NowNet
Arts

NOWNET ARTS CONFERENCE 2020

Nov 5——8

NETWORK ARTS
AND SOCIAL DISTANCE:

CAPACITIES
AND INNOVATIONS

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

Center for Computer Research in
Music and Acoustics (CCRMA)
Stanford University
California, USA

Edinburgh Napier University
Scotland

Orpheus Institute
Ghent, Belgium

ONLINE

NOWNET ARTS CONFERENCE 2020
Network Arts and Social Distance: Capacities and Innovations
November 5-8, 2020

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 2020 theme "Network Arts and Social Distance: Capacities and Innovations" is a response to the COVID-19 pandemic and changes in the world due to social distancing. Network arts is a prominent field for continuation of live performance with capacities for events that take place entirely online or events with in-person participants dispersed across multiple locations. Historical and current artistic network arts works show the artistic significance in transcending distance and new expressions that are achieved through this medium. While the capacities are inherent to the field, social distancing calls for further innovations to adapt the artistic, technological, and educational strategies to this new setting. The NowNet Arts Conference 2020 is a program of papers, presentations, and concert demonstrations that feature this topic and generate new innovations for this work forward. The conference is a virtual event this year.

AFFILIATE SITES

Institute for Advanced Computational Science (IACS), Stony Brook University, New York, USA
Center for Computer Research in Music and Acoustics (CCRMA), Stanford University, California, USA
Edinburgh Napier University, Scotland
Orpheus Institute, Ghent, Belgium

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.

CONFERENCE COMMITTEE

Director: Sarah Weaver, NowNet Arts
Chris Chafe, Stanford University
Margaret Schedel, Stony Brook University
Program Cover: Scott Lewis Design

NOWNET ARTS CONTACT

info@nownetarts.org
https://nownetarts.org/conference-2

DAILY SCHEDULE
THURSDAY NOVEMBER 5

9:00AM Lab

10:00AM Opening Session
Concert Demonstration: Magnify the Sound
Paper: Social distance – artistic proximity
Trond Engum, Carl Haakon Waadeland, Thomas Henriksen, Johan-Magnus Elvemo,
Otto Wittner
Norwegian University of Science and Technology

11:00AM Presentation: Running a Remote AI Livetime in the Cloud for an AI
Brainwave Opera
Ellen Pearlman, ThoughtWorks Arts/RISEBA University, New York

12:00PM Lab

1:00PM Panel: Network Arts Technology Updates
Chris Chafe, Stanford University, California
Miloš Liška, CESNET, Prague
Zack Moir, Edinburgh Napier University
Miller Puckette, University of California San Diego
Sarah Weaver, NowNet Arts, New York

2:30PM Paper: A Quantum-Classical Network for Beat-Making Performance
Omar Costa Hamido, University of California Irvine
Scott Oshiro, Stanford University, California

3:00PM Concert Demonstration: Telematic HDPHN by Willful Devices
Scott Miller, St. Cloud State University, Minnesota
Pat O'Keefe, University of Wisconsin, River Falls

4:00PM Concert Demonstration: SpaceShip88: Tribute to Pauline Oliveros
Jonas Braasch, Rensselaer Polytechnic Institute, New York

5:00PM Concert Demonstration: SoundWIRE Ensemble CCRMA
Chris Chafe, Director, Stanford University

6:00PM Concert Demonstration: ReFLEXions
Tom Bickley (music director), Bonnie Wai-Lee Kwong (multidisciplinary artist),
Katarina Eriksson, Ronja Ver, Nikolay Shchetnev, Christine Germain (dance artists)
Chris Chafe, Sergey Zhigaltsov (musicians)

FRIDAY NOVEMBER 6

8:30AM Lab

9:30AM Presentation: Using virtual reality to assist online singing teaching
Ben Loveridge, University of Melbourne

10:00AM Presentation: Real-World Strategies for Online Music Ensemble Pedagogy
Ellen Waterman, Kathy Armstrong
Carleton University, Ottawa

11:00AM Paper: Tuning in/to Zoom: The Music on the Rebound Festival as a Model for Inclusive Networked Musical Praxis
Brendan Kent, Carleton University, Ottawa

11:30AM Presentation: Resources: Networked Music Library and Source Elements
Daniil Pilchen, Rebekah Wilson
Source Elements, Multiple Locations

12:00PM Lab

1:00PM Concert Demonstration: Ensemble Decipher presents works by Samuel Beebe, Eric Lemmon, Niloufar Nourbakhsh, Lainie Fefferman, and Yaz Lancaster
Joseph Bohigian, Sam Beebe, Robert Cosgrove, Eric Lemmon, Chelsea Loew, Niloufar Nourbakhsh, Taylor Long
Stony Brook University, New York

2:00PM Presentation: Video Chat Variations: Tyshawn Sorey, Autoschediasms
Gavin Chuck, Director, Alarm Will Sound, New York

3:00PM Presentation: Bad Connections: Making Music for the Unreliable Internet
Isaac Schankler, California State Polytechnic University, Pomona

4:00PM Presentation: Network Arts Composition Strategies
Sarah Weaver, NowNet Arts, New York

5:00PM Lab

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SATURDAY NOVEMBER 7

10:00AM Lab

11:00AM Concert Demonstration: Sound Notebooks: Remote Improvisation
Recordings, Soundscapes and Sound Processing
Cássia Carrascoza Bomfim, University of São Paulo
Lidia Bazarian, Performer, Brazil
Danilo Rossetti, Federal University of Mato Grosso

12:00PM Lab

1:00PM Concert Demonstration: NowNet Arts Lab Ensemble
Sarah Weaver, Director, NowNet Arts, Multiple Locations

2:00PM Concert Demonstration: Wit & Daniel – Tactile Improvisation
Prawit Siriwat, Daniel Durst
Performers, New York

3:00PM Concert Demonstration: A Performance and Discussion using Collab-Hub:
a remote networking collaborative tool
Nick Hwang, University of Wisconsin at Whitewater
Jeff Herriott, University of Wisconsin at Whitewater
Anna Weisling, Performer, Wisconsin
Eric Sheffield, State University of New York, Broome
Anthony T. Marasco, Louisiana State University

4:00PM-5:00PM Panel: Lessons from Earth Day Model 2020
Scott Deal, Chuiyuan Meng, Harry Chaubey
Tavel Arts Technology Lab, Indiana University–Purdue University Indianapolis

5:00PM Concert Demonstration: Women's Labor: Embedded Iron networked performance
Jocelyn Ho, University of California Los Angeles
Margaret Schedel, Stony Brook University, New York
Matthew Blessing, Louisiana State University

6:00PM Lab

9:00PM Social Hour

10:00PM Concert Demonstration: NowNet Arts Lab Ensemble
Sarah Weaver, Director, NowNet Arts, Multiple Locations

