

NOWNET ARTS  
CONFERENCE

2019

Nov 7—10

Social  
Purpose  
in  
Contemporary  
Network  
Arts



NOWNET  
ARTS

# NOWNET ARTS CONFERENCE

2019

Nov 7—10

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## PRIMARY SITE:

Institute for Advanced Computational Science (IACS),  
Stony Brook University,  
New York, USA

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## SATELLITE SITES:

Center For Computer Research  
In Music And Acoustics (CCRMA),  
Stanford University,  
California, USA

Edinburgh Napier University,  
Edinburgh, Scotland

Orpheus Institute,  
Ghent, Belgium

Electronic Studios  
At The Technical University,  
Berlin, Germany



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## WITH REMOTE SITES:

Elder Conservatorium of Music in Adelaide (Australia),  
University of Melbourne (Australia),  
University of California San Diego (California, USA),  
University of California Santa Barbara (California, USA),  
York University/Arraymusic (Toronto, Canada),  
Northwestern University (Illinois, USA),  
Indiana University-Purdue University Indianapolis (Indiana, USA),  
Nagoya University (Japan),  
University of Auckland (New Zealand),  
LASALLE College of the Arts (Singapore),  
Zurich University of the Arts (Switzerland)

**NOWNET ARTS CONFERENCE IS AN ANNUAL EVENT** for artists, technologists, researchers, educators, and industry professionals advancing topics in contemporary network arts for the ongoing development of the field. The 2019 theme *Social Purpose in Contemporary Network Arts* is a prominent motivation and capacity of this work. The ability to transcend geographic distance through performance and technology has inspired new forms of social connection and impact. As an artistic medium, contemporary network arts is a social purpose. It has also served as a vehicle for community projects on themes such as peace building, the environment, and diversity. Technologists in the field have incorporated social topics including access, green technology, and international network development. The NowNet Arts Conference 2019 *Social Purpose in Contemporary Network Arts* is a program of papers, workshops, presentations, and concert demonstrations that feature this topic and generate new innovations for this work forward.



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#### SUPPORTERS

NowNet Arts, Inc.  
Department of Music, Stony Brook University  
Institute for Advanced Computational Science (IACS),  
Stony Brook University, New York, USA  
Center for Computer Research in Music and Acoustics (CCRMA),  
Stanford University, USA  
NYSErNet, Inc.  
Cycling '74  
Artivive: Augmented Reality Platform for Art  
SplitmediaLabs

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#### CONFERENCE COMMITTEE

Director: Sarah Weaver, NowNet Arts Inc.  
Chris Chafe, Stanford University, TU Berlin  
Scott Oshiro, Stanford University  
Margaret Schedel, Stony Brook University

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#### CONFERENCE WEBSITE

<https://nownetarts.org/conference-2019>

# FULL SCHEDULE

All sessions are listed in Eastern Standard Time (EST). Conference location of presenter(s) listed in parentheses.

## NOVEMBER 5-6, 2019

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1:00PM-4:00PM  
NOWNET ARTS CONFERENCE  
LAB ENSEMBLE

Open sessions for Network Arts works-in-progress, technology trials, research, and group improvisation.

*Location:* Multiple Sites

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## NOVEMBER 7, 2019

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10:00AM-11:00AM  
REGISTRATION

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11:00AM-11:30AM  
OPENING SESSION

**Sarah Weaver**  
Conference Director  
(Stony Brook University, New York)

**Scott Oshiro**  
Satellite Site Host  
(Stanford University, California)

**Margaret Schedel**  
Conference Committee  
(Stony Brook University, New York)

**Paul Ferguson**  
Satellite Site Host  
(Edinburgh Napier University, Scotland)

**Chris Chafe**  
Conference Committee  
(Technical University, Berlin)

**Juan Parra Cancino**  
Satellite Site Host  
(Orpheus Institute, Belgium)

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11:30AM-12:00PM  
CONCERT DEMONSTRATION

*Title:* Karlheinz Stockhausen's Solo (1965-66) (version 2019) & Multiple paths: (omaggio a Nono) for networked soloist and live electronics

*Presenter:* Juan Parra Cancino  
(Orpheus Institute, Belgium)

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*Description:* Telematic performances of two pieces: A new rendition of Karlheinz Stockhausen's "Solo" (1965-66), blending several performances of "solo(s)" simultaneously over the net, with live diffusion on location, followed by my own work "Multiple paths: (omaggio a Nono)" for networked soloist and live electronics.

This demonstration aims to present the affect (and effect) of network technology both in the re-interpretation of a seminal work of live electronic music, as well as in a new work, inspired by the conceptual and technical methods of another seminal work of live electronic music. By using musical collaborators spread around the world, with different aes-

thetic backgrounds I aim to expose the differences between cultural and geographic interpretations that sometimes historical repertoire (even "recent" one, like the one used in this proposal), is coloured by. I have been working on Solo(s) since 2015 with musicians coming from traditional academia as well as jazz and world music, negotiating the traditional notions of "faithfulness to the work", and the uniqueness that each aesthetic approach can contribute.

Using digital and network technology to revise a historical work, with "period" technology attached to it, invites to a reflection pertinent to the topics of this conference: the historical importance of a piece like Solo can be understood

through the lens of the tools it was first realised with, and its implications for that technology. Solo represents the first well-known instance of introducing tape delays to the concert space, with all the challenges and shortcomings that such an endeavour generated. Looking back, the technology required to realise this work is now considered trivial in its implementation, but the aesthetic contribution to our perception of the work (through recordings, for example) coloured by the original tape technology and its struggles, is undeniable. Using network technology as part of the setup of the work serves a secondary function: to bring back the “unstable” nature to the setup of the piece, given the glitches, artifacts and other shortcomings that still have to be confronted in realising these kinds of performance. I dare entertain that in fifty years time, those wrinkles will be perceived by future digital artists as part of the sounding and visual nature of the telematic works of today, as much as we perceive the warble, wow and flutter of tape of fifty years ago. The second piece “Multiple paths (omaggio a Nono)”, deals with history in a different way: It uses technical and conceptual methods found in Luigi Nono’s works “A Pierre” and “Post-prae-ludium no. 1 per Donau”, focusing on sound spatialisation a musical parameter for the computer music performer.

Multiple Paths engages with two main issues: the search for a historical and aesthetic context for the creation of com-

puter music today, and the extraction of musical elements from references to pre-existent music in order to feed them back into new compositions.

My encounter with the sound world of Luigi Nono’s music provided me with a starting point to explore my own musical path. I retained several elements of this encounter as particularly relevant to my own questions regarding instrumental identity and practices. Furthermore I perceived that various implications of Nono’s work go beyond the specific materials and performers featuring in either his music or my own, and beyond his or my specific historical moments, in constituting a fundamental challenge to traditional definitions of interpretation and composition.

The use of telematic technology in both works allows to disassociate the visual and aural components of the instrumentalists, opening possibilities of physical displacement, mixing and sound manipulation that otherwise would be challenged by the ongoing presence of the instrumental source in the concert space. This disjointed nature allows the electronic performer to highlight the importance of the manipulation of the physical space over time, turning the only “live” performer in front of an audience in something of a meta-conductor, who, not having a sonic imprint of his own, sculpts the musical experience by manipulating, distributing, and balancing the voices of others.

**Biography:** Juan Parra Cancino (b. Chile, 1979) studied Composition at the Catholic University of Chile and Sonology at The Royal Conservatoire The Hague (NL), where he obtained his Masters degree with focus on composition and performance of electronic music. In 2014, Juan obtained his PhD degree from Leiden University with his thesis “Multiple Paths: Towards a Performance Practice in Computer Music”.

His compositions have been performed in Europe, Japan, North and South America in festivals such as ICMC, “Sonorities”, “Synthese”, and “November Music”, among many others. His acousmatic piece “Serenata a Bruno” obtained a special mention at the Bourges electroacoustic music competition of 2003 and in 2004, his piece “Tellura” was awarded with the residence prize of the same competition.

Founder of The Electronic Hammer, a Computer and Percussion trio and Wiregriot, (voice & electronics), he collaborates regularly with Ensemble KLANG (NL) and Hermes (BE), among many others. His work in the field of live electronic music has made him recipient of numerous grants such as NFPK, Prins Bernhard Cultuurfonds and the International Music Council. Since 2009 Parra is a fellow researcher at the Orpheus Institute (Ghent, BE), focused on performance practice in Computer Music.

