ISSTA

IRISH SOUND SCIENCE AND
TECHNOLOGY ASSOCIATION

2017

Festival/Conference Theme: Sound-Makers: technologies, practices and cultures

ISSTA is the annual conference of the Irish Sound, Science and Technology Association, featuring experimental music performances, AV installations, workshops, sound art, academic presentations and even a cutting edge 'club' night!

Creative audio and visual practices are increasingly moving from the digital sphere into the 'real' world—moving from bits to atoms (Ishii and Ullmer, 1997)—as physical computing technologies continue to become more widely affordable and accessible. Custom–made and repurposed controllers, gestural interfaces and intentionally hackable or reconfigurable instruments now support the creation and control of music and audio-visual media outside the mouse and keyboard paradigm and beyond normative models based on previously–established practices.

These technologies are increasingly being championed by grassroots movements which are driven by the designers, makers and creators who build and use them. Maker groups, festivals and social spaces—frequently more diverse and inclusive than established communities within academia and industrial R&D—have emerged to engage new creators and audiences through music, visual and sound art performances. Spanning disciplines such as controllerism, modular synthesis, interface design, circuit bending and live sound art, many practitioners and researchers are increasingly looking beyond code, bringing, integrating sensors and soldering within their classroom, stage and studio practices.

This year ISSTA-17's theme of 'Sound-Makers: technologies, practices and cultures' brings together practitioners and researchers in the field to share their experiences, creativity and skills over 2 days in Dundalk Institute of Technology.

About ISSTA

The Irish Sound, Science and Technology Association is an organisation that brings together practitioners integrating fields of music, art, sound, science and technology. It serves musicians, researchers, scientists, engineers and artists by promoting sound within the arts, science and technology, within Irish and international communities. Since 2010 ISSTA has hosted an annual conference, gathering researchers from around the globe to present papers, installations, concerts and workshops.

Founding President: Dr Kerry Hagan
Founding Vice–President: Dr Tony Langlois

ISSTA Board, 2016/2017:
Dr Linda O Keefe, President
Dr Brian Bridges, Vice–President
Dr Jacqueline Walker, Treasurer
Dr Alan Dormer, Secretary
Stephen Roddy, Web Manager

He chairs the Composition and Theory Department in the University of Denver's Lamont School of Music. In the United States, he also has taught at Brandeis University and the New England Conservatory at Walnut Hill. In the United

ISSTA 2017 Keynotes

<u>Professor Teresa Dillon</u> (Artist–Researcher, Professor of City Futures at University of the West of England, Bristol)

<u>Peter Kirn</u> (Editor–in–Chief, CDM: Create Digital Music)

<u>Dr. Luca Forcucci</u> (Invited Artist, www.lucalyptus.com)

ISSTA 2017 Organising Committee and Conference Team

Dr Linda O Keeffe (President, ISSTA)
Dr Brian Bridges (Vice-President, ISSTA)
Dr Niall Coghlan (Chair of ISSTA 2017)
Chair of Papers/Posters: Dr Caroline O'Sullivan
Chair of Workshops: Dr Kelly McErlean and Rory Walsh
Chair of Sound Art/Installations: Kieran Nolan and David Stalling
Chair of Music: Dr Neil O'Connor and Claire Fitch
Technical Support: Derek Farrell, Alphie O'Maolagain
Administration: Montira Satsam, Alice Hoey
PR and Social Media: Stephen Roddy, Thomas Redmond

Thanks to staff at the Department of Creative Arts, Media and Music who have supported this event.

ISSTA 2017 Partners

School of Informatics and Creative Arts: Department of Creative Arts, Media and Music

About DkIT's Department of Creative Arts, Media and Music

The Department of Creative Arts, Media and Music (DCAMM) is home to an exciting and innovative range of undergraduate and postgraduate programmes. It hosts regular events, performances, exhibitions, showcases and students have travelled globally to engage in international events.

In 2010 the Sections of Music and Creative Media moved into the newly refurbished Carroll Building on the DkIT Campus. This €38 million state-of-the-art music and creative media centre includes dedicated facilities for students in the Department. Its redevelopment marks a coalescing of the rich historic legacy of Oriel with our aspirations for the future. The Carroll family and factory were for many years part of the fabric of the industrial life of the region. Their investment in contemporary, modern and abstract Irish art of the period was an exemplar of the successful fusion of commerce and culture. It is in this new and exciting environment that the Department of Creative Arts, Media and Music finds itself. The Department is proud to share space with the many important pieces of Irish contemporary art gracing walls of the building and ask all students to please refrain from touching the artwork.

Students in Creative Arts, Media and Music now avail of new, purpose-built performance spaces and practice rooms and fully equipped labs and recording studios. The building also houses a recital room, dance movement room, radio studio, a TV studio, a screening room, an Avid teaching lab and numerous editing and animation Suites. Students have access to Mac Pro and iMac labs with a wide range of professional multimedia, audio and editing software. The upgraded facilities mean that students will have convenient access within the building to all audio visual and portable recording equipment they require and a range of musical instruments including harpsichord, concert harp, traditional harp, viols and classical guitars.

In addition to these physical facilities, a number of top industry professionals teach classes within the Department. All programmes also feature regular master classes from guest speakers and guest performers working within the industry in Ireland and internationally. These classes provide invaluable information and networking opportunities for students. The Department also participates in the Socrates programme, which gives all students the opportunity of transferring to our partner Universities across Europe for one or two semesters.

An added benefit of this new creative hotspot within the Institute is that it inspires student's creativity and encourages networking. This open and collaborative atmosphere leads to a creative environment that is aimed at encouraging students to produce work of the highest quality.

Twitter: @MusicDkIT, @cmdkit
www.facebook.com/MusicDkIT
www.facebook.com/creativemediadundalk

www.dkit.ie/creative-arts-media-music

Location, Maps and Orientation

Map of the PJ Carroll's Building
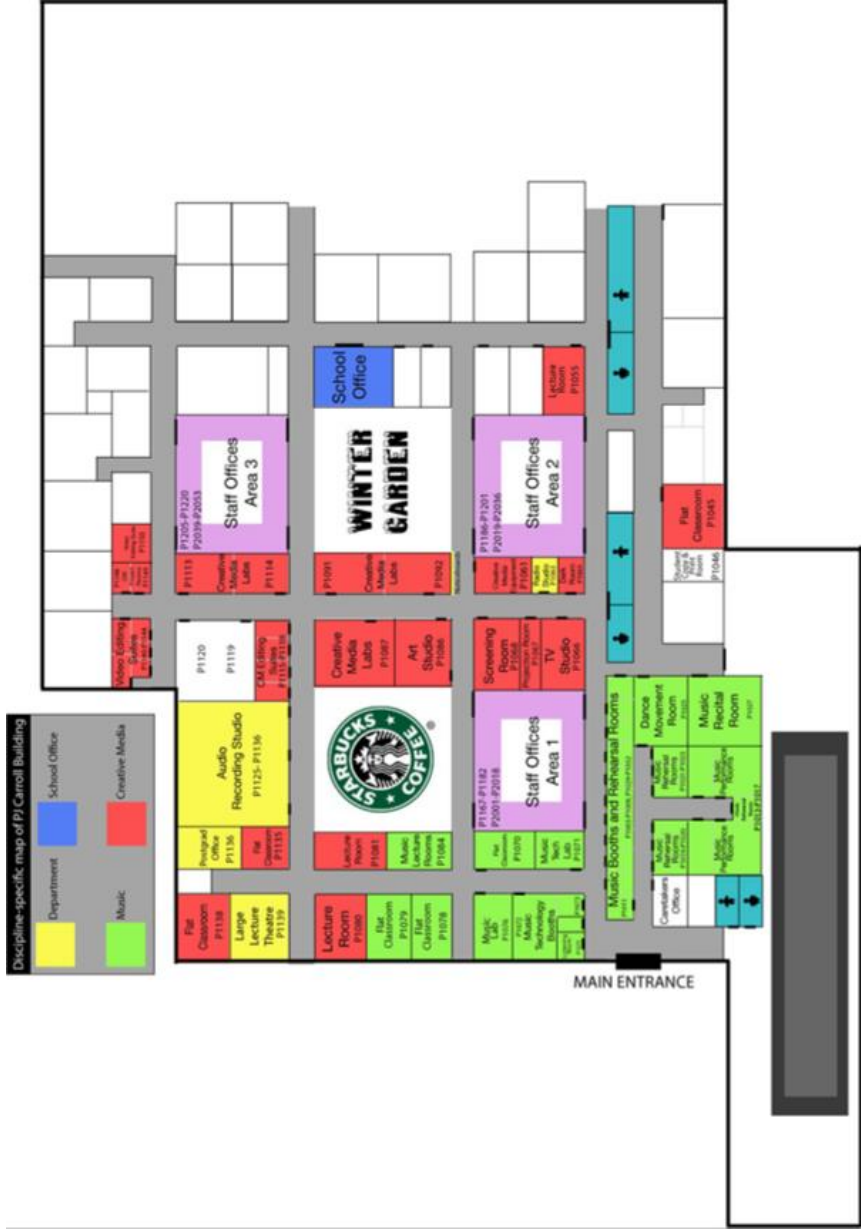
Carroll's Map: Overview of Venues

City Map: Dundalk
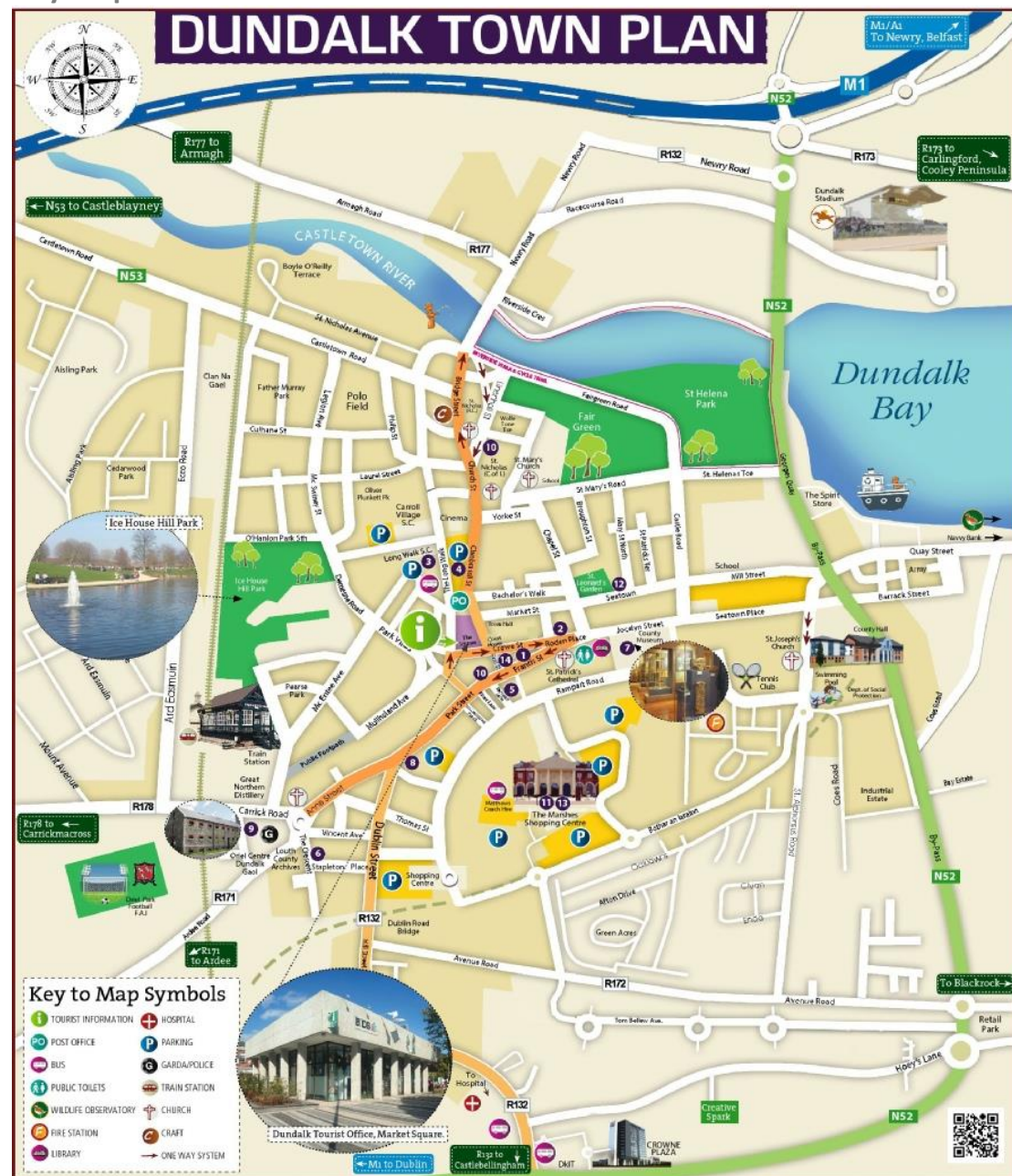
City Map: City Centre Venue, Landmarks
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Dundalk Institute of Techology
Campus Map