SUNDAY NOVEMBER 8

9:00AM Lab

10:00AM Art Installation Demonstration: Electo Electro 2020
Mike Richison, Monmouth University, New Jersey

11:00AM Presentation: Digital Vitality - Vital Digitality
*Kat Mustate*a, *EdgeCut Performance Series*

12:00PM Lab

1:00PM Presentation and Concert Demonstration: Three States of Wax
Juan Parra Cancino, Orpheus Institute Belgium
Jonathan Impett, Orpheus Institute Belgium

2:00PM Concert Demonstration: Digital Void
Lynn Baker, University of Denver
Conrad Kehn, University of Denver

3:00PM Concert Demonstration: #OtherBeats: The Web Browser as a Sonic Landscape
Outside the Grid
Marcel Zaes, Brown University, Rhode Island

3:30PM Concert Demonstration: The ACCAD Sonic Arts Ensemble (United States,
Argentina, Germany)
Marc Ainger, Fede Cámara Halac, Directors
Ohio State University

4:30PM Concert Demonstration: New Artistic Practices Born of Social Distancing
Limitations
Katherine Liberovskaya, Performer, New York
Dafna Naphtali, Performer, New York
Barbara Held, Performer, Barcelona

5:00PM Closing Session and Social Hour

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FULL SCHEDULE
THURSDAY NOVEMBER 5

9:00AM Lab

10:00AM Opening Session
Concert Demonstration: Magnify the Sound
Trond Engum, Carl Haakon Waadeland, Thomas Henriksen, Johan-Magnus Elvemo,
Otto Wittner
Norwegian University of Science and Technology

The duo "Magnify the Sound" will present a 20 minutes live musical/audio-visual
performance from four different locations in Norway - exploring the interplay and
live processing between drums/percussion and electric guitar, and live and recorded
visuals. The duo will be expanded with two members for this performance. Thomas
Henriksen will contribute as a performing studio engineer and Johan-Magnus Elvemo
will contribute with the visuals. Drums/percussion will be performed from a recording
studio, the recording studio will be remotely controlled from a second location
behind a home router, guitars and live processing of the drums will be performed from
a third location behind a home router. Live visuals will be controlled behind a home
router sending and receiving visuals from the other locations and blending these with
pre-recorded video.

The duo "Magnify the Sound" consists of Trond Engum on guitar and electronics, and
Carl Haakon Waadeland on drums/percussion. They have performed together since 2010 in
various constellations exploring the interplay between acoustic instruments and live
processing in a free improvisation context. These musicians/researchers have
participated in the projects "T-EMP Communication and interplay in an electronically
based ensemble" (2011 - 2014) https://www.researchcatalogue.net/view/48123/48124 and
"Cross-adaptive processing as musical intervention" (2016-2018)
http://crossadaptive.hf.ntnu.no/index.php/about-the-project/index.html, both projects
conducted at the Norwegian University of Science and Technology (NTNU). "Magnify the
Sound" combines a continuation of experiences from these different experiments with
an aim of developing new artistic expressions.

Paper: Social distance - artistic proximity

During February 2020 we had planned and started the recording of a full-length album
in a studio in Norway. These plans were radically changed because of the COVID-19
pandemic. We were no longer allowed to meet physically in the same room. This new,
dramatic situation forced us to search for alternative ways of performing music
together, and we started to explore online performance as a platform for new artistic
expressions within the ensemble. We designed a technical set up where the two
musicians and the studio engineer were placed at three different locations.

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Performing together as a group over the internet challenges conventional performing practices concerning physical presence and presentation context. It also challenges existing communication technologies related to latency and telepresence. However, despite our physical and social distance we were aiming at artistic proximity. The technical requirements needed to obtain both high sound quality and not compromising with the musical dialog between performers. This involved transmission of uncompressed multitrack audio over public internet to several locations at the same time and foldback/talkback solutions with minimal latency for performers and producer involved.

As two out of three location were home studios with commodity Internet access, a careful selection and tuning of tools was necessary. Interesting enough COVID-19 triggered one of the commercial Internet operators involved to reroute traffic a much shorter path than earlier, improving proximity significantly. Even so the more robust and well tested tools, jacktrip and zoom, proved to be more stable than tunnel-based setups (e.g vxlan).The ensemble completed the album recording during three online sessions March – May 2020, and in addition performed an online concert with this set up.

In this paper we give a detailed description of the technical set up. In addition, we discuss how this situation of social distancing affected us as musicians: What happens with musical interaction when the embodiment of performance takes place over the internet instead of in the same physical room? Which elements in the interaction will be actualized in these situations (musician – musician, musician – engineer, musician – audience)? Which limits and new strategies for interaction could be found, and how can we work with and against these?

11:00AM Presentation: Running a Remote AI Livetime in the Cloud for an AI Brainwave Opera
Ellen Pearlman, ThoughtWorks Arts/RISEBA University, New York

A custom built AI running live time in the Google Cloud over a remote network served as the engine behind an emotionally intelligent artificial intelligent brainwave opera "AIBO."

Ellen Pearlman is a Brooklyn based new media artist, critic, curator and educator. She received her PhD from the School of Creative Media, Hong Kong City University where her thesis was awarded highest global honors by Leonardo LABS Abstracts. Ellen is a Senior Research Assistant Professor at RISEBA University in Riga, Latvia, and on faculty at Parsons/New School University. A Fulbright World Learning Specialist in Art, New Media and Technology, she is also a Vertigo STARTS EU Laureate, a Zero1 American Arts Incubator/U.S. State Department artist, Director of ThoughtWorks Arts, and President of Art-A-Hack™.

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12:00PM Lab

1:00PM Panel: Network Arts Technology Updates
Chris Chafe, Stanford University, California
Miloš Liška, CESNET, Prague
Zack Moir, Edinburgh Napier University
Miller Puckette, University of California San Diego
Sarah Weaver, NowNet Arts, New York

The panel will discuss updates on JackTrip, UltraGrid, LOLA, QuackTrip, and more network arts technologies. Technical details, adaptions for use during social distance, and models forward will be shared.

Chris Chafe is a composer, improvisor, and cellist, developing much of his music alongside computer-based research. He is Director of Stanford University's Center for Computer Research in Music and Acoustics (CCRMA). In 2019, he was International Visiting Research Scholar at the Peter Wall Institute for Advanced Studies The University of British Columbia, Visiting Professor at the Politecnico di Torino, and Edgard-Varèse Guest Professor at the Technical University of Berlin. At IRCAM (Paris) and The Banff Centre (Alberta), he has pursued methods for digital synthesis, music performance and real-time internet collaboration. CCRMA's jacktrip project involves live concertizing with musicians the world over.

