovery process and sound captured at the time of the storm. These include heavily filtered and modified sounds of: two high powered industrial air-blowers as the primary air-drivers, with varying ways of interrupting airflow such as multiple lengths of PVC storm-water pipe, ripped flyscreen, pizza boxes, shattered window glass, and a water-damaged middle section of a bass recorder; a Flugel horn, a French horn, and back-yard recordings taken over the course of the four days. Extra- musically, this composition uses spatialisation techniques that focus on isotropic phantom images created between equidistant speakers rather than placing sounds in speakers, and in creating an immersive depth of field using pair-wise planes.

ACMC 2014: Live Diffusion Concert – Thursday July 10 at 8PM
VCA Founders Gallery

Surround sound system supplied by Mark Pedersen @ Chailight Productions: www.chailight.com

Paulina Sundin, Monty Adkins, Jonny Axelsson - Splintered Echoes

This work is the result of an extended period of research investigating how the work of William Sethares can be implemented in electroacoustic composition. Software has been constructed in Max/MSP by Adrian Gierakowski directed by Paulina Sundin that enables an spectrum analysis of sound files to be created. Scales of the most significant partials are then extracted. The software enables scales to be transposed onto any existing scale step as well as morphed on to a different scale from a different analysis. A series of live tools have then been constructed to enable the performance and live electronic manipulation of these elements.

The composition of the work took the form of a series of improvisations held at EMS Stockholm in February 2014. As a result the harmonic and large-scale formal progression of the piece is fixed. There are five movements based around the spectrum of i) a drum ii) a low bell iii) temple block iv) a gong and v) a combination of gong and drum spectrums. The moment to moment progression of the piece is improvised. The overall shape of specific movements has been discussed in advance, however, there is no score for the percussion. Axelsson both leads the electronics through his gestures and is able to respond to what results from the transformations presented by Sundin and Adkins.

Splintered Echoes was first performed live at the Beyond Pythagoras Symposium held at the University of Huddersfield in March 2014. At the ACMC the piece will be performed by Jonny Axelsson playing against a fixed media part prepared by Adkins and Sundin.

Yu Tao - Peach Blossom Fan

Peach Blossom Fan is a legendary play written by Kong Shangren of the early Qing Dynasty in 1699. In total, the play has 40 chapters divided into three sections. The story goes that during the period of the late Ming Dynasty, members of the Donglin Party fled for their lives to Nanjing and re- established "Fushe" (the Restoration Society), fighting against the deposed official Ruan Dacheng. Dacheng remained a confederate of Wei Zhongxian, a eunuch who seized all the powers of the state. Hou Fangyu, one of the mainstays of the Restoration Society, met a geisha named Li Xiangjun, and the two fell in love. Hou Fangyu sent a fan inscribed with a poem to Li Xiangjun and married her. Ruan Dacheng asked someone to send a substantial dowry to ingratiate himself with Hou Fangyu, but the dowry was handed back by Li Xiangjun after she learnt the identity of the sender. For this reason, Ruan Dacheng harboured resentment in his heart. After Emperor Hongguang took the throne, Ruan Dacheng was reappointed to an important position. He took the opportunity to falsely incriminate Hou Fangyu, forcing him to seek shelter from Shi Kefa, and coercing Li Xiangjun to marry someone else. Li did not yield to him and hit her head against the wall to commit suicide. She failed, and the blood spattered on the fan. Yang Longyou, a friend of Hou Fangyu, used the blood drops to draw a branch of peach blossoms with them. When the Ming Dynasty collapsed, Li Xiangjun went to live in the mountains and became a nun. And when Yangzhou fell, Hou Fangyu fled to Nanjing to look for Li Xiangjun. He finally converted to Taoism, following Li Xiangjun's path. The Peach Blossom Fan is said to be "a painting of social scenes in late dynasty" periods, in which the contents are complicated, the roles various, and the scenes motley.
The music here describes one of these scenes. A transformation of the flute brings a new quality to the sound, which seems like a human scream; it enters into dialogue with the voice of the flutist. Moreover, an installation of a lighting system in the tube of the flute adds a subtle light variation which follows the fingering changes. The electroacoustic part is written for six channels that contrast with the flute on the stage.

Text :

萧然 美人去远

Xiao ran, mei ren qu yuan
Desolate I wander, distant my only beloved.

重门锁 云山万千 知情只有闲莺燕

Chong men suo, yun shan wan qian, zhi qing zhi you xian ying yan
Daunting the walls between us, these thousand, ten thousand, mountains. Only the faithful oriole knows my heart.

尽着狂 尽着颠

Jin zhuo kuang, jin zhuo dian
All is madness All is folly

问着他一双双不会传言

Wen zhe ta yi shuang shuang bu hui chuan yan
Cannot the oriole bring news of my love?

熬煎

Ao jian!
Sorrow!

想当日猛然舍抛

Xiang dang ri meng ran she pao
How cruel the day of our parting!

银河渺渺谁架桥

Yin he miao miao shei jia qiao
In old stories, the magpies formed bridges to let lovers meet for their trysts,

墙高更比天际高 书难捎

Qiang gao geng bi tian ji gao, shu nan shao
but the walls which divided us were higher than the sky, far too high to be crossed by letters.

梦空劳 情无了 出来路儿越迢遥

Meng kong lao, qing wu liao, chu lai lu er yue tiao yao
Our dreams were vain, and love was quickly fleeting. Oh, the winding ways we travelled!

曾见金陵玉殿莺啼晓 秦淮水榭花开早

Ceng jian jin ling yu dian ying ti xiao, qin huai shui xie hua kai zao
At dawn, I have heard the oriole sing by the great houses of Nanjing. I have seen the flowers blossom by the riverside.

谁知容易冰消

Shei zhi rong yi bing xiao
Who was to know that it might so easily vanish?

眼看他起朱楼 眼看他宴宾客 眼看他楼塌了

Yan kan ta qi zhu lou, yan kan ta yan bin ke, yan kan ta lou ta liao
I saw them build the courtesan's quarters, saw them feast and make merry. But I saw, too, how the building collapsed.

这青苔碧瓦堆

Zhe qing tai bi wa dui
Now moss covers those piles of broken bricks.

那乌衣巷不姓王 莫愁湖鬼夜哭 凤凰台栖枭鸟

Na wu yi xiang bu xing wang, mo chou hu gui ye ku, feng hung tai qi xiao niao
The old families no longer live in those houses; and the ghosts' nocturnal wailing echoes on the lake. The houses of power have become owl roosts.

残山梦最真 旧境丢掉难 不信这舆图换稿

Can shan meng zui zhen, jiu jing dui nan diao, bu xin zhe yu tu huan gao
Broken dreams are the most real, and sights once seen are hard to forget.

诌一套哀江南 放悲声唱到老

Zhou yi tao ai jiang nan, fang bei sheng chang dao lao
I have written these laments for you. Intone them sadly, and grow old.

Lindsay Ross Vickery - Sacrificial Zones

For clarinet and electronics.
In his "Days of Destruction, Days of Revolt" Chris Hedges details a number of places in the US which he describes as "sacrificial zones", places that have essentially been abandoned by society and government. One of the places he visits is Camden New Jersey. It was once a hub of industry, but has become a no-go zone with large homeless camps, ruled by gangs, with a permanent underclass of unemployed. The graphical score (Figure 1.) for Sacrificial Zones is a collage created from images of Camden.

Figure 1. The graphical score for Sacrificial Zones

Sacrificial Zones is a rhizomatic score in which the performer reads along intersecting pathways that are orientated both vertically and horizontally (Figure 2.).

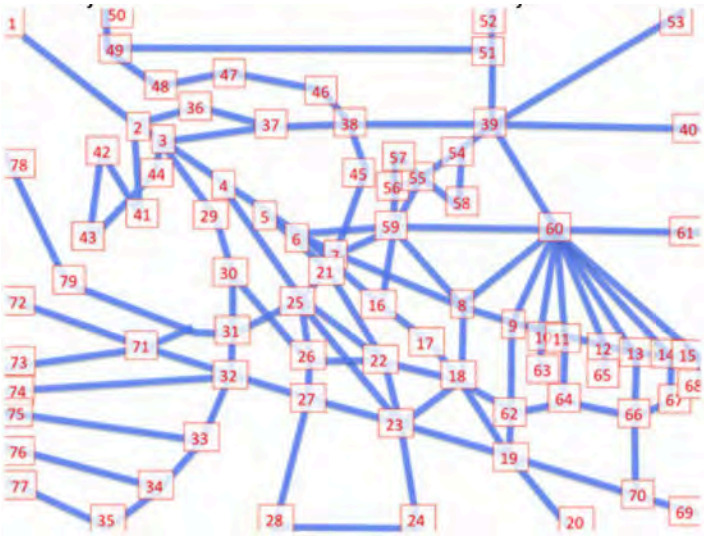


Figure 2. Rhizomatic pathways in Sacrificial Zones

In addition, the score is comprised of five layers each notated in a different manner: non-semantic, semantic, traditional, proportional and spectrogram (Figure 3.). The notated score was evolved from improvisations based on "readings' of the non- semantic notation.