North ⟷ South

Belfast

M1
Belfast / Dublin
Junction 16

Dundalk
Town Centre
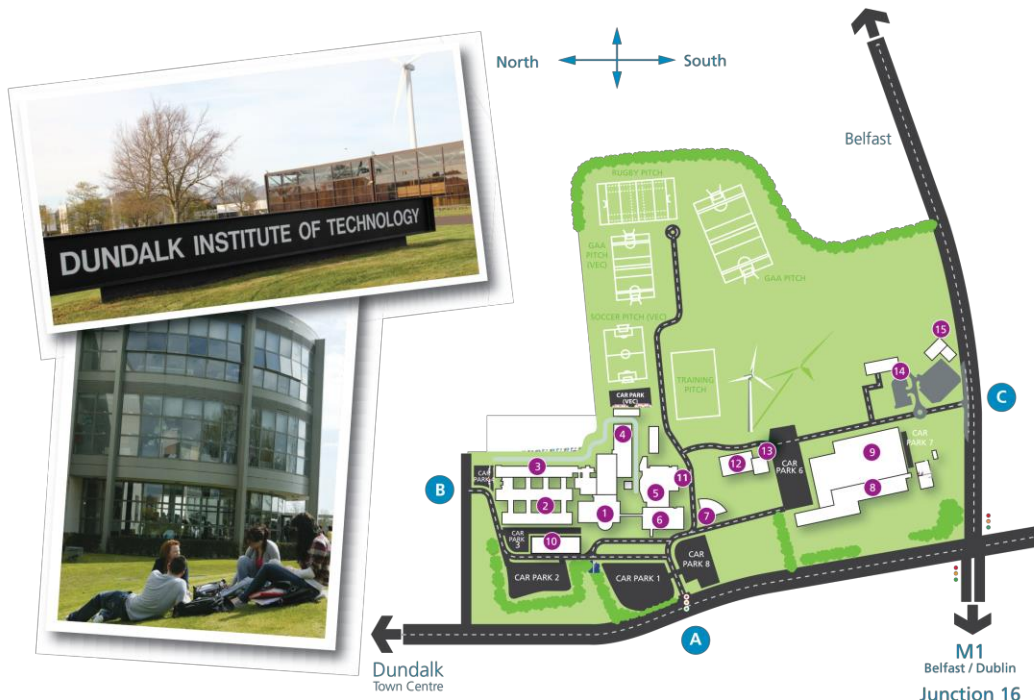
1	Dr. T.K. Whitaker Building (Main Reception, Admissions and Library)	Rooms L
2	North Building (School of Engineering)	Rooms C, Rooms W & Rooms E
3	North Building (Department of Applied Science)	Rooms C, Rooms W & Rooms E
4	South Building (School of Business & Humanities)	Rooms S
5	Faulkner Building (Student Services, International Office, Bank, Shop and Sports Hall)	Rooms F
6	Faulkner Building (Hospitality Training Building)	Rooms H
7	Muirhevna Building (Department of Nursing, Midwifery and Health Studies)	Rooms N and Rooms M
8	Carroll's Building (Apprenticeships and Bright Room)	Rooms A and Rooms P
9	Carroll's Building (School of Informatics & Creative Arts)	Rooms P
10	Regional Development Centre	Rooms D
11	Campus Bar	Rooms F
12	Campus Restaurant	Rooms R
13	Blackbox Theatre	Rooms R
14	Student Accommodation	
15	Crowne Plaza Hotel	

Entrances
A   Main Entrance: Dublin Road
B   Hoey's Lane Entrance
C   Crowne Plaza Hotel / Carroll's Entrance

Schedule Overview

ISSTA's programme of events takes place from 7th-8th September. This overview outlines the main tracks and 'blocks' of scheduled events, but please consult the detailed schedules to make sure you don't miss out!

TIME	DAY 1: THURS 7TH	DAY 2: FRI 8TH
9 am	REGISTRATION (9.00) – PJ CARROLL'S BUILDING WELCOME (9.30) – P1080 PAPER SESSION 1 (10:00) – P1080	PAPER SESSION 3 (from 9.30 am, P1080) PAPER SESSION 3a (from 9:30 am, P1081)
11 am	COFFEE BREAK (11.30)	COFFEE BREAK (11.30)
12 pm	KEYNOTE 1: PETER KIRN (12:00) – P1080	KEYNOTE 3: PROF. TERESA DILLON (12:00) – P1080
1 pm	LUNCH (WINTER GARDEN)	LUNCH WINTER GARDEN)
2 pm	ARTWORKS TOUR (Meet at Carroll's Entrance) WORKSHOP 1: DIY OSCILLATOR (1:30-4:00) – P1077 PAPER SESSION 2 (2:00) - P1080 BREAK (3:30) KEYNOTE 2: DR LUCA FORCUCCI (4:00) – RECITAL ROOM	ARTWORKS TOUR (Meet at Carroll's Entrance) CONCERT 2: MAC ANNA THEATRE (2:00) WORKSHOP 2: SPRINGS AND COILS (1:30-4:00) – P1077
4 pm		CLOSING CEREMONY: MAC ANNA THEATRE
5 pm	CONCERT 1: MAC ANNA THEATRE	ISSTA AGM (4:00-4:45)
6:30 pm	OPENING RECEPTION (WINTER GARDEN)	
7 pm	FREE FOR DINNER	
9 pm	LATE NIGHT ISSTA: SUNKEN FOAL & JONI (LIVE) SPIRIT STORE	

Internet Access

Wifi can be accessed using EduRoam or via the guest account set up for the conference (case sensitive):

Username: icaguest50
Password: ISSTAconf2017

Parking

Parking in DkIT is generally pay by the hour/day. There is a free car park in front of the Carroll's Building but also a paid one so read the signs carefully!

Food and Drink

We will be providing tea/coffee and sandwich lunch for delegates each day of the festival/conference; there will also be a reception on the first night of the festival. See below for coffee and restaurant options.

Coffee and deli food/snacks are available from our on-site restaurant (same building as Mac Anna Theatre) as well as from the petrol station across the road. In addition the Crowne Plaza hotel has a full bar and restaurant.
5 minutes down the road you can find the Malt House which has great pub grub and pints.
Further into town there are a wide selection of bars and restaurants.

Getting Around

Dundalk city centre is pretty walkable; there is a bus that goes from the Dublin Road (far side) to the city centre, but taxis are inexpensive, with a journey from DkIT to the city centre being around €7.

Taxis
Sevens Taxi (+353 42 93 77777)
Dundalk Cabs (+353 42 93 55555)

Spirit Store
From South of Dundalk
Take the M1 until you reach the East link bypass (N1) and you're nearly there. Stay on the N1 through 2 round abouts then 3 sets of traffic lights and turn right onto the Dundalk Harbour (look out for the 'Port' entrance sign). You can't miss the Spirit Store around the corner on the left.

From North of Dundalk
As soon as you cross over the new Tain Bridge you're just about there. Look out for the Harbour Entry sign on your left. The Spirit Store is on the harbour around to your left.

Parking
Free parking is available along the Harbour in front of the Spirit Store

Buses to Dublin & Dublin Airport
The Matthews private bus service operates from Dundalk centre and also stops on the Dublin Road outside DkIT from the bus stop/shelter on the near side of the road. Journey time is roughly 1 hour, NOTE this bus does not stop at Dublin Airport.
http://www.matthews.ie
The Bus Eireann 100x service also operates from Dundalk and stops at the same stop at DkIT. This bus also provides a connection to Dublin Airport.

http://www.buseireann.ie

Train

Clarke Station just outside the city centre provides a rail connection to Belfast and Dublin (journey time roughly 1 hour either way).

The cross-border Enterprise service is jointly operated by Irish Rail (IRL) and Translink (NI). NOTE: this train takes you to Dublin centre and does not stop at the airport.

http://www.irishrail.ie

http://www.translink.co.uk/Services/NI-Railways/

Belfast Airports

If you are flying from Belfast the cross-border Enterprise train service will leave you at Belfast Central station (confusingly not in Belfast city centre).

If you are flying from Belfast City Airport (George Best Airport) you can take the train to Sydneham station and cross the bridge to the airport. A taxi from the station to there will also be reasonably cheap (£10).

If you are flying from Belfast International Airport you can take the train, taxi or shuttle bus from Central to Great Victoria Street station, from where a bus to the airport departs regularly. A taxi from Central to International will likely cost upwards of £40.

ISSTA 2017 Peer Review of Submitted Works

We were delighted to have approximately 90 submissions of work for ISSTA 2017 across our programme of music, art, academic papers and workshops. We are extremely grateful to all of those who submitted and reviewed work.

Joseph Murphy	Alexander Sigman
Min Kim	Andre Arends
James Moran	Mark O'Donnell
Caroline Pugh	Liam O'Sullivan
Bernt Isak Wærstad	Thomas Ciufo
Liam Caffery	Curtis Bahn
Fionnula Conway	Frank Rossi
Hugh Davies	Eshen Chen
Geoffrey Perrin	Grace Digney
Richard Price	Paolo Gatti
Gordon Delap	Myungduk Kim
Brian Carty	Isabel Noguiera
El Putnam	Luciano Zanatta
Miguel Ortiz	David Baxter
Skot Deeming	Yi-Cheng Lin
Chris Burke	Michael Pounds
Mikael Fernstrom	Anna Terzaroli
Roberto Zanata	Antonio D'Amato
Julius Bucsis	Thais Aragao
Kosmas Giannoutakis	John Filwalk
Gareth William Young	Aaron Anderson
Siobhan Mannion	Lucas Baughman
Sara Wentworth	Utkucan Eken
Stephen Lilly	Aaron Anderson
James Kent	Dave Loder
Nathan Corder	Thomas McConville

Outline Schedule: Day 1, Thurs 7th

09.00 Registration (Entrance PJ Carroll's building)

09.30 Welcome (P1080, PJ Carroll's building)
Head of School, Dr. Gerard (Bob) McKiernan, School of Informatics and Creative Arts
Dr Linda O Keeffe, President of ISSTA

10.00 Papers I (P1080)

11.30 Coffee Break

12.00 Keynote 1: Peter Kirn (P1080)

13.00 Buffet Lunch (Winter Garden, PJ Carroll's Building)

13:30 Workshop I: DIY Oscillator (P1077)

14.00 Artworks Tour (various rooms in PJ Carroll's – meet at entrance)

14.00 Papers 2: (P1080)

16:00 Keynote 2: Dr. Luca Forcucci (Recital Room)

17.00 Concert I (Mac Anna Theatre)

18.30 ISSTA reception (Winter Garden, PJ Carroll's Building)

21.00 ISSTA 'Late Night' (Spirit Store): Sunken Foal & Joni LIVE + ISSTA DJ's

Outline Schedule: Day 2, Fri 8th

09.30 Papers 3 (P1080)
09.30 Papers 3a (P1081)

11.30 Coffee (Winter Garden)

11.45 Keynote 2: Prof. Teresa Dillon (P1080)

13.00 Buffet Lunch (Winter Garden, PJ Carroll's Building)

13:30 Workshop 2: Springs & Coils (P1077)

14.00 Artworks Tour (various rooms in PJ Carroll's – meet at entrance)

14.00 Concert 2 (Mac Anna Theatre)

16:00 Closing Ceremony & ISSTA AGM (Mac Anna Theatre)

Detailed Schedule, Papers and Talks Track: Day 1, Thurs 7th

09.00: Registration (at Front of PJ Carroll's Building)

09.30: Welcome: Dr. Gerard (Bob) McKiernan, Head of School (DkIT) and Dr Linda O Keeffe (President, ISSTA) (P1080)

10.00: Papers I (P1080)
Chair:

James McDermott (University College Dublin) *Learning a Representation for Drum Tracks using Variational Autoencoding Neural Networks*

Ben Freeth (Culture Lab, Newcastle University) *Psychoheliophysics – Exploring Solar/Telluric Interactions And Affect Through Making Digital Musical Instruments Called "Sun Tongs"*

Damien McEvoy and Joseph Timoney (Maynooth University) *Digital Guitar Percolator on a Pi*

Papers 1: Abstracts

James McDermott (University College Dublin) *Learning a Representation for Drum Tracks using Variational Autoencoding Neural Networks*

Abstract
Many digital synthesizers and audio effects are controlled by a large number of real-valued user-settable parameters, via knobs and sliders. Designing a patch is a search problem in the resulting Cartesian space. Operations such as tweaking a single patch and blending between a pair of patches are possible in this space. These geometric operations are valuable as a means of control both for novice and expert users, and as enablers for applications such as interactive evolutionary computation. In contrast, drum machines are controlled by a matrix consisting of one velocity value (possibly zero) per drum type, per time-step. Tweaking and blending in this space is not satisfying: the result of blending, for example, sounds like the two "parent" loops being played at the same time, rather than faithful blending of their styles and features. A more abstract representation of drum loops is needed. An extra requirement is that the representation be generative, i.e. possible to map from a given point in the representation space to a concrete drum pattern, fast enough for interactive use.
Here, we propose to use neural networks to learn a suitable representation from a corpus. An auto-encoder [1] is a neural network in which the goal of training is to reproduce the input layer at the output layer, via a much smaller bottleneck layer, as shown.
In principle, the bottleneck layer gives a generative representation: the input layer is discarded, and a user can explore the space of drum loops by navigating in the space defined by the bottleneck layer. The bottleneck-output mapping runs in real-time.
In practice, however, auto-encoders do not necessarily succeed in learning a representation where every point in the bottleneck gives rise to a meaningful drum loop, as opposed to a malformed one. The variational auto-encoder or VAE [2] uses a slightly different architecture and learning procedure in order to improve the properties of the learning representation. In particular, it constrains the corpus to a Gaussian distribution in the bottleneck.
Here, we investigate VAE performance (success in the input-output reproduction task) on a corpus of MIDI drum tracks. We investigate the influence of VAE hyperparameters. We also demonstrate the distribution achieved in the bottleneck layer. Finally, we audition the results of random generation, tweaking, and blending in the learned representation.
References
[1] Geoffrey E Hinton and Ruslan R Salakhutdinov. Reducing the dimensionality of data with neural networks. science, 313(5786):504–507, 2006.