Miloš Liška is currently a researcher with Czech NREN CESNET. He has earned his PhD. in informatics from the Masaryk University in 2010. He is interested especially in high-quality, low-latency multimedia transmissions over high-speed networks and its applications in various fields including medicine, arts, broadcasting and cinematography, sports or education including aspects such as user-empowered orchestration of large-scaled, distributed transmissions or automated user-empowered control of dynamic network infrastructures. He is also working on projects concerning videoconferencing, webconferencing, tools for collaborative environments and collaborative workflows.

Zack Moir is an Associate Professor of Music and the Director of the Applied Music Research Centre. 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, and a reactive generative sound art installation at the Edinburgh International Science Festival.

Miller Puckette obtained a B.S. in Mathematics from MIT (1980) and Ph. D. in Mathematics from Harvard (1986), winning an NSF graduate fellowship and the Putnam Prize Scholarship. He was a member of MIT's Media Lab from its inception until 1987, and then a researcher at IRCAM (l'Institut de Recherche et de Coordination Musique/Acoustique), founded by composer and conductor Pierre Boulez. At IRCAM he wrote Max, a widely used computer music software environment, released commercially in 1990 and now available from Cycling74.com. Puckette joined the music department of the University of California, San Diego in 1994, where he is now professor. From 2000 to 2011 he was Associate Director of UCSD's Center for Research in Computing and the Arts (CRCA; now defunct). He is currently developing Pure Data ("Pd"), an open-source real-time multimedia arts programming environment. Puckette has collaborated with many artists and musicians, including Philippe Manoury (whose Sonus ex Machina cycle was the first major work to use Max), Rand Steiger, Vibeke Sorensen, Juliana Snapper, and Kerry Hagan. Since 2004 he has performed with the Convolution Brothers. He has received honorary degrees from Université de Mons and Bath Spa University and the 2008 SEAMUS Lifetime Achievement Award.

Sarah Weaver, Ph.D. 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 twenty-five years, integrating influences of jazz, contemporary classical, improvisation, computer music, world music, and 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, director of the Sarah Weaver Ensemble, and editor of the Journal of Network Music and Arts (JONMA). She on the faculty of New School College of Performing Arts, Performer-Composer Masters Program. Weaver is a member of ASCAP, College Music Society, National Association of Composers, and board member of the JackTrip Foundation.

2:30PM Paper: A Quantum-Classical Network for Beat-Making Performance
Omar Costa Hamido, University of California Irvine
Scott Oshiro, Stanford University, California

This presentation will discuss the use of a quantum internet protocol in the context of networked music performance, where quantum computing could play a role in processing musical data via a cloud-based music software application. We also propose an example model for a beat-making performance network using a smart music playlist application deployed on a simulated quantum internet.

Omar is a performer, composer, and technologist, working primarily in multimedia and improvisation. In 2013, he earned his Master's degree in Music Theory and Composition at the Escola Superior de Música, Artes e Espectáculo (ESMAE-IPP Portugal) where he

conducted research on the relations between music and painting, and compositional processes. He is currently pursuing his PhD in Integrated Composition, Improvisation and Technology (ICIT) at the University of California, Irvine, where his main research is on Quantum Computing and Music Composition. Recently he has won several relevant awards: Fulbright Exchange Visitor, Beall Center for Art+Technology - 1st Prize Student Artwork, IBM Qiskit Camp Europe – Community Choice Award. en.omarcostahamido.com

Scott Oshiro is a flautist and electronic composer from the Washington DC Metropolitan area, specializing in improvised, experimental and telematic music. He has received his B.S. in Electrical Engineering from George Mason University and is currently a PhD student at Stanford University's Center for Computer Research in Music and Acoustics (CCRMA). Scott is experienced in both the technological and psycho-perceptual aspects of Networked Music Performance, and has studied the social and cultural exchanges that occur within these performances. His current research focuses on developing quantum music generation algorithms, in which he received honorable mentions at IBM's December 2019 Qiskit Hackathon in South Africa for his work on Qu-Beats: a Quantum Beat Generator. Scott is also researching the development of algorithms and protocols for Networked Music Performance over a quantum internet. https://oshqmusic.squarespace.com

3:00PM Concert Demonstration: Telematic HDPHN by Willful Devices
Scott Miller, St. Cloud State University, Minnesota
Pat O'Keefe, University of Wisconsin, River Falls

HDPHN presents the audience with a new way to experience live electro-acoustic music performance, and has been adapted for telematic performance over the internet. Similar to the "silent disco," HDPHN imagines a shared audience experience dependent on the use of a technology, headphones, which is usually regarded as isolating. The music is performed live, but instead of being amplified through a set of speakers in the room, all sounds (both acoustic and electric) are delivered to the audience via headphones. Processed sound is also returned to the clarinet via analog 'talk box,' which is piped through the clarinet to be filtered by the instrument and amplified by the microphones, creating a feedback loop that is further manipulated by Pat on the clarinet. The use of headphones allows for a live concert of music that involves sounds that are often impossible to hear without amplification, and also for an extremely precise presentation of sound moving in space.

HDPHN was created and is performed by Willful Devices, Pat O'Keefe (Bass clarinet, Bb clarinet) and Scott L. Miller (Kyma, Keyboard). It was developed while in residence at Sparta Sound, on the Iron Range of Minnesota, owned and run by musician and studio engineer, Rich Mattson. The residency was funded by the McKnight Foundation, in support of Miller's 2018 McKnight Composer Fellowship.

Willful Devices is an electroacoustic avant-improv duo, born of the collaboration between composer/computer musician Scott Miller and clarinetist/bass clarinetist Pat O'Keefe. Their name refers to the willful nature of the tools they manipulate to produce sound, because despite their best efforts, these devices are never fully under their control. Willful Devices celebrates this, since within this unpredictability lies the potential for unimagined sonic discovery. Willful Devices develops most of their music during that unique time we all know as play, and the results are a vital, dynamic product of the connection between Scott and Pat and their unique musical identities.

4:00PM Concert Demonstration: SpaceShip88: Tribute to Pauline Oliveros
Jonas Braasch, Rensselaer Polytechnic Institute, New York

If starting with Rocket 88, Rock & Roll was celebrating automobile culture, Pauline Oliveros' music was much being in outer (and inner) space. This year marks her 88th Birthday. We will improvise to outer space videos created with SpaceEngine – a universe simulator using Pauline Oliveros EIS system with a co-located ensemble from Rensselaer Polytechnic Institute's CRAIVE-Lab and Stony Brook University.

Jonas Braasch is a Professor at the School of Architecture at Rensselaer Polytechnic Institute and teaches in the Graduate Program in Architectural Acoustics. He also serves as Director of Operations for the Cognitive and Immersive Systems Laboratory (CISL) at RPI. His research interests span collaborative virtual reality systems, binaural hearing, auditory modeling, multimodal integration, sensory substitution devices, aural architecture, and a creative practice based on hyperspecializing in saxophone with a variety of sound generators. Braasch obtained a master's degree from Dortmund University in Physics and two Ph.D. degrees from Ruhr-University Bochum, Germany in Electrical Engineering/Information Science and Musicology.