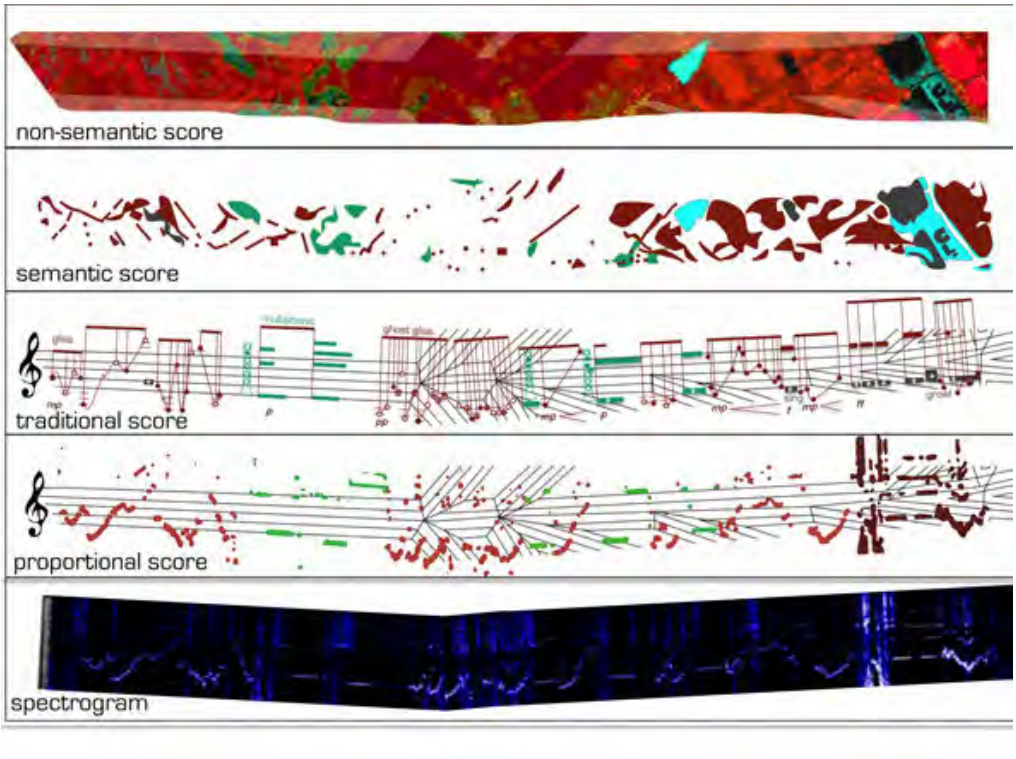


Figure 3. Five forms of notation used in Sacrificial Zones

The material to be realized by the performer is specified by a moving circle on the score. The work unfolds indeterminately along its rhizomatic pathways, and also cross-fades between the five notational paradigms. The clarinet performance is processed by delay, pitch shift, distortion, spectral manipulation and ring modulation.

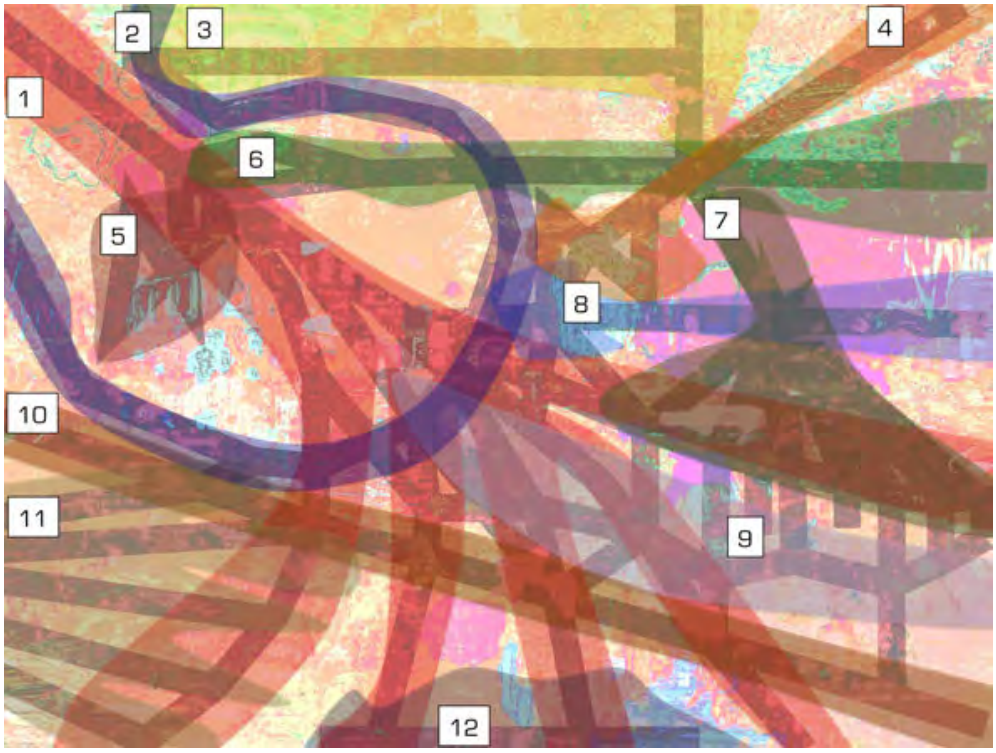


Figure 4. Signal Processing zones in Sacrificial Zones

The amplified sound of the live clarinettist is diffused to four (or eight) speakers in a spatial location analogous to the position of the performer on the score. The electronically processed signal follows a separate path through the space. One instantiation of the pathways is shown in Figure 5.

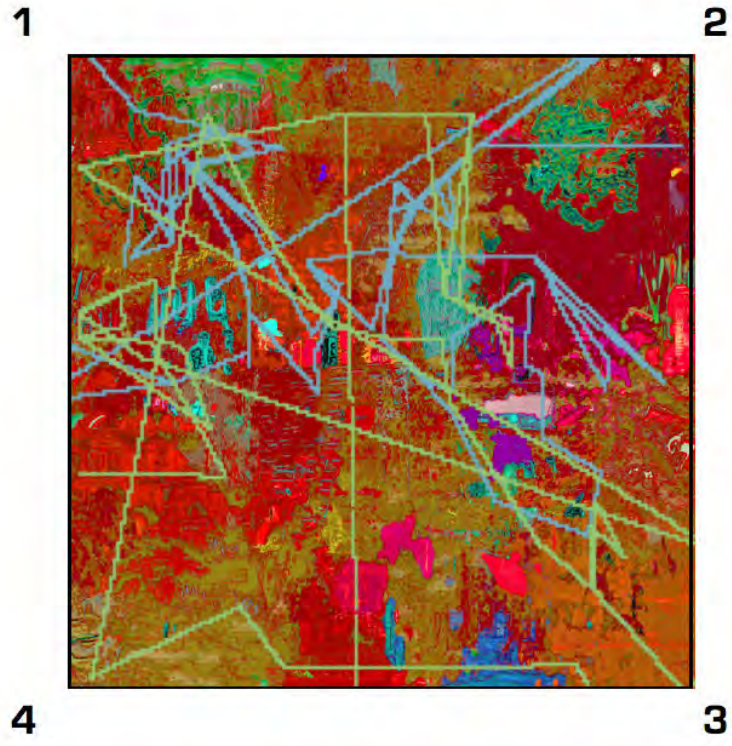


Figure 5. One instantiation of spatialisation pathways Sacrificial Zones

Steve Adam - An Abbreviated Space (for Lawrence Whiffin)

For solo flute, computer and spatial sound system.

Flute: Tamara Kohler, computer: Steve 'Stelios' Adam

Commissioned by the Astra Chamber Music Society earlier this year as part of a memorial concert for Lawrence (Laurie) Whiffin, teacher, colleague and friend, *An Abbreviated Space* draws on Whiffin's short serial work *A Brief Moment* - for woodwind trio - as a point of departure.The title and organising principles of the piece assume something of a spatial analogue to the temporal theme of Laurie's title, where initial ideas about spectral treatments and layering of a selection of motifs gradually evolved to embrace spatiality - not simply in terms of the effect of sounds moving across a sound field (though they do), but as a means of shaping formal aspects of the work. To this end, a larger collection of discrete sound elements – all derived in one way or another from the performer – roam through a virtual space, only becoming apparent to the listener as they traverse the 'window of audition'. With thanks to Tamara Kohler for performing the piece tonight with relatively short notice and to Mardi McSullea for her contribution to the development and first performance of the work.

Bio: Steve Stelios Adam has harboured a long-term fascination with music, sound and its associated technologies. As a composer and sound artist, Steve has created works for a variety of media and performed with instrumentalists, ensembles, choirs and interactive music systems of his own design. His electro-acoustic works have been presented both nationally and abroad and appear in recordings by Move Records, ANU and ABC Classics. Informed by the technical challenges of his own works, he occasionally consults for other artists and organisations to develop software designs for specialised media-based projects.

ACMC 2014: Concert 2 – Friday July 11 at 5:15PM
VCA Federation Hall

Tim Kreger – Firehose
For Electric Guitar and Desktop Computer. Duration 7-12 mins.

Firehose is a real-time improvisation using the Twitter live stream api. Twitter provides access to the live stream head which is known as the firehose. This work uses a filtered form of the firehose to generate a musical stream for the guitar to react to. ASCII characters are mapped to pitch sets and presented in two forms:
1/ In parallel, the mapped pitches control sine tone generators playing simultaneously. Each tweet generates a new sonority and are played as they come off the head of the stream.
2/ Sequentially, each tweet encodes a melodic sequence played by three different waveform generators played in alternation.
The filters used are simple one word filters such as love, happy, lonely, sad etc. Each filter possesses its own rhythm pace and patterning as much of traffic can quite often be the same message permeating(ie retweets replies etc).

Michael Terren - Whirling Knives
for laptop and 4-speaker array

Whirling Knives was composed for a concert commemorating the 100th anniversary of the beginning of World War One. While it responds in part to present-day portrayals of wartime mythologies (particularly the Battle of Fromelles), it also calls into question the aesthetics of interpreting historical events using the contemporary mediums of computer and multi-speaker array. Digitally synthesised spatial musics have traditionally favoured abstract associations—my goal was to successfully navigate the contradictory aesthetics of the absolute and the thematic to create a piece that acknowledges the atrocities of World War One while retaining a degree of semantic independence.

Roger Alsop, Brigid Burke - Motion 5
For solo clarinet & interactive visual score

Brigid is an Australian composer, clarinet soloist, poly-media performance artist, video artist, visual artist, and educator. Brigid's work also includes the exploration of acousmatic music, and composing multi-tasking performance works, live video footage, Bb/Bass Clarinet and live audio laptop configurations.

Roger is a sound and video artist working across all areas of performance. He holds a PhD (titled Mapping Gestures in the Creation of Intangible Artworks) from RMIT School of Communication and Media, a Master of Arts in Composition, a Graduate Diploma in Music Technology, and a Bachelor of Arts in Music, from La Trobe University. He has studied Composition for Film through AFTRS, and Conducting through the Faculty of VCA and MCM.

