ORPHEUS

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Canterbury Christ Church University

The Sound of Feedback, The Idea of Feedback in Sound

Seminar 25 January 2020

Canterbury Christ Church University
Daphne Oram Building
North Holmes Road
Canterbury CT1 1NP (UK)

Co-organisers:

WinterSound Festival and
the Composition, Improvisation and Sonic Art (CISA) Research Unit,
Canterbury Christ Church University (Canterbury, Kent, UK)

Music, Thought and Technology,
Orpheus Institute (Ghent, Belgium)

WinterSound: Celebrating the sonic underground

We celebrate the sound of tomorrow with the fourth annual WinterSound festival. Fresh for 2020, we move to a new home, the Daphne Oram Building, named after one of the UK's most experimental, risk-taking musicians. Daphne Oram was a pioneering composer who taught in Canterbury in the 1980s, and listened beyond the boundaries of style and convention to dream of sounds no one had heard before. We continue her legacy in seeking out sounds beyond the mainstream, with dynamic collisions of electronic music, jazz, sound installations, improvisation, circuit bending and audiovisual surprises.

Thursday 23 January, 5PM-9PM, Daphne Oram Building

"Experimental Songs, Broken Rhythms and Glitches"

5.00 - 6.30	Collaborations with C3U records, jazz and rap experiments and CONTACT, Canterbury's hottest electronic band.	Exhibition Space
6.30 - 7.00	Extra Normal Records: DJ Set	Exhibition Space
7.00 - 8.00	Matthew Herbert presents Accidental Records	DO 0.14
8.00 - 9.00	Mariam Rezaei - DJ Set	Exhibition Space

Friday 24 January, 5PM-9PM, Daphne Oram Building

"Communities of Sound"

Presenting the Splinter Cell string quartet, Free Range Orchestra and the debut of a brand new Canterbury band, TOTEM//TREES, featuring 80s legend Jack Hues, flautist Heledd Francis-Wright and US saxophonist Robert Stillman.

5.00 - 9.00	Magz Hall: Brexit Bags sound installation	Exhibition Space
5.00	CONTACT DJs	Exhibition Space
5.30	Splinter Cell String Quartet perform PhD student work	Exhibition Space
6.30	Sonic Experiments from Ghent Juan Parra Cancino and Jonathan Impett: *Three states of wax* Daniela Fantechi: *Hidden Traces* (Seth Josel, guitar) Nicolas Collins: *Immortal Coil*	DO.0.14
7.30	Free Range Orchestra	Exhibition Space
8.30	TOTEM // TREES	DO.0.14

Seminar: The Sound of Feedback, The Idea of Feedback in Sound

Saturday 25 January, 11.30AM-8PM, Daphne Oram Building

A day-long research festival, free and open to the public, co-hosted with the Orpheus Institute for Artistic Research in Music (Ghent, Belgium).

What do Norbert Weiner, Jimi Hendrix and TripAdvisor clients have in common? An obsession with feedback. Feedback lies at the core of self-stabilizing systems, unstable guitars and social networks alike. Contemporary music is an especially rich domain for the study of feedback, since it often incorporates the phenomenon in multiple guises: in software, instruments, ensemble interaction.

Join us for a day of sonic exploration with a host of international guests from around the world. Full running order of presentations and events available on the day.

Schedule (25 January)

11.30	**Coffee**	Exhibition Space
11.50 - 12.00	**Welcome**	DO.0.14
12.00 - 1.30	**Session 1** • Seth Josel (Orpheus Institute) — *The Electric Guitar in New Art Music: The Incorporation of 'Controlled Feedback' as an Expressive Device* • Scott McLaughlin and Oliver Thurley (University of Leeds) — *The tides of feedback: boundaries and fragility* • Grant Gover (Canterbury Christ Church University) — *A vicarious view: feedback* • Silvia Rosani (Goldsmiths, University of London) — *Feedback for social equality and multimedia works*	DO.0.14 DO.0.14 DO.0.14 DO.0.14
1.30 - 2.30	**Lunch**	Exhibition Space
2.30 - 4.00	**Session 2** • Nic Collins and Peter Todd — *Ayton Basement*, Stuart Marshall, 1976 • Rebekah Wilson — *An early investigation into acoustic feedback in Networked Music Performance* • Vincent Caers and Klaas Verpoest (LUCA School of Arts, KU Leuven) — *The Sound of Feedback.Integrating sonic, conceptual and visual feedback into electro-acoustic performance*	Exhibition Space DO.0.14 Exhibition Space
4.00 - 4.30	**Coffee**	Exhibition Space