5:00PM Concert Demonstration: SoundWIRE Ensemble CCRMA
Chris Chafe, Director, Stanford University

Improvisations
Musicians: Constantin Basica, Tom Bickley, Chris Chafe, Henrik von Coler, Hassan Estakhrian, Wendy Hillhouse, Allan Jiang, Bonnie Kwong, Fernando Lopez-Lezcano, Synthia Payne, Juan Parra, Ty Sadlier, Nathan Sariowan, Eddie Tchaouchev, Tovar, Tom Zlabinger

Chris Chafe is a composer, improvisor, and cellist, developing much of his music alongside computer-based research. He is Director of Stanford University's Center for Computer Research in Music and Acoustics (CCRMA). In 2019, he was International Visiting Research Scholar at the Peter Wall Institute for Advanced Studies The University of British Columbia, Visiting Professor at the Politecnico di Torino, and Edgard-Varèse Guest Professor at the Technical University of Berlin. At IRCAM (Paris)

and The Banff Centre (Alberta), he has pursued methods for digital synthesis, music performance and real-time internet collaboration. CCRMA's jacktrip project involves live concertizing with musicians the world over.

6:00PM Concert Demonstration: ReFLEXions
Tom Bickley (music director), Bonnie Wai-Lee Kwong (multidisciplinary artist), Katarina Eriksson, Ronja Ver, Nikolay Shchetnev, Christine Germain (dance artists) Chris Chafe, Sergey Zhigaltsov (musicians)

"ReFLEXions" is a new scene from Bonnie Wai-Lee Kwong's play *Liriope*, first staged in May 2018 as an interactive, site-specific performance at Stanford University's Jasper Ridge Biological Preserve with Chris Chafe as Music Director.

In this prophetic play, extreme climate conditions have melted Arctic ice to release a "silencing disease" into the air, wreaking havoc on all who inhabit the planet. The nymph Liriope aims to contain the transmission of this terrifying disease from species to species while parenting her son Narcissus, a talented but self-absorbed performer.

"ReFLEXions" centers on Liriope's conversations with her fellow nymph Echo, who mourns deteriorating conditions in the Arctic Circle, representing a dialogue of friendship between two bodies in times of stress. This online performance utilizes the latest audio technology, yet reveals the vulnerability of humans living in isolation, as if in cages. Bay Area dance artists Katarina Eriksson (choreographer) and Ronja Ver (Liriope) will converse in movement with Nikolay Shchetnev (Echo) in Kirkenes, Norway. Musicians will use JackTrip from various locations--New York and the San Francisco Bay Area to Arkhangelsk, Russia--to deliver this intercontinental performance to the homes of audience members anywhere online.

Bonnie Wai-Lee Kwong is a multidisciplinary artist and software developer in the San Francisco Bay Area. She has lived in nine states and two continents. Art is a way for her to traverse seen and unseen geographies. Her first poetry collection is ravel, a finalist for the Many Voices Project by New Rivers Press, and the White Pine Press Poetry Prize. Her work in poetry and fiction has garnered a number of Pushcart nominations. Her poetry has appeared in journals such as The California Quarterly, The Columbia Review, Crab Orchard Review, The Pedestal, and Spillway.

6:00PM Lab

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FRIDAY NOVEMBER 6

8:30AM Lab

9:30AM Presentation: Using virtual reality to assist online singing teaching
Ben Loveridge, University of Melbourne

Access to specialist music instructors can be an issue for those living in regional areas or with a physical disability. Although webcam-based video conferencing technology can help bridge the distance divide, factors such as audio quality, latency and lack of physical presence can have an impact on the nature of the session.

By looking at recent research in the area, this presentation will discuss how the use of virtual reality and networked music technology may be applicable in the context of online singing teaching. It will examine the affordances as well as the limitations that comes with the technology and provide practical insights into best practices.

Ben is the Immersive Media Coordinator (VR/AR) at the University of Melbourne and assists with the integration of spatial technology in teaching and research across the University. He coordinates the Learning Environments VR lab including providing technical and development consultation to staff and students through workshops and masterclasses. He has a Bachelor of Music from the University of Melbourne and is currently studying a Master of Music (Research), investigating the intersection of networked music performance and virtual reality. In 2017, he was inducted as an Institute Fellow (Virtual Reality) at the Networked Society Institute for his work related to the use of VR at the University. He was a co-researcher on the Music Therapy in Virtual Environments project which investigated the delivery of telehealth sessions to people with quadriplegia through the use of virtual reality. The project was a finalist in the 2017 National Disability Awards and winner in the 2018 iAwards Victorian finals Infrastructure and Platform Innovations category.

10:00AM Presentation: Real-World Strategies for Online Music Ensemble Pedagogy
Ellen Waterman, Kathy Armstrong
Carleton University, Ottawa

Post-secondary music programs are scrambling to figure out a solution to a seemingly intractable problem: How can we make networked performance work for students participating in online music ensembles?

We know that students and instructors have variable access to the internet, software, hardware, space, and time, which creates significant barriers to participation in on-line ensembles. We know that not all of our students and instructors are tech-savvy, that many students have shared computers, limited bandwidth, or outright poor internet connections (particularly those living in rural environments).

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Many music programs work with limited financial and human resources. Add the myriad other social and economic variables that are affecting people during COVID-19 and issues of access and equity become pronounced.

In Summer 2020 a team of researchers at Carleton University are working with ensemble directors and music students to ask: What technologies, pedagogical strategies, musical materials and techniques best achieve a meaningful music ensemble experience for learners under imperfect, real-world conditions of physical distancing?

In this presentation, we share the strategies for both synchronous and asynchronous ensemble participation tested at Carleton University in Summer 2020 and used in three online music ensemble courses in Fall 2020. In particular, we discuss three case studies: jazz ensemble, choir, and rhythm class with a "lab ensemble" of music students in July/August 2020. Using video examples from the online rehearsals we explore the following issues:
•   Software and equipment solutions adapted to imperfect, real-world conditions.
•   Learning to love latency (helping ensemble directors and participants to embrace the online environment through improvisation and latency-friendly rehearsal strategies).
•   Institutional issues of privacy, copyright, and distribution of resources.
•   Deep Listening: not only musically but to foster principles of access and equity.
•   Creating community, engaging students, and fostering independent practice and learning.

        The presentation will be designed to foster discussion and sharing of strategies by audience members who are coping with similar pedagogical dilemmas.