Charles Martin – MetaLonsdale
Performance for 2-4 iPads and Random Forest Classifier. Duration: 10 minutes.

MetaLonsdale is a musical work for iPad ensemble and Random Forest Classifier that focusses on percussive interaction and ensemble improvisation on touch screens. Commissioned for Everything/Nothing Projects Gallery in Canberra, Australia, the work transforms the sonic environment of the cafés and shops around the gallery in Lonsdale St, Canberra through field

recordings and sampled percussion instruments. In MetaLonsdale, the iPad screens are treated as percussive surfaces with the performers accessing a small palette of sounds and effects through simple tap and swipe actions. Just as percussionists explore a vocabulary of gesture to expand the sounds of simple instruments, the performers of MetaLonsdale use percussive gestures to deconstruct the available sounds in this work. The MetaLonsdale app is available for free from the iTunes app store: http://metatone.net/metalonsdale

The performance is mediated by a laptop running a Random Forest Classifier that interprets touch data from both iPads according to a vocabulary of nine percussive gestures. The laptop tracks these gesture states, responding to the performers' exploration of new musical ideas by changing the sounds and tonalities available to them on the iPads.

Andrew Sorensen, Ben Swift – Codified

Live coding with Extempore. Extempore is a programming language and runtime environment designed to support 'cyberphysical programming'. Cyberphysical programming supports the notion of a human programmer operating as an active agent in a real-time distributed network of environmentally aware systems. The programmer interacts with the distributed real-time system procedurally by modifying code on-the-fly.
Extempore provides a completely hotswappable runtime environment with a strong temporal semantics, a flexible concurrency architecture, builtin support for distributed heterogenous operation (both OS and Architecture), and aims to provide flexible compiler-as-a-service functionality. Extempore makes extensive use of the LLVM project to provide back-end code generation.

ACMC 2014: Concert 3 – Friday July 11 at 8PM
VCA Federation Hall

Paul D. Miller (aka DJ SPOOKY That Subliminal Kid)

Born in 1970 in Washington D.C., Paul D. Miller is an artist, writer, and musician working in New York. Miller is best known under the moniker of his "constructed persona" as "DJ Spooky That Subliminal Kid."

Miller has recorded a huge volume of music and has collaborated with a wide variety of artists, writers, musicians and composers such as Robert Wilson, Iannis Xenakis, Ryuichi Sakamoto, Mariko Mori, Kool Keith/Doctor Octagon, Pierre Boulez, Saul Williams, Steve Reich, Yoko Ono, Metallica, Chuck D, Thurston Moore of Sonic Youth, Paul Auster, and Colson Whitehead among many others.

Miller's work as a media artist has appeared in the Whitney Biennial; The Venice Biennial for Architecture (2000); the Ludwig Museum in Cologne, Germany; Kunsthalle, Vienna; The Andy Warhol Museum in Pittsburgh and many other museums and galleries. His video installation "New York Is Now" was exhibited in the Africa Pavilion of the 52 Venice Biennial 2007, and the Miami/Art Basel fair of 2007.

Miller's award-winning book "Rhythm Science" was published by MIT Press 2004, and was followed by "Sound Unbound," an anthology of writings on electronic music and digital media, published in 2008. His newest book, "The Book of Ice", was published in July 2011 by Mark Batty Publisher. His latest, large-scale multimedia performance piece is "Terra Nova: Sinfonia Antarctica", commissioned by the Brooklyn Academy of Music/Next Wave Festival and other highly respected presenters.

http://www.djspooky.com

The 60x60 Project:

60x60 was started by composer Robert Voisey in 2003. Here's what he has written about it:

60X60 IS A ONE-HOUR MUSIC EXTRAVAGANZA
FEATURING ONE-MINUTE SLICES OF NEW MUSIC

60 works by 60 artists, 60x60 offers something different every minute
60x60 is a project containing 60 works each 60 seconds in length presented continuously in an hour performance synchronized with an analogue clock. 60x60 presents a slice of what is happening in the contemporary music scene by representing 60 works that are diverse in aesthetic and style. Works are selected from an international pool of emerging and established composers and sequenced in order. The resulting mix is presented, without interruption, as a continuous one-hour performance synchronized to an on-stage analogue clock.

Embracing diversity with a fervour not seen anywhere else on the planet
Eclectic by nature, 60x60 offers an unmatched diversity of styles, making for a fast-speed, electrifying one-of-a-kind performance that never ceases to surprise. Music includes contemporary, neo-romantic, neo-classic, text-sound, ambient, environmental, noise, experimental, theatrical, folk, jazz, blues, tech-house, rock and everything but the kitchen sink (and maybe even that.)

Collecting 60-second miniatures by composers and sound artists from around the world since 2003,
60x60 has featured the work of thousands composers and presented them in hundreds of performances spanning the globe in more than 30 countries. There have been over 35 mixes to date. An International Mix is done every year to represent the complete pool of submissions for that year. And then every year (with the exception of the first) there has been extra alternate mixes of the project. Some mixes are regional to particular regions such as the Canada Mix, Pacific Rim Mix, Midwest Mix, and New York Mix. There are also mixes devoted to gender such as the Athena Mix which has all women. Some mixes are based on themes such as the Munich Mix or the UnTwelve mix.

FOR THE MELBOURNE ACMC, WE THOUGHT THAT A MELBOURNE (AND ENVIRONS - COMPOSERS FROM AS FAR AWAY AS STAWELL, DROMANA AND BENDIGO!) 60X60 WOULD PROVIDE A GREAT INTRODUCTION FOR OUR VISITORS TO THE AMAZING VARIETY OF MUSICAL STYLES AND KINDS OF MUSICAL THINKING THAT CO-EXIST SIDE BY SIDE HERE. WE EMAILED OUT INVITATIONS TO ABOUT 130 COMPOSERS TO CONTRIBUTE, AND WE RECEIVED 110 SUBMISSIONS. UNLIKE THE INTERNATIONAL 60X60S, OURS WAS NEVER INTENDED TO BE A COMPETITION, SO WE HAVE ASSEMBLED TWO COLLECTIONS OF 60 PIECES EACH, WITH A SLIGHT OVERLAP BETWEEN THE TWO SETS. WE USED RANDOM NUMBERS TO DETERMINE THE LUCKY COMPOSERS WHO APPEAR IN BOTH COLLECTIONS. WE ALSO ASKED COMPOSERS TO SEND US AN IMAGE TO GO WITH THEIR PIECE. 57 COMPOSERS DID SO. SO THE COMPOSERS WHO SENT PHOTOS WENT INTO THE WEDNESDAY PERFORMANCE, WHILE THOSE WITHOUT PHOTOS WENT INTO THE FRIDAY PERFORMANCE. AGAIN, WE USED RANDOM NUMBERS TO DETERMINE WHICH THREE COMPOSERS WITHOUT PHOTOS WENT INTO THE WEDNESDAY PROGRAM.

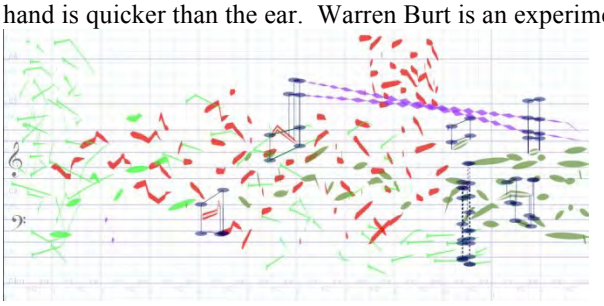
THE RESULTING SEQUENCES OF PIECES ARE EXCITING BEYOND OUR WILDEST EXPECTATIONS. THE QUALITY AND DIVERSITY OF MUSIC IS WONDERFUL. WE HOPE YOU ENJOY LISTENING TO THE SEQUENCES AS MUCH AS WE ENJOYED PUTTING THEM TOGETHER. AND MANY THANKS TO THE COMMITTEE OF ACMC 2014 FOR ALLOWING US TO DO THIS AND GETTING BEHIND THE IDEA. ENJOY!

WARREN BURT AND SUSAN FRYKBERG, MELBOURNE 60X60 2014 ORGANIZERS

Melbourne 60x60 – Programme 1:

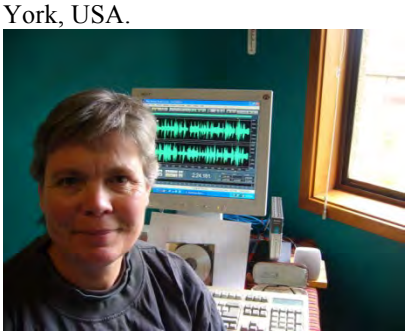
11 am, Wednesday 9 July 2014,
Federation Hall, Victorian College of the Arts
Australasian Computer Music Conference

1. Warren Burt – Audio Fingerpainting
   Made entirely in the program High C, using a touch screen computer, all the sounds are drawn by hand onto the screen. Fingerpainting of sound allows kinds of sounds not attainable by other means. The hand is quicker than the ear. Warren Burt is an experimental composer based in Melbourne.

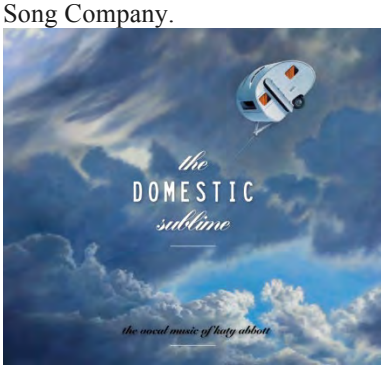


2. Allan Walker – Spring Dance
   A piece for harpsichord which refers to a 1963 etching by Australian artist George Baldessin - "Figures in Landscape (Spring Dance)" Allan walker is a Melbourne-based composer of mostly acoustic notated music.

3. Ceridwen Suiter – steps to
   Is the new city really progress or is it closing the door on old ways which might still be of value? Fine hand-made original field recordings carefully selected for piquancy. Ceridwen composes music ranging from songs to experimental computer music. She is currently completing her PhD using fuzzy logic to develop a strategy to assist the general public in the appreciation of contemporary art music. Ceridwen's music has been performed in Melbourne, Sydney, Adelaide and regional Australia in a wide variety of settings from art galleries, dedicated concert spaces, to cafes and outdoor performances. Several performances of her computer music works have taken place in Florida, California, and New York, USA.