[2] Diederik P Kingma and Max Welling. Auto-encoding variational Bayes. arXiv preprint arXiv:1312.6114, 2013..

Ben Freeth (Culture Lab, Newcastle University) *Psychoheliophysics – Exploring Solar/Telluric Interactions And Affect Through Making Digital Musical Instruments Called "Sun Tongs"*

Abstract
This paper presents, "Psychoheliophysics", a concept for a speculative discipline that opens up a creative space facilitating the making of musical instruments called "Sun Tongs". Sun Tongs feature explorations of heliophysical data (e.g. planetary atmospheres and magnetospheres, the solar corona, and the interstellar medium) and corresponding affect (i.e. the "psycho-" prefix referring to the subjective affect experienced in response to heliophysical processes and data) linked with explorations of open source technologies, repurposed technologies, electronics, and the production of custom code. It describes how they are used for performing within a workshop setting and taken forward to performance before an audience. It outlines a set of theoretical prompts and provocations coupled with a methodological approach towards delivering such workshops. This is the first use of this concept and combination of technologies to generate these specific types of musical instrument.
This paper describes the workshops and their culmination in a set of sonic performances involving participants in the UK and Norway.   In the UK these took place at Culture Lab, Newcastle University and at Globe Gallery, Newcastle-upon-Tyne. Performances in Norway took place on Mt. Fløyen one of "De syv fjell", the seven mountains that surround the city.
It describes the new challenges and concerns faced by participants and musicians developing and deploying such devices. I then provide several recommendations for expanding this study and producing future work.
It is the hope of the author that these findings will encourage others to further research and use specific and unique calls to creativity for generating their own customs instruments and installations.

Damien McEvoy and Joseph Timoney (Maynooth University) *Digital Guitar Percolator on a Pi*

Abstract
The purpose of this work to analyse and emulate an analogue waveshaping pedal using digital signal processing techniques. It will also show that 'TinyWare' such as the Raspberry Pi have become powerful and robust enough to handle such emulations in real time at CD audio standard or above and can be used in the same manner as a guitar effects unit. The guitar effects pedal in question, a Harmonic Percolator, which is an even-order/unipolar harmonic distorter.
The Harmonic Percolator was sold in the 1970s but not widely, and later on it acquired a cult status, and is a known favorite of Daniel Lanois. Recently, a number of schematics and DIY clones have appeared on the internet. Little analytical work has actually been carried out on the device however. It would be interesting though to understand more about the secret behind its sound. Furthermore, it is unusual to find an even-order 'waveshaper' given the far more common odd-order devices.
The methodology was to first build a clone of the Harmonic Percolator. After a study of the many options, the one selected was the Fuzzdog version. On completing and testing the build the next step was to generate a set of test tones that are input to the clone. The properties of the test tones are important and should cover a comprehensive set of frequencies and levels. The outputs were recorded under various effect parameter configurations (that are controlled via the device's potentiometers). The recordings were analyzed in the frequency domain to understand their harmonic spectra. Using a peak-picking analysis the most prominent frequency, magnitudes and phases can be found.
The spectral data facilitated the development of a model of the pedal behavior. Additive synthesis was first considered for the modeling but this was rejected in favor of developing a Dynamic waveshaper transfer function approach derived using Arfib's well-known paper. This was implemented using Csound, an open source sound programming language. Csound is supported on the Raspberry Pi. The

coefficient values are manipulated using array tables in CSound which can then be applied to other signal inputs. Real time audio input and output is through a Behringer U-Control device. A sharp anti-alias filter with cut-off at 2000Hz is used.

Analogue control of the Input/Distortion and Volume/Output is achieved via linear potentiometers. The Analogue to digital conversion of these controls is via an Arduino connected to the Raspberry Pi. Input/Distortion and Volume/Output controls are processed to mimic analogue controls, so they "saturate" rather than Hard-clip. Levels were controlled to minimize aliasing. Further filtering is required to shape the output to perceptually match the Percolator's timbre. Everything is housed in a unit similar to a guitar effects pedal, giving the illusion of a true analogue unit.

Evaluation with a number of users was carried out to assess the unit. It was tested both for its own aesthetic quality and how well it sounded in relation to the original.

11.30 Coffee Break (Winter Garden)

12.00 Keynote 1: Peter Kirn (Editor-in-Chief, Create Digital Music): *Makers, Mirror Neurons, Music* (P1080)
Introduction: Dr Niall Coghlan (DkIT)

Abstract
The entrenched music industry is often quick to view the accessibility of music technology, the growing number of people producing music and DJing, and the ease with which technology is transmitted and shared as dangers to be avoided. But what if the spread of music making technology could be productive? What if we replace the myth of the lone genius creating novelty from nothing with the reality of transmission by mimicry, iteration, and evolution? Can music technology embody empathy? Can it decolonize artists around the world? Can it not only fire our own mirror neurons, but produce a greater, connected, collective intelligence? And if so, what can we do to empower that musical possibility, making music a renewable, rather than limited, resource?

Bio
Peter Kirn is a musician and electronic artist active as voice for understanding technological practice and collaboration. For over a decade, he's run the electronic music website CDM (cdm.link), which now supports a hardware synthesizer project (MeeBlip) and record label (Establishment). His own music has evolved from a compositional training in New York and frequent work with contemporary dance to working with post-classical, experimental ambient, and techno and post-techno club music and audiovisual performance in Berlin, including releases on Snork Enterprises, Instruments of Discipline, and his own Establishment. In addition to solo work and collaborations, he has worked on projects in education, open source technology, open data, media archaeology, and open knowledge exchange, including developing the MusicMakers Hacklab for CTM Festival.

13.00 Lunch (Winter Garden)

14.00 Papers 2 (P1080)
Chair: Dr Brian Bridges (Ulster University)

Matt Green (Leeds Beckett University) *The Acoustic Atrium: An Imagined Communal Space for Sound Creativity*

Robin Parmar *Atoms and Digital Audio: Epicurus meets Mika Vainio*

Neal Spowage (De Montfort University) *Now I'm Digital Where Is My Ritual? Investigating Post Digital Performance Objects as Totems for Agency and Ritual.*

Papers 2: Abstracts

Matt Green (Leeds Beckett University) *The Acoustic Atrium: An Imagined Communal Space for Sound Creativity*

Abstract

The paper concerns the Centre for Creative Arts, a new building scheduled to open 2020 and which will house Leeds Beckett University's School of Film, Music and Performing Arts as well as Fashion. A major desire for the new building is to bring the school and its students in to greater contact with the public. Accordingly, the new building is to include a number of public amenities and spaces including a theatre, black box theatre and cinema as well as an atrium, foyer and café/bar area.

In March of 2017, the author hosted a workshop concerning sound, architecture and the Centre for Creative Arts. Central to the workshop was 'acoustic design', an interdisciplinary practice outlined by R. Murray Schafer that includes "the imaginative placement of sounds to create attractive and stimulating acoustic environments for the future" (Schafer, 1994, p.271). The workshop commenced with insight into what acoustic design is and as to the history and future of acoustic design, its principles and practices in architecture and urban planning. Following this, the feasibility and possible impact of acoustic design in the development of the Centre for Creative Arts was debated. The day ended with a design activity that yielded a number of ideas for aural architectures and site-specific sound installations in the Centre for Creative Arts.

Many of the ideas generated in the workshop's design activity regarded supporting student performance and presentation of sound and music work in the communal spaces of the new building. Additionally, a number of ideas concerned provisions for studying acoustics, sound and music in these spaces, and for creating and making in these spaces too.

The paper provides an overview of the workshop before focusing upon imagining a flexible, multi-use, technology-driven space that respects and advocates sound and listening, and supports performance, exhibition, study, practice and reception of creative sound and music work. In this imagining, applicable examples of past and present acoustic architecture, site-specific art and pervasive computing will be referenced.

References

Schafer, R. M. (1994), The Soundscape: Our Sonic Environment and the Tuning of the World, Destiny Books.

Robin Parmar *Atoms and Digital Audio: Epicurus meets Mika Vainio*

Abstract

Our digital world has made us comfortable with the concept of the bit as the smallest, indivisible component of a media stream. In Western philosophy, this concept can be traced back to the atomists, who held that all of nature could be construed as two elements: atom and void. Though much of this model has been superseded by both physics and philosophy, key concepts remain insightful. Foremost among these is the parenklisis (Latin: clinamen), as proposed by Epicurus and described by Lucretius. This "swerve" is the tiny deviation from free-fall that causes atoms to interact with one another and

hence create all that we perceive. Though a subject of mockery for Epicurus' contemporaries, this concept has renewed explanatory power in light of fluid dynamics and especially chaos theory, where it can be compared to the process of bifurcation that generates complexity from simple components. This paper will describe how atomism can be used to develop a corpuscular theory of sound, using Curtis Roads' concept of microsound. The music of Mika Vainio will be used to illustrate the contemporary relevance of this theory.

Neal Spowage (De Montfort University) *Now I'm Digital Where Is My Ritual? Investigating Post Digital Performance Objects as Totems for Agency and Ritual*

Abstract

Unlike many techno-positivist, ephemeral, discrete and ubiquitous systems for music and performance, post-digital performance objects commonly have three important potentials for:
AGENCY: A thing (or person) that acts to produce a particular result.
TOTEMISM: The foundations of a social system of obligation and restriction; the rituals, customs and taboos associated with this; often with family veneration and respect within tribes.
RITUAL: Activities that convey the sense of re-connecting things, beings, and spheres of existence that once were close but somehow have come to be distant.
I argue that performance objects and instruments can be seen as totems that offer instruction through agency and ritual, and that this is an important contributor an engaging performance. These important aspects have, to a large extent, been left out of instrument design with the march of discrete technology. Performance objects can take any form, although they often look like art and craft objects, junk sculptures, appropriated appliances and can even exist as the performance space. They allow artists to create and perform using external thinking and object orientated ontological practice.
Their interaction/transaction with the performer creates levels of agency that materialise in the performance to lesser or greater degrees, dependent on the strength of totemic values inherent in the instruments. The strongest contribution creates performance specific devices where the instrument is the totem and agent, and the ritual is the making process and final performance. Totemism, agency and the process of ritual anchor the instrument to the composition and the space. It is seemingly unlikely that the techno-posivitist approach, which lacks strength in these three anchors, can contribute greatly to this area of devised performance without finding alternative sources of inspiration and interaction with the artist though totemism and ritual.
There is a cyclic agency that operates between the totem and the ritual. The totems inform ritual and the rituals are agents. The instruments are totems and agents within the performance. The performance spaces can be totems, agents and instruments. The performer who is also the agent enacts ritual. Once this network of objects, actors and performers has been identified, it will appear as a messy, organic, interactive, serendipitous, blended and creative social ecosystem centered on the artist.

16.00 Keynote 2: Dr. Luca Forcucci: *Bodyscapes* (Recital Room)
(with support from The Swiss Council for the Arts Pro Helvetia)

Introduction: Dr Niall Coghlan (DkIT)

Abstract

The project is based on a previous research conducted in 2015 in the South African regions of Limpopo, KwaZulu Natal and the towns of Johannesburg and Cape Town. The collected sonic material was included into a composition based on L'Epidémie Virale, a text from the Swiss writer Friedrich Dürrenmatt about the Apartheid. The resulting composition, Bodyscape, was presented at the National Museum Centre Dürrenmatt in Neuchâtel, Switzerland on January 22 2016.

The actual research is a process based composition, which includes recordings of musicians and local soundscape. It was recorded in April 2017 in Maputo in Mozambique, Mbabane in Swaziland, Cape Town and Johannesburg in South Africa. We explored the possible field of possibilities offered by the technology of ancestral instruments and electroacoustic music: virtuosic skills brought into electroacoustic contexts by creating bridges with ancestral knowledge. The exploration of ancestral knowledge is contextualized in novel forms of music based on dialogue. The aim resides on a long term collaboration for future developments in Southern Africa (Mozambique, Swaziland and South Africa) from 2018 onward. The composition has evolved into an acousmatic piece by including the process of composition of the encountered contexts in Africa.