Ellen Waterman is both a music scholar with a strong focus on music in Canada and a flutist specializing in creative improvisation. She was appointed to the inaugural Helmut Kallmann Chair for Music in Canada at Carleton University in 2019 where she is developing a research program committed to investigating issues of diversity and decolonization of music in Canada through scholarship, research creation, and experiential learning. Ellen is a core member of the International Institute for Critical Studies in Improvisation and founding co-editor of the journal Critical Studies in Improvisation/Etudes critiques en improvisation. With Gillian Siddall, she is co-editor of Negotiated Moments: Improvisation, Sound, and Subjectivity (Duke 2016). She is the research team leader for the project "Robust Solutions for Online Music Ensemble Pedagogy" at Carleton University.

Kathy Armstrong is an Instructor in the Music Department of the School for Studies for Art and Culture at Carleton University. She is an experienced percussionist and arts educator, with a strong focus on community-based engagement with diverse populations in a variety of settings. At Carleton she has developed innovative Rhythm

skills courses, using Western and non-Western experiential methods. Kathy has a multi-disciplinary background in Western classical music performance, world music traditions, music education and community music. Research interests include participatory music-making, music and wellbeing, social justice in music education and applied ethnomusicology.

11:00AM Paper: Tuning in/to Zoom: The Music on the Rebound Festival as a Model for Inclusive Networked Musical Praxis
Brendan Kent, Carleton University, Ottawa

The implementation of physical distancing measures during COVID-19 has required both professional and amateur musicians to rapidly improvise ways of making music together. Expedited reconfigurations of performance and community have benefitted from the existing practices of telematic and networked music making (i.e., making music together on-line in real time from separate physical locations). The possibilities of networked musicking, and the lessons we can abstract from studying it, will remain relevant for many communities beyond the current pandemic. This paper will explore participatory networked musical encounters in the unique context of physical distancing during a global pandemic. I will emphasize how musical communities are constructed through a process of networking (socially) through participation.

Through the lens of critical improvisation studies, social aesthetics and theories of participation I will examine the community support initiative Music on the Rebound. Among other initiatives, it sponsored four global performances of The World Wide Tuning Meditation on the conferencing platform Zoom during the month of April. These performances of Pauline Oliveros' text score Tuning Meditation (1971) had hundreds of participants singing vowel tones to one another in a moment of mutual sharing and listening. Although there was a grass-roots aesthetic and technological approach to these performances, they were facilitated by a team of professional artists deploying their creative and organizational expertise. Music on the Rebound has unified the dual goals of creating an inclusive musical community during a difficult time and keeping professional musicians (and the current challenges they face) in the forefront.

This paper comprises analysis of audio/video documentation of performances and an evaluation of existing critical literature. It will include reflections on my own participation in events, as well as interviews with event organizers and participants. I will investigate the tension between the imperative to encourage participation and the negotiation of technological and aesthetic priorities. I aim to determine if new vectors of sociality are being exhibited through networked performance at this time, or if familiar ones are being presented in a different context, and to discern if shifts in agency are occurring, and whether new networks and communities are being (per)formed.

Brendan Kent is enrolled in the Music and Culture program at Carleton University (Ottawa, Canada) where he is working on his master's thesis "Live Streaming Musical Communities: Lessons Learned from Networked Improvising During COVID-19." As a research assistant in the Research and Education in Accessibility, Design, and Innovation program Brendan is conducting research on networked resources for young caregivers of people living with dementia. He holds a bachelor's degree in history from York University in Toronto (2015) and a bachelor's degree in music from Carleton University (2019). His research to date has dealt with how different roles of performance (composer, producer, performer, audience and place) are navigated and blurred through sound installations. Brendan enjoys making and teaching music while exploring sound's potential to empower oneself and build a sense of community.

11:30AM Presentation: Resources: Networked Music Library and Source Elements
Daniil Pilchen, Rebekah Wilson
Source Elements, Multiple Locations

We present the Networked Music Performance Library. This project aims to collect and keep up-to-date a complete library of network performance-related papers, books, and documents to facilitate further research, software development, and performance practice in the field. The library is publicly accessible as a group library at Zotero, with all the PDFs freely downloadable for the group members.

Alongside expanding the library, we are suggesting specific use cases (e.g., new music composition, music lessons, recording studios, theatre, etc.) for each paper, which can be useful for education and research.

Daniil Pilchen is a composer based in The Hague. Graduated from Royal Conservatoire The Hague in 2020. In April 2020, organized the networked edition of the Conservatoire's annual Spring Festival. Since the same time, works on the Networked Music Performance Library for Source Elements.

Rebekah Wilson is the technical director and one of the co-founders of Source Elements, which created and markets the Source-Connect and Source-Live software for remote audio recording and real-time collaboration for sound professionals. She works daily with international voice talent, studios and musicians to understand and serve the direct needs of remote sound production and recording. The magic of music and science combined, which forms the backbone of her (and her co-founders') training, has kept the spark alive for Source Elements since it was founded in 2005. Rebekah believes that the future is full of wonderful options. Her main goal with Source Elements is to continue improving network collaboration software so she can travel as widely as she does now: she's lived in more than 10 countries and loves to ask (and answer) "where are in the world are you?" every day.

12:00PM Lab

1:00PM Concert Demonstration: Ensemble Decipher presents works by Samuel Beebe, Eric Lemmon, Niloufar Nourbakhsh, Lainie Fefferman, and Yaz Lancaster
Joseph Bohigian, Sam Beebe, Robert Cosgrove, Eric Lemmon, Chelsea Loew, Niloufar Nourbakhsh, Taylor Long
Stony Brook University, New York

Ensemble Decipher, Stony Brook University's resident laptop ensemble, performs world premiere works for networked laptop ensemble by Sam Beebe, Eric Lemmon, Niloufar Nourbakhsh, Lainie Fefferman, and Yaz Lancaster.

Sam Beebe's "Pretty Saro Orbital" taps into telematic latency and unstable home internet and wifi systems in order to generate a lush, glitch-rich fresco of sound played to a shared (albeit erratic) metronome, which remains silent to the audience. Similar in its minimalist aesthetics yet distinct in both its mode of production and sonic world, Eric Lemmon's work creates an ethereal texture of bells and crunchy bass tones that slowly give way to a harmonically and visually threatening climax. Nourbakhsh's piece "remember me" draws on excerpts of Nayyirah Waheed's poetry: Aftrica's lament, and is sung by ensemble members while being harmonized through a vocoder. This piece will express a narrative journey that begins with vocoded sounds and returns them to the original voice, in order to remember the past and our ancestors. Lainie Fefferman's "Overshare" uses individual performer recordings describing anxieties and using the created samples as material to develop a networked, vocoded wash of text and tone together, resulting in a concert piece, performance art, and group therapy. Yaz Lancaster's "HOLDING_SPACE" uses a degree of indeterminacy with acoustic guitar, electric guitar, drones, and bit-klavier to create a sustained, yet ever-developing sonic space.