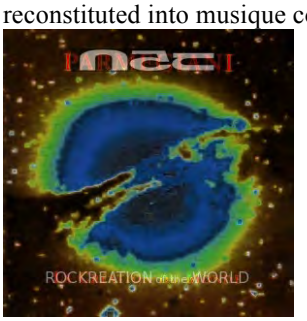
4. Katy Abbott – Handsome
   Katy Abbott is a Melbourne composer who looks for the absurd and quirky when setting text. ***Handsome*** (from the song cycle 'Words of Wisdom') is a quote from one of Who Magazine's 25 most beautiful people voted in 2004. Any guesses as to the identity? Performed by Richard Black of The Song Company.



5. Tom Fryer - Episiotomy Blues
   This is an excerpt from a fretless guitar improvisation using a microtonal scale comprising 1 qb2 qb3 4 qb5 qb6 qb7 1 with the quarter-tones being closer to Turkish 5 Koma flat rather than the equal temperament quarter-tone. Further AM processing was used creating a variety of sidebands and additional artifacts.

6. Eve Duncan – Dredge Dragon
   Composed by Eve Duncan, photograph by Siri Hayes. The ruthlessness and fear by which industry justifies the dredging of Port Phillip and Westernport Bays lives in the cold Dredge Dragon.

7. Nat Bates – Feedback Loops
   Taken from Nat's project ROCKreation of The World that consists of samples of iconic rock recordings reconstituted into musique concrète. Nat has recently completed a PhD in sampling.



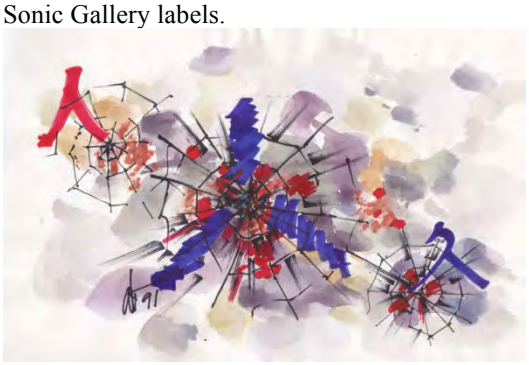
8. Michael Hewes – Undertown
   Michael Hewes is an audio engineer, composer and electronic music performer, sometimes all at once. *Undertown* speculates that a parallel universe might be closer than we think. Perhaps just beneath...

9. Lawrence Harvey – Machine for Making: Zephyrs
   Drawn from a work-in-progress: a multi-channel installation voicing 5 architectural machines for making Insight, Delicacy, Faces, Grace, Simplicity and Zephyrs, created by architect Peter Downton. This 1 minute realisation from the Zephyr machine was recorded in situ and captures an operating cycle between exhalation and distraction.

10. Paul Doornbusch – Opening of the Door
    Paul Doornbusch is a composer in Melbourne. The piece "Opening of the Door" is a flight of fantasy in that moment of opening a portal to another world and stepping into a cavernous space. The door is the one to the stairwell of my building.

11. Alice Hui-Sheng Chang – Reflection
    Since 2003, Taiwanese artist Chang's work focuses solely on developing extended vocal technique in improvisation. Her work has been heard throughout Asia, Australia, New Zealand, USA, and Europe.

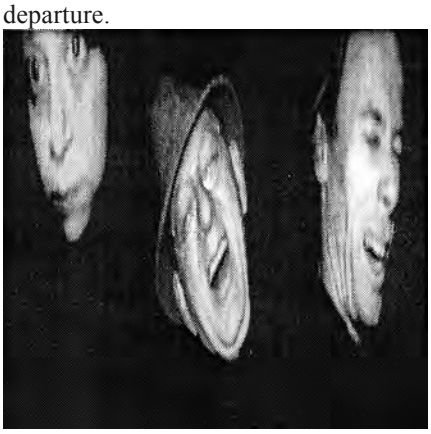
12. Dang Kim Hien – Rhythms of Life
    Rhythms of Life is a musical meditation on the tangled facets of life. The music combines the sounds of tearing papers and Vietnamese instruments, including dan tranh (zither), dan nguyet (lute) and percussion. The piece is based on materials from my earlier work entitled Webs of Life. Dang Kim Hien is a multi-instrumentalist, composer and educator. She specialises in Vietnamese strings, percussion and vocal music. Her performances and compositions have been released on Move and Sonic Gallery labels.



13. Carolyn Connors – Shldldcqntncebfrgt
    Carolyn works with acoustic extremes of voice.

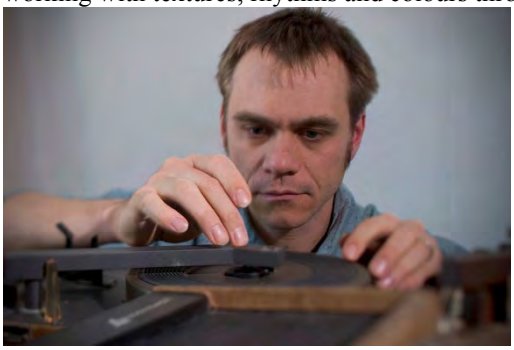
14. Julian Cafarella – Do Not Go Gentle
    My name is Julian Cafarella and I am a Melbourne born (1947) composer of electronic music My piece is called "Do not go gentle" and was composed this year in February.

15. THAT #1 – David Tolley
    THAT consists of David Tolley, Ren Walters, and Dur-é Dara. We are all composers of each other's works as well as our own. Collectively we function as the group 'THAT' and have done so for 20 years. We are a collaborative performance trio centred around improvisational music performance. The performance of these 3 works also marks the passing of David from this life. We feel that THAT's musical relationship continues in some indefinable manner, after Davids departure.



16. Peter James – Trist
    Peter James was born in 1969 in Springvale, Melbourne, Australia and is a self-taught musician, artist and photographer. In 2005 Peter started the Iceage Productions imprint releasing music by Australian and international noise, experimental and electronic musicians. Trist was constructed on computer using found sounds. The age of concrete and steel is upon us, the urban sprawl envelops all in its path.

17. Michael Graeve – Recordplayertablism
    Recordplayers turning, tumbling and mumbling. Michael Graeve is a Melbourne sound and visual artist working with textures, rhythms and colours through painting and sound installations and performances.



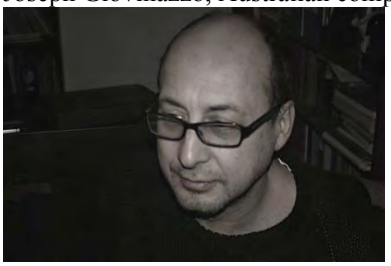
18. Chris Dench - AB1: telescopic squaredance
    Written for Andrew Bernard, AB1 is one of the heretical bagatelles from my Phase Portraits piano collection. Performed by: Peter de Jager (piano) Recorded at: 3MBS. Composer biog: After 15 years living in Melbourne, the composer now lives in Ballarat; his music has been performed and broadcast internationally for more than 30 years. Performer biog: Peter de Jager loves exploring how music from all periods of time can co-exist, peacefully or otherwise; he is about to release his first solo album, featuring music from Bach to Chopin to Dench to Radiohead.

19. Rainer Linz - the computer is what?
    rainer linz is a melbourne composer who occasionally submits pieces for wonderful initiatives like 60x60. the computer is what? is a found object that has been coloured by natural signal distortion.

20. Catherine Schieve - Laying On Of Hands
    Animal magnetism for human electrostatic energy and Anakie chicken orchestra. Quasi-voodoo experiences across media and species; the hand as medium; micro electrical storm; feathered expressivity. Catherine Schieve, inter-media artist, lives and works in the Goldfields region of Central Victoria. This work is informed in some way by her time visiting Umbanda ceremonies in Brazil.

21. David Chesworth – Orb Fountain
    David Chesworth is an artist and composer based in Melbourne. Orb Fountain is the sound of a malfunctioning soviet era fountain outside administrative offices recorded in Tblisi, Georgia 2013

22. Joseph Giovinazzo - "When Winter Cries”
"When Winter cries, pity the cold;
their's is not the right of reply."
Joseph Giovinazzo, Australian composer



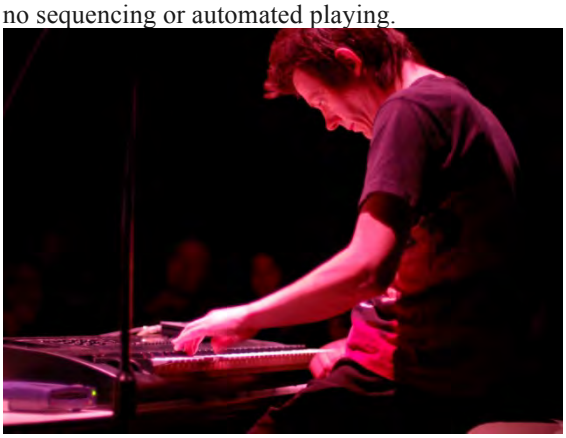
23. Hi God People – Time Has Stopped
Live-to-air improvisation on election day 2013 by the Hi God People on radio 3CR. Later one section of the performance was selected for time-stretching. This is our country's last few seconds of sanity. Since the late 90s, Hi God People spontaneously assemble out of Melbourne's indie music and art scenes to do weird things. Their live performances include Liquid Architecture, What Is Music, the Melbourne International Jazz Festival, and a Sonic Youth support. They have released several albums and YouTube videos.

24. Petar Jovanov – Moving On
This composition consists of found sounds from my recent trip to Thailand and a combination of sampled sounds and sounds produced with plastic bottles that processed with various sound FX.
Petar Jovanov was born in the city of Bitola, Macedonia and migrated to Sydney Australia at the age of seven. He studied music at the University of Western Sydney (UWS) where by he graduated in 2009, and recently completed his Doctor of Creative Arts at UWS. His music is strongly influenced from his Macedonian culture and he has a particular interest in film music. His postgraduate research focuses on creating a Macedonian-Australian compositional voice through a juxtaposition of traditional Hollywood film music conventions and Macedonian Folk music techniques.