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12:00PM–12:30PM

## PAPER

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**Title:** The documentation of immersive and multisensory art: An upcoming Fulbright funded project

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**Presenter:** Federica Bressan (Stony Brook University, New York)

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**Description:** Physiological computing applied to the arts is a new genre of scholarship and practice focusing on the senses, art, design, and new technologies. These installations exploit concepts and technology from physiological computing, a branch of computer science that studies how [human] sensory data can be captured, processed, and included in a technological system to trigger functions or to be displayed at the interface. Physiological computing focuses on sensory data like brainwaves, heartbeat, skin conductivity, eye tracking, and breathing – electrophysiological signals that

are normally used to monitor biological functions and health. Immersive and multisensory installations that challenge human perception by merging haptic (touch), visual, acoustic, and other sensory phenomena (synaesthesia). Examples are Haptic field by Chris Salter and TeZ (2016) and The body that carries me by Ernesto Neto (2014). The creative process leading to the realisation of these installations normally involves a highly interdisciplinary team and its practice is informed by a range of different disciplines: theatre, architecture, visual art, computer music, perceptual psychology,

cultural theory, and engineering. The impact of physiological computing goes well beyond the arts, but experimentation in this field is just beginning in Europe, slowed down by a strictly discipline-based academic structure. That is why transatlantic collaborations are key in the advancement in this field. During this presentation, I will talk about my upcoming collaboration with Stony Brook University (with the support of a Fulbright-Schuman grant). The project deals with the preservation and documentation of immersive and multi-sensory installations and performances. Challenges include the fine-tuning of a conceptual framework that unambiguously accommodates concepts like “interaction” with all the implication for what agency, intelligence, etc. expanding this concept from observable processes representable as transfer functions to every technological setup that purposefully encourages and influences interaction between humans. Interactive technology as in facilitating, supporting, colouring social interaction. Another problem is the fast obsolescence of hardware and software, which in the case of multi-sensory installations and performances reflects the ways in which the senses

are mapped in the art work design, and what technology is used to detect and transmit them. This project contributes to enriching the documentation of the works by filling a gap in the existing documentation models, and at the same time it builds an independent archive that mainly contains two types of objects: (i) a description of the senses used in a work (alone or in synesthetic combinations); (ii) the devices used to detect and distribute the sensory data. Example: in the case of Dissense (Chris Salter and TeZ, 2017), the sensory data of the performer include the heartbeat, which is detected with a wearable device attached to her finger; this heartbeat is mapped onto sound and tactile feedback which the audience receives via loudspeakers and tactile actuators called VibroPixels. The same installation, in the future, may detect the heartbeat by means of another type of device. For each installation, the archive gets updated with new artistic ideas, mapping strategies, and new technology. The project brings a concrete contribution to the Conservation of Contemporary Art, and to History of Science and Technology.

**Biography:** Federica Bressan (1981) is a Fulbright scholar and Marie Curie alumna (<http://research.federicabressan.com>). Currently she is a postdoctoral researcher at Ghent University, Belgium, and appointed Professor of Digital Humanities at the University of Nova Gorica, Slovenia. She holds an MD in Musicology and a PhD in Computer Science. The vision underlying her research concerns the co-evolution of technology and culture. Her main expertise is in the field of multimedia preservation, with a special attention for audio and interactivity. She is a member of the Steering Committee of the Ghent Center for Digital Humanities (<http://www.ghentcdh.ugent.be/>). She was Guest Editor for the Special Issue on “Digital Philology for Multimedia Cultural Heritage” of the Journal of New Music Research (2018), and General Chair for different international scientific events. She is active in science communication, and she is the host of the podcast Technoculture (<http://technoculture-podcast.com/>).

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12:30PM–1:00PM  
PAPER

**Title:** Performer experiences of shared agency in networked music performance

**Presenter:** Ian Hattwick  
(Stony Brook University, New York)

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**Description:** This paper examines the factors that allow network topologies to play a formative role in the experience of performers and observers of network music ensembles. In particular, I consider situations in which performers share control of software instruments. Within this context, how can we support musicians’ perception of collaboration?

This relates to the issue of the perception of causality in electronic music performance: how are we able to perceive other musicians’ actions and intentions and what our ability we have to react accordingly. For networked music ensembles much of the challenge lies in making the actions of performers perceptible to co-performers. To frame this challenge, I will draw on work by the Computer Supported Collaborative Work community examining how to assess the effects of networked interactions on successful

collaborations, and on how to design interfaces to support understanding and connection. Using this understanding we can see that the noticeable effects of the network will be greatly influenced by the balance between three factors: a performer’s connection with their own instrument, their ability to reconcile elements of their instrument which they control vs. which are remotely controlled, and their perception of how their actions affect other performer’s instruments.

Instrument design plays a key role in creating this balance, and there are many examples we can draw upon, included embedding functional program calls within the same interface as group chat or mirroring a performer’s interface on the interface of their neighbour and allowing them to copy it. Regardless of how it is accomplished, some kind of sensory (often visual) feedback helps to



make it possible for networking strategies to play a primary role in the shape of the performance. But how can we assess the impact of this feedback, and of the network, in performance?

To address this question I will draw on examples from existing digital music ensembles as well as new work conducted working with the MIT Laptop Ensemble. The discussion will consider aspects such as the choice and implementation of networking strategies, the choice of mapping strategies, the interface design, and the practical effects of both ensemble structure and compositional decisions. To frame the discussion, I will draw on work from both the CSCW community as well as contemporary research on musical collaboration (Gurevich, Magnusson, McCaleb).

Throughout, my focus will be on the experience of the individual performer, in terms of performative agency,

their perception of their role within the network, and their satisfaction with the performance experience and the musical outcome. Ultimately, my goal is to demonstrate ways in which to effectively implement networks in order to facilitate the creation of new social and musical experiences.

**Biography:** Ian Hattwick is an artist, researcher, and technology developer whose work focuses on the creation and use of digital systems for professional artistic performances. With a background in music composition and performance as well as a Ph.D. in Music Technology from McGill University, he is particularly interested in the creation of multimodal hardware systems to explore and facilitate social and embodied interaction. Currently, Ian heads R&D in the creation of haptics systems for The Phenomena and teaches at the Massachusetts Institute of Technology. At MIT, he is expanding the Music Technology

program to include the design of new digital musical instruments and networked music performance systems.

A true pioneer in his field, Ian creates hardware systems for a wide range of artistic performances by working closely with artists to create multimodal visual, sonic, and tactile experiences that help them bring their vision to life. His work includes the creation of prosthetic musical instruments worn by dancers, wearable tactile display systems enabling the creation of social touch experiences with 20-100 participants, and digital musical instruments whose embedded visual and tactile displays reify hidden digital processes and subtle gestural interactions. More than just fun and engaging, these intricate systems use a combination of movement, sound, touch, and light to create rich, embodied social experiences that go beyond immersion to true connection.

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1:00PM–2:00PM  
PAPER, PANEL,  
CONCERT DEMONSTRATION

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**Title:** Synchrony: Network Music and Arts Works (2006–2019)

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**Presenter:** Sarah Weaver with Ray Anderson and Gerry Hemingway (Stony Brook University, New York)

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**Description:** Synchrony as the perception of alignment of distributed time and space components has been a prominent lens in the network music and arts works of composer Sarah Weaver. This trajectory of work in artistic and socially motivated collaborations includes a focus on the multi-year project “Universal Synchrony Music (2013–present)” and influences of innovative performative languages of collaborating musicians. The paper will outline latency studies in the field, a history of the works and projects by Weaver and collaborators, provide an analysis of their components for synchrony, and discuss new directions in the work. The panel and concert demonstration will incorporate Ray Anderson (trombone) and Gerry Hemingway (drumset) in discussion and live performance of excerpts of this and related work to illustrate elements of synchrony. Excerpts from the recent recording release “Synchrony Series” will also be shared and discussed.

**Biographies:**

**Sarah Weaver** is a New York-based contemporary composer, conductor, technologist, educator, and researcher working internationally as a specialist in Network Arts. Weaver has composed solo, chamber, and large ensemble works for groundbreaking musicians for over twenty years, integrating influences of jazz, contemporary classical, improvisation, computer music, world music, and innovative individual music languages of performers. She is an innovator of live performance via the internet by musicians and artists in different geographic locations, encompassing numerous artistic projects with collaborators and interdisciplinary projects with groups such as NASA Kepler/K2 Mission and United Nations. Weaver is the Director of NowNet Arts Inc. and the Sarah Weaver Ensemble. She is Editor of the Journal of Network Music and Arts. She holds the degrees Bachelor of Music with Education Certificate from the University of Michigan, Master of Music - Music Technology from New York University, and Ph.D. in Music Composition from Stony Brook University. Weaver is a

member of ASCAP, College Music Society, New York Women Composers, and National Association of Composers.