Bio

Luca Forcucci is a composer, artist, writer and scholar based in Berlin. His research observes the perceptive and dynamic properties/relations of sound and space. The field of possibilities is explored in music and art as experience. In this context, he is interested in perception and consciousness. The research was conducted at University of the Arts of Berlin, INA/GRM Paris (Institut National d'Audiovisuel/Groupe de Recherches Musicales) while investigating at Bibliothèque Nationale de France François Mittérand, at the Brain Mind Institute in Switzerland exploring cognitive neuroscience and out-of-body experiences. Forcucci holds a PhD in Music, Technology and Innovation from De Montfort University, a MA in Sonic Arts from Queens University of Belfast and has an extensive background in architecture. He regularly lectures in universities around the globe (USP São Paulo, UNESP São Paulo, PUC Rio de Janeiro, UFRJ Rio de Janeiro, UCR California, UdK Berlin, ZhDK Zürich, EPFL Lausanne, SIVA Shanghai). The artworks are presented worldwide (ISEA 2017 Manizales in Colombia, Biennale of Sao Paulo, Red Bull Station São Paulo, Centro Municipal d'Arte Heliò Oiticica Rio de Janeiro, Akademie der Künste Berlin, Miller Gallery Pittsburgh USA, MAXXI: Museum of XXI Century Arts Rome, Rockbund Museum Shanghai, House for Electronic Arts Basel) and are in the collections of the Swiss National Library, Swatch Shanghai, the Djerassi Foundation in San Francisco and Red Bull in Sao Paulo. Luca has received numerous awards and residencies, and he was nominated in the arts at the World Technology Summit in New York in 2011. The compositions are released by Universal, Cronica Electronica in Porto and Subrosa in Bruxelles. www.lucalyptus.com

Detailed Schedule, Papers and Talks Track: Day 2, Fri 8th

9.30: Papers 3 (P1080)
Chair:

Lisa Nguyen, Joseph Timoney, Thoa Pham and Thomas Lysaght (Maynooth University) *Musimap: an interactive tool for musical search by geography*

Roisin Loughran and Michael O'Neill (University College Dublin) *Evolving Live Code in ChucK with Grammatical Evolution*

William Coleman, Charlie Cullen and Ming Yan (Dublin Institute of Technology) *sonicPainter: Modifications to the Computer Music Sequencer Inspired by Legacy Composition Systems and Visual Art*

Mike Glennon (Dublin Institute of Technology) *Mixtape: Medium, Message, Materiality*

9.30: Papers 3a (P1081)
Chair: Dr Caroline O'Sullivan (DkIT, Chair of Papers)

Ronan Breslin and Jessica Argo, Poli Petrova (Glasgow School of Art) *Novel approaches to production and post-production of immersive VR/360 audio-visual experiences*

Brendan McCloskey (Ulster University) *The effectiveness of creative digital technologies in community participation in customised design*

Linda O Keeffe and Rebecca Collins (Lancaster University) *Research in a Box: A Toolkit for Researching Women in Sound*

Fiona Keenan (University of York) *Prototyping and Remaking as Inquiry into Historical Sound Design Practice*

Papers 3: Abstracts

Lisa Nguyen, Joseph Timoney, Thoa Pham and Thomas Lysaght (Maynooth University) *Musimap: an interactive tool for musical search by geography*

Abstract

In recent years, the digital music marketplace has substantially evolved with the increasing dominance of a variety of music streaming services. These businesses are delivering an innovative and highly portable means of legally accessing music to customers. Due to the popularity of these services, platforms such as Spotify now have a huge store of User data. To encourage external developers Spotify have released a Web API (application programming interface) to interact with this data. This facilitates the creation of more visually appealing analytics regarding users' musical preferences than is currently possible. This would lead to better tools for users to find and exchange new music. Previously before the launch of Spotify and other music streaming services, associating a very large number of peoples' musical preferences with their geographical locations in real-time was an almost impossible task. Some attempts had been made but they all exhibited significant limitations. For example, they were limited to within a single country and offered but a small set of musical descriptors. In 2015 Spotify launched their Musical Map. This application discloses the distinctive tracks that compose the musical preferences of users living in over 850 cities around the world. It is intended that this is a novel method through which users will find new music outside their home. This application interface is basic and can obviously be enhanced however. This paper will detail the

development of a new application, Musimap, which extends significantly the Musical Map's current functionality via the Spotify API.

Musimap currently uses data gathered from Musical Map 1.0 which was obtained by means of web scraping as the data was not publicly available at the time of Musimap's development. This data contains the playlist identification string for each available city. The main idea is to use this playlist identification to initiate a request to Spotify's API. From the results returned a far richer dataset is available. This is further expanded by making additional requests based on information such as track, album, and artist identification. Subsequently, the results are then combined into new collections of data, formatted, sorted and weighted in order to generate a number of visual representations for each data set.

The final analysis of data gathered leads to a variety of visually attractive interactive charts which were created and customised using D3.js. The charts, displayed on a dashboard, include (a) a map-based search tool, (b) a genre display, and (c) a novel release-year graphic. The user is prompted to express genre preferences from which new playlists are derived. This information can be stored to build a recommender system oriented on a city's musical DNA.

Evaluation of Musimap was carried out with 25 participants and the results provided useful feedback on the design philosophy. A further value of this type of system is to investigate if aspects of culture or society can play a significant role in shaping the musical preferences of specific geographical locations relative to the rest of the world.

Roisin Loughran and Michael O'Neill (University College Dublin) *Evolving Live Code in ChucK with Grammatical Evolution*

Abstract

Live coding is a practice where software that creates music, and sometimes visuals, is written and manipulated in real-time as part of a live performance. We present `My Little ChucKy', a compositional system that uses PonyGE, a python implementation of Grammatical Evolution (GE), to evolve short programs in the strongly-timed live coding programming language ChucK. GE is a grammar-based Evolutionary Computation (EC) algorithm. EC systems, such as GE, develop solutions to a given problem by considering a population of individual solutions over a series of successive generations, rather than trying to deterministically improve one single solution. While such methods were developed on traditional optimisation problems such as symbolic regression, in recent years GE has been applied to subjective tasks such as music composition.

We present the initial framework for developing an evolutionary system that generates music using ChucK. We develop a series of grammars that generate individual ChucK files for new threads, that currently correspond to specific instruments. Each of these threads can be added to the running VM by the programmer. A video example of the system running can be found at http://tinyurl.com/n27xb9r.

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William Coleman, Charlie Cullen and Ming Yan (Dublin Institute of Technology) *sonicPainter: Modifications to the Computer Music Sequencer Inspired by Legacy Composition Systems and Visual Art*

Abstract

The standard piano roll, as implemented in most modern music sequencers, allows the editing of note information by manipulating graphical objects in a pitch versus time score space. This implementation can be an obstruction to creative flow however, as the manipulation of some features is abstracted to controller lanes, for instance. This paper explores a set of design provocations to investigate how richer visualisations may be employed to enhance this type of musical display.

Inspiration has been taken from the areas of graphic synthesis systems, visual music and graphic scores, as well as theoretical writings in the area of embodied cognition. Iannis Xenakis's UPIC system was a particular stimulation, as was the work of animator and motion graphics artist Norman McLaren. Both legacy and contemporary graphic synthesis systems are considered in the design process, and literature on embodied cognition is summarised. Concepts from these areas are then applied to the realisation of a novel music sequencer, which provides visual feedback of timbral effects applied.

An overview of system implementation is then offered, which includes a discussion of the code written to realise the device. An evaluation of the system is then outlined which includes user feedback from the demonstration of the system at exhibition. The user feedback is generally positive and offers suggestions for improvement which have informed a discussion of scope for future work on the topic.

Mike Glennon (Dublin Institute of Technology) *Mixtape: Medium, Message, Materiality*

Abstract

Creative audio and visual practices are increasingly moving from the digital sphere into the 'real' world. Artists associated with the maker and circuit-bending movements and "post-digital" aesthetics (Cascone, 2000) utilise custom-made and repurposed sound generating devices in place of the virtual, wireless and mass produced technologies more commonly associated with digital audio production (Richards, 2008). Such actions can be seen as an effort to imbue the digital with qualities more often associated with analogue and mechanical tools or as a reaction against mass produced consumer technologies. They have contributed to increased debate amongst many practitioners and researchers with regard to material and conceptual transitions from the analogue to the digital (or vice-versa), as well the political significance of adopting alternative, DIY, and hybrid tools outside the mouse and keyboard paradigm. This paper expands and repositions this dialogue, shifting the focus from composition and performance technologies, focusing instead upon the genre/format of the mixtape, and the political and cultural significance of its "remediation" (Bolter & Grusin, 1999) across eight-track tape, cassette, CD, and digital audio. Hegarty (2007) sees the mixtape, in its original manifestation, as the apogee of what Moore (2004) deems "cassette culture." In its blurring of the lines between cultural producer and consumer it is, Hegarty posits, "a way around the culture industry, a re-appropriation of the means of production." We may also view the cassette mixtape, carefully compiled and curated, and gifted from one person to another, as a shared and inclusive form of listening, physical manifestation perhaps of Szendy's (2008) notion of "listening to music with the idea of sharing this listening - of addressing it to another person." The mix CD has been posited as the logical successor to the mixtape, a technological advancement with high fidelity audio and extended running time. However, we need only consider the name of the most prominent recordable CD, the CD ROM or Read Only Memory, to establish that the mix CD reestablishes the lines between read and write culture previously blurred by the cassette mixtape. More recently the mixtape has reemerged within the worlds of popular and experimental music as something of a hybrid genre/format, part composition, part compilation, sometimes delivered via its "classic" medium of cassette, sometimes taking digital form. This paper explores how the medium of the mixtape has moved from the analogue to the digital, retaining the title and the conceptual framework of its initial (analogue) material, and yet incorporating further developments coming from the digital. It asks why artists have continued to inhabit this form long after the technology with which it is most associated has become (largely) obsolete. In so doing, it

examines the tensions which often exist between cultures of consumption and production, and how these tensions become embedded within certain technologies and formats, imbuing them with a level of political and cultural significance seemingly capable of transfer between the digital sphere and the 'real' world.

Papers 3a: Abstracts

Ronan Breslin and Jessica Argo, Poli Petrova (Glasgow School of Art) *Novel approaches to production and post-production of immersive VR/360 audio-visual experiences*

Abstract
Key aspirations for VR/360 AV experiences are immersion and presence. Yet, these are impossible to achieve without spatial synchronisation between visuals and sound. Audio has been recognised by many VR/360 practitioners as the most difficult aspect to control within the user experience. In an attempt to overcome this, current research focuses on object and scene based audio paradigms that deploy complex spatialisation techniques via game-engines such as Unity and proprietary software. There has been success with these approaches, most notably BBC R&D's landmark VR production, The Turning Forest. However, many VR/360 productions may not require such complex workflows to render an engaging user experience, particularly if content delivery is linear. Scene-based audio using Ambisonics coupled with head-tracking technology offers a more manageable workflow that is ideal for short VR/360 experiences in such areas as tourism, arts and sports promotion. The authors are currently lead directors on a series of one minute 360 sports films for The Glasgow 2018 European Championships. These promotional videos have been captured with a GoPro Omni and Soundfield ST350 microphone rig accompanied by spot microphones when required. This paper will describe the unique production and post-production workflows that have been deployed to deliver these videos.

Brendan McCloskey (Ulster University) *The effectiveness of creative digital technologies in community participation in customised design*

Abstract
The authors present a narrative report on, and evaluation of, the impact of a recent (2017) series of community engagement workshops, centred on the use of customised and off-the-shelf creative technologies, for people in the wider community commonly less familiar with such tools and processes. As part of the recent [conference] held at [Ireland], a short series of workshops were delivered in the weeks preceding the event, to introduce different social groupings of adults, young adults with disabilities, and school age students to creative digital music technologies. Using a broad range of available technologies – from free iPad apps to Csound and embedded hardware platforms – each group of participants was challenged to design and prototype a novel musical instrument or sound toy, across two 4-hour sessions. The main aim of the workshop series was to expose interested hobbyists and creatives to more or less unfamiliar technologies; the second goal of the project was to evaluate the efficacy of a variety of tools and processes in effecting a subjectively successful response to the design challenge, in a variety of design contexts.
Participant groups were identified based on simple criteria:
- a high likelihood of interest in creative technologies
- a low likelihood of regular participation in or exposure to third-level research and practice in the domain
Three differing groups were chosen: [group A] from the {Ireland] area, currently engaged in regular public workshop activities related to the workshop and conference theme; [group b] from [Ireland] participate in inclusive music making via [named group], and; [group c] represent school age students familiar with STEM curriculum topics, but unfamiliar with prototype design challenges.

The authors comment on the suitability of a given methodology, for a given hardware and software platform, in a given design context.

Linda O Keeffe and Rebecca Collins (Lancaster University) *Research in a Box: A Toolkit for Researching Women in Sound*

Abstract
This paper will present the processes and methods developed to create a sound and technology toolkit for young girls in schools.
Two members of the WISWOS (women in sound women on sound www.wiswos.com) network received a grant in April 2017 to develop a research toolkit. The grant is called Research in a Box and is funded by the Research Council UK and Lancaster University. 'Research in a Box' is a loanable kit aimed at GCSE or A-Level school students that fits in with the appropriate curriculum and at the same time showcases resources used by researchers. The aim of the box, developed by WISWOS, is to first, make practical interventions into the current pedagogical apparatus for the teaching of sonic technologies in schools, and second, to interrogate and generate the construction of virtual and physical sites of knowledge exchange on gender, sound and technology. The first Kit will be available to schools and students from September 2017.