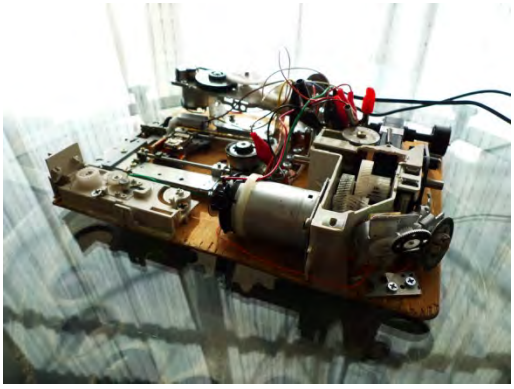
25. Ernie Althoff – They're coming, they're coming!
    Ernie Althoff started his forays into experimental music in the late 1970s. The digital editing suite has overcome the limitations of multi-track cassette technology, but one still needs to conceptualize the piece. Small percussion machines, clapping in a reverberant space, a pitch-shifted cricket - isn't it good to have an archive!

26. Mark Pedersen – Provolone
    Mark Pedersen is a Melbourne-based interactive media artist whose work includes sound design for dance and spoken word performance, large scale immersive audio-visual installations and bespoke electronic instruments. Using a single short field recording, "Provolone" re-imagines a Saturday morning visit to the composer's local Italian deli. Gervasi's is always a rich sensory experience in itself, and this auditory excursion offers a taste of one of the many layers of culture that define Melbourne.

27. Philip Brophy – I Am Dave Brubeck
    "I Am Piano" (2003-2009) is a suite of 5 compositions for live sampler. Each piece is based on a single uninterrupted passage (lasting no more than around 15 seconds) from a famous modern jazz piano standard (between 1955 and 1965, most with a combo backing). The sample is mapped across a keyboard and edited into discrete and irregular loops activated by pressure-sensitive keyboard performance and amplified in quadraphonic. The work is designed for hands-on live performance with no sequencing or automated playing.

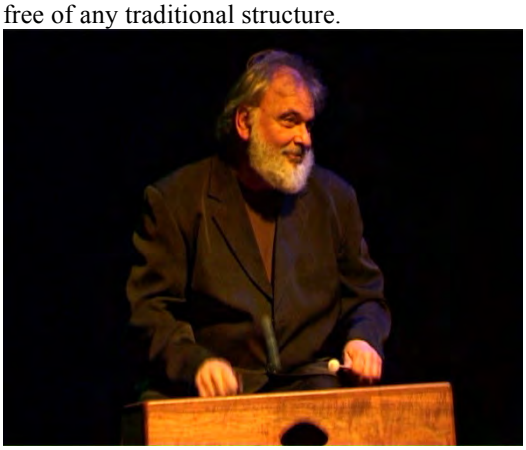


28. Rod Cooper – disc startup
    The image for the project is below, a device called the big end of town, which contains some of the sounds use in my piece. The sound of a hard disc motor being switched on. The empty am radio band carries the electromagnetic waves emitted from the electrical hardware into a minidisc recorder when they were once cool. about me: 30 years in sound art, instrument building and noise. Over 3000 sound works archived.



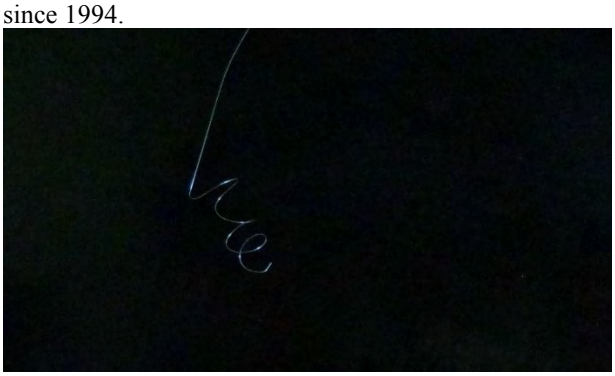
29. Howard Dillon – Heat
    Heat is based on part of a field recording made early one morning down by the Yarra River during the oppressive heat of last summer then processed in various ways through Ross Bencina's Audiomulch progamme. Howard Dillon gained his music education from La Trobe University and is involved various musical activities as violinist, educator and composer.

30. Al Wunder – 6060
    I have been teaching and performing improvised movement theatre for over forty years. This sixty second piece of music is an excerpt from an afternoon practice with Bruce Millar on double bass and myself on a Hum Drum. Not being a trained musician I only do improvisations that are completely free of any traditional structure.

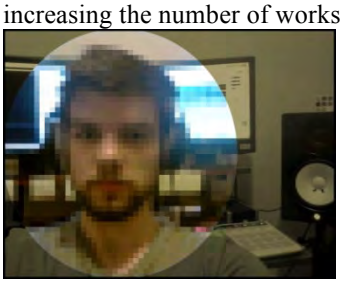


31. Genevieve Lacey and Jim Atkins – High To Low
    Genevieve Lacey is a serial collaborator, whose musical life takes her into many domains and roles. High to Low gives you a glimpse into the rich sonic world of her recorders, and is both played and composed by Genevieve, with sound design by Jim Atkins.

32. Le Tuan Hung – Air on a Broken String
    Air on a Broken String is a collation of the sound of a broken dan tranh string and its transformed versions. It is a fusion of minimalism and Bach in a digital multi-part invention. Le Tuan Hung creates new music with a touch of Vietnamese sensibility and colours and is an expert in Vietnamese musicology. He has been the producer and curator at the Australia Asia Foundation's Sonic Gallery since 1994.

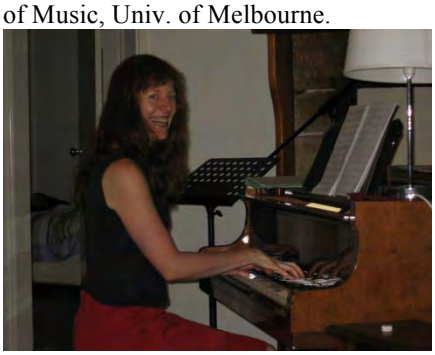


33. Sam Glazebrook – Through Another Door
    Sam Glazebrook is a Melbourne composer, specializing in electronic music, among other things. He has just recently graduated his bachelor's degree in music composition and has been working on increasing the number of works in his portfolio.



34. Rosalind Hall – Spring
    Saxophone, spring tube, improvisation. Melbourne based saxophonist, improviser, maker, Rosalind Hall is possessed by all things reedy. www.rosalind-hall.com

35. Linda Kouvaras – Earth Art Fragment
    This piece is derived from my Bundanon Sonata for Violin and Piano (2011), written for, and performed here by, Marianne Rothschild (violin) and Glenn Riddle (piano). It was composed during an artist-in-residence stay at Bundanon, the Arthur & Yvonne Boyd bequest in NSW. Linda is a composer, musicologist and pianist, who holds a Senior Lectureship at the Melbourne Conservatorium of Music, Univ. of Melbourne.



36. Anne Norman – Afternoon Premonition
    Afternoon Premonition' combines manipulated tea and bell sounds with a magpie out my back door in Mornington. While shakuhachi is my primary acoustic instrument, I occasionally manipulate sounds for use in my one-woman theatre shows using very basic software and processes to achieve the sound I want.

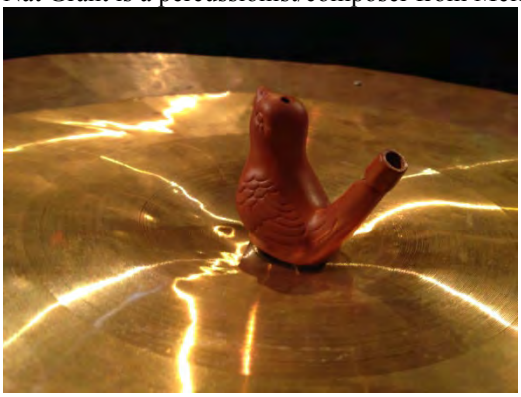
37. Johanna Selleck – Undone
    Johanna Selleck is a Melbourne-based composer and flautist. Her electronic piece, "Undone", was created in the computer program Sonar. Using samples from an earlier solo piano piece, "Undone" deconstructs the original work using techniques including different types of delay, reverb and reversal effects. Painting: Starry Night by Anne Selleck

38. Adam Simmons – Arc
    The "score" for this is a sculpture - a music box with a looped strip of paper, without holes. The melody is completely at the whim of the movement of the paper as it twists and turns through the mechanism.
    Adam Simmons is one of Australia's most eclectic woodwind players and composers, contributing to numerous ensembles and well known for the Adam Simmons Toy Band and Origami. More recently he has delved into sculpture as well as creating and directing the Festival of Slow Music.

39. Joshua Hay – Out of Focus
    The intention of this piece is to texturally build for a short time, but not to a climax point. It is up to the audience to imagine what musical direction the piece should lead after its duration. The whole musical picture is not intended to be painted for the audience, hence the title: "Out of Focus". My name is Joshua Hay, and I have just completed a Bachelor in Applied Music (Composition). I have a strong passion for scoring orchestral compositions, but am exploring compositional possibilities in electronic realms as well.

40. Peter McIlwain – Collapse Study #4
    Peter is a sound designer and composer in Melbourne. His piece uses multiples of 60, e.g. sine tones, envelopes and frequency contours. The piece is thrown across the stereo space in grains that initially collapse space then establish space as the grains get closer together.

41. Nat Grant – Little Bird
    For ceramic bird, gong and objects, recorded on a zoom h4n and processed in Ableton Live.
    Nat Grant is a percussionist/composer from Melbourne.



42. Angus Fenton – It's a Long Way Down
    The piece was recorded in Studio One using a combination of conventional rock instrumentation with sonic treatments to create tension. As for bio, I'm Angus, 19, living in Bendigo, hoping in vain to someday be able to make a living from music, my greatest passion.