Named five straight years as best trombonist in the Down Beat Critics Poll and declared “the most exciting slide brass player of his generation” by the Penguin Guide to Jazz on CD, **Ray Anderson** has shown remarkable range. He has led or co-lead a daunting assortment of tradition-minded and experimental groups, big bands, blues and funk projects and even a trombone quartet. Anderson attended the University of Chicago Lab School, where one of his classmates was another notable trombone original, George Lewis. His teachers included Frank Tirro and Dea n Hey. In 1973, Anderson moved to New York where he studied and played with composer and music theorist Jimmy Giuffre, joined

drummer Barry Altschul’s free-form trio and played for three years with the quartet of AACM saxophone hero Anthony Braxton. In the ‘80s, he garnered attention with collective bands including the funk-oriented Slickaphonics and the trio BassDrumBone, featuring bassist Mark Helias and drummer Gerry Hemingway. On a series of acclaimed recordings, he has ranged from Ellingtonia and jazz classics to striking originals. He is Professor of Jazz Studies at Stony Brook University.

**Gerry Hemingway** has led a number of quartet & quintets since the mid 80’s as well as being a member of a wide array of collaborative groups including BassDrumBone (whom celebrated its 40th anniversary in 2017), Brew w/Reggie Workman & Miya Masaoka, a trio with Georg Graewe & Ernst Reijseger,

the Swiss based WHO trio with Michel Wintsch and Baenz Oester, Tree Ear with Sebastian Strinning and Manuel Troller, as well as numerous duo projects with Marilyn Crispell, Samuel Blaser, Thomas Lehn, John Butcher, Ellery Eskelin, Jin-Hi Kim, a o. Mr. Hemingway is a Guggenheim fellow and has received numerous commissions for chamber and orchestral works. He is well known for his eleven years in the Anthony Braxton Quartet along with his collaborations with some of the world’s most outstanding improvisers and composers including Evan Parker, Cecil Taylor, Mark Dresser, Anthony Davis, Derek Bailey, Leo Smith, Frank Gratkowski, Simon Nabatov and many others. He currently lives in Switzerland having joined the faculty of the Hochschule Luzern in 2009.

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## 2:00PM–3:00PM PRESENTATION

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**Title:** Networked Arts and Social Purpose in Scotland: Performance, Participation, and Peace

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**Presenters:** Paul Ferguson and Zack Moir (Edinburgh Napier University, Scotland)

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**Description:** This presentation will comprise three related sections, outlining recent and imminent projects. We will begin by discussing work that the authors have recently undertaken in which communication technologies and commercially available audio software were harnessed to allow remote musicians to participate in a world-first trans-Atlantic recording session. Findings, developments, and lessons-learned from this experience will be discussed. We will then progress to talk about ways in which we are working with local schools, and network infrastructure providers in which we are using our experience of network performance and music education to enable remote participation in workshops and performances for schoolchildren, nationally. We finish by discussing how this work feeds in to the production of #iplayforpeace, a global celebration of the anniversary of the first World War Armistice Treaty, which sees many artist participants from around the world coming together virtually, over networks, to perform in a celebration of international peace.

### **Biographies:**

**Paul Ferguson** is Associate Professor of Audio Engineering in the School of Arts and Creative Industries at Edinburgh Napier University. His research focuses on the use of high-speed research/education networks to allow artists separated by long distances to perform together in real-time. This research brings together two separate strands from Paul’s industry background—10 years as an electronics/embedded software R&D engineer combined with 20 years as an audio engineer. Paul has presented in person, and virtually, at conferences in the UK, Europe and USA on the subject of networked real-time rehearsal, teaching and performance over distance.

**Dr Zack Moir** is a Lecturer in Popular Music and the Director of the Applied Music Research Centre at Edinburgh Napier University, UK. His research interests are in popular music in higher education, popular music composition pedagogy, and the teaching and learning of improvisation. He has published on the topics of popular music pedagogy, music in higher education, popular music making and leisure, popular music songwriting/composition, and real-time



interactive networked performance. Zack is also an active composer and musician performing as a soloist and in ensembles

internationally. Recent composition works include pieces for saxophone and tape, solo cello, a reactive generative

sound art installation at the Edinburgh International Science Festival.

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3:00PM–4:00PM  
PRESENTATION

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*Title:* Performing and Rehearsing through Immersive Telepresence in Theatre

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*Presenter:* Tom Gorman (Edinburgh Napier University, Scotland)

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*Description:* The discussion will revolve around a variety of telepresence technologies/web-based applications repurposed to investigate actor training, rehearsal, education and performance. In this project, Immersive Telepresence in Theatre, two identical spaces, linked by H.323 videoconferencing technology, were created in Tampere (Finland) and Coventry (United Kingdom), each with rear projection screens and directional sound giving the participants the impression of a shared space. The project used existing pedagogical practices but re-applied them to a digital setting with the teaching and rehearsal process only slightly modified to account for the technological aspects of working in this manner.

As well as the traditional rehearsal process there is also the social aspect which builds a group dynamic amongst the performers. For this aspect of the process, a range of supporting applications were used – Facebook for scheduling and rapid sharing of visual materials from and the web conferencing app, Adobe Connect, was used to provide individualised rehearsal rooms for the participants as well as break-out social spaces.

When training in a digital environment, the lack of immediate touch must be replaced by other sensory means. The use of the screen meant that actors had to take a more experimental approach to rehearsal. This process redefines how participants use the space, as proxemics are replaced with visual representation on the screen. Here ‘play’ and the participant’s own will to investigate the non-traditional possibilities of this process became tantamount.

*Biography:* Tom Gorman is an academic and theatre director currently based at Coventry University. Tom studied English Literature and Language at Queen’s University Belfast before going on to complete a PhD in Theatre and Media at the University of Ulster researching the concept of the ‘play within a play’. In 1990, after working for some time as a freelance actor, Tom co-founded Sightlines Theatre Company, Belfast and worked with them as Artistic Director for six years. During this period he also worked as a freelance actor, writer and director with numerous theatre companies throughout Northern Ireland and as a writer/performer for BBC Radio Ulster. From 1997 onwards he worked as Strand Leader in Drama at the University Of Birmingham, moving on to become Course Director of the BA Drama Studies degree at Bath Spa University. From 2007 onwards he has been working as Senior Lecturer on the BA Theatre and Professional Practice Degree at Coventry University.

He is currently engaged in an ongoing research project in conjunction with the University of Tampere, Finland, using videoconferencing technology, bespoke network connections, rear-projection and sound design to create immersive rehearsal spaces. This project was the recipient of a Gold Award from Reimagine Education in 2016 and in December 2018 it received the Gold Award for best Arts and Humanities project and the Gold for Hybrid Learning at the 2018 Reimagine Education awards.

11:00AM–12:00PM

## CONCERT DEMONSTRATION

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*Title:* CYPHER

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*Presenter:* Scott Oshiro  
(Stanford University, California)

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*Description:* In a Hip Hop cypher lyricists, musicians, dancers, etc. gather in circle and take turns improvising. This circular formation and cyclic motion promotes a sense of unity; generating a powerful collective energy, breaking social and cultural barriers. This performance will take this concept, along with inspirations from Software Defined Networking (SDN), and apply them to a Networked Music Performance (NMP). In order to achieve this, a system called “CYPHER” has been developed to mimic the motion of a hip hop cypher by automating changes in the network topology. The automation of altering network connections between geographical locations allows for effortless changes in the ensemble’s set up, organization and instrumentation. As a result, more flexible composition structures and can be explored, taking advantage of the

various interactions that occur over the network.

*Biography:* Scott Oshiro is a PhD student at Stanford University’s Center for Computer Research in Music and Acoustics (CCRMA) researching both the technological and psycho-perceptual aspects of Networked Music Performance (NMP). Currently his focus is on studying the social and cultural exchanges that occur within these performances using various Music Information Retrieval (MIR) techniques. As a flautist himself, specializing in Jazz and experimental music, he understands how such analyses of these musical interactions on the basis of genre, culture and personal experience are essential for further developing NMP platforms.