Fiona Keenan (University of York) *Prototyping and Remaking as Inquiry into Historical Sound Design Practice*

Abstract
This paper presents an investigation into techniques of remaking and prototyping (Elliott et al., 2012) as a method for revealing more of the tacit knowledge behind the design and performance of sound with acoustic materials and simple mechanisms (Napier, 1936) from theatre, magic lantern shows and silent cinema in the late nineteenth and early twentieth century. It will explore prototyping's potential to augment the few historical texts available about the craft of making sound with materials, and even introduce the concepts behind digital methods such as physical modelling synthesis, in a workshop setting. The Maker Lab (MLab) in the Humanities at the University of Victoria, BC, researches and remakes historical technologies through physical computing, prototyping and digital fabrication (Sayers, 2015). The design and delivery of a pilot workshop on prototyping for sound making informed by historical sound design methods, which was developed as part of a research residency at MLab, will be outlined. Further development of this workshop will also be explored

11.30 Coffee Break (Winter Garden)

12.00 Keynote 3: Prof. Teresa Dillon (P1080) Sound of the Breakdown
Introduction: Dr Neil O'Connor (DkIT)

Abstract

This keynote explores processes of hacking and repair within contemporary art practices, which work with sound. Commonly associated with ideas of access, transformation and freedom of information, hacking is considered as the promotion of decentralised systems (Levy, 2010), whereby hackers commit crimes of curiosity by addressing weakness and creating new alternatives (Wark, 2004). Repair on the other hand focuses on processes of maintenance and care by dealing with the realities of breakdown and failure. Revealing what Graham and Thrift (2007) refer to as a 'politics of repair', where infrastructures connect and disconnect with geopolitical struggles and labour systems. In this respect repair and one could also argue hacking (depending on its form) goes against the lexicon of fluidity and the seamlessness of 'smart' technologies (Tironi, 2014), which dominates the imaginations of the network society (Castells, 1999). Hacking and repair move away from the rhetoric's of the 'new' as a means of progression and innovation, to what Jackson (2014) calls 'broken world' logics. Taking this idea of 'broken world' logics, I explore how artists, composers and musicians have been employing process of hacking and repair by focusing on failure (Cascone, 1998), glitch (Goriunova and Shulgin 2008; Menkman, 2011) and planned obsoletism. Concluding with how such sonic works connect to contemporary conversations on ecology, art and the anthropocene (Bennett, 2010, Davis and Turpin, 2015, Dyson, 2014, Kahn, 2013, Kanngiser, 2015, Latour, 2017, Morton, 2007 and van der Velden, Belina, Altena et. al, 2016)

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Bio

Teresa Dillon is an artist, researcher and Professor of City Futures at the School of Art and Design, University of the West of England/UWE, Bristol. Her performative, research and sound based work metaphorically and critical examines the techno-civic systems, which affect and shape everyday urban

life with a special interest in notions of survival, governance, degrowth and interspecies behavior. Recent commissions focus on sonic reenactments of the built environment (Canary Songs, 2016) and interspecies relations and symbolism within surveillance societies (UNDER NEW MOONS, WE STAND STRONG, 2016). Prior to joining UWE, she was a Humboldt Fellow at UdK and TU Berlin, where she carried out work on artistic processes to making the electromagnetic spectrum audible and its relation to city governance. Her earlier research focused on creative collaborative processes using music technologies in different learning settings and the use of music as an analgesic in hospitals and in therapeutic contexts with young people. Since 2007 she has curated various independent and established art programmes, including festivals OFFLOAD, Systems for Survival (Bristol, 2007), HACK-THE-CITY (Science Gallery, Dublin, 2012), transmediale (Berlin, 2016) and Urban Knights (2013-ongoing). In partnership with various institutions, including STEIM, Amsterdam she directed and organized the collective N.I.P (New Interfaces for Performance, 2007-2010), which included over 12 artists from the UK, Portugal and The Netherlands, whose work focused on real-time performance, sound, interaction and media. Teresa's work has been exhibited widely across Europe, her publications appear in various academic books and journals and her work has been reviewed in Nature Magazine, Wire and BBC online.
polarproduce.org and urbanknights.org

13.00 Buffet Lunch (Winter Garden, PJ Carroll's Building)

16.00 ISSTA AGM (Mac Anna Theatre)

All attendees are members of ISSTA (unless they specifically expressed wishes not to become members) and are invited to take part in discussions and votes at our AGM.

Detailed Schedule, Music Track: Day 1, Thurs 7th

17.00 Concert I (Mac Anna Theatre, DkIT)

Amble Skuse: Balancing Act   (Spoken, soundscape, Sensors)
Paolo Gatti: Senhalte   (fixed)
Chris Malloy: Cold Light (Piano)
Andrea Guterres: Solipsistic Slumber (Laptop)
Richard Molloy: Perpetua (Laptop and Cymbal)

Concert I: Programme Notes and Bios

Amble Skuse: *Balancing Act*

Noise, our voices become noise, our names become noise, inaudible, unheard, filtered out.
In response to deep mysogyny, the piece serves as a ritual, a mantra, a magical spell, presenting 1464 names, female names, invisible names, to the concert hall. Composers who are "simply not there" are simply here, we "cannot rewrite history", we are not the ones rewriting herstory.
Balancing act explores the relationship between noise and female contribution, and the genderwashing of composition history. It presents the names of 1464 female composers to concert space, giving them a place on the stage. The names are read by computer voice, the computer bears testimony to the women having been in them, she was here, she touched me.
The names are so overwhelming that they blend to noise, become waves, rain and all around us.
Women in music make up the air we breate and the water we drink.
Amble uses an EEG headset routed through MAX MSP to balance the audio streams of the live microphone and the recorded voices. The stress levels from the EEG headset control how Amble's voice is heard.
www.ambleskuse.net

Bio
Amble works as a composer and has a broad background in Diversity and Inclusion. Her interests lie in the various ways in which power is created and maintained through exclusive structures. After working at the Arts Council England on the Diversity and Inclusion team, Amble developed innovative Gypsy and Traveller training and outreach projects in the UK and Central America. Her diversity work explored relationships between the connected and the disconnected. It focuses on identity within a cultural framework, related to language, nationality and a sense of home.
Amble is currently commissioned to write a bespoke piece for instruments and technology for the British ParaOrchestra. Charles Hazlewood described her as a "fierce creative spirit [that] could not be more welcome! We couldn't ignore Amble's violinistic brilliance (a true sonic adventurer)". The work fits well with Amble's AHRC Scholarship PhD exploring performance, improvisation and composition using body sensors with disabled musicians

Paolo Gatti: *Senhalte*

"Senhalte" is based on the counterpoint and on the union of various electronic materials and acoustic melodies (from some countries of the world) that I have recorded. Eleven musicians recorded different folklore melodies and recorded 5 words in their own language: singularity, together, time, non linear, deformation. During the piece these words are slowly decomposed and reassembled forming 5 words in the italian language and finally the title word, Senhalte (in the Esperanto language, the idiom of the peace between people). Senhalte is a stereophonic composition. The musical materials are juxtaposed

following an "conscious atomistic" style, an editing technique on which the composer has based his recent studies.

Bio
Paolo Gatti studied guitar and piano. He is graduated in environmental engineering, sound engineering and computer music. He is a composer of electronic music. Some of his compositions have been performed in Italy: at the "Argentina" theatre, at the "Emufest" , at the "MAXXI" museum, at "Cariplo Factory" in Milan and worldwide: at the IFIMPAC 2016 in Leeds, at the NYCEMF 2016 in New York. In 2015 his work for violin and electronics called "Poltergeist" was one of the awarded compositions at the end of the Claudio Abbado" national prize. In 2017 his composition Senhalte earned a special mention at the "Forum Wallis, Swiss contemporary music festival". He recorded for "VideoRadio" music label, Neuma Records.From 2015 he collaborates with the "Mondo Digitale" foundation, leading computer music courses. Actually, he lives in Malta (he won a scholarship organized by Regione Lazio and in collaboration with the "Master in Sonic Arts" of the "Tor Vergata" University of Rome).

Chris Molloy: *Cold Light*

Cold Light was composed in tempore belli. The title is from the phrase, "in the cold light of day," referring to any objective, disquieting evaluation of past decisionmaking. While I was composing this piece, American forces launched a massive assault on the city of Fallujah; the death toll for American soldiers in Iraq reached 1,000; and estimates ranged from 25,000 to 100,000 Iraqi civilian deaths. Most of those civilians were killed during American airstrikes. Most were unarmed women and children. I dedicate this music to their memory.

Bio
Chris Malloy is an American composer living in Denver, Colorado.
His music has been presented in Brazil, Canada, Germany, Ireland, the United Kingdom, and the United States, by Elizabeth Keusch, Jonathan Leathwood, the Auros Group for New Music, the East Coast Composers Ensemble, Crosscurrents, the Guildford International Festival of Contemporary Music, the Boston Cyberarts Festival, the Sonorities International Festival of Contemporary Music, the Warebrook Contemporary Music Festival, the Master Singers, the Boston Cecilia Chorus, the Pennsylvania Wind Quintet, the Lydian and Alard String Quartets, the Cambridge Symphony Orchestra, the Music on the Hill Orchestra, members of the Colorado Symphony Orchestra, and others.
After receiving a B.A. in Composition from Pennsylvania State University, where he studied with Burt Fenner and Maureen Carr, he earned a Ph.D. in Composition and Theory from Brandeis University, where his teachers included Allen Anderson, Martin Boykan, Eric Chasalow, Ed Cohen, Allan Keiler, Harold Shapero, and Yehudi Wyner.
He chairs the Composition and Theory Department in the University of Denver's Lamont School of Music. In the United States, he also has taught at Brandeis University and the New England Conservatory at Walnut Hill. In the United Kingdom, he has taught at the University of Surrey.

Andrea Guterres: *Solipsistic Slumber*

'Solipsistic Stupor' is an exploration of consciousness. The music and visuals aim to offer alternative perspectives to reality by warping and reversing sound and light from our environment. It also seeks to mimic natural sounds by using computer programming, hence bridging the gap between the 'natural' and the 'artificial.'
The music consists of a mixture of recorded sounds, recorded music, and electronic sound design. Although most of the recordings come from our natural environment, the piece does not claim to represent the 'natural' exclusively. Some electronic instruments used have also been designed to incorporate more unnatural sounds, or mimic acoustic instruments (such as the flute) with an electronic interpretation. The result is a harmony between the natural and artificial.
The flickering flame is symbolic of how our reality is shaded by solipsism, as objects can appear warped depending on their lighting.

This piece is a collaboration between video artist Katherine Sultan and composer Andrea Guterres.

Bio

After graduating with Honours from the Conservatoriums of Melbourne and Sydney, Andrea now dedicates her time to submerging her classical roots in unconventional electronic fusions (but she still enjoys a good wind quintet). Her chamber music has been premiered and recorded by leading ensembles at iconic venues and concert halls in Sydney and Melbourne, and she has performed regularly herself at numerous festivals and major venues in Sydney, Melbourne, Berlin and elsewhere, including the Guitar Maker's Festival, street music festivals, on 3MBS radio, Open Studio (Melbourne), Loophole (Berlin), Greenhouse (Berlin), Sonicscape Festival (South Korea), Landratsamt Tübingen (Germany), ISSTA (Ireland), and at a multitude of other public events in Australia, Germany, Italy, Morocco, South Korea and the U.K. Since her expedition to Berlin with an artist visa, Andrea has written music for art music events, dance companies, video artists and professional chamber ensembles. She continues to reside in Berlin, pursuing opportunities in electroacoustic music, sound art, and performance art music (particularly dance) – while occasionally performing on the Spanish guitar.

Richard Molloy: *Perpetua*

Perpetua was composed in 2017 as an exploration of delay-based resonant drones. The sound of the cymbals is transformed by a series of controlled feedback loops within Max/MSP. The usual runtime of this piece can exceed an hour, but today a shorter performance will be given

Bio

21.00 ISSTA 'Late Night' (Spirit Store): Sunken Foal & Joni LIVE + ISSTA DJ's

Dunk Murphy (Sunken Foal) has been writing, performing and producing all manner of electronic and acoustic music for almost 20 years. Under monikers Sunken Foal and Press Charges, and as a member of Ambulance and The Natural History Museum he has had releases on Planet-Mu, Black Acre, Acroplane, The Fear, Front End Synthetics, U:Mack, Heresy and Countersunk.org. Championed by BBC6 DJ Mary Anne Hobbs, Donal Dineen and the late John Peel, Dunk's music covers a large area showcasing his deep knowledge of synthesizers, grooving rhythms and plucked instruments as well as a keen ear for a unique sound and emotive melody. In summer 2017, Dunk releases his ambient epic 'Supersede' under the guise of 'Minced Oath' through www.countersunk.org. He has collaborated on many audio visual ventures with Tim Redfern over the years where the duo seek to explore the visceral, kinetic links between music and the moving image.

Joni is originally a classically trained violinist whose musical education and sound straddles the divide between the organic instrument and the electronic bass world. Joni's naturally soulful singing style is combined with electronic beats and smart lyrics to make a sound all of her own. She has worked with many prominent Irish producers across many different genres such as Eomac, kaboogie !, Deviant, t-woc and Major Grave. With a release to come in July 2015 on label Feel Good lost and a video directed by Brendan Canty Joni brings a dark lascivious feel to a street pop sound. Her single 'Running' is due to be released on the 20th of July and has already been played on BBC radio 1 and appeared on Nialler9, Disco Naivete and Dazed and Confused.