4.30 - 6.00	**Session 3** • **Filipa Botelho** (Orpheus Institute and KU Leuven) *— Acoustic feedback and movement: designing an experimental system to shed light and create resistance on the musician's corporealities* • **Helena Marinho** (University of Aveiro, INET-md), **Rui Penha** (School of Music and Performing Arts, P.Porto / INESC TEC) **and Oyvind Brandtsegg** (Norwegian University of Science and Technology) *— Embodied alien. Nobody - no body* • **Tijs Ham** (University of Bergen / KMD / Grieg Academy) *— Intraface*	DO.0.14 DO.0.02 DO.0.14
6.00 - 6.30	**Break**	Exhibition Space
6.30 - 8.00	**Session 4** • **Adam Pultz Melbye** (Sonic Arts Research Centre, Queens University, Belfast) *— What the Frog's Eye tells the Frog's Brain* • **Kosmas Giannoutakis and Arthur Lanotte-Fauré** *— Confluent Currents* • **Gaspar Cohen** (Faculdade de Belas Artes da Universidade do Porto) *— 4 - 4*	Exhibition Space Exhibition Space Exhibition Space

Centre for Practice-Based Research in the Arts

The Centre for Practice-Based Research in the Arts at Canterbury Christ Church University brings together arts practitioners from across the Faculty of Arts and Humanities to develop and promote innovative practice-based arts research through seminars, workshops, performances, broadcasts, screenings, exhibitions, conferences and online initiatives.

Our key objectives are

- to promote innovative practice-based arts research with national and international reach and significance
- to support collaborative and interdisciplinary practice-based arts research initiatives
- to support early career researchers and research students working in practice-based arts disciplines
- to document and disseminate the impact of practice-based arts research undertaken within the Faculty of Arts and Humanities

More info: www.canterbury.ac.uk/arts-and-humanities/cpbra/centre-for-practice-based-research-in-the-arts.aspx

Canterbury Christ Church University

Music, Thought & Technology

This seminar is organised in the context of the research cluster Music, Thought and Technology (MTT) at the Orpheus Institute. MTT posits a fundamental relationship between these three aspects of human behaviour. Taking its cue from recent research in technology theory, in new media and digital culture, MTT proposes a radical reorientation of the space and terms in which we think about music, exploring these ideas through creative projects.

Put simply, our common repertory of operational concepts is largely derived from technology; this therefore seems the natural place to look for constructive or explanatory models. Technology is fundamentally constitutive of music, its experience, practices and culture. Like all art, music could be seen to function in the context of a common sense of the possible, of the operations and relationships that it might embody, extend or reveal. This sense of the possible derives primarily from science, technology and their cognates such as natural philosophy or cosmology. Music is literally inconceivable without technologies. They participate in the imagining and apprehending of music, but in a bidirectional process also become part of the broader repertoire of conceptual operations that inform human thought at any given cultural moment. There is a continuum from the 'hard' technologies of instruments or reproduction through the materials of composition to the mental models we use to understand music. Engagement with music is thus also technical. The techniques of music are inseparably linked with its technologies of imagining, creation and production.

In our self-consciously technological age above all, technology provides a common set of ideas, metaphors and behaviours. It is the natural place to look for discourse that reaches across the many approaches to composition, sound art and improvisation that characterise contemporary musical activity irrespective of style or genre – including the vast body of inherited work for which we constantly search for new relevance.

At the same time, researchers investigating new areas of computer science and artificial intelligence are posing new questions about the nature of digital objects, concepts and experience. Musical works, we suggest, have much in common with virtual or digital objects. They exist in a unique state of materiality/immateriality: while they are intensely bound to direct experience, to technologies, techniques and materials, this physicality can exist in multiple instantiations, they can be manipulated, engaged with and acted upon as cultural abstractions. In cultural terms, music is the area of human activity in which we deal with the virtual, with the constructive relationship between human affect and abstract structures or formal systems. Digital humanities research and computer-based creation use the same repertory of tools; both are acts of musical imagination extended and explored through technology. The boundaries become increasingly blurred.