12:00PM–12:30PM

## PAPER

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*Title:* Spatial Continuity of Distant Locations

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*Presenter:* Matthias Ziegler and Patrick Müller (Zurich University of the Arts, Switzerland)

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*Description:* Telematic performances interlink at least three spaces: a local stage, a remote location and a mediating, in-between space that bridges geographic distance. Each of these spaces have their own characteristics and agency. In reviewing the existing literature and history of telematics, and in the experience of our own practice, two fundamentally different approaches to engaging the continuity of distant locations can be distinguished. In one, the involved spaces are synthesized into a homogeneous spatial configuration which leads to an immersive experience not influenced by the contradictions of the physical characteristics at play. The goal of this approach is to produce a shared virtual space. In the other, the linkage of different spaces in a telematic performance intentionally carves out the differences of what is coming together, dispersing the characteristics of distinct physical and virtual spaces. This could be referred to as an anti-virtual approach. It grafts one space onto the other, actively making the rupture lines perceivable. In this presentation,

different approaches to analyzing the spatial continuity of distant locations in telematic performances are systemized and described on an acoustic level (how are local, virtual and remote spaces represented?), on a symbolic level (how are they treated compositionally?), and on a social level (how are different contexts brought into play and how is the public integrated?). A particular focus is given to approaches which are aware of the power of immersion but are nevertheless prepared to break it in order to open up multilayered perspectives.

*Biographies:*

Patrick Müller is professor of Media of Transdisciplinary at the Zurich University of the Arts (ZHdK). He studied music and musicology. At ZHdK, he initiated the transcultural platform Connecting Spaces Hong Kong – Zurich as well as the master programme in Transdisciplinary Studies.

Matthias Ziegler, flutist, professor of flute at the Zurich University of Arts. Head of the research project Telematic

Performance Format funded by the SNSF at the Institute for Computer Music and Sound Technology.

Matthias Ziegler and Patrick Müller focus on telematic performances with a research team of musicians, scenographers,

choreographers, technicians, funded by the Swiss National Science Foundation (SNSF).

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12:30PM–1:00PM  
PAPER

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**Title:** Network(ed) Music and Telematic Music: Articulating Technique and Social Practice

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**Presenter:** Eric Lemmon (Zurich University of the Arts, Switzerland)

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**Description:** Telematic and Networked musics are novel musical performance practices that, over the course of the late 20th century, have developed alongside the expansion and liberalization of the internet, digital technologies, and the physical and protocological infrastructures that support them. That Telematic music, a fully-fledged social practice, and Networked music, a technique in the service of music production, are often conflated belies the degree to which the two terms overlap. Indeed, as this paper will show, Telematic music is necessarily a Networked music but Networked musics are not always Telematic. As such, I argue that it is necessary to more concretely define Networked music and Telematic music.

To this end, the proposed paper will take a historiographical approach in its overview of Telematic and Networked musics and seek to delineate between the two. It will do so by first drawing upon network theory and historical applications of networks to create music in order to propose a more abstract technical definition of Network Music, which will be broadly appropriated and adapted from Leonardo Gabrielli and Stefano Squartini's 'Networked Music Performance' as "the practice of conducting real-time music interaction over a...network". The paper will then trace the historical development of Telematic Music as a musical

and social practice, by drawing upon the discursive formations of the term 'Telematic' as it was applied in theoretical and cyberutopian thought to the visual arts by Roy Ascott and then the term's appropriation into the avant-garde music world later in the early 1990s. This historical narrative will then be situated in relation to cyber and digital culture, trans- and post-humanism, and epistemological concerns surrounding virtuality and telepresence.

**Biography:** Composer Eric Lemmon's music has been described as using "a broad range of extended techniques and complex rhythms to create [a] beautifully ethereal nebulosity of sound". They have been reviewed by the New York Times and featured on WQXR's Q2. Eric has been awarded MetLife's Creative Connections Grant, a UMEZ and LMCC Arts Engagement Grant, multiple Puffin Foundation Grants, a Tofte Lake Center Emerging Artist Residency, a Deutscher Akademischer Austauschdienst, a Fulbright Award and ConEd's Exploring the Metropolis Residency. Recent commissions include works for IDRS, and The Chelsea Symphony. Eric is a Ph.D. student in Music Composition at Stony Brook University and is conducting research for his Ph.D. dissertation at the Züricher Hochschule der Künste.

1:00PM–2:00PM BREAK

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2:00PM-3:00PM

PANEL PRESENTATION

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*Title:* Network Arts Technology Access: Charting Network Requirements for Hardware and Software

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*Presenters:* Chris Chafe (Technical University, Berlin), Trevor Henthorn (University of California San Diego, California), Sarah Weaver (Stony Brook University, New York)

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*Description:* The panel will address requirements such as bandwidth, quality of service, network type, and compatibility for audio and video technologies of network arts. The topics will outline this knowledge base, facilitate more efficient approaches to energy use, diversify the scope of participants, and forge new developments.

*Biographies:*

**Chris Chafe** is a composer, improviser, cellist and music researcher with an interest in computer music composition and interactive performance. He has been a long-term denizen of the Center for Computer Research in Music and Acoustics where he directs the center and teaches computer music courses. Three year-long research periods were spent at IRCAM, Paris, and The Banff Center, composing and developing methods for computer sound synthesis. He is continuing the SoundWIRE experiments for musical collaboration over the Internet. An active performer, he has performed in Europe, the Americas and Asia. Discs of his works are available from Centaur Records. Recently he has performed with Roberto Morales, Simon Rose, Pauline Oliveros, Roscoe Mitchell, Mark Dresser, and Dave Douglas, among others. A sound installation, *The End of Winter*, was recently featured at the Pasadena Museum of California Art. His doctorate in music composition was completed at Stanford in 1983.

**Trevor Henthorn** is a trumpet player, percussionist, composer, music and network technologist currently living in San Diego, California. With a background in electrical engineering and psychology, his music explores aspects of hypertechnology and psychoacoustics. His recent explorations emphasize analog and data-driven synthesis with '90s electronic percussion forms. He gains inspiration and ideas from new media concepts and media contradictions with characteristics of industrialized NOWNET ARTS CONFERENCE 2018 Network Music: Artistic and Technological Strategies for Public and Private Networks April 19-22, 2018 performances. He is cur-

rently teaching at the Art Institute of California, San Diego and working as a programmer within the Department of Music at the University of California, San Diego.

**Sarah Weaver** is a New York-based contemporary composer, conductor, technologist, educator, and researcher working internationally as a specialist in Network Arts. Weaver has composed solo, chamber, and large ensemble works for groundbreaking musicians for over twenty years, integrating influences of jazz, contemporary classical, improvisation, computer music, world music, and innovative individual music languages of performers. She is an innovator of live performance via the internet by musicians and artists in different geographic locations, encompassing numerous artistic projects with collaborators and interdisciplinary projects with groups such as NASA Kepler/K2 Mission and United Nations. Weaver is the Director of NowNet Arts Inc. and the Sarah Weaver Ensemble. She is Editor of the *Journal of Network Music and Arts*. She holds the degrees Bachelor of Music with Education Certificate from the University of Michigan, Master of Music - Music Technology from New York University, and Ph.D. in Music Composition from Stony Brook University. Weaver is a member of ASCAP, College Music Society, New York Women Composers, and National Association of Composers.

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3:00PM–3:30PM

PAPER

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*Title:* Telematic Tools for Mainstream Conferences

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*Presenter:* Scott Deal (Indiana University – Purdue University Indianapolis)

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*Description:* Leveraging of technologies of telematic arts for use in mainstream conferences, will lead to a more compelling experience for both online and on-site participants of large group meetings. Involvement in conferences is an elemental component of professional life for countless millions of people throughout the world. Yet the social synergy gained from attending a far-away gathering of is offset by two factors. The first is that conference participation often involves air travel, resulting a large carbon footprint. Second, the expense of attending a far-away conference prevents many from participation who could otherwise benefit and contribute. In short, as beneficial as conferences are, they are environmentally problematic, and they exclude communities based upon economic standing. For over thirty years, musicians and artists have provided a significant contribution to networked communications through their work in developing techniques for telematic art, and over the years the telematic experience has become more refined and vivid. The expertise of the craft can be applied to a broader population of gatherings in order to provide ways for online participants to more fully learn from, and engage with others. As a result, organizations will be empowered to broaden their reach to communities throughout the world, while offering a green alternative to participation. The paper will outline a comprehensive approach that focuses on the merging of participants who are both on-site and on-line, via tailored applications and best practices that can be used by conference organizers for their respective communities. This suite of tools and concepts includes research-grade audio/video capabilities common to telematic artists, in addition to integral components and practices of online presence that address issues of event management, social networking, collaboration-communication, information exchange, asynchronous presence. Two events will be given treatment in the paper. The first is the Transplanted Roots percussion symposium, to be held in Mexico in September 2019. The second event will occur on April 22, 2020,

when the Tavel group at IUPUI will hold a 24-hour world-wide telematic arts event titled “Earth Day Art Model”.