43. Phillippe Vranjes – NOISEWEAR
    NOISEWEAR is built from the perspective of the audience and employs obsessive fans' strategies. This piece uses 18 sound recordings of myself putting on and dressing up with the iconic garments - boots, shoes, pants, belt, petticoat, skirt, dresses, shorts, shirt, t shirts, hoodie, parka, jackets, scarf, necklace and hat - of 14 of my favourite musicians and composers. Philippe Vranjes is a Melbourne-based visual artist who works across the mediums of painting, sculpture and photography.

44. Y H Ippo – Isopathologus IX
    Y. H. Ippo, originally from Woonona, NSW, now lives and works in the Goldfields region of central Victoria, where, using the latest technology, he continues to compose Complexist New Age music with childlike insouciance. Isopathologus IX is one of a series of chamber works which explore juxtapositions of different emotional and structural nano-mini-worlds.

45. Darrin Verhagen EPA – Furious Virus
    EPA is Darrin Verhagen's noise project – the subject of his recent PhD and the birthplace of the RMIT Audiokinetic Experiments (AkE) lab. "Furious Virus" explores the recontextualization of an unstable Noise ground, transformed into a writhing figure through a trellis of rock drums.

46. David Young – Taxidermy Crossover
    Currently based in Berlin, David Young is a composer preoccupied with graphic notation, and was artistic director of Chamber Made Opera (2010-2013), Aphids (1994-2010) and the Next Wave Festival (2001-2002). 'Taxidermy Crossover': from the Greek for the arrangement of skin. How does music get under our skin, and what is the point of this crossover?

47. Anthony Wilson – Un moment
Anthony Wilson is a composer, teacher and pianist living in Melbourne. 'Un moment' is a work for solo piano which explores both conventional and non-conventional chromatic harmony.

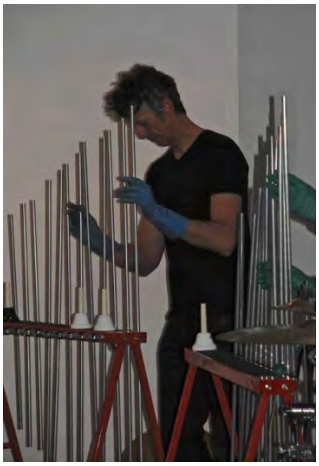
48. Alistair Riddell – Exterior Music Homage to J. K. Randall
Alistair Riddell thinks about music and occasionally composes it. This piece is a construction of fragments of a post improvisation discussion between Jim Randall, Rick Labante, Peter Polinsky (Architecture Masters students) and Alistair Riddell recorded in the MacAlpin Rehearsal Studio at the Woolworth Centre for Musical Studies at Princeton University on 28th March 1991. Jim Randall, who described himself as one of the "grandaddies of computer music" died 28th May 2014 at his home in Princeton. (Photo of J. K. Randall by Alistair Riddell)

49. Clinton Green - Blind Beat 4 (rustle)
Clinton Green lives in Melbourne and makes something akin to music - http://ShameFileMusic.com/ug/ (Photo of Clinton Green by Peter James)

50. THAT #2 – Ren Walters
THAT consists of David Tolley, Ren Walters, and Dur-é Dara. We are all composers of each other's works as well as our own. Collectively we function as the group 'THAT' and have done so for 20 years. We are a collaborative performance trio centred around improvisational music performance. The performance of these 3 works also marks the passing of David from this life. We feel that THAT's musical relationship continues in some indefinable manner, after Davids departure.

51. Simon Charles - Carboniferous Offering 3
    Simon Charles is a composer, electronic musician and saxophonist living in Melbourne. Fragments of improvisation, measured and cut to length, torn into scraps and collaged.

52. Tim Catlin – Gossamer
    Tim Catlin is a a composer, instrument maker, composer and guitarist based in Melbourne. "Gossamer" is composed using Tim's microtonally tuned Vibrissa instruments which produce sounds acoustically using rosined gloves on the instruments metal rods. Besides some basic EQ no sound processing or effects were used.



53. James Hullick – Uno: Five Pieces for Voice
    Vocalist: James Hullick. Five pieces - each consisting of a single vocal gesture. There is no essential meaning behind the pieces, though some of them are quite old now for me. The first piece for example was from 2009. James is a sound maker. He is director of JOLT Arts and The Click Clack Project. He is a Creative Australia Fellow through the Australia Council for the Arts and a research fellow at the Melbourne Conservatorium of Music, UoM.

54. Anthony Lyons – Convergence
    Convergence was made from recycled and reprocessed prepared piano recordings that are put together in rhythmic sequences cumulating in a kind of micro-montage effect, or a convergence. Anthony Lyons is an Australian composer and performer working across acoustic, electronic and hybrid arts mediums. He is a lecturer in Interactive Composition at the VCA School of Contemporary Music at the University of Melbourne.

55. Mark Lyall - Secrets dance within the voice
    A 60 second dream sequence from "'Edge' for concert band, narrator and sound design", a deconstructed love story commissioned by the Melbourne Rainbow Band. Mark works at the Australian Catholic University as a lecturer in media theory. He plays the trumpet and euphonium, and is currently enjoying the company of several Victorian brass and concert bands.

56. THAT #3 – Dure Dara
    THAT consists of David Tolley, Ren Walters, and Dur-é Dara. We are all composers of each other's works as well as our own. Collectively we function as the group 'THAT' and have done so for 20 years. We are a collaborative performance trio centred around improvisational music performance. The performance of these 3 works also marks the passing of David from this life. We feel that THAT's musical relationship continues in some indefinable manner, after Davids departure.

57. Gary McKie – The Gardener [Mix 2]
    A hose is unrolled and the gardener gets to work...but what was he thinking? (Samples were recorded and edited in Pro Tools LE as part of a Tropscore Composer submission in 2012, re-mixed in GarageBand for 60x60 in 2014). Born in Melbourne in 1955, I studied music at La Trobe University 1989 - 1995, composed for various Melbourne based choreographers 1995 - 2001, taught Instrumental Music in Regional Victorian Secondary Colleges 1998 - 2007, Grad Dip Ed at La Trobe University 2008, taught Classroom Music in Melbourne Primary Schools 2009 - 2014...

58. Robin Fox – Combustion
Robin Fox is an audio-visual artist working with sound and light in contexts ranging from live AV performance, designs for contemporary dance, sound releases, video works and sculpture. Combustion is a one-minute study on the sound of heat. Sources range from submerged hydrophones recording the dissipation of heat in water to the simplicity of the struck match and are underpinned by the sound of a heat triggered FM patch.

59. Sean Baxter - Melbourne 2014 (Chinese New Year)
Sean Baxter (drumkit and percussion) is an Australian improviser from Melbourne, who is interested in exploring the percussive possibilities of sound. Focusing on the use of extended techniques applied to the conventional drumkit (both acoustically and through the manipulation of membraphonic feedback), he utilises an arsenal of metallic junk and other percussive detritus to expand the sonic palette of the percussion tradition. His performance aesthetic evokes a variety of sonic practices, ranging from extreme metal and punishing noise to free jazz and the Modernist abstraction of the classical avant garde. (Photo by Philo Lenglet)

60. Susan Frykberg – SDF One
Composer from New Zealand who lived in Canada for many years, Susan is now based in Melbourne, and is one of the organizers of Melbourne 60x60. http://earsay.com/earsay/artists/frykberg/

Melbourne 60x60 – Programme 2:

11:30 am, Friday 11 July 2014,
Federation Hall, Victorian College of the Arts
Australasian Computer Music Conference

1. Susan Frykberg – SDF Two
   Composer from New Zealand who lived in Canada for many years, Susan is now based in Melbourne, and is one of the organizers of Melbourne 60x60. http://earsay.com/earsay/artists/frykberg/

2. Jeffrey Hannam – Orbit
   Jeffrey Hannam is a composer and Studio Technical Assistant at the Spatial Information Architecture Laboratory, RMIT.

3. Raceless (Adam Gauci) – Complete Overhalls
   raceless --an experimental hip hop demigod from curse ov dialect..... song--lost in the kitchen cupboard of a monastery in 1612---a song about fatherhood and its effects on creativity

4. Elliott Gyger – Mirrorbell
   Mirrorbell is derived entirely from a composite metallic percussion attack in my 1996 work A wilderness of mirrors, multiplied and layered on itself using simple audio transformation techniques.
   Elliott Gyger is a Senior Lecturer in Composition at the University of Melbourne.

5. Jacques Soddell – Interrupted
   Jacques Soddell is a Bendigo-based sound (and video) artist working mainly with field recordings, often processed beyond recognition, He also curates the Undue Noise concert series and runs sound art label cajid media. He was a microbiologist in a former life.

6. The Crystal Set (Liz Landray, Anna Fern, Hilary Dobson) – Incessant
   Recorded in April 2014 in Anna's kitchen in Footscray. We played, acoustic xylophone, violin, zither, accordian, drinking glasses, Turkish drum and other assorted hand percussion. Edited and remixed in Audacity.

7. Maize Wallin – Extra Bow (excerpt)
   Composer, guitarist Maize Wallin works in improvised and electronic music and interactive art.
   Performers/contributors: Eli Simic-Prošic (piano), Aaron Klein (clarinet), and Emile Frankel (cello).
   The group begins at A and moves an octave upward, taking turns to nod their head to cue each other for the start of a loud hit.. While based upon staying within a small interval of each other and rising upward together, the piece plays mostly off of feel and musical communication.

8. Jaccob McKay – Intruder in the Mountains
   Intruder in the Mountains is created from field recordings in the Dandenong Ranges and explores ideas of space and location. As recording was taking place, an aeroplane intruded on the tranquil setting and shaped the narrative of the piece. Jaccob McKay is a multidisciplinary artist working with sound, photography and other media.

9. Tim Opie – Life is Beachy
   A musical work composed using the eco-structural technique. The eco-structural source was derived from Bells Beach, and determined most of the musical events. http://www.ecostructuralism.com

10. candlesnuffer (David Brown) - magnetobruitisme 3
    David Brown (AKA candlesnuffer) has been involved in the Melbourne avant-garde, art rock/punk rock scene since the mid-seventies. The focus of his solo project “candlesnuffer” has increasingly centred on the development of composing techniques which meld opposing streams like conventional electroacoustic methods with noise and rock and also the development of a vocabulary of tiny acoustic sounds enlarged outside their normal context. Magnetobruitisme 3 utilises prepared string instruments and computer composition.