More info: www.orpheusinstituut.be/en/projects/music-thought-and-technology

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Abstracts

Filipa Botelho (Orpheus Institute & KU Leuven)

ACOUSTIC FEEDBACK AND MOVEMENT - designing an experimental system to shed light and create resistance on the musician's corporealities

By reducing the possibility to freely compose the movements of a performer, this project aims at increasing the situations where new corporealities can emerge. In acoustic feedback, sound production and movement have an interdependent relationship which may be seen as a lack of freedom to choreograph the performer's presence. However, this project intends to take those limitations as triggers that force the body to move. Movement becomes then an excess of musical intention and sound production, being out of range to be directly changed but possibly accessed and manipulated by different experimental situations.

To create those situations, I aim at designing and developing an experimental system consisting of interdependent elements (sound, movement, and space) that creates resistance on and carves the performer's body. That system takes the characteristics and limitations of feedback, in other words its constituent parts, and stretches them to their limits without losing the inherent proportions of its specificity.

Vincent Caers and Klaas Verpoest (LUCA School of Arts, KU Leuven)

The Sound of Feedback. Integrating sonic, conceptual and visual feedback into electro-acoustic performance

This lecture-performance discusses the implementation of feedback in Lsl.lpsr, an electroacoustic improvisation tool[1] inspired by contemporary percussion compositions. On the one hand audio feedback is integrated by returning the sounds created with multiple samplers immediately to their input. This leads to an unstable but highly surprising and interesting sound environment which the performer manages in real-time. On the other hand, it allows for using music notation as controller data to manipulate sonic material of the same notated music by acoustic performers concurrently and thus also creates a conceptual feedback cycle. The presentation starts by discussing briefly the general principles of lsl.lpsr and highlighting the different feedback concepts. It then continues by illustrating how these concepts are used in two different projects[2]. Both projects extend the concept of feedback also into the world of visual arts.

The presentation concludes with a short audiovisual performance containing the discussed ideas of sonic, conceptual and visual feedback.

Gaspar Cohen (Faculdade de Belas Artes da Universidade do Porto)

4 - 4

4 - 4 is a sound performance reflecting on DJ culture and methods of musical expression using no-input mixing. This is a research territory on transcoding, time, cycles, interface; collaging between computational process and somatic hands-on creation. Simple programming uses iterations between black and white to create prints that are used as paper records. A series of feedback loops are modulated by photoresistors circular-reading these records, creating sound patterns to be edited, remixed and overpainted in real time.

My background as a producer and programmer of parties and live acts in Rio de Janeiro (BR) drives an interest on how the personas of nightlife mirror and feedback cultural paradigms, the agency in audio culture and the aesthetics of "what we dance to"; or how this social practice of assimilating and curating content has an intrinsic hegemonic power. My current practice as a sound artist and audiovisual performer addresses relational thresholds of the city, where media, art and culture create emancipatory living forms.

Nicolas Collins and Peter Todd

Ayton Basement, Stuart Marshall, 1976
Recreation by Peter Todd and Nicolas Collins, 2019

Stuart Marshall was a seminal figure in British art in the later part of the 20th century and his works resounds today outside boundaries of place or context. Fine art, sound, performance, video, documentary, television, and education were particular focuses as were activism on gay issues and the AIDS crisis. He was one of Alvin Lucier's earliest and most innovative students, serving as an important link between the American experimental music and the British visual arts scene of the 1970s. One could credit him with introducing the concept of "sound art" into British art education.