*Biography:* Performer, composer and media artist **Scott Deal** engages new works of computer interactivity, networked systems, electronics and percussion. His recordings have been described as “soaring, shimmering explorations of resplendent mood and incredible scale”....”sublimely performed”, and his recording of Pulitzer Prize/Grammy Award-winning composer John Luther Adams’ Four Thousand Holes, for piano, percussion, and electronics was listed in New Yorker Magazine’s 2011 Top Ten Classical Picks. He has performed at venues worldwide, including Musicacoustica Beijing, Almeida Opera London, Arena Stage Washington, Supercomputing Global, Vancouver New Music Festival, Zerospace, SIGGRAPH, Chicago Calling, IEEE CloudCom, Ingenuity Festival, ICMC, NIME, PASIC and with groups that include ART GRID, Another Language, Digital Worlds Institute, Calithumpian Consort, Percussion Group Cincinnati, and the Helsinki Computer Orchestra. He is the percussionist for the computer-acoustic trio Big Robot, who have performed to audiences worldwide. In 2011, Deal and composer Matthew Burtner won the coveted Internet2 IDEA Award for their co-creation of Auksalaq, a telematic opera called “an important realization of meaningful opera for today’s world”. Deal’s work has received funding from organizations that include Meet the Composer, Lilly Foundation New Frontiers, Indiana Arts Council, Clowes Foundation, IUPUI Arts and Humanities Institute, and the University of Alaska. He resides in Indianapolis, Indiana where he is a Professor of Music and Director of the Donald Louis Tavel Arts and Technology Research Center at Indiana University Purdue University Indianapolis (IUPUI).

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4:00PM–4:30PM  
PRESENTATION

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*Title:* Transmigratory bodies of sound

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*Presenter:* Rebekah Wilson  
(Stony Brook University, New York)  
Andrew McMillan (University of  
Auckland, New Zealand)

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*Description:* The research we are presenting investigates how networked music performance can facilitate meaningful connections between those for whom travel is inconvenient or impossible. This means addressing participation logistics such as access to suitable technology, and undertaking presence research that considers how latency and the absence of wide-band sensory information limits immediate acceptance outside of experimental groups.

*Biographies:*

**Rebekah Wilson** (New Zealand) studied music and taught herself computer technology. From 2001-2003 she was Artistic Co-Director at STEIM, Amsterdam, where her passions for music, performance and technology became fused. Since 2004 she has been co-founder and technology director for Chicago's Source Elements, developing high-level long-distance networked audio tools for the sound industry while performing and lecturing in many international venues and festivals. She is a fierce advocate for promoting diversity in technology, and has been involved with non-profit and community groups including co-founding disaster-recovery and internet-access non-profit WiFi For Humanity after the Christchurch earthquake in 2011 and running programming classes for youth. In a return to contemporary music composition, she recently completed her masters in the field of networked music performance at the New Zealand School

of Music in Wellington. She has since relocated back to Amsterdam where she continues her work in developing networked performance technologies and practices and promoting their use for international music projects.

**Andrew McMillan** (New Zealand) comes from a background of performance, Improvisation, and composition. He completed his studies at University of Auckland School of Music (NZ), Leeds College of Music (UK) and Christchurch Jazz School (NZ). Studies focused on areas of interest including – intercultural composition/performance between Pacific and Western influences. Interactive technologies and interfaces, Electronic music, large ensemble improvisations, and a crossover between sound/music performance and installation. Andrew has a wealth of experience in the New Zealand music and performing arts as an improviser, composer, musician and sound designer. He has successfully combined his commitment to improvised music, theatre, sound design and composition. He is currently researching and developing an artistic practice incorporating interactive gestural interfaces for electronic instruments, converting real world data into sound and composition, and network performance. This research will be undertaken in a PhD at the University of Auckland Music School starting 2019.

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4:30PM–5:00PM  
PRESENTATION

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*Title:* Can the use of virtual reality improve the experience of real-time networked music sessions?

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*Presenter:* Ben Loveridge  
(University of Melbourne, Australia)

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*Description:* Due to the latency of video conferencing, musicians often look away from each other to help maintain a steady rhythm during a networked music session. As a result, important visual details that are usually present when performing in-person such as facial expressions and gestural cues may get overlooked. This presentation will discuss the suitability of using virtual reality technology within a real-time networked music collaboration. It will examine the communication of expressive visual information between remote performers

and explore avatar and environmental preferences when inhabiting virtual performance spaces.

*Biography:* **Ben Loveridge** is currently studying a Master of Music at the Faculty of Fine Arts and Music at The University of Melbourne, investigating networked music performance in virtual reality. He also works as a Communications and Media Production Consultant at the University in the area of video, audio and creative media production. Part of his role includes coordinating the



Learning Environments virtual reality lab, assisting staff with the integration of VR in the curriculum as well as running masterclass sessions for staff

and graduate research students. He was part of team that worked on the Music Therapy VR project which was a finalist in the 2017 National Disability Awards

and reached the 2018 iAwards national finals in the Infrastructure and Platform Innovations of the Year category.

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## 5:00PM-7:00PM BREAK

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### 7:00PM-8:00PM CONCERT DEMONSTRATION

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*Title:* Voting Booth Project

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*Presenter:* Mike Richison  
(Stony Brook University, New York)

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*Description:* This is an interactive performance that is comprised of 2-4 customized voting booths. iMacs housed in voting booths will remix video from political rallies, news footage, and debates. The booths will be custom-programmed audio/visual instruments that utilize this video to produce percussion, bass lines, voice samples, and a melody to create techno-inspired video loops and musical tracks.

*Biography:* Mike Richison is a professor in the Department of Art and Design at Monmouth University where he teaches motion graphics. He utilizes a variety of media and approaches including sculpture, graphic design, and interactive video. He presented his project Spin Stack at this conference in 2018.

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### 8:00PM-9:00PM CONCERT DEMONSTRATION

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*Title:* Trans-Pacific Concert between University of California Santa Barbara and the Elder Conservatorium of Music in Adelaide

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*Presenter:* Ken Fields  
(University of California Santa Barbara)

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*Description:* Elder and UCSB will present the results of their summer and fall collaboration. Santa Barbara will route the audio mix to other participating NowNet Arts nodes.

*Biography:* Dr. Kenneth Fields is currently a Professor of Network and Electronic Music at the Central Conservatory of Music in Beijing, China. He is also an adjunct professor at the University of California, Santa Barbara. Previously,

Ken held the position of Canada Research Chair in Telemedia Arts, investigating all aspects of artistic and musical performance over high-speed networks. He is the first Ph.D. with the Media Arts degree from the University of California at Santa Barbara (2000). Ken has been developing Artsmesh since 2008, a network enabled presence platform for the World Live Web.

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## NOVEMBER 9, 2019

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### 9:00AM-9:30AM PAPER

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*Title:* Utilization of robot for enhancement of inter-subjective pleasure in performing arts

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*Presenter:* Nihan Karatas  
(Nagoya University, Japan)

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*Description:* Recently, computer-supported interactive technologies have been played a significant role as a complementary tool to create extraordinary artworks. These technologies have been used in art to explore how to utilise them to compose new creative concepts and to enrich the dimensions of the pleasure of artistic performances. For example, digital interactive environments, animations, videos and other related software products are all being used to either as a creative artistic concept or a complementary tool for artistic performances. Given that robotics inherently has a “computing” component in it, “robotic-supported” interactive technologies have been also

practised by researchers and artists in recent years. The robotic-supported art has been anticipated that it would promote human creativity and enrich the aesthetic of artistic performances. Since integrating the audience into the artistic performance has a significant role in enhancing the pleasure, a robotic medium holds a great potential of bringing new opportunities such that it embodies the mystical ambient emerged by the harmony of the artists and audience during a performance. The embodiment and the different interpretations of this ambient enrich the pleasure of the artistic performances.

Humans are sensitive to other living creature's existence in a way that their perspectives change depending on the other individuals' behaviours. In recent years, researchers in Human-Robot Interaction (HRI) field showed that humans can perceive the robots as living creatures at some degree depending on their interaction design. In addition, with their enhanced precision, freedom of degrees, and persuasive and cognitive capabilities, robots can extend the perceptual dimension of humans that paves the way of creating innovative artistic performances and increasing the pleasure of it.