Detailed Schedule, Music Track: Day 2, Fri 8th

14.00 Concert 2 (Mac Anna Theatre)

Robin Parmar. Improvisation on Korg Volca (4 Mika Vainio) (Laptop)
John Keston. Vocalise Sintetica (Laptop)
Eiliyas Nicholas Kelly. Improvisation (Piano)
Alexander Senko. Object and Line (Improv)
Jenn Kirby. Phonetics (Voice)

Concert 2: Programme Notes and Bios

Robin Parmar: *Improvisation on Korg Volca (4 Mika Vainio)*

The Korg Volca is a line of small, inexpensive, battery-powered electronic instruments, each designed for a specific purpose. This improvisation is designed to test the limits of a single Volca, both in terms of sonic output and with respect to its minimal performance interface. It is an homage to Mika Vainio and his experiments with minimal techno

Bio
Robin Parmar explores the poetics of place and memory through composition, sound installations, texts, and video. Works have appeared in Ireland, England, Portugal, Spain, Germany, Sweden, Slovenia, Canada, and the USA. His albums include "…between…" (Gruenrekorder, 2014) with David Colohan, and "The Drones" (Stolen Mirror, 2013). His research investigates psychoacoustics, post-punk music, science fiction, field recording, and other topics. Robin is currently a doctoral student at De Montfort University (Leicester) and a lecturer at the University of Limerick.

John Keston: *Vocalise Sintetica*

Vocalise Sintetica is an audiovisual composition made up of four movements: I. Machines, II. Liquid, III. Vocalise, and, IV. Sintetica. Each movement is a playlist of five audiovisual objects that are instantly available to be projected and amplified while being granulated in real-time by a performer using a multitouch interface. The performer may loop their gestures applied to the audiovisual objects. This allows for the introduction of additional synthesized sound layers that accompany, contrast, or mimic the audiovisual objects.
The gestures and additional synthesized layers are improvised so that the piece is significantly different with each performance. It is also possible to use new audiovisual objects in order to change the context of the piece.

Bio
John C.S. Keston is an award winning composer of electronic, experimental, and instrumental music. His work embraces the chaotic ambiguities of environmental and sensorial influences providing context within unpredictable or everyday events. His unconventional compositions convey a spirit of discovery and exploration through the use of graphic scores, chance and generative techniques, analog and digital synthesis, experimental sound design, signal processing, and acoustic piano. His compositions parallel indeterminate improvisation activating what remains immutable within traditional forms of notation driven music. Performers are empowered to use their phonomnesis, or sonic imaginations, to contribute to the work.
John has performed and exhibited original work at Northern Spark (MN); the Weisman Art Museum (MN); the Montreal Jazz Festival; the Walker Art Center; the Burnet Gallery (MN); the In/Out Festival of Digital Performance (NYC); the Eyeo Festival (MN); INST-INT (MN); Echofluxx (Prague); WMC (Miami);

and Moogfest (NC). His music appears in The Jeffrey Dahmer Files (2012) and he composed the music for the short Familiar Pavement (2015). He has appeared on more than a dozen albums including two solo albums on UnearthedMusic.com. His latest release, Isosceles (2016) has drawn comparisons to the Stranger Things soundtrack. John resides in Minneapolis where he is a professor of creative multimedia at the University of St. Thomas and founded the sound design resource AudioCookbook.org

Eiliyas Nicholas Kelly: *Improvisation*

Seeking an alternative interface for music creation, a sonic feedback loop is created utilizing various sonic processors for manipulating the sound. Although the initial premise was inspired by Thelonious Monks piano solos, the sonic output may seem quite different, given the fact that Eiliyas "Nicholas Antoine Kelly" is a different person with different experiences and thus the outcome is noticeably different.

Bio
Eiliyas "Nicholas A. Kelly" is an artist working with experimental video, music, creative writing, new media, visual art, public art, composition and varied concepts. Also curator of the YEAH C-MiniVideoArt Festival in Atlanta,GA Host of Mixtape Menage in Berlin has a number of music releases and installation projects. He was recently selected for MIX at Bath Spa University(UK), attended Arteles Residency(FIN), participated in FLUX festival for public art in Atlanta, GA Sound, concept, video, synchronicity, broken technology, idealism, pen, paper, pencil, ink, 80's-90's hip-hop production equipment, song, simplicity, layers, life, environment, and other are just some of the tools that Eiliyas uses to execute his artistic endeavors.

Alexander Senko: *Object and Line*

Dedicated to Wassily Kandinsky's "Point and line to plane".
Sound and visuals are interdependent. Position, size, speed, and brightness of objects and lines generate sound, its spectrum, volume and rhythm.
Live performance combines algorithmic composition and live improvisation.Created with Puredata/GEM.

Bio

Jenn Kirby: *Phonetics*
Phonetics is written for voice and live electronics. It is performed using a headset microphone, a gametrak (controller) and a Max patch. The piece makes use of the voice as a sound source for live manipulations in a gestural electroacoustic performance. The piece aims to create an audio-visual symbiotic relationship that translates to the audience. My approach in creating this piece and my other electroacoustic performance pieces, is to build a software instrument that requires skill from the performer, design the performance in a way that connects with an audience and compose a piece with it that is structurally sound..

Bio
Dr. Jenn Kirby is a composer, performer, lecturer and music technologist. Jenn works as the Programme Director for BA Music Performance and Production at the University of Wales Trinity Saint David, where she teaches composition and music technology. Her output includes contemporary instrumental composition, electroacoustic music, sound art, noise music, laptop orchestra performance and solo live electronics. Her work has been performed in Ireland, the United Kingdom, Austria, the Netherlands, Germany, Italy, Poland, Canada, the United States and Mexico.

Jenn is very active in the performance of electronic music as a performer and a sofware developer. She builds software and re-purposes controllers as musical interfaces to create and perform theatrical and often humourous live electronic music.

Jenn is an active member of the Irish Composers' Collective and the Irish Sound, Science and Technology Association. She is founder and director of the Swansea Laptop Orchestra, a performing member of the Dublin Laptop Orchestra and a committee member of the Association of Irish Composers. Jenn also serves on the board of the International Alliance of Women in Music.

Jenn holds PhD in Composition from Trinity College Dublin, an MSc in Music Technology from the University of Limerick, a BSc in Software Development from Limerick Institute of Technology and a Certificate in Teaching and Learning Support.

ISSTA 2017 Art Track: Introduction

A number of artworks from our international selection will be on display at various venues in the PJ Carroll's Building throughout the conference/festival.

We will also conduct a guided tour/artwalk, at two designated times in the schedule, introduced by members of the programme team.

Attendees are invited to take the time to explore the works in more detail after they have experienced them on the guided tour. We are grateful to all featured artists for the time they have taken to craft these experiences.

Detailed Information, Sound Art & Installation Track:

Hugh McCarthy: *De Profundis* (Recital Room)
Joao Pedro Oliveira: *Neshamah* (Recital Room)
Brian Connolly: *Track* (Recital Room)

Aki Pasoulas: *Irides* (P1078)
Briay Conditt: *Hypocrisy* (P1078)
Chris Malloy: *The Gliding Intervals* (P1078)
Claire Fitch: *Murdering The Time* (P1078)
Kristina Warren: *Eight Paces* (P1078)
Antonio D'Amato: *Opus III* (P1078)
Jessica Argo: *Violence* (P1078)

Tim Howle and Nick Cope: *Flags 3* (P1079)
Massimo Vito Avantaggiato: *Atlas of Uncertainty* (P1079)
Sabine Bürger and Rosalía Soria Luz: *The Silver Key* (P1079)

Frank Rossi: *So viele Farben Schwarz (So many colours black)* (P1007)
Iain McCurdy: *Kaleidophone* (P1006)
Günther Berkus and Alison Forbes: *Evolution* (P1135)
Arthur Clay: *The Book of Stamps* (P1005)
Brian Connolly: *In-Ear Performances* (P1008)

ISSTA 2017 Artworks: Programme Notes and Bios

Frank Rossi: *So viele Farben Schwarz*
Sound Installation (Music Box, Gramophone Trumpets, Sound, Motion Sensors, Computer), 2017

So viele Farben Schwarz is a music automaton, in the truest sense of Satie's words*, musique d'ameublement* (furniture music). In it, the twin strands of confrontation with automatons that are able to play music independently of humans and the idea of automated composition, of endlessly self-generating music, are combined to form an autopoietic, that is to say, both self-playing and self-composing music machine.

The concept of automated composition is grounded in a very early understanding of the close connection between musical and mathematical structures. Common to the Ancient Greeks, medieval scholars such as Athanasius Kirchner, through to the Institute of Biomimetics at the University of Malaga is the conviction that, if one can analyse music mathematically, it must also be possible, by implication, to generate music out of mathematical structures.

Outwardly, *So viele Farben Schwarz* resembles a fashionable living-room music box from the 20s/30s, unusually realised as a tripod in a hexagonal shape with three historical gramophone trumpets, directed towards each leg side. A cellular automaton installed in the interior of *So viele Farben Schwarz* explores the concept of self-organising tonal systems coupled with interaction from the environment, through the use of motion sensors.

Bio
Frank Rossi, born in 1967 near Heidelberg, Germany, is a photographer and media artist. He studied Liberal Arts and Experimental Photography in Kassel and in Prague. His photographic works and installations have been shown hitherto in Germany, Switzerland and the USA. His interest is focused on experimental settings in photography, in fine art, but also in New Music. "My art is experiment, and - as is well known - every single experiment is defined by the uncertainty of its outcome, I relish creating parameters that allow me to react to an influx of unplanned and inconceivable events."

Iain McCurdy: *Kaleidophone*
Sound Installation (Wood, metal, sensors, computer), 2013

Kaleidophone is a new interactive sound installation piece. As its name suggests, the aim of the piece is to create a musical analogue of a kaleidoscope. As children we were intrigued by the infinity of patterns that this simple toy could produce. It is this notion of facilitating the creation of patterns (in this case musical) that continually evolve and reinvent that are key to this work. With Kaleidophone visitors select and stack any number of coded discs upon a spindle on a base unit which they can then move, spin or stop independently. These discs feature patterned cutouts, which unmask sensors on the base unit. Stacking the discs on the spindle combines the cutouts of multiple discs but each disc features a unique pattern so the results are largely unknowable.

Bio
Iain McCurdy is a composer of electroacoustic music and sound art originally from Belfast and currently based in Berlin. Having come from a background of writing for fixed medium, more recent work has focussed on sound installation, exploring physical metaphors of compositional structures through the creative use of electronic sensors and innovative human interface design. Physical designs are minimalistic, using primary shapes and colours and utilising instinctive user inputs.

Günther Berkus and Alison Forbes: *Evolution*
Sound Installation (Wood, Max/MSP, computer)

The installation, as well as creating an unpredictable evolving soundscape, serves as a journal of the day's sonic happenings. Using kitchen sounds, it is built on shelves, like a kitchen dresser, with household items on it. Participants can either throw something to create hit or miss sounds, or tap directly with different textured implements. The visual and sonic worlds support each other, i.e. the music is not a backing for the visual. The installation works by social input. The whole pays tribute to the acater.

Bio
Alison Forbes has a background in music performance, creative art and housewifery.

Günther Berkus likes to be seen as an emphatically non-academic music composer and sound designer. He has a neurodegenerative illness and is enthusiastic about promoting music making as an activity for people with disabilities.

Arthur Clay: *The Book of Stamps*
Sound Installation (paper, ink, Computer Vision, computer)

The « Book of Stamps » is a The stamps that look like natural things like trees, bushes or stone paths belong to the "Country Sounds" category; Those that look like buildings belong to the "City Sounds" category. By stamping a book page with a combination from both categories, a soundscape is created that will either tend to sound like a city, a country or an urban sonic mix of both. In this manner, sonic spaces are created for each of the pages and when the user turns the pages to other already stamped pages, it lends him or her the impression that they are actually "traveling" between places sonically. Behind the artwork lurks the "Physical Sequencer" software by Enrico Costanza, where interactive objects are "seen" by the computer through a web-cam based fiducial recognition.

Bio
Art Clay is an artist and curator who was born in New York and lives in Basel. He is a specialist in the performance of self-created works with the use of intermedia and has appeared at international festivals, on radio and television in Europe, Asia & north America. His recent work focuses on media based works and large performative works and spectacles using mobile device. He has won prizes for performance, theatre, new media art and curation. He has taught media and interactive arts at various Art Schools and Universities in Europe and North America including the University of the Arts in Zurich. He is the initiator and Artistic Director of the 'Digital Art Weeks' in Zurich.

Tim Howle and Nick Cope: Flags 3
AV Installation (DVD)

Previous pieces have been subject to a cartoonification of sound where a great deal of sound organisation is aligned to phase-like visual material. This piece is gentle by comparison. The approach attempts limited levels of intervention that chime with the images. The exploitation of the inherent musicality of the images emphasises timelessness and continuity through an improvisational approach, mirroring and counterpointing objects in the image. The limited indeterminate relationship of the layers of musical material allows for shifts with regard to each other, resulting in harmonious and gestural relationships regardless of juxtaposition. Sounds are selected from a limited palette.

Bio
Tim Howle is Professor of Contemporary Music at the University of Kent. He has also worked at the Universities of Hull and Oxford Brookes. He read music at Keele University, studying under Roger Marsh and Mike Vaughan completing a doctorate in composition in 1999. His work centres on

acousmatic music including pieces for tape, and also for performer and live electronics and pieces involving visual media. His work has been performed throughout the US, Asia and the EU.