Ensemble Decipher, Stony Brook University's Laptop Ensemble is comprised of Stony Brook students from a variety of backgrounds in music composition and performance. The ensemble members share the desire to introduce their community to a sonic expansion of musical performance through their unconventional instrument—a conglomeration of laptops, speakers, and human performers. Founded in 2017 by Niloufar Nourbakhsh, its current members are Joseph Bohigian, Sam Beebe, Robert Cosgrove, Eric Lemmon, Chelsea Loew, Niloufar Nourbakhsh, and Taylor Long. Over the years, Ensemble Decipher has worked with several composers and technologists, including Mara Helmuth (Cincinnati College-Conservatory of Music), Margaret Schedel (Stony Brook University), Hannah Davis (NYU ITS), and premiered new works by many others. Feature performances include the Society of Electro-Acousic Music, the International Computer Music Conference, several New York City Electroacoustic Music Festivals, the Network Music Festival, and an ensemble residency at EarFest.

2:00PM Presentation: Video Chat Variations: Tyshawn Sorey, Autoschediasms
Gavin Chuck, Director, Alarm Will Sound, New York

Conceived during the COVID-19 pandemic, Video Chat Variations are a series of commissioned pieces performed remotely through video chat. Instead of trying to correct the often frustrating technological idiosyncrasies of video chat platforms, we are embracing quirks like delay and glitching to discover their beauty and expressive power. The goal is to transform video chat from a stop-gap, content-delivery medium into meaningful artistic material that will capture and therefore outlast the pandemic.

Gavin Chuck, Executive Director of Alarm Will Sound says this, "More than ever, Alarm Will Sound is leaning into experimentation. A profound impact of the pandemic is uncertainty. But instead of merely dealing with it, imagination is a potent way to overcome uncertainty. When nobody knows what's next, artists can and should imagine what's next using what is at hand."

The specific Video Chat Variation that we'd like to share for this presentation is called Autoschediasms, by Tyshawn Sorey. It is a piece where Sorey deconstructs the inherent limitations of referring to music as strictly composed or improvised. Sorey conducts Alarm Will Sound by video with visual gestures, textual directives, and autonomous prompts relayed via the hands or baton (or several batons). Some cues are technique-specific, or they can also be relational: for example, directing musicians to play a sound based on their distance from other players, or prompting musicians to execute a given order of events. No matter the gesture, all players are free to create these sounds in their own tempo from the time they are cued until they are given another direction. The form of the composition is almost never predetermined, although Sorey is quick to point out that "there is nothing random or 'free' about what happens whenever I conduct an ensemble—in fact, I always think compositionally. Much of what I do is craft even when I spontaneously create something, no matter who I am doing it with. The performers must do the same and they're also equally responsible for the result. They have to own up to all of their contributions. This is not a work in which musicians will just get up on stage, blank their minds, and pick sounds out of thin air without any attention paid to what they are doing. At no point can one performer take this process of making music for granted."

Alarm Will Sound is a 20-member band committed to innovative performances and recordings of today's music. They have established a reputation for performing demanding music with energetic skill. The New York Times says that Alarm Will Sound is "one of the most vital and original ensembles on the American music scene." With classical skill and unlimited curiosity, Alarm Will Sound takes on music from a wide variety of styles. Its repertoire ranges from European to American works, from the arch-modernist to the pop-influenced. The group itself includes many composer-performers, which allows for an unusual degree of insight into the creation and performance of new work. Alarm Will Sound has been presented by Carnegie Hall,

Lincoln Center, (le) Poisson Rouge, Miller Theatre, Brooklyn Academy of Music, the Kitchen, the Bang on a Can Marathon, Disney Hall, Kimmel Center, Library of Congress, the Walker Arts Center, Cal Performances, Stanford Lively Arts, Duke Performances, and the Warhol Museum. International tours include the Holland Festival, Sacrum Profanum, Moscow's Art November, St. Petersburg's Pro Arte Festival, and the Barbican. The members of the ensemble have also demonstrated our commitment to the education through residency performances and activities at the Eastman School of Music, Manhattan School of Music, Harvard University, New York University, and Massachusetts Institute of Technology.

3:00PM Presentation: Bad Connections: Making Music for the Unreliable Internet
Isaac Schankler, California State Polytechnic University, Pomona

Like so many musical groups, the New Music Ensemble at Cal Poly Pomona was caught off guard in the spring of 2020, when the COVID-19 epidemic suddenly curtailed our in-person rehearsals and performances. We shifted to a radically different format, in which student composers wrote music for the ensemble specifically designed for the limitations of performing from home, with often unreliable internet connections and less than ideal recording conditions. We focused on creating music that incorporated an understanding of latency and could "degrade gracefully," including exploration of canons and imitative writing, open form pieces, temporal indeterminacy, and modular composition. I will discuss some of the challenges and discoveries we ran into along the way.

Isaac Schankler is a composer, accordionist, and electronic musician living in Los Angeles. Schankler's recent album Because Patterns, released on Aerocade Music in 2019, has been lauded as "beautiful, algorithmic, organic, dystopian" (I Care If You Listen) and "remarkable listening… a new benchmark" (Sequenza21). Their music has also been described as "ingenious" (The Artificialist), "masterfully composed" (Boston Musical Intelligencer), and "the antidote to sentimentality" (LA Times). Schankler's recent music also includes works for the SPLICE Ensemble, Autoduplicity, Nouveau Classical Project, the Ray-Kallay Duo, Friction Quartet, gnarwhallaby, pianist Nadia Shpachenko, and bassist Scott Worthington. Additionally, Schankler has written music for critically acclaimed and award-winning video games, including Ladykiller in a Bind, Analogue: A Hate Story, and Depression Quest. Schankler is the artistic director of the concert series People Inside Electronics, and Assistant Professor of Music at Cal Poly Pomona, where they teach composition and music technology.

4:00PM Presentation: Network Arts Composition Strategies
Sarah Weaver, NowNet Arts, New York

As a composer Weaver has written contemporary pieces for network arts since 2006. She will discuss strategies outlined in her recently published paper "Synchrony: Music of Sarah Weaver and Collaborations (2006-2019)" Journal of Network Music and Arts 2, 1 (2020) and new approaches since the pandemic.

Sarah Weaver, Ph.D. 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 twenty-five years, integrating influences of jazz, contemporary classical, improvisation, computer music, world music, and 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, director of the Sarah Weaver Ensemble, and editor of the Journal of Network Music and Arts (JONMA). She on the faculty of New School College of Performing Arts, Performer-Composer Masters Program. Weaver is a member of ASCAP, College Music Society, National Association of Composers, and board member of the JackTrip Foundation.