The life-like interaction design of a robot that is designed for artistic performances can change the perception of both the artists and the audience towards the robot such that they would believe that the robot's actions are governed by its beliefs and desires. Also, the robot can persuade

them about its intentional stance and the social presence during an artistic interaction. These perceptions would build an intersubjective connection among the robot, artists and the audience where all the participants of this interaction would feel that they contribute to the performance by sharing the same intentions.

In our study, we aim to practise an intersubjective collaboration among artists, audience and robots as a complementary tool in order to embody the ambient that consists of ups and downs. In order to realise this, we aim to build a minimally designed interactive robot with several modalities to persuade the artists and the audience, such as the body parts with a few degree of freedoms and a LED light emitting mechanism. In addition to these modalities, with a function that would enable the robot to be remotely accessible by another artist, he/she would get a great benefit from the robot without

joining to the performance physically. The artists can use the different modalities of the robot to express their feelings in some degree. Finally, we aim to gather subjective data from the artists and the audience about their feelings and experience about the the performance to evaluate our system.

**Biography:** BS in Computer Science and Engineering, Isik University, Istanbul/Turkey 2006-2011 Quality Assurance Engineer, Monitise MEA, Istanbul/Turkey 2010-2013 MsE in Computer Science and Engineering, Toyohashi University of Technology, Toyohashi, Aichi/Japan 2013-2015 PhD in Computer Science and Engineering, Toyohashi University of Technology, Toyohashi, Aichi/Japan 2015-2019 Researcher in Nagoya University, Nagoya, Aichi/Japan 2019-

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## 9:30AM-10:00AM PRESENTATION

**Title:** Brain Scores

**Presenter:** Marek Choloniewski  
(Academy of Music, Krakow, Poland)

**Description:** Brain Scores describes different concepts of musical scores using biofeedback techniques and distributed live in network performance.

**Biography:** Marek Choloniewski (born 1953, in Krakow). Composer, sound artist, performer and teacher. Head of Electroacoustic Music Studios at the Academy of Music and Audiosphere Lab at Intermedia Department at Fine Arts Academy in Krakow. Founder and President of Muzyka Centrum Art Society and Polish Society for Electroacoustic Music. Since 2011 President of Interna-

tional Confederation of Electroacoustic Music. Director of Audio Art Festival in Krakow. Founder of many groups and ensembles, among others Freight Train, ch&k&k, dizzy kinetics. He is author of many art projects, instrumental and electroacoustic music, sound and video installations, interactive, space/environment, audiovisual and net-art projects. He received Honorable Award of the Polish Composers Union, Award of the Ministry of Culture and National Heritage, as well as the Independent Project grant of the CEC ArtsLink in New York.

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## 10:00AM-10:30AM PAPER AND CONCERT DEMONSTRATION

**Title:** On Timbre Networks: Between Metaphor, Simulation, and Model (and Metaphor)

**Presenter:** Juan Parra Cancino  
(Orpheus Institute, Belgium)

**Description:**

*Background*

The pressure imposed by the fast-paced succession of technological advances favors the adoption of new tools as emulation of pre-existent ones, while hindering more innovative and transformative approaches. In this context, one of the persistent challenges is to develop an aesthetic language that can resonate with the transdisciplinary world in which digital music creators operate. This proposal

presents the notion of Timbre Networks to address the following questions:

1. *What musical structures can be created in resonance with our transdisciplinary and interconnected world?*
2. *Which would be a suitable musical instrument to convey such structures?*

*Project*

Timbre Networks is a creative method that aims to integrate a tele-communicative, algorithmic, and poetic understand-

ing of the concept of “networks”. This is done by applying dynamic mappings of control streams, which are synthesized from live and telematic musical sources, to network-based synthetic sound agents, such as stochastic synthesis and Boolean network pattern generators (Ref. [1]). From an artistic and performative perspective, this setup aims to expose the multithreaded role of the computer music performer, blurring the boundaries between composition, digital lutherie (Ref. 2) and performance into an integrated entity. Linearly-structured composition procedures are replaced by networks of interdependent sound engines and manipulators, and rules that determine the initial states of each element and the thresholds where those states are transformed. Performances correspond to the unfolding of this network over time and space, according to the notion of “self-organisation” recently developed in (Ref. [3]). The spatialisation features of the piece are controlled in real performance using “Egg”, a hardware controller designed in collaboration with Lex van den Broek, head of the Elektronica Werkplaats at the Royal Conservatoire in The Hague, Netherlands.

#### *Case study*

The presentation focuses on a subset of Timbre Networks labeled “TN\_chain”. This is a series of works (or rather, a single chain-shaped work) designed within the research cluster “Music, thought and technology” of the Orpheus Institute, which aims to employ each iteration/performance to inform, define and enrich the “following” iteration/performance. Our choice is to do this by preserving aspects of the performance that might be described as “highly volatile” (for example, a dancer reacting to specific elements of an improvisation music setting). These preserved aspects are converted into a stream of data, which is used to drive (and therefore, automatise) musical parameters of a future performance. Unlike traditional (and also some artistic) manifestation of sonification strategies, that seek for a degree of clarity between the data used to generate sound structures and the sonic output, the sensorial result of the Timbre Networks

are complex (and confusing) by design. Therefore, a purely perceptual evaluation of how the metaphoric elements negotiate the decision making process would not suffice, and additional methods are necessary. I propose to perform comparative data analysis over digital traces left by the succession of performances that serves as “digital archeology”, giving account of evolving traits throughout the various renditions. In particular, I apply various metrics of complexity to signals and digital structures from different past performances, in order to confirm if complexity grows in time following patterns seen in e.g. biological evolution [1]. Through this method, I seek to test a key hypothesis inherent on the creative premise of TN\_chain: That it corresponds to a single piece, i.e., that it has a consistent structure that travel through the successive renditions. Following this rationale, I explore to what extent the unfolding over time realised by the performers involved deals with two parallel fluxes of time: the “now” of a single performance, and the consequential relationship between the present and the residual ghosts of past performances.

#### *References*

- [1] S.A. Kauffman. The origins of order: Self-organization and selection in evolution. OUP USA, 1993.
- [2] S. Jord à . Digital Lutherie: Crafting musical computers for new musics’ performance and improvisation. PhD. Thesis. Pompeu Fabra University, 2005.
- [3] F. Rosas,, P. Mediano, M. Ugarte, and H. Jensen. “An information-theoretic approach to self-organisation: Emergence of complex interdependencies in coupled dynamical systems.” *Entropy* 20, no. 10 (2018): 793. Presentation format Being at heart a composition and performance creative strategy, the results of Timbre Networks are the performances this method generates. Therefore I propose a hybrid paper/performance presentation in the context of this conference.

Duration 25’ (15’ Paper, 10’ Performance)

**Biography:** Juan Parra Cancino (b. Chile, 1979) studied Composition at the Catholic University of Chile and

Sonology at The Royal Conservatoire The Hague (NL), where he obtained his Masters degree with focus on composition and performance of electronic music. In 2014, Juan obtained his PhD degree from Leiden University with his thesis “Multiple Paths: Towards a Performance practice in Computer Music”. His compositions have been performed in Europe, Japan, North and South America in festivals such as ICMC, “Sonorities”, “Synthese”, and “November Music”, among many others. His acousmatic piece *Serenata a Bruno* obtained a special mention at the Bourges electro-acoustic music competition of 2003 and in 2004, his piece *Tellura* was awarded with the residence prize of the same competition. Founder of The Electronic Hammer, a Computer and Percussion trio and Wiregriot, (voice & electronics), he collaborates regularly with Ensemble KLANG (NL) and Hermes (BE), among many others. His work in the field of live electronic music has made him recipient of numerous grants such as NFPK, Prins Bernhard Cultuurfonds and the International Music Council. Since 2009 Parra is a fellow researcher at the Orpheus Institute (Ghent, BE), focused on performance practice in Computer Music.

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10:30AM–11:00AM

PAPER

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*Title:* INTIMAL: Sensing place and presence in a Long-Distance Improvisation

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*Presenter:* Ximena Alarcon Diaz  
(Stony Brook University, New York)

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*Description:* INTIMAL art-research project questions the role of the body as interface that keeps memory of place, in the context of human migration. This question informs the creation of a telematic physical-virtual embodied interactive system for relational listening.

INTIMAL has been initially informed by the listening experiences of nine Colombian migrant women living in the cities of Oslo, Barcelona and London, interrelating memories of migration and place, their unconscious dreams, and also oral archives, leading to the expression of embodied narratives using improvisatory body/voice expression.