In 1976, while teaching at Newcastle Upon Tyne Polytechnic, Stuart Marshall performed at Ayton Basement, a legendary artist-run performance space. For Open Circuit 2019, Peter Todd and Nicolas Collins reconstructed from memory a piece Marshall created for that concert, but neither documented nor performed again. Todd was a founder member of Ayton Basement, and Collins took part in the performance. The core technique of the work is a "lost chapter" in the history of the creative application of analog tape: whereas many musical works of the 1960s and 70s made use of static two-machine tape delays and loops (Steve Reich "Come Out", Terry Riley's "Rainbow in Curved Air", Pauline Oliveros "I of IV", etc), there are very few examples of ambulatory tape performance. "Ayton Basement" is one such "turn in the shrubbery" of tape music history (to paraphrase Jane Austen).

The recreation of this work was made possible through a residency at Orpheus Instituut.

Kosmas Giannoutakis and Arthur Lanotte-Fauré

Confluent Currents

This performance explores the phenomenon of sonic synchronization between two heterogeneous feedback systems by means of improvisation. The application of chaotic systems to creative musicking is associated with spontaneous play, since this practice can deal with the intractable traits that characterize such systems (non-linearity, non-periodicity, unpredictability, unrepeatability). Synchronization is a well-understood phenomenon where chaotic systems with different trajectories and oscillating frequencies, converge to identical ones when coupled. The "confluent currents" performance investigates this unique feature, by interconnecting two different feedback systems (analog-digital), allowing their idiosyncratic signal flows to exert influences to each other and resonate at unexpected frequencies.
The first feedback system consist of various electromagnetic string instruments that re-inject feedback signals into the strings, creating evolving resonances which depend on the contraction and expansion of the strings due to alterations in temperature. The physical manifestation of this system obliges the performer to make delicate gestures in order to locate the "resonant spots" of the instrument's components. The second feedback system is a digital generative feedback network implemented with the PureData programming environment. A far-from-equilibrium drive of the non-linear oscillators produce mellifluous sonic streams of explosive and recalcitrant character.

The performers try to push their systems towards equilibrium states, where the internal dynamics settle to steady frequencies. Then the phenomenon of synchronization takes place, with the two frequencies starting to approximate a harmonic relationship. Sometimes this proximity cannot occur due to unconformity between the current individual states. After a successful or failed synchronization, the performers will search for new equilibria, by perturbing the current states and traversing unexplored routes of tumultuous activity.

Grant Gover (Canterbury Christ Church University)

A vicarious view: feedback

It is intended to provide an overview bringing together various experiential and theoretical thoughts. It is proposed to conduct a personalised review of various aspects, or perspectival observations, on the topic of feedback. Within this overview, feedback seems to fit within my Total Field Theory (TFT) introduced at an earlier Transformations conference at Canterbury Christ Church University (22.05.2019).

I propose to cover feedback from knowledge gained during teacher training, construction management principles, information theory, music and other points of view, drawing them together to provide some sort of binding thread to the general argument. I would provide a talk illustrated by images from PowerPoint slides.

The relevance to sound would be, at a primary level, from the point of view of music, per se, as well as within the technical mechanisms of electronic music. Various theoretical spin-offs would be considered which would be subsumed, generalised and 'specificialised' (a homophone of specialised and specific) into the TFT.

Tijs Ham (University of Bergen / KMD / Grieg Academy)

Intraface

Due to the *sensitive* nature of chaos, instrumental interaction is put into question. Where classical instruments *allow* for the development of mastery through rehearsal, chaotic instruments *refuse* to repeat the same thing twice. Rehearsals become explorations in dialog with technology, driven by *curiosity*.

Taking inspiration from Karen Barad, we can think of the music as the result from intra-actions between performer and instrument, each embodying their own agency. The use of the word *intra-action* instead of interaction, stresses that the sound results from the *exchange between* performer and instrument, neither of which are able to impose intentions onto each other. This requires that intentions of both performer and instrument are unfinished. Open to suggestions that surface during performances.

Recursivity amplifies the slightest *performative input* to echo through the instrument, affecting the sound in unforeseen ways. Minor changes of a single parameter could start chain reactions that readjusts sonic behaviors. Instead of a clearly labeled interface, where parameters have specific functionalities, the instrument is played through inputs, each able to instigate a web of sonic repercussions, amplified by recursivity. Taking some linguistic liberty, these inputs could be viewed as an *intraface*, allowing the performer to influence the *sensitive conditions* that, in return, shape the sonic behavior of the instrument.