5:00PM Lab

SATURDAY NOVEMBER 7

10:00AM Lab

11:00AM Concert Demonstration: Sound Notebooks: Remote Improvisation Recordings, Soundscapes and Sound Processing
Cássia Carrascoza Bomfim, University of São Paulo
Lidia Bazarian, Performer, Brazil
Danilo Rossetti, Federal University of Mato Grosso

The duo Carrascoza-Bazarian formed by Cassia Carrascoza and Lidia Bazarian is active for 15 years and was preparing a concert series in 2020 with a repertoire based on contemporary music and improvising. With the confinement due to Covid 19, it was immediately imposed for us, and for all musicians, the problem of how to continue our common projects. Music performance, until then, was mostly an activity in which participants interact with sounds and gestures sharing the same space. On the other hand, in a remote performance, musicians are separated in distance (each one are in their houses) but share another kind of space, a virtual space with properties to be discovered and examined (Deleuze, 1995; Lévy, 1996).

After a reflection on this problem, Carrascoza and Bazarian started working on improvising together in real time using some available tools. The solution adopted was to use the Zoom app platform to see each other in video and, for the audio recordings, the AuphonicEdit app in the cell phone. The project was called Sound Notebooks. Aiming to overcome technical issues (latency and other problems) few parameters were established such as a game where the basic rules were: short duration

of the recordings (around 2 minutes), no pre-established synchronies and no common pulses. Moreover, the windows must be opened so that the external soundscape shall be incorporated in the recordings, including protest sounds against the federal government that are taking place daily in Brazil (panelaços). A routine of twice recordings a day was defined and texts were read to generate creative impulses (Agamben, 2009). The Micropoem by Michaela von Schmaedel was chosen to guide the musical ideas and the performances:
Life

Huge expectations planted
in tiny vases.

Gradually, we experienced that latency was not the only problematic factor in synchronization. There were also difficulties of sound compression via network (we decided that the poor audio quality of the recording would be an aesthetic element of the project) and the oscillations of the network itself that interrupt the sounds and leave us in a kind of abyss of the sound perception flux.

The Micropoem #5 was an improvisation on one single pitch: E Flat. After the acoustic recording, Danilo Rossetti started collaborating in the project making a new version of the improvised piece. He performed morphological transformations on the original recording sounds by filtering them and trying to emphasize the role of the soundscape in the performance. Although the voices are not intelligible, the sound immersive environment is highlighted. Those filters suggest the quarantine sensation of people in their houses, watching the streets and other houses and buildings' movement from a long distance.

The next steps of the project are: 1) to put together improvisation and sound processing in Max MSP simultaneously in real time employing tools such as Jackrouter, Zoom and/or Jacktrip and other platforms such as Soundjack, and 2) to include a video work that is being prepared by the visual artist Deni Guimarães.

References:
Agamben, G. O que é o contemporâneo e outros ensaios. Chapecó: Argos, 2009.
Deleuze, G. L'actuel et le virtuel. In: Deleuze, G. Dialogues. Paris: Flammarion, 1996.
Lévy, P. O que é o virtual. São Paulo: Editora 34, 1996.

Cássia Carrascoza is Professor of the Department of Music, Faculty of Philosophy, Sciences and Arts, Ribeirão Preto, University of São Paulo – USP. From 1999 to 2018 she was principal flutist of the Symphonic Orchestra of the Municipal Theater of São Paulo. She has been a member of Camerata Aberta since its foundation in 2010, with which she received the APCA (Association Paulista of Arts Critics) 2010 Contemporary Music Award and the 8th Bravo 2012 Award. With concentrated and intense work as a performer and improviser, she dedicated herself to the research and performance of contemporary Brazilian music and as a result was a recipient of several original compositions. She has performed in several countries such as Hungary, Holland,

France, Portugal, Belgium, the United States and Argentina. In 2017, she presented in a show of technological interactivity with Felipe Castellani; The Cd Tempo transversal - an expanded flute, recorded in São Paulo and IRCAM in Paris, (SESC label), nominated by magazine Bravo as one of the 10 unmissable CDs of classical music of the year.

Lidia Bazarian's artistic career as a solo pianist and chamber musician, is especially linked to the production, research, and interpretation of contemporary music from the 20th and 21st centuries, with several premieres and recordings of Brazilian and international contemporary pieces. Bazarian is graduated at the University of São Paulo and concluded a specialization in piano at the École Normale de Musique de Paris, with Brazilian government's full scholarship. She performed tours throughout Brazil, USA (Washington and New York), Europe (Portugal, England, Belgium, Denmark and Sweden) and Japan. As a chamber musician, she was pianist for Sonâncias Ensemble, Grupo Novo Horizonte, the Camerata Aberta (APCA 2010 Award, and Bravo! 2010 Award) and Pierrot quintet. She has been pianist in several CD recordings such as Paisagem Brasileira (Meridian Records), Trópico das Repetições (SESC Label), Música de Câmara Brasileira (LAMI Label), Espelho d'Água and Sobreluz (SESC Label), Fragmentos de um Inverno Solar (LAMI Label) and the piano solo CD Imaginário (LAMI Label).

Danilo Rossetti is professor of Harmony and Electroacoustic Music at the Department of Arts of the Federal University of Mato Grosso (UFMT) and collaborator professor at the graduate studies of the Institute of Arts at UNICAMP. Recently he finished a post-doc research at the Interdisciplinary Nucleus for Sound Communication (NICS), at the University of Campinas (with funding from the São Paulo Research Foundation), and had earned a Ph.D. in Music Composition at the same university, with a doctoral stage at the Centre de recherche Informatique et Création Musicale of Paris 8 University. His main research topics are computer-aided composition and musical analysis. His compositions have been played in many events and festivals such as ICMC, CMMR, NYCEMF, NIME, CICTeM, BIMESP, SBCM e ANPPOM. He has been one of the awarded in 2016 Brazilian Arts Foundation Classical Music Prize, in the category of electroacoustic and live-electronic music.

12:00PM Lab

1:00PM Concert Demonstration: NowNet Arts Lab Ensemble
Sarah Weaver, Director, NowNet Arts, Multiple Locations

The NowNet Arts Lab Ensemble is open to contemporary musicians, actors, dancers, and video artists for research and demonstration performances of contemporary network arts works by the director and participants. Since March 2020 the group has been focused on developing, testing, and demonstrating models from home, with 21 presentations involving participants from 17 countries. We will discuss findings and show pieces with the Lab Ensemble.