Nick Cope posts have included Associate Professor at the Dept of English, Culture and Communication at Xi'an Jiaotong_Liverpool University, Suzhou and Senior Lecturer in Video and New Media Production, University of Sunderland where he also completed a PhD. He Graduated in 1986 from Sheffield Hallam University and worked in film and video production with a particular emphasis on music and moving image work, collaborating with Cabaret Voltaire, the Butthole Surfers, O yuki Conjugate and Electribe 101 amongst others. More recent work has included projection work for public arts projects and installation collaborations.

Massimo Vito Avantaggiato: *Atlas of Uncertainty*
AV Installation (Video, Audio)

This piece is an expressive sonic continuum ranging from unaltered natural sounds to entirely new sounds - or, more poetically -- from the real world to the realm of the imagination.
"Atlas of Uncertainty" is an electronic music piece in which a microcosm of sounds, explored through some csound interfaces, becomes the hyletic universe of the work.
Heterogeneous sound materials are explored through various techniques (granular, subtractive):
- Kitchen noises; Treated bells texture; Electronic generated whips sounds and Granular accumulation, Noisy whooshes; Chimes; Tibetan bowls; just to name a few. The sounds are here combined in well-identifiable electronic gestures.

Bio
Massimo took a degree in Electroacoustic Composition with full marks at "Giuseppe Verdi" Conservatoire in Milan and a degree as a Sound Engineer (Regione Lombardia).
For him, music is a medium through which the inner spiritual essence of all things is revealed and shared.
Finalist in some composition and video competitions, he has recently participated in:
SEGNALI 2017, Perugia, Italy; EMUFEST 2016 (Rome, Italy); Rieti Elettroacustica 2016, Rieti, Italy; Csound 30 Conference 2016, Maynooth University (Ireland); Labirinti sonori 2016, Casa del Suono, Parma; Art and Science days 2016, Bourges (France).

Sabine Bürger and Rosalía Soria Luz: *The Silver Key*
AV Installation (video, audio)

This audio-visual collaboration between Mexican composer Rosalía Soria Luz and German video artist Sabine Bürger literally originated from within ISSTA2015 when the two authors first had the opportunity to immerse themselves in each other's work.
The music is a 16-channel audio composition inspired by H. P. Lovecraft's 1926 short story "The Silver Key", part of his "Dreamlands" series. In the story a silver key unlocks gates of space and time, offering access to an alternative dimension of vast cities and lands. The music consists of five sections as a metaphorical allusion to these dreamlands, conceived as synthetic sound spaces. The source materials include recordings of a koto and synthetic sounds created using mathematical models. Sound transformations, timbres, behaviors and trajectories are largely based on this model's behaviours. A stereo version of the piece provided the basis for the visuals.
The visuals were created in response to the music, generating an intuitive visual equivalent to its expressive qualities and its movement from a mathematical origin towards the emotive. The audio piece, rather than relying on an overall theme repeated throughout, offers instead a sequence of differing autonomous elements strung together, which could be best mirrored by continually introducing new visual components throughout the piece. In that respect the visuals evolved in a linear process, as fragments were created in chronological order, reacting to the piece as it progressed. Nevertheless a non-linear process also played a crucial role in the video production, as the original footage, shot at an electrical sub-station, was rapidly transformed into abstract components. These

were peripheral moments captured in the instances before focusing on a particular motif: extracted from the ostensible subject of the shoot, they achieve their own autonomy.

The resulting video is literally constructivist, referencing the aesthetics of Suprematism in the use of geometric cells to contain footage, further fracturing what was already peripheral and fragmentary imagery, whilst also providing it with a temporary and constantly evolving structure.

Bio

Sabine Bürger studied Visuals Art at the Academy of Fine Arts Münster with Professor Ulrich Erben, and at Düsseldorf Art Academy, becoming a 'Meisterschüler' with Professor Günther Uecker. In the late 1980s she was awarded a grant by the German Academic Exchange Service (DAAD) to study at the Royal College of Art in London. She continued living in London for six years, exploring performance art and self-portraits in photography. From the late 1990s on she exhibited her black and white photography widely, including at the Museum Ludwig, Cologne. Her work also featured as cover stories in the German photographic magazines Photonews and Schwarzweiss. Since 2007 she has been concentrating mainly on video, exploring the interface between video and sound. She has worked with different musicians on various projects resulting in collaborations with Heiner Göbbels (D), William Basinski (US), Machinefabriek (NL), Steve Roden (US), and Svarte Greiner (N), amongst others.

Rosalia Soria-Luz's research focuses on the use of state-space mathematical models applied in multi-channel sound synthesis and sound transformations. She explores new possibilities in music language by designing real-time sonifications of this models and is interested in combining these sonifications with recorded materials and live instruments.

Aki Pasoulas: *Irides*
Installation (audio) 2017

Irides literally means rainbows. In Greco-Roman mythology, rainbows were thought to be bridges made by the goddess Iris and connected heaven and earth. Irides are multicoloured arcs caused by diffraction and dispersion of light by water droplets in the air. Similarly, in this composition, momentary sunny spells and droplets of rain give rise to spectra, bands of colours, arcs that form double, triple and multiple sonic rainbows that permeate the scenery of the piece.

Bio

Aki Pasoulas is an electroacoustic composer, Lecturer, Director of Education and the Director of MAAST (Music and Audio Arts Sound Theatre) at the University of Kent. He also taught at universities in London including City, Middlesex, and the University of the Arts, and he holds a PhD on timescale perception in electroacoustic music. His research interests include acousmatic music, time perception in relation to music, psychoacoustics and sound perception, spatial sound, acoustic communication, and soundscape ecology especially in relation to listening psychology. His scholarly and music works have been published through EMI/KPM, ICMA, CUP and OUP. (http://www.aki-pasoulas.co.uk)

Briay Conditt: *Hypocrisy*
Installation (audio) 2017

Hypocrisy is an electro acoustic piece utilizing fragments of Noam Chomsky's voice found within an interview by Rhod Sharp, broadcast on BBC Radio 5 Live on 25 November 2015. The intention behind the piece is to parent an artistic expression of Chomsky's thoughts on global issues. Emphasizing the importance of understanding and the consequences of current political decisions, Hypocrisy captures the frightful nature of the current realities facing the world: climate change, terrorism, and the potential ramifications of the outcome of the United States' presidential elections.

Bio

Briay Conditt is a horn player and composer. She graduated with her masters from the Lamont School of Music with concentration in both performance and composition in June 2016. Briay completed her

horn performance studies with Susan McCullough and her composition studies with Dr. Chris Malloy, Dr. Leanna Kirchoff, and William Hill. As a Colorado native, she finds inspiration in nature and enjoys composing outside.

Chris Malloy: *The Gliding Intervals*
Installation (audio) 2017

"The Gliding Intervals" is a 21st-century madrigal. An artificial soprano, provided by Yahama's text-to-singing Vocaloid software, performs the cantus firmus. Her rhythm is governed by an algorithm that exaggerates extremes of continuity and discontinuity. The accompanimental mixture is derived from her song.

Bio
Chris Malloy is an American composer living in Denver, Colorado.His music has been presented in Brazil, Canada, Germany, Ireland, the United Kingdom, and the United States, by Elizabeth Keusch, Jonathan Leathwood, the Auros Group for New Music, the East Coast Composers Ensemble, Crosscurrents, the Guildford International Festival of Contemporary Music, the Boston Cyberarts Festival, the Sonorities International Festival of Contemporary Music, the Warebrook Contemporary Music Festival, the Master Singers, the Boston Cecilia Chorus, the Pennsylvania Wind Quintet, the Lydian and Alard String Quartets, the Cambridge Symphony Orchestra, the Music on the Hill Orchestra, members of the Colorado Symphony Orchestra, and others. After receiving a B.A. in Composition from Pennsylvania State University, where he studied with Burt Fenner and Maureen Carr, he earned a Ph.D. in Composition and Theory from Brandeis University, where his teachers included Allen Anderson, Martin Boykan, Eric Chasalow, Ed Cohen, Allan Keiler, Harold Shapero, and Yehudi Wyner.
He chairs the Composition and Theory Department in the University of Denver's Lamont School of Music. In the United States, he also has taught at Brandeis University and the New England Conservatory at Walnut Hill. In the United Kingdom, he has taught at the University of Surrey.

Claire Fitch: *Murdering The Time*
Installation (audio) 2017

The pre-composition process is inspired by Gilles Deleuze. The Fold: Leibniz and The Baroque. (1993). Inflection of an idea becoming inclusion: no longer hearing, we're listening. We move from the virtual to the real, inflection defining the fold, but the inclusion defines our envelopment in the act of listening.

Bio
I've been writing music and creating sound effects for games since 2003. Clients have ranged from Intel, AMD, Adobe, Blender and Riverdeep to Forfas, Galway City and Northern Ireland Science Park. The games have ranged from loud action shooters to quiet and cute educational games. Whatever the style or genre producing audio for games is the passion.
For my musical skills I studied performance, composition and improvisation at Birmingham Conservatoire, the Royal Academy of Music and Dublin Institute of Technology.
Linking together all of my musical, sound design and technology skills is something I think is very important to constantly progress, so I am currently a Sonic Arts PhD candidate at Queen's University Belfast.

Kristina Warren: *untitled*
Installation (audio) 2017

Eight Paces explores the themes of sound-makers and digital-as-real by juxtaposing vocal, digital, compositional, and improvisational techniques. Most sounds in this piece come from deep processing of voice, so 'vocalizing' includes playing the tailor-made electronic system

(Pd, Bela, Max, Arduino, hardware components). Analog sounds are also incorporated, deriving from a Buchla 200 system (EMS Stockholm). Continuous, relatively untreated voice emerges briefly at the end of the piece. The effect is to suggest that voice – ostensibly the most intimate and natural of human instruments – can be productively electrified, noisified, and removed temporally in order to coax a complex dialogue between human and machine.

Bio
Kristina Warren (kmwarren.org) is an electroacoustic composer, improvising vocalist, and researcher. Her diverse output – including electronic-vocal performance, non-traditionally notated scores, and scholarship on gender in electronic music – imagines the coherence of seemingly disparate processes, such as noise and individualized listening. Warren's work has been programmed at events such as Guthman Musical Instrument Competition, ICMC, Mise-En Music Festival, NYCEMF, and SEAMUS, and performed by ensembles such as Dither, JACK Quartet, and Sō Percussion. Warren is a Visiting Assistant Professor of Electronic Music & Multimedia at Brown University. She holds a PhD in Composition & Computer Technologies from the University of Virginia (2017) and a BA in Music Composition from Duke University (2011).

Antonio D'Amato: Opus III
Installation (audio) 2017

This piece is a soundtrack composed expressly for a short abstract movie by Walter Ruttmann, titled Lichtspiel Opus III (1925). Previously I had composed a couple of pieces inspired by modern abstract paintings, where I tried maximizing the transmission of emotions through a synesthetic transposition of abstract paintings into music. Art synesthesia is an interaction of different sensory modalities, assumed that in certain conditions a single sense could activate the others. The first idea came up while I was visiting an exhibition on Italian futurism at the Guggenheim Museum in New York. Unfortunately the work by Arnaldo Ginna and Bruno Corra, who were two filmmakers associated with the futurist movement, has been lost. We just have an article (Abstract cinema – Chromatic music, 1912), where they describe their attempt to realize a direct translation of music into colours and shapes, applying coloured paint directly to film frames. The connection with Prometheus, the Poem of Fire (1908-1910) by Aleksandra Scriabin - where the composer also wrote a visual score with coloured shapes and lights, to be performed on the stage by a keyboard controller similar to an organ – is intriguing. The abstract movies by Hans Richter and Walter Ruttmann, dating around the 1920s seem to be an expected evolution of the above mentioned research. We could really call their artwork visual music, because of their emphasis on qualities as rhythm, tempo, movement, counterpoint and harmony, in the kinetic of colours and forms. Ruttmann was a violinist and cellist, but he wasn't casual. Ruttmann, formerly a painter in his early abstract films followed the futurists' idea of coordinating music with colours and moving shapes. In his effort he used some animation techniques that would be adopted later in the animation industry. In this experimentation the author investigates the possibility of a new grammar of forms and colours, through a dual reduction of forms into basic shapes and colours into basic tints, and the study of the mutual relations in their kinetic movements. However he didn't adopt an invariable correspondence of colour or geometric shape and pitch, opting for a subjective and more expressive relations of elements. Though Opus III was created as a silent animated film without soundtrack, few years later Hanns Eisler wrote the music for this film, for a performance at the Baden-Baden music festival in 1927.
Here I propose my piece composed as a soundtrack following strictly – frame by frame – the original silent movie. I adopted a free association of forms and sounds, working mostly on progressive timbre mutations, where the same shape appears many a time. The dislocation of the shapes is mostly reflected in a pitch change, but the behaviour is occasionally reversed or more complex. The goal is to achieve the merging of communicative strengths from different art forms.

Bio
Antonio graduated at conservatory in Piano, Harpsichord, Music for Multimedia, Music Pedagogy, Electronic Music and in 2017 in Audio Engineering. He also studied Composition for eight years,

Bassoon for three years, Baroque Organ, Ondes Martenot in Strasbourg and Paris, and later Sonology at ESMUC in Barcelona. 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. In summer 2015 he was trainee at ExperimentalStudio des SWR in Freiburg, and in 2016 at ZKM in Karlsruhe. His works have been performed in Australia, Austria, Belgium, Brazil, Canada, France, Germany, Greece, Ireland, Italy, Japan, Mexico, Slovenia, Sweden, Taiwan, UK and USA.