Seth Josel (Orpheus Institute)

The Electric Guitar in New Art Music: The Incorporation of 'Controlled Feedback' as an Expressive Device

Presumably, most of us do not normally associate electric guitar-induced feedback with new art music. Instead, we tend to recall favourite video clips or audio recordings of such figures as Jimi Hendrix, Peter Townsend, Robert Fripp (Bowie's 'Heroes'), or Sonic Youth's Lee Renaldo and Thurston Moore. In part, the apparent disconnect concerns sheer volume: these guitar icons perform(ed) at decibel levels which would obliterate any contemporary chamber ensemble in a side by side match-up.

Despite this 'cognitive dissonance', the visceral sonic energy of electric guitar-induced feedback has fascinated a relatively broad and culturally diverse collection of contemporary composers, particularly during the past two decades, a period which has witnessed a blossoming of the instrument's repertoire. Additionally, modern technology allows controlled feedback at almost any volume, in any situation; hence, its incorporation as a compositional element is not only aesthetically viable, but also a realistic possibility.

This paper will illuminate a selection of examples which demonstrate the use of feedback in chamber music and larger ensemble contexts. It shall examine the aggregate instrumental textures in which the feedback is performed, and it will compare the various notational strategies employed, including thecomposer's performance explanations -or lack thereof(!) -as regards the actual production of feedback. It will also consider the compositions' aesthetics and whether the prescribed feedback is possibly theatrical in nature, rather than 'harmonic'.

Helena Marinho (University of Aveiro, INET-md)
Rui Penha (School of Music and Performing Arts, P.Porto / INESC TEC)
Øyvind Brandtsegg (Norwegian University of Science and Technology)

Embodied alien. Nobody - no body

This performance will explore machinic feedback as a means of cyclic co-creation, in order to understand procedures of interaction, adaptation and expressivity in the context of technologically mediated performance. This is part of an ongoing project focused on cross-adaptive modulations, AI, and their contribution towards the expansion of human actions on stage. AI methods, as automation and modulation in software, represent a disembodiment, acting both as an intimate and an alien partner in contexts where humans perform the physical action.

We will explore the topic of human response to machine manipulation in performance by addressing three layers of feedback: 1) amplification of resonances from a piano equipped with transducers; 2) improvisation mediated by controlled feedback; 3) co-creation involving automated procedures of algorithmic improvisation based on feedback. Embodiment of the alien partner has its physical manifestation in the acoustic instrument equipped with transducers, and the resonances of the piano body thus become the common playground for the machine - human encounter.

Scott McLaughlin and Oliver Thurley (University of Leeds)

The tides of feedback: boundaries and fragility

Taking a cue from Ingold's concept of 'wayfaring' (2007), this paper examines compositional strategies for working at the indeterminate boundaries of audio-feedback; not disciplining feedback but following its contours in various ways. By treating feedback as a spatial phenomenon, strategies are devised for constrained explorations of the behaviours of feedback at its many boundaries: sound/no-sound, pitch-X/pitch-Y/harmonic-N, single/multiple tones, etc. Explorations are devised as part of a performative listening process, using notations that privilege guided-perception and response-ability (Haraway) to the flux of feedback (heard but not seen): following feedback can only be done by feeding the system and protensing the leading edge of what comes back. As Ingold describes, wayfaring 'couples locomotion and perception' as a Deleuzian becoming; exploration of a material territory unfolding in time. We discuss examples using audio feedback on different performative scales: a performer moving through a room using a microphone as a tool to divine the contours of feedback, mapping it as they go; a performer interacting with a single cymbal exploring its resonances with a microphone on a millimeter scale; a 'feedback clarinet' where the performer dynamically balances the boundaries between clarinet-tone and feedback-tone in the same clarinet body.

Adam Pultz Melbye (Sonic Arts Research Centre, Queens University, Belfast)

What the Frog's Eye tells the Frog's Brain

What the Frog's Eye tells the Frog's Brain (Melbye, 2019) is the ongoing development of a work for feedback double bass, the behaviour of which depends on pressure applied to the instrument body as well as control signals generated from audio feature extraction. The haptic and sonic responsivity of the instrument combined with its adaptive behaviour affords a performance ecosystem (Waters, 2007) of physical interaction between operationally closed human and non-human agents.