This paper describes the technological and artistic implementation of INTIMAL system, and the mediated expressions and listening experiences that emerged in a public telematic sonic improvisatory performance: “A Long-Distance Improvisation” between the three cities. Mediated by the telematic environment, the experience is proposed as a shared dream, creating a space where migratory expression flows in a territory of time and space fragmentation, while improvisers are listening for agency and connections. This practice and system are opening paths for healing and expansion of the migratory experience and stimulates further questions on memory, embodiment, migration and emotions, and technological mediations for long distance communication. I suggest that this experience expands possibilities of telematic practice in terms of sensing “vibrations” as suggested by Nina Sun Eidsheim (2015), and through the light of Pauline Oliveros’ Deep Listening practice (2005).

Two technical tools have been developed in the first stage of the system, as a prototype: 1) “Memento” the navigator of an oral archive, for mobile phones, interrelating fragments of stories by the displacement of the body in space (walking and rotation), and across four spheres of migratory memory namely: body stories, social body, native land, and host land (Alarcón, 2019); 2) A sonification patch

that transmits real-time data across different locations from breathing sensors that nine improvisers are wearing. The first tool, states and evokes the search for directions in the midst of disembodied voices; the second, amplifies the experience of being there (presence), and women’s emotional reactions of what is being heard together.

The system implementation is a joint effort between researchers at RITMO, Centre for Interdisciplinary Studies in Rhythm, Time and Motion, and with the support of students from the Master in Music Communication and Technology from the University of Oslo and NTNU in Trondheim.

*References:*

Alarcon, Ximena (2019). “Conceptual design for INTIMAL: a physical/virtual embodied system for Relational Listening”. *Somaesthetics and Technology. Journal of Somaesthetics* Vol 4 No 2, March 2019

Oliveros, Pauline (2005) *Deep Listening: A Composer’s Sound Practice*. iUniverse Books: Lincoln, NE.

Eidsheim, Nina Sun (2015) *Sensing Sound. Singing and Listening as Vibrational Practice*. Duke University Press.

*Biography:* Ximena Alarcón is a sound artist researcher interested in listening to interstices: dreams, underground public transport, and the migratory context. Her research focuses on the creation of sonic telematic performances using Deep Listening, telematic improvisation, and interfaces for relational listening. In 2007, she received a PhD in Music, Technology and Innovation from De Montfort University, and in 2012, a Deep Listening Certificate from the Deep Listening Institute. She has been awarded with postdoctoral fellowships such as the Leverhulme Trust Early Career Fellowship 2007-2009 (IOCT- DMU) which led her to develop *Sounding Underground*; and a CRiSAP-UAL fellowship 2011-2017, where she developed telematic performances exploring the

in-between sonic space in the context of migration. She is now a Marie Skłodowska Curie Fellow 2017-2019 at RITMO Centre for Interdisciplinary Studies in

Rhythm, Time and Motion, Department of Musicology, at the University of Oslo, developing her project INTIMAL: a novel physical-virtual “embodied system”

for relational listening, integrating: body, memory, migration and telematics.

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## 11:00AM–12:00PM PRESENTATION

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**Title:** The Virtual Conservatoire: six world-leading institutions collaborating in the digital space

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**Presenter:** Anthony Quinn  
(Edinburgh Napier University, Scotland)

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**Description:** ‘The Virtual Conservatoire’ is a four-year collaboration between Bristol Old Vic Theatre School (BOVTS), Central School of Ballet, London Academy of Music and Dramatic Art (LAMDA), Royal Academy of Dramatic Art (RADA), Royal Academy of Music (RAM) and Royal College of Music (RCM) and backed by HEFCE / Office for Students Catalyst Fund.

Together, the six Conservatoires are transforming their facilities into state-of-the-art digital spaces that enable creative collaboration between the consortium’s students and partners across multiple locations, in real time. The result is a new template for conservatoire training, which pioneers digitally enabled pedagogy and practice, and the scope to transform live performance art into a multi-location experience.

To test the technology, students from across the conservatoires hosted a series of ‘scratch nights’ that culminated in a formal production created with immersive theatre makers, Raucous. The performance of ‘Otis and Eunice’ saw two interconnected shows played out simultaneously to two audiences, in two venues from two different cities, creating a dual perspective on the tale of Orpheus and Eurydice.

This presentation will explore challenges of the creative process from inception to first night, investigating how LOLA and other technologies stimulated a multi-institution, multi-site exchange to deliver what we believe to be a world-first: two interlocking and interdependent live performances for two audiences in two cities.

**Biography:** Anthony Quinn is Head of Screen and Audio Performance at LAMDA. A BAFTA-nominated director, he has directed over 100 hours of prime-time drama for the BBC, ITV, C4 and RTE in Ireland. On graduating from Cambridge University, he began his career in theatre as an assistant director at the RSC. He then joined BBC Radio Drama as a producer, before being invited onto the BBC TV Drama Directors Course. At LAMDA, Anthony has produced over 80 short films featuring graduating year actors, many of which have also been selected for national and international festivals. In addition to acting as LAMDA’s lead on the Virtual Conservatoire project, Anthony also leads LAMDA’s research activity. Outside LAMDA, Anthony produces non-broadcast programming for clients including Accenture and Adecco through his company AGC Productions, and coaches corporate clients in screen performance.

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## 12:00PM–1:00PM BREAK

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## 1:00PM–1:30PM PRESENTATION

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**Title:** Implementing the Jacktrip Online Jamming Technology at Stanford University Online High School

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**Presenter:** Ethan Bogle  
(Stanford, California)

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**Description:** While the Jacktrip collaborative technology for synchronous remote performance and rehearsal has existed for a long time, it still often remains “experimental” when applied outside of university and research settings. The Stanford OHS Jazz Band at Stanford University Online High School endeavors to enable Stanford OHS students to rehearse and perform in a school band despite the school’s

geographically distributed student body, using Jacktrip technology on their home devices and networks. The long-term goal of the Stanford OHS Jazz Band is to serve as a proof-of-concept to enable online schools to offer musical opportunities for their students similar to those at an in-person institution. I will tell the story of the Stanford OHS Jazz Band, particularly focusing on the difficulties, successes, and solutions we found using



Jacktrip outside of a university setting, the effect of the band's presence on the school community, and the future of the Jacktrip in this setting.

**Biography:** Ethan Bogle is a jazz and classical pianist, composer, and band-leader with strong interests in pure math,

computational thinking, and education. He is a Senior at Stanford University Online High School, where he founded and leads the Stanford OHS Jazz Band, which holds weekly rehearsals using Jacktrip and performs at both online and in-person school events. Outside of school, he performs in the Minneapolis,

Minnesota area, and has performed several times at the Twin Cities Jazz Festival, including in the main stage opening set of the 2018 event. He studies jazz and classical piano under Gary Gratz and composition under Adi Yeshaya.

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1:30PM–2:00PM  
PAPER

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**Title:** The Virtual Conservatoire project and future music applications

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**Presenter:** David Gleeson  
(Edinburgh Napier University, Scotland)

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**Description:** This paper reports on the research and practical outcomes of the Virtual Conservatoire project – presented as a “ground-breaking collaboration between the UK’s leading conservatoires to explore how advancements in digital technology can transform the conservatoire curriculum to develop innovative learning and teaching methodologies, provide students with enhanced facilities and offer exceptional training experience they could not receive anywhere else in the world.”

In 2015, a consortium comprising the Royal Academy of Music (RAM), the Royal College of Music (RCM) and four of the schools that are part of the Conservatoire for Dance and Drama (CDD) (Bristol Old Vic Theatre School, Central School of Ballet, LAMDA and RADA) was successful in securing funding from HEFCE to undertake a collaborative project to create the Virtual Conservatoire.

At the time, each of the institutions had major construction projects underway, all in various stages of completion. Since a key VC objective was to “Create new, state-of-the-art, digitally integrated training and Performance spaces across HEI partners,” this paper examines the outcomes for RAM’s new facilities. It also considers outcomes of other key technology-based objectives to “Facilitate cutting-edge artistic collaborations,” “Strengthen links with performing arts and digital technology industries,” and “Transform curriculum embedding latest digital technology into core conservatoire training.” In particular, innovations in technology allowing students to make their own recordings at RAM venues using sophisticated equipment without the need for advanced operational skills is reported.