Jessica Argo: Violence
Installation (audio) 2017

Violence extends the archetypal horror stinger into a prolonged Shaefferian musique concrete. Counter-conditioning occurs when the listener hears positive music coupled with abrasive material noises - so panic attacks are less frequently triggered by unpleasant sounds in everyday life. Throbbing piano gradually modulates from foreboding deep minor tones to a consoling major resolution in delicate high notes. Short extracts of cello are cut up and multiplied; whilst strings have been seen as supra-expressive voices throughout history (mimicking human cries but faster, with a more diverse dynamic and pitch range), in this soundscape the cello parts are physically unplayable in real-life. The organic breathy timbre of the cello comforts, but its digital manipulation causes unease.
The listener is constantly being interrupted, never allowed to settle into the soundscape: there are numerous sudden interjections of metallic squeaks, but repetition gradually numbs their shock value. Just when the sound reaches peak saturation, there is a sudden dropout, akin to intrusive fearful memories barging in and out of focal consciousness in Post-Traumatic-Stress-Disorder.
The gradual reduction of intensity is a hopeful metaphor: realistically, no-one is ever "cured" from anxiety - but eventually the mind can begin to realize positive attributes of the same memory trigger.

Bio
Dr Jessica Argo is a 3D sound designer, installation artist and educator both for early years and higher education. She has recently completed her PhD, where she composed immersive Ambisonic soundscapes to temporarily induce anxiety in exposure therapy, to encourage both physical desensitisation and mental catharsis for anxiety sufferers.
http://www.jessicaargo.com/

Brian Connolly: In-Ear Performances
Installation (audio) 2017

'In-Ear Performances' is constructed as an educational tool for both the composer and listener as a means of providing an insight into the vast potential of considering one's inner ears as musical instruments. With a specific focus on non-linear inner ear phenomena, this audiovisual installation explores the application of otoacoustic emissions (tones created within/by the inner ear), residue pitch, auditory masking and binaural beating. Here, a selection of the composer's work from his doctoral portfolio entitled 'Playing the Ear: Non-Linearities of the Inner Ear and their Creative Potential' are presented with an informative analytical visual display, which outlines the various compositional techniques, combined with the psychoacoustical processes that are taking place in the listener's ears during their experience of the installation.

Bio
Brian Connolly (b.1987) is a composer, broadcast producer and digital media consultant from Dublin, Ireland. Having starting out his journey into music and sound while being fascinated by the use of music in marketing and media, Brian's focus naturally shifted towards investigating the greater roles of sound, visuals and perception within music, broadcasting and digital media. While completing his Bachelor of Music degree (BMus) at Maynooth University, Brian began working as a freelance composer and consultant for sound imaging and commercial production within the radio industry, while also working as a broadcast monitor in the media monitoring sector.

Work for Brian in broadcast production continues today with his work as sound producer for the iTunes award-winning podcast series An Irishman Abroad. Brian also continues to work in audio branding and digital media consultancy, in which he specialises in training individuals to manage their own recorded digital content.

Upon the completion of an MA in Computer Music, Brian's fascination with sound, perception and music composition led him to undertake a PhD in music composition at Maynooth University in 2012, having been awarded the John and Pat Hume Scholarship. For Brian's doctoral studies, research focus concerned non-linear psychoacoustic phenomena and their potential in turning the inner ear into a musical instrument. Over the next four years, Brian began to build both a local and international profile by presenting his work through concert performances and paper presentations at conferences, festivals, symposia and other research-based events around the world. During the four academic years of his PhD, Brian had teaching duties at Maynooth University in which he lectured acoustics and psychoacoustics to undergraduate and postgraduate students. From September to December 2016 Brian also had part-time teaching position in the same area at the University.

More recently, in February 2017, Brian successfully passed his PhD under the external examination of Dr Adrian Moore (University of Sheffield) and hopes to graduate in winter of this year.

Hugh McCarthy: *De Profundis*
Installation (audio) 2017

While not particularly religious the composer has strong memories of performing this particular psalm.
Out of the deep have I called unto thee,
  O Lord: Lord, hear my voice.
O let thine ears consider well: the voice of my complaint.
If thou, Lord, wilt be extreme to mark what is done amiss: O Lord, who may abide it?
For there is mercy with thee: therefore shalt thou be feared.
I look for the Lord; my soul doth wait for him: in his word is my trust. My soul fleeth unto the Lord:
  before the morning watch, I say, before the morning watch.
O Israel, trust in the Lord,
  for with the Lord there is mercy: and with him is plenteous redemption.
And he shall redeem Israel: from all his sins.

Bio

Hugh McCarthy is currently Senior Lecturer (teaching) at the CIT Cork School of Music where he primarily lectures in music technology. Ensemble playing remains his passion. He has travelled the east coast of the States and most European countries as performer, teacher, and composer. Before working in CIT Hugh enjoyed a foray into the mysterious world of Tango music, a sojourn as a researcher in Italy, and was employed as administrator of the Irish Association of Youth Orchestras. He continues to volunteer with arts organisations including as a director of the Cork Orchestral Society. Hugh holds a Master of Science degree in music technology, Master of Arts degree in music performance (cello), a Bachelor of Music degree and is a recipient of the RTÉ Millennium Musician of the Future prize.

Joao Pedro Oliveira: Neshamah
Installation (audio) 2017

Neshamah is a Hebrew word that means "breath".
This piece was inspired in the following biblical text:
"then the Lord God formed the man of dust from the ground and breathed into his nostrils the breath of life, and the man became a living creature" (Genesis 2:7)

Bio
João Pedro Oliveira began his music studies at the Gregorian Institute of Lisbon where he studied organ performance. From 1985 to 1990 he moved to the US as a Fulbright student, with a fellowship

from Gulbenkian Foundations, where he completed a PhD in Music at the University of New York at Stony Brook. His music includes one chamber opera, several orchestral compositions, a Requiem, 3 string quartets, chamber music, solo instrumental music, electroacoustic music and experimental video. Recently he has been exploring the possibilities of interaction between instrumental and electroacoustic sounds, and most of his recent works use both media.

He has received over 30 international prizes and awards for his works, including, among others, the Giga-Hertz Award and the Magisterium Prize from the IMEB (Bourges).

His music is played all over the world, and most of his works have been commissioned by Portuguese and foreign groups and foundations. He is Professor at Federal University of Minas Gerais (Brazil) and Aveiro University (Portugal) where he teaches composition, electroacoustic music and analysis. He published several articles in journals, and has written a book in analysis and 20th century music theory. He contributed to the development of a new generation of Portuguese composers, and several of his students have received national and international awards. Work for Brian in broadcast production continues today with his work as sound producer for the iTunes award-winning podcast series An Irishman Abroad. Brian also continues to work in audio branding and digital media consultancy, in which he specialises in training individuals to manage their own recorded digital content.

Brian Connolly: Track
Installation (audio) 2017

Over two short movements 'Track' exploits the non-linear nature of the inner ear in relation to the varies theories of pitch perception within complex non-periodic sounds. Through both knowledge of bandwidth phenomena in relation to basilar membrane functions of the inner ear, combined with specific equalization, filtering and spectral masking procedures, this work involves the generation of formant regions with specific centre frequencies and modulating bandwidths, which the listener's ears will unintentionally track throughout the duration of the piece.

Part 1: ''Pitched' Non-Periodicity' (3:59)

The source material for this section is solely comprised of pouring water, dragging metallic pipes, chains and glasses, all of which exhibit inharmonic waveforms. ''Pitched' Non-Periodicity' forces the listener's ears to move from being passive receivers of spectral information to becoming active participants in the realisation of this work. Carefully conducted equalization procedures manipulate the inner ear to process the periodic content within these inharmonic structures. Such an approach allowed for a sense of pitch, within non-periodic sound sources. While much is known regarding the science of the listening process, a lot remains to be discovered in relation to the full extent of the non-linear nature of the inner ear, and this work seeks to employ such concepts at the heart of its creative methodology. As the listener's ears become instruments in the performance of this piece, a bridge is formed between the physicality of the listener and the loudspeakers with the sound waves now behaving as sonic stimuli which place the inner ear of the listener at the forefront of the work itself.

Part 2: 'Percolated Audio' (4:12)

In contrast to the opening movement, this section is comprised predominantly of synthetic sounds, which also includes harmonic material for the first time in this work. An added emphasis is placed here on the listener's ability to track peak frequencies within inharmonic material as this section demonstrates a significantly reduced sound world in relation to timbral colour. 'Percolated Audio' explores a heavy use of filtered sounds with moveable bandwidths, which present the inner ear with a new dilemma as the listener is exposed to more direct sounds. These sounds often appear to already have clear centre frequencies, yet the movement of the filters causes the listener's ears to track the extremities of the bandwidths rather than conducting more simple pitch tracking procedures. This section is, essentially, an interrogation of the listener's frequency modulation systems. While filters constantly expand to output increasing levels of frequency content, the listener is not necessarily always aware of such expansions, more often than not, our perception (in this context) causes us to be focussed on subtle changes rather than wider viewpoints..

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Detailed Schedule, Workshops Track, Day 1, Thurs 7th September

13.30 Workshop 1 (P1077, PJ Carroll's Building)

Andy Wilson (Patchblocks) DIY Oscillator

Abstract
In keeping with this year's theme, this workshop seeks to introduce participants to the areas of open source design, soldering, hacking and DIY electronics.
Recent years have seen a growing number of open source electronics design software applications for circuit simulation and printed circuit board (PCB) design, which have been developed and embraced by the growing maker movement. In this workshop, participants will build a useful test oscillator which has been designed using open source design software and low cost commonly available electronic components.
A sine wave oscillator is a useful piece of equipment for any studio recording or live sound environment as it can be quickly utilised to send a simple test signal to a speaker, mixer or any other audio processing device.

Bio
Andy Wilson is currently working as a electronic instrument designer for Patchblocks www.patchblocks.com, developing a new interactive audio platform for the next generation of music makers. He also recently worked for 2 years with www.maker.ie developing open source DIY audio products and delivering DIY electronics workshops.
He has over 4 years of experience of bringing audio instrument ideas / concepts from idea stage through to commercial product release and has worked with workshop groups of all ages, sizes and abilities.
He is a member of multi-disciplinary artist collective A4 Sounds www.a4sounds.org where his workshop space is based for designing, making and testing prototypes and in the past year he has exhibited his work at audio industry events in Dublin, Berlin and London.

Detailed Schedule, Workshops Track, Day 2, Fri 8th September

13.30 Workshop 2 (P1077, PJ Carroll's Building)

David Strang (Plymouth University) Springs and Coils

Abstract
This workshop will build upon hacking and noise making practices through a D.I.W.O (Doing It With Others) framework, as opposed to D.I.Y. The workshop group will collectively explore the creative noise / sound making potential within certain objects and materials - initially focusing on wire springs and coils. Developing out of the research project 'transmission+interference' (Strang, Van Uffelen) the workshop will explore aspects of signal interference, modulation and diffraction using light, vibration and physical objects / materials to generate new sonic output. By focusing on the seemingly simple material of wires / coils the group will be able to quickly discover alternative methods for making sound - for example, spring reverb, magnetic pickup coils and mini fm broadcasting. These will be developed by the group into complex assemblages of materials as devices / tools / instruments for live performance or installation. At the end of the workshop the group participants will be able to display their work as a short live performance, if possible within the constraints of the event. The workshop draws upon current theory around vital / vibrant materialism (Bennett, Barad, Coole) and object-oriented ontology (Harman, Morton, Bryant). The group dynamic will be encouraged to share not only

technical expertise and skills through making but also develop the discourse within this field of sonic arts practice.

Bio

David Strang is an artist and researcher working with sound and interactive elements. His work explores the creative potential within the movement of noise in and around systems of sound and light by building / hacking bespoke devices and tools for performance, workshop, installation and intervention. Through processes of playful interaction and making, his practice investigates the links between objects, material, consciousness and the body. David runs various experimental workshops, often in collaboration, exploring sonic arts, hacking, sensors, making and objects / materials in a multi strand collaborative framework. These workshops are aimed at the sharing of knowledge (Doing It With Others) throughout the group to create an artwork/performance. Recent work includes site-specific installation, performance, field-recording, re-appropriating media objects, hacking and noise.
David works across multiple disciplines, such as architecture, design and marine biology.
He has collaborated and exhibited with artists and scientists as well as exhibiting solo work in the UK, Europe, Iceland, Russia, Canada, Hong Kong and USA.
David currently lives and works in the UK and is a Lecturer in Music at Plymouth University and is the co-founder of the interactive arts consortium ~hotwire~.

ISSTA Local Organising Team

Technical Support: Derek Farrell, Alphie O'Maolagain
Administration: Montira Satsam, Alice Hoey
PR and Social Media: Stephen Roddy, Thomas Redmond
Videography: John McCallig
Photography: Ryan Duffy

Venue lead partners: Derek Turner, Spirit Store

Volunteer team (students and graduates of the BA (Hons) Production of Music & Audio):
Joseph Murphy
James Moran
Kial Wallace
Angelika Stemplewska
Ronan Byrne
Conor Walls
Aoife Hilliard
Ciaran Hilliard

Acknowledgements and Thanks

We have been overwhelmed with the generosity of individuals and institutions in helping us get this festival and conference up and running. Below is a list of just some of those who have helped us with this year's ISSTA.