The presentation will consist in a demonstration of the instrument combined with the delivery of a paper discussing its design and performance, with special attention being given to the generation and use of control signals.

Ashby's model of double feedback (Ashby, 2014: 83) suggests that what we generally perceive to be the primary feedback phenomenon – the Larsen effect – may be considered a function of the system observing its environment and itself. I will discuss the concept of 'control' in control signals by reimagining the relationship between the Larsen effect and the inaudible feedback loops of audio feature analysis. While being a question of perspective, such an approach has proven useful in the design of and performance with the present work.
Documentation: www.adampultz.com/feedbackbass

References:
Ashby, W. R. (2014). Design for a Brain. Martino Fine Books.
Melbye, Adam Pultz (2019). What the Frog's Eye tells the Frog's Brain.
https://vimeo.com/327281165. Accessed dec 3rd, 2019.
Waters, S. (2007). Performance Ecosystems: Ecological approaches to musical interaction.

Silvia Rosani (Goldsmiths, University of London)

Feedback for social equality and multimedia works

The use of feedback to transform an object into an instrument is not new. Since the 1960s, thus when equipment became more easily available and short after the first electronic music studios were born, composers have experimented with this phenomenon. Thanks to software for multimedia works, musicians can now combine feedback with motors and sensors for the creation of self-playing instruments or instruments for musicians and non-musicians. Last year a project gave me the chance to investigate the effect of feedback on vibraphone tone bars for controlling the dynamics and durations of the sounds produced by their vibration. Since then, I have been applying feedback to metal panels of several sizes to develop instruments that people with no prior music education can play. My installations for LOXOSconcept (Matera, 2019) and for the Huddersfield Contemporary Music Festival (2019) used motors to automatically vary the position of speaker drivers on the surface of the panels and, consequently, produce sounds with different pitch content. Pure Data was used to control the feedback loops and the microcontroller that activated the motors. Through these tools, feedback can now be integrated in performances for acoustic ensembles and live electronics or interactive installations.

Rebekah Wilson

An early investigation into acoustic feedback in Networked Music Performance

One of the key issues when projecting sound in an open-microphone environment is the 'Larsen Effect', referring to the "loop established in an electrophonic chain" that "constantly reinjects the signal over itself". (Augoyard & Torgue, 2014). Along the resonant spectrum lies a delicate balance between reproduction fidelity and the dangers of acoustic feedback. This creates tension in the platform of networked music performance: acoustic feedback is a major obstacle to performing together remotely without having access to dedicated, often-expensive equipment and sound engineering processes. In this investigation I consider what technical developments, of the present and future, might fully acknowledge this tension and seek to both mitigate and embrace resonant frequencies created by microphones, amplifiers, room acoustics, codec design and latency. I imagine a rich future—given the development of audio tools that monitor, analyse, filter and process—where we no longer fear the open microphone in networked music. Acoustic feedback can then cease to be a barrier to the widespread adoption of the networked music performance platform, while affording, in addition, new sources of aesthetic exploration in timbral fusions and acoustic ecologies.

Orpheus Institute

The Orpheus Institute, founded in 1996, is a leading European centre for artistic research in music, or research embedded in musical practice and primarily guided by artistic objectives.

The Orpheus Institute hosts the international inter-university docARTES programme for practice-based doctoral study in music, and the Orpheus Research Centre, home to some 35 artist-researchers involved in advanced artistic research. The close link between education and research within our facilities creates an inspiring environment where artists can experiment, exchange ideas, and develop new knowledge.

To promote and disseminate this knowledge, the Orpheus Institute organises seminars, study days, workshwops, concerts, and masterclasses. The Orpheus Institute also has its own publication series.

advanced studies & research in music

Upcoming events at the Orpheus Institute:

13 - 14 Feb.	Orpheus Seminar *Experience :: Music :: Experiment* Pragmatism and Artistic Research
28 - 29 May	Orpheus Doctoral Conference *Imagining the Non-Present*
5 - 11 July	Historical Piano Summer Academy

www.orpheusinstituut.be/en/news-and-events

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