11. Jim Barbour – ever up
    Jim Barbour is an independent spatial audio researcher currently undertaking a PhD by Project at RMIT, investigating height in acoustic space. In former lives, Jim has been an audio engineer, music producer, radio production manager, theatre sound supervisor and academic but seeks a simpler life now. In this 60 second piece, Jim is exploring the sensation of virtual height generated by ever higher frequencies.

12. Brendan Colbert – Scintilla
    scin· til· la : (noun) a minute amount ; hint ; trace ; spark ; particle. Brendan Colbert studied composition with Brenton Broadstock & Riccardo Formosa, and his works have been performed throughout Australia, Europe and the USA. Detailed bio, works list and score samples etc. can be found at www.brendancolbert.com.au or at the Australian Music Centre.

13. Paul Moulatlet – re-bird
    re-bird is a recording of native birdlife made during a heavy rain event in inner-urban Melbourne, with minimal alteration and effects applied to the original captured sounds. Paul Moulatlet is a Melbourne-based composer whose works have been performed in Asia, Europe, the UK, the USA and numerous Australian events. Most of his works are for chamber ensembles and have been interpreted by leading performers including Trio Altrove 1.3 (Italy), Barrie Webb (UK), and noted Australian artists including Deborah Kayser, Ken Murray, Peter Neville, Carl Rosman, Eugene Ughetti and Tristram Williams.

14. Holly Caldwell – Admission
    Holly Caldwell recently completed her music studies at Monash University and has since been pursuing her interest in youth instrumental teaching, community music projects and music composition. 'Admission' (violin solo performed by Larissa Aguiar). Acceptance, not in the sense of an external process, but rather an internal endeavour, is a person's assent to the reality of a situation, the appreciation of a condition without the attempt to exit, protest or change it. Admission is the birth of this journey into a place of mental rest.

15. Matthew Ellis – Wednesday
    Piano, bass and synthesised noise tuned to Erv Wilsons Tetradic Diamond (1-3-7-11)

16. Graeme Leak - Winton Shire Channel 1
    Council radio field recordings mixed with string cans, tube resonance recordings and a rock plop.
    Graeme Leak is a composer, performer and musical director who likes using found and everyday objects in the studio.

17. Angus Burns - Malted Grain
    A serialist piece, for piano and electronics. Angus "Acknack" Burns is a 28-year-old composer and film scorer, currently residing in Richmond, Victoria. He recently completed his Bachelor Degree in Composition at Box Hill Institute. Angus has focused most of his musical outpourings into serialism, atonality and twelve-tone techniques, however his repertoire spans many styles and genres, including classical, jazz, film music, rock, electronic music and remixing, sampling, and many more. For more information, visit: https://soundcloud.com/acknack/

18. Peter Myers – SURGE
    Dr Peter Myers has taught music theory and composition at La Trobe University, the University of Melbourne, Monash University and Box Hill Institute where he was the Head of Music for five years. SURGE for two pianos (with lots of hands) exposes a harmonic sequence that systematically unfolds. As the work progresses, it becomes faster, louder and denser; but the rate of these changes are based on ‘just noticeable differences’.

19. Jordan Lacey – A Suburban Train Traveller
    Jordan Lacey is a Melbourne-based creative practitioner, who is presently completing a PhD in Urban Sound Design at RMIT University. Recently, when traveling on the suburban trains of Melbourne I met an unusual young man who spends his days riding the trains collecting sound recordings of train and station announcements with his mp3 recorder. He told me he had collected nearly every announcement, and offered to send me a copy. I've always wanted to do something with these recordings for which 60*60 seemed the perfect opportunity.

20. Ross Healy – Cray60
    Ross has been heavily involved with electronic music since the early 90's. Releasing recordings for labels in Australia, Germany, France, United Kingdom, Ireland and the U.S under many different names (This Digital Ocean, Amnesia, Siko Spunji, Roland Oberheim, Ryou Oonishi,56k and Cray) covering many styles of electronic music, Avant improv electronics, Experimental computer music, Noise, Industrial, Techno, Ambient, IDM and Drum n Bass. Ross is also the founding member of VICMOD, they teach people how to build (solder electronic) modular synthesizers. Description of work: Nature meets tone.

21. Judy Pile – Inner-city Wind Music
    Judy Pile is a freelance composer, performer and teacher whose passion for social justice and diverse musical interests have led her everywhere from the operatic stage to political street theatre. My new inner-Melbourne home is suffused with 'wind music', in the broadest sense of the expression. For this piece I used found sounds recorded in and around my flat to build a minimally processed collage of wind, birdsong, and my neighbour Fereshteh singing to and playing with her four-month-old baby.

22. George Papanicolaou – Easter Intersection
    My main area of work is in Film & Multimedia composition. I also lecture and mentor students in Film Scoring Practice at various Universities in Melbourne, Australia. This piece is an examination in blending different tuning systems, including religious liturgy. Hope that you enjoy it.

23. Thembi Soddell – Anamnesis
    Anamnesis is "an effect of reminiscence in which a past situation or atmosphere is brought back to the listener's consciousness, provoked by a particular signal or sonic context." Sonic Experience - Jean-François Augoyard and Henry Torgue; Thembi Soddell (b.1980) is an Australian sound artist and electroacoustic composer. She is a PhD candidate at RMIT's School of Art where she is researching the articulation of psychological distress in sound practice.

24. Brigid Burke - A Moment of Fluttering
    Gloss is inspired by a pen and ink drawing. An acoustic ensemble and live electronics interpret the drawing. The creative process that evolved from this simple idea explores facets of interactive performance that include 5 live instrumentalists, improvisation, spacialised sound exploration and visual elements. Brigid is an Australian composer, clarinet soloist, poly-media performance artist, video artist, visual artist, and educator. Brigid's work also includes the exploration of acousmatic music, and composing multi-tasking performance works, live video footage, Bb/Bass Clarinet and live audio laptop configurations.

25. Zoltan Fecso – Don't Forget the Kindling!
    Zoltan is a composer and instrument builder, who lives and works in Fitzroy. Originally from Hungary, he recently completed his Bachelors degree in composition from Box Hill Institute. A video of his recent instrument building work can be seen at https://www.youtube.com/watch?v=vn13nYlmVTg

26. Justin Butler - Peak Oil
    justin butler -born-adelaide 1963 -currently lives in Musk Vale 3461 audio collage concerning dire predictions-prayers are not enough - every personal action has an outcome recorded with this in mind.

27. Dindy Vaughan - Starry Night in Mullum Mullum
    Dindy Vaughan is a writer, educator, activist and composer whose life has centred on cultural and community development, focusing particularly on education, environment and the arts. "The night walks are magical : to meet possums at night, to see the deep blue of spiders' eyes, hear the shrill call of bats and children clamour in whispers let me see, let me see, while the delicate sugar glider sails through the soft dark. To feel the Old People's presence, touching the shield tree, tasting the tart bush food, to learn their wisdom. We are nurtured by the earth, and in turn we must nurture it; its sickness is our sickness, its health our health."

28. Tim Catlin – Gossamer
    Tim Catlin is a a composer, instrument maker, composer and guitarist based in Melbourne. "Gossamer" is composed using Tim's microtonally tuned Vibrissa instruments which produce sounds acoustically using rosined gloves on the instruments metal rods. Besides some basic EQ no sound processing or effects were used.

29. Philip Samartzis – Rainy Season
    Shibuya River runs through the heart of the Shibuya district in Tokyo yet most of it is hidden due to urban development. In 2013 Philip Samartzis and Seijiro Murayama followed the river from Shibuya Crossing to its source, stopping to record drains, pipes, gutters, spillways, and finally the exposed river itself in a series of site responsive performances and interactions. Philip Samartzis is a sound artist and artistic director of the Bogong Centre for Sound Culture.

30. Catherine Schieve – Laying on of Hands
    Animal magnetism for human electrostatic energy and Anakie chicken orchestra. Quasi-voodoo experiences across media and species; the hand as medium; micro electrical storm; feathered expressivity. Catherine Schieve, inter-media artist, lives and works in the Goldfields region of Central Victoria. This work is informed in some way by her time visiting Umbanda ceremonies in Brazil.

31. Ros Bandt – icescape
    Icescape for tarhu (bowed spike fiddle with 8 sympathetic strings with live electronic logic patches and digital glass forest immersive sound environment. Premiered in the Floating Glass exhibition January 2013. See rosbandt.wordpress.com
    Ros Bandt is a composer performer and sound artist who is passionate about combining ancient and modern sonic practices.

32. Gary McKie - The Gardener [Mix 2]
    A hose is unrolled and the gardener gets to work...but what was he thinking? (Samples were recorded and edited in Pro Tools LE as part of a Tropscore Composer submission in 2012, re-mixed in GarageBand for 60x60 in 2014). Born in Melbourne in 1955, I studied music at La Trobe University 1989 - 1995, composed for various Melbourne based choreographers 1995 - 2001, taught Instrumental Music in Regional Victorian Secondary Colleges 1998 - 2007, Grad Dip Ed at La Trobe University 2008, taught Classroom Music in Melbourne Primary Schools 2009 - 2014...

33. Madeleine Flynn and Tim Humphrey – WeatherShift
    Madeleine Flynn and Tim Humphrey are audio artists who work with the human experience of listening, their collaborations intersecting with industry, communities and sites across public art, film, radio, theatre, dance and installation. This piece uses two site recordings as source materials. The first was made within a tent of an early-morning shower of rain at Asahidake, Hokkaido. The second is a ‘water piano’, where the piano strings are played by a series of falling water droplets, the instrument itself a hybrid of nature and urban symbol.The climate data of a long-term 12 month average in Sapporo (including precipitation, humidity and daylight hours) is mapped to these materials, creating a compressed, yet spacious sense of the passage of the local weather. The WeatherShift excerpt uses the same materials, much like a weather report.