A major aspect of the collaboration involved low-latency streaming technology, for which purpose many different products were evaluated. The culmination of four years’ work on the VC project used LOLA in a production simultaneously staged at two sites, incorporating live dance, drama, and music. In considering how the technology worked in context of the production, and to what extent it was utilised in each of the different disciplines, the paper examines how the multidisciplinary collaboration was also interdisciplinary and transdisciplinary. Given the research aspects of the VC project, along with industry partnerships, prospective funding paths from programmes for science, innovation, health, technology, and social science (i.e. beyond conventional arts and humanities funding) are considered and compared to approaches already underway in opera.

Particular consideration is given to the limitations of low-latency streaming technology, and how creative demands from the production exacerbated inherent latency. More broadly, the conflicts and commonalities between the creative and technological entities involved from experimentation through to staging are explored. Possibilities for more efficient means of connection than conventional ISPs (with inherent packet loss and delays) are presented.



**Biography:** David Gleeson is a graduate of the University of London and is the Royal Academy of Music's Head of Recording. After a period as a recording engineer for Decca, he worked at Abbey Road Studios before spending two years

co-running the scoring stage at Skywalker Sound in California. He also founded a post-production facility in Sausalito with sound designer Ren Klyce, worked as Associate Producer for Howard Shore on the Lord of the Rings film scores, has

held the British Library's Edison Fellowship, and has been the recipient of a Grammy Award.

## 2:00PM-3:00PM BREAK

### 3:00PM-4:00PM CONCERT DEMONSTRATION

**Title:** Tell a Presence #1

**Presenter:** Doug Van Nort (York University, Arraymusic Venue, Toronto)

**Description:** Connected digitally across borders, Doug Van Nort presents his Partnership Engage project with Arraymusic in the first of three telematic concert events. Connecting with NowNet Arts Ensemble in New York (Sarah Weaver dir.), invited musicians at two sites join to explore senses of collective presence via the shared acoustics of a virtual performance space. Joining Van Nort and Array Ensemble musicians for this concert will be cellist Anne Bourne.

**Biography:** Doug Van Nort is an artist, researcher, composer and improviser. His work is concerned with distributed agency and sensorial immersion in technologically-mediated musical performance contexts. His research-creation activities engage with affective and visceral experiences of the sonic and haptic senses, with the complex and embodied nature of listening, and with improvisation as a social model for collective emergence. He creates works that integrate improvisation and collective performance with machine agents, interactive systems and experiences of telepresence. Van Nort regularly presents this work internationally, and recent projects have spanned telematic music compositions, a solar-powered and evolving environmental sound art piece for a remote pond

(Fieldwork), interactive conducting/processing of his Electro-Acoustic Orchestra, autonomous machine composition/improvisation systems, interactive music composition for large-scale dance pieces (National Ballet School, EMPAC, York Dance Ensemble), soundscape composition for 2,500 year old Chinese bells (Smithsonian's Freer-Sackler Gallery), and performative sonification of data streams (NASA's Kepler mission). This work is informed by his background in mathematics, media arts, Deep Listening practice, music composition and performance, and draws upon disparate areas ranging from perceptual and cognitive science, electroacoustic music, systems theory, sound studies, AI/machine learning, signal processing and various forms of ritual. Van Nort is currently Canada Research Chair in Digital Performance and an Associate Professor at York University, cross-appointed between the departments of Computational Arts and Music. At York he has founded the DisPerSion (DIStributed PERformance and Sensorial immerSION) Lab, dedicated to explorations in distributed agency, improvisation and technologically-mediated performance. He also works as an Assistant Editor for the Computer Music Journal (MIT Press).

## 4:00PM-5:00PM BREAK

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5:00PM–6:00PM  
LAUNCH EVENT:  
JOURNAL OF NETWORK  
MUSIC AND ARTS (JONMA)

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*Location:* Center for Scholarly  
Communication, Melville Library,  
Stony Brook University

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*Description:* JONMA is a peer-reviewed  
open access digital research journal  
published by Stony Brook University.  
Network Music and Arts utilize the In-  
ternet and related technologies as an ar-  
tistic medium for works created for this  
platform. JONMA publishes research by  
artists, technologists, educators, and

related scholars. The journal content  
includes articles, audio and video docu-  
mentation, and reviews for books  
and recordings.

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## NOVEMBER 10, 2019

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10:00AM–11:00AM  
CONCERT

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*Title:* #iPlayforPeace Armistice Day  
Concert 2019

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*Presenter:* Paul Ferguson  
(Edinburgh Napier University, Scotland)

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*Location:* Multiple sites

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*Description:* A global orchestra of musi-  
cians will come together in the spirit of  
creativity, peace and cooperation. The  
#iPlay4Peace concert is a partnership  
project involving Edinburgh Napier

University, Aberdeen University, Wilfred  
Owen's Edinburgh 100 and renowned  
Scottish fiddler, Thoren Ferguson.  
<https://tinyurl.com/y3jb9wud>

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11:00AM–12:00PM  
PRESENTATION

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*Title:* Eudaimonia and Social Good  
through Technologically Mediated,  
Collaborative Music-Making

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*Presenter:* Gareth Dylan Smith  
(Stony Brook University, New York)

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*Description:* Humans often tend towards  
working in groups of various kinds.  
Following childhood and the family  
unit we seek those groups in mutual  
interest groups and activities. One of  
the fundamental ways that people make  
profound meaning is through creating  
music with one another. For some people  
making music is key to their identity  
realization (Smith 2013) or self-actu-  
alization (Maslow 1954). Pursuing the  
deep, core existential needs of one's  
self or 'daimon' has been identified as  
'eudaimonia' (Smith 2016; Waterman  
1992), recognized by Norton (1979) as a  
virtuous and essential means for people  
to flourish. Collective music-making  
therefore creates a particular kind of  
social good for those for whom engaging  
in music-making is a vital part of their  
personhood, being whom they really are.  
Music-making is thus also an inherently  
societal good, bringing arts, creativity  
and joy to the world.

Internet and music recording technol-  
ogies are able to expand the potential  
for creating this social good across and  
beyond local and national boundaries in  
multi-located, de-territorialized modes

of distributed creativity and creation  
(Pignato and Begany 2015). In this pre-  
sentation, two musician-researchers talk  
about and demonstrate through music  
performance how Avid ProTools and  
LoLa technologies have enabled them to  
work collaboratively online and indi-  
vidually in physical spaces to engage to  
produce a professional, broadcast-qual-  
ity sounds recording. A saxophonist  
from the UK and a drummer based in  
eastern Pennsylvania provide a detailed  
description of the process, opportunities,  
challenges and limitations of collaborat-  
ing to create recordings of three original  
pieces. They then demonstrate one of the  
possible outcomes of their collaborative  
creative process by recreating their music  
in live performance using LoLa tech-  
nology. Following precedent set during  
previous improvisations and performanc-  
es using LoLa (Moir, Ferguson & Smith  
2019), the drummer will be on campus  
at Stony Brook, with the saxophonist on  
campus at Edinburgh Napier University  
in Scotland.

The presenters emphasize that the  
salient point is not whether this music  
is 'objectively' any good, but rather how

it is good and what/whom it is good for. With people valued increasingly for their (contributions to corporations') economic output, to the point that any social or artistic contribution is frequently devalued and ignored, network technologies offer means of salvation from lives potentially devoid of eudaimonic meaning and fulfillment, enabling artists to make music and to connect with a shared artistic purpose. Flourishing through creative, collectively meaningful musical activity is core to the notion of artistic citizenship (Elliott, Silverman and Bowman 2016). Artistic citizens make music as part of compassionate, democratic and personally fulfilling lives. A society in which people are valued by

one another and are able to engage in deeply meaningful action as part of their jobs, 'devotee work' or as 'serious leisure' activity is one that has the potential to be more just, more socially good.

*Biography:* Gareth Dylan Smith is a British drummer, teacher, writer and academic based in New York, USA. Gareth is Visiting Research professor of Music at New York University and works for music education nonprofit, Little Kids Rock, as a grant-writer. Gareth's research centres around popular music education. He is President of the Association for Popular Music Education, founding editor of the Journal of Popular Music Education, Chair-Elect of the

NAfME special research interest group on popular music education, and a board member of the International Society for Music Education. Gareth has written over 80 peer-reviewed articles and authored or edited eight scholarly books including *Sociology for Music Teachers*; *Punk Pedagogies*; *I Drum, Therefore I Am*; *The Oxford Handbook of Music Making and Leisure*; *The Bloomsbury Handbook of Popular Music Education*; and *The Music Learning Profiles Project*. His next book (due out in December 2019) is titled *Eudaimonia: Perspectives for Music Education*.

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12:00PM–12:30PM  
CLOSING SESSION

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NOWNET  
ARTS