34. Christina Green – Diamond Valley
    Christina Green is a Melbourne-based musician writing and performing both folk/acoustic and contemporary classical music. Diamond Valley, which takes its name from the Diamond Valley area of Melbourne, is representative of her piano music, which combines jazz and classical elements. Images of places in the area, such as Eltham, were in the composer's mind while playing and working on the piece, and its slightly brooding, turbulent quality captures something of the energy of the area as experienced by her.

35. Mark Pollard – The clearing of ten thousand
    This is an imaginary sound sound snap shot of a massive choir in warmup mode. This image just tickled my fancy and the thought a massive number of singers clearing their collective throats in ten sound resonant bathrooms became the inspiration for the layering and imitation that produced the blanket of sound. Finishing with one singer who is clearly late for the gig. Australian composer Mark Clement Pollard has an eclectic compositional style utilising such diverse materials as improvisation, jazz, pop and the indigenous music's of South East Asia. He has for thirty years been a highly active composer and inspirational leader in the performing arts in Australia and is Head of the VCA School of Contemporary Music at the University of Melbourne and a passionate supporter of the Australian Football League team the Western Bulldogs!

36. Lloyd Honeybrook - Solo for Feedbax & Tone Generator
    Lloyd Honeybrook is a sonic terrorist/part-time enfant terrible currently wreaking havoc in Melbourne Australia. A deep-seeded distaste for his instrument of choice, the saxophone, coupled with a steadily suffocating diet of death metal, late-period Miles Davis, noisecore and Alvin Lucier has led to the development of the feedbax, a device intended to shred the internal space of the woodwind beast and audience's earholes alike. His favourite co-conspirators include Sean Baxter, Brendan Walls, Martin Ng, Oren Ambarchi, Robbie Avenaim, John Wiese, Marco Fusinato and Robin Fox, but his best friends are Density, Heterodyning, Making It Up and Brutality.

37. Wang Zheng-Ting – Frog Calling
    Wang Zheng-Ting, graduated from Shanghai Music Conservatory, completed a PhD in Ethnomusicology at the University of Melbourne and performed many recitals around world including New York's Lincoln Center. Frog Calling combined both western and Chinese elements: by using unique instrumentation the piano, trumpet and Chinese mouth organ the sheng; and adapting some phrases from Peking Opera. The piece expresses the feeling in response to the beauty of nature as well as reflecting Australian Chinese cultural identity.

38. Steve Adam – Hurry
    'Hurry' is a minute long 2-channel excerpt from a self-organising spatial-sound work entitled "Passing By… More Quickly". It is preoccupied with the sounds of motion, the motion of sounds and the relations and ambiguities that can arise. Courtesy of the RMIT University Sound Art Collection. Steve Stelios Adam has harboured a long-term fascination with music, sound and its associated technologies. As a composer and sound artist, Steve has created works for a variety of media and performed with instrumentalists, ensembles, choirs and interactive music systems of his own design. Informed by the technical challenges of his own works, he occasionally consults for other artists and organisations to develop software designs for specialised media-based projects.

39. Barnaby Oliver - 61xviolin
    61xviolin was created in real time from a single 61-minute solo performance, using a specially created Pure Data patch to progressively composite each minute into a single 1 minute mix. Barnaby Oliver is a composer, performer and software developer originally from the UK, now resident in Melbourne.

40. Dale Gorfinkle - Single exhalation - footpump-powered modified trumpet
    What does it mean to make music in a world where we have archaic brass instruments, plastics, and electronic cultures? Dale's been developing an approach to the trumpet with gardening irrigation, internal reeds, balloons, and footpumps. The result is no longer 'an instrument' but a hybrid system reminiscent of electronic music where valves function like switches for synthesizing and diffusing sounds. www.dalegorfinkel.com

41. Catherine Sullivan – Jinn
    This short work depicts "Jinn", literally meaning "hidden from sight." In Islamic and Arabic culture, the Jinn are regarded as supernatural creatures inhabiting an unseen world in dimensions beyond the visible universe of humans. Catherine Sullivan is a Melbourne based composer currently completing studies at the University of Melbourne.

42. Rob Vincs – Radiolumen
    Rob is Graduate Coordinator for the the School of Contemporary Music at the Victorian College of the Arts. He works in Australia and internationally as an improvisor and composer.

43. Marguerite Boland – Childsplay
Childsplay was composed using a recording of Marguerite's daughter Alice playing the piano at age eleven months. Marguerite Boland is a composer and music theorist, and co-editor with John Link of the book Elliott Carter Studies.

44. John Grant – Seadragon Dreaming
Seadragons perform a stately dance together as part of their intricate social rituals. On the other hand, John Arthur Grant draws a curved line through performances at the Melbourne Town Hall, past the Christchurch Performing Arts Centre, on to a hangar at Broome airport, the beach at Chennai, and a hotel in Tehran. His music practice channels Thomas Tallis, Stravinsky, Skyhooks, and The Tubes.

45. Andrian Pertout - Nueve sinfonías
At the core of the structural scheme of 'Nueve sinfonías' or 'Nine Symphonies' is Cecil Balmond's 'Mandala' magic circle and all the principal themes of each of Ludwig van Beethoven's nine symphonies enacted in sixty seconds, as well as polyrhythmic ratios 1/2 and .314159265 (or pi)/1.
In 2007, Andrián Pertout completed a Doctor of Philosophy (PhD) degree at the University of Melbourne. Composition awards include the Friends & Enemies of New Music Composition Prize (USA) and the Louisville Orchestra Prize (USA). His music has been performed in over thirty-five countries around the world by orchestras that include The Louisville Orchestra (USA), Jerusalem Symphony Orchestra (Israel) and Orquestra Petrobrás Sinfônica (Brazil).

46. David Hirst - Temple Bells Sound a Welcome
Temple bells are manipulated to sound a welcome for visitors to Melbourne in 2014. David Hirst has composed and researched electroacoustic music for over 30 years, and is currently Honorary Principal Fellow at the School of Contemporary Music, University of Melbourne.

47. Catherine Meeson - Not in our Name
Amidst the growing cacophony of Melbourne town can be heard voices of great diversity. 'Not in our name' is a lo fi glimpse of Melbourne town, some of its sounds, some of it's spirit and some of its din. Catherine Meeson is a singer / songwriter electro acoustic composer from Melbourne with a passion for composing alternative soundscaped worlds. www.catherinemeeson.com

48. Peter Knight – Breath
Peter Knight is a Melbourne based composer, trumpeter and sound artist.

49. Roger Alsop – blur 2
Roger is a sound and video artist working across all areas of performance. He holds a Master of Arts in Composition, a Graduate Diploma in Music Technology, and a Bachelor of Arts in Music, from La Trobe University. He has studied Composition for Film through AFTRS, and Conducting through the Faculty of VCA and MCM. He is one of the organizers of this year's Australasian Computer Music Conference.

50. Elwyn Dennis – Desert Dreaming
Composer, architect, sculptor and writer Elwyn Dennis lives in the Black Range south of Stawell, Vic. where he composes, writes, and makes art. A passionate ecologist, he makes work which he hopes will reflect the rhythms of nature, rather than those of the urban world.

51. Melita White – Lots of Love, Gran
Melita White creates electroacoustic and instrumental works, specialising in feminist composition. *Lots of Love, Gran* is a reworking of material that Melita created for a large-scale 2002 installation, *Matrix*. It is a portrait piece of the composer's grandmother, Kathleen White, who died in 2002.

52. Anthony Magen - repressed memories #201398969- aposematic signalling love song
RECORDED: 2013 Nodar, Portugal, for Binaural Media Summer school. Thankyou Naturestrip!

53. Mark Lyall - Secrets dance within the voice
A 60 second dream sequence from "'Edge' for concert band, narrator and sound design", a deconstructed love story commissioned by the Melbourne Rainbow Band. Mark works at the

Australian Catholic University as a lecturer in media theory. He plays the trumpet and euphonium, and is currently enjoying the company of several Victorian brass and concert bands.

54. Rainer Linz - the computer is what?
    rainer linz is a melbourne composer who occasionally submits pieces for wonderful initiatives like 60x60. the computer is what? is a found object that has been coloured by natural signal distortion.

55. Silvia Simons – TERRAUSTRALIS
    The concept of TERRAUSTRALIS is 'a breath of the Ancient Spirits of this land', with the only sound sources of the piece being voices (afterwards processed/manipulated): the voice of the composer and the voices of birds recorded in the Bush. Written scores, electroacoustic creations, improvisation & experimental performance as well as cross-artform expressions, all play a vital role in Silvia Simons's output. Her work has been performed and broadcast in Australia, the USA & Europe.

56. Herb Jercher – GONE WAVING
    Recorded in a resonant tunnel near my home in Sunshine where graffiti artists display their talents. As well as whip cracking I also enjoy surfing and flying model aeroplanes. I design and build HAPI® Acoustic Playground Instruments. www.soundsculptures.com.au

57. Ross Bencina – Ma
    Ross Bencina studied computer music at La Trobe University. He is currently studying mathematics and working on the next version of AudioMulch.

58. Anthony Lyons – Convergence
    Convergence was made from recycled and reprocessed prepared piano recordings that are put together in rhythmic sequences cumulating in a kind of micro-montage effect, or a convergence. Anthony Lyons is an Australian composer and performer working across acoustic, electronic and hybrid arts mediums. He is a lecturer in Interactive Composition at the VCA School of Contemporary Music at the University of Melbourne.

59. West Head Project (Jim Denley, Monika Brooks, Dale Gorfinkle, Anthony Magen) – 2013 Bendigo
    West Head Project focus on the intersection of energies, cultures and spaces - electromagnetic/mechanical, human/non-human, urban/non-urban, new/old technologies while navigating the ecotones. Artists: Jim Denley (wind instruments + electronics) Dale Gorfinkel (prepared trumpet), Monika Brooks (accordion) & Anthony Magen (soundwalk facilitator & tape recorder).

60. Warren Burt – 8 Tone Bop for J K Randall
    Microtonal algorithmic hexachordal chord progression in 8 tone equal temperament made by drawing probability distributions by hand. In memoriam J K Randall, composer and deep musical thinker. Warren Burt is a microtonal composer based in Melbourne, as well as being one of the organizers of Melbourne 60x60.