Ximena Alarcon, voice, electronics (Oslo), Viv Corringham, voice, electronics (New York), Luisa Muhr, voice (New York), Biggi Vinkeloe, alto saxophone (Sweden), Olivia Esther, french horn (Toronto), Anne Sophie Andersen, violin (Denmark), Angelo Branford, guitar (New York), Colin James Gibson, guitar (Toronto), Juan Parra, guitar (Belgium), Diane Roblin, piano (Toronto), Tom Zlabinger, bass (New York), Gloria Damijan, electronics (Vienna), Scott Miller, electronics (Minnesota), Mike O'Connor, sound, visuals (Wisconsin), Jane Wang, multi-instrumentalist (Boston), Sarah Weaver, conductor (New York)

2:00PM Concert Demonstration: Wit & Daniel – Tactile Improvisation
Prawit Siriwat, Daniel Durst
Performers, New York

Wit & Daniel explores the spontaneous creation of music, using tactile elements as the motive to organize composition. With the pandemic and stay at home orders placed in New York, the duo posed questions about how art is experienced. How does social distancing affect our physical connections? Can the tactile sensation of sound still be communicated through a networked medium? Wit & Daniel experiment with using the Zoom video platform and electronics to improvise compositions that center the physical experience of music.

Wit & Daniel is an exploration of intimate sound creation and manipulation. Their live performance is cathartic, meditative, explosive, immediate, and never predictable. With an intuitive sense for each other, they navigate time as if it were a rubber band stretched to its breaking point. Vol. 2 is their most recent adventure. Following up 2018's Wit & Daniel Make a Record, Vol. 1, the duo experiments with the tactile essence of organized sound with improvised compositions grounded in touch, texture, and space. From sparse moments of contemplation to explosive ferocity, the new album reflects the duo's ongoing evolution.

3:00PM Concert Demonstration: A Performance and Discussion using Collab-Hub:
a remote networking collaborative tool
Nick Hwang, University of Wisconsin at Whitewater
Jeff Herriott, University of Wisconsin at Whitewater
Anna Weisling, Performer, Wisconsin
Eric Sheffield, State University of New York, Broome
Anthony T. Marasco, Louisiana State University

We have been working on a collaborative tool called Collab-Hub (http://collab-hub.io) which is a node-based control-value server for any number of performers across the internet. Performers/clients can connect computers (and circuit-bent devices e.g. https://www.benditio.com/) and send control data to others on the server. This allows us to create collaborator-dependent musical instruments through programs like Max. We created Collab-Hub and our weekly improv live-stream during the on-going coronavirus pandemic isolation, and we've been working on performing together while improving our

collaborative instrument design. Our concert demonstration will be a discussion about the inner workings of the Collab-Hub, perspectives as user/performer, our collaborative-instrument design, and a musical performance.

Nick Hwang is a composer and interactive artist whose research has involved networked performance and collaborative art-making.

Jeff Herriott is a composer whose music focuses on sounds that gently shift and bend at the edges of perception, featuring interaction between live performers and electronic sounds.

Anna Weisling is a practice-based researcher who explores the relationship between sound and image and the performance possibilities shared by both.

Eric Sheffield is a musician and educator currently focused on physics-based modeling, networked performance, and popular music.

Anthony T. Marasco is a composer and interactive artist whose work focuses on extending networked performance techniques to circuit-bent and remediated hardware and creating collaborative sonic experiences between audience members and musicians.

4:00PM-5:00PM Panel: Lessons from Earth Day Model 2020
Scott Deal, Chuiyuan Meng, Harry Chaubey
Tavel Arts Technology Lab, Indiana University-Purdue University Indianapolis

Earth Day Art Model is a telematic festival held over 24 hours on April 22, International Earth Day. The festival hosts and streams performances and media by musicians, artists, writers, and others whose work engages Earth-focused themes. It highlights perspectives that range from anecdotal sensory observations to the integration of scientific data in the form of remote sensing, climate models, and field recordings. The festival engages a variety of networked communications modes, ranging from the sophistication of multi-site productions to fixed media. 2020 saw the inaugural launching of the festival in the midst of the COVID-19 Pandemic. Over 100 artists from 14 countries performed and had works presented to viewers in 83 countries. The event is an outgrowth of long-term work in the Tavel Lab that leverages transmedia and telematic arts technologies for use in mainstream conferences. This technical sophistication can be applied to a broader range of gatherings in order for online participants to more fully engage with the content of a meeting as well as with those on location and others online. As a result, organizations will be empowered to broaden their reach to communities throughout the world. This work explores a user interface that offers enhanced navigation over time and space. This interface will be a key component to a larger system of applications and practices that can be easily implemented by conference organizers whose expertise may not lie in networking technology. Similarly, elements of the system must be effective over low-bandwidth formats. Also discussed are issues of event management,

social networking, collaboration-communication, information exchange, asynchronous presence.

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 was listed in New Yorker Magazine's 2011 Top Ten Classical Picks. He has performed in events such as Musicacoustica Beijing, London's Almeida Opera, Arena Stage, Supercomputing Global, Vancouver New Music Festival, Zerospace, SIGGRAPH, Chicago Calling, IEEE CloudCom, Ingenuity Festival, ICMC, NIME, PASIC and with musical groups that include ART GRID, Another Language, Digital Worlds Institute, Callithumpian Consort, and the Percussion Group Cincinnati. In networked arts, Deal explores intrinsic qualities of telematics for translation to a broad scale of online media functions. 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". In the 2020 he launched Earth Day Art Model, an annual festival of telematic and media arts focused on earth systems, using an arts-focused streaming server created at the Tavel Lab. Deal's work has received funding from organizations that include Meet the Composer, New Frontiers, Indiana Arts Council, Clowes Foundation, Indianapolis Arts Council, IUPUI Arts and Humanities Institute, and the International Arctic Research Center, University of Alaska Fairbanks. Scott Deal resides in Indianapolis where he is Professor and Director of the Donald Tavel Arts Technology Research Center, Purdue School of Engineering and Technology, IUPUI.

5:00PM Concert Demonstration: Women's Labor: Embedded Iron networked performance
Jocelyn Ho, University of California Los Angeles
Margaret Schedel, Stony Brook University, New York
Matthew Blessing, Louisiana State University

Performers: Theresa Dimond, Meenah Alam, Sam Beebe, and Taylor Long

Women's Labor repurposes old domestic tools laden with functionalities traditionally pertaining to women, becoming new musical instruments to be explored in public installations, community workshops, commissioned new compositions, and concert performance. A continuing feminist project to revalue traditional women's work spearheaded by Jocelyn Ho in collaboration with Margaret Schedel and Mattew Blessing, domestic tools are transformed into new musical instruments using embedded technologies. Traditionally relegated to the private sphere, domesticity is recast in a new light through public engagement and performative spectacle. In the midst of the COVID-19 pandemic lockdown, there have also been accounts of domestic responsibilities largely defaulting silently upon the shoulder of women. There has not been a time more opportune to interrogate the issue of domesticity and its associated invisible gender inequality. In a city like LA, domesticity also

highlights racial inequality, in which domestic work is usually done by colored, female housekeepers who are often undocumented. The project aims to sparkconversation and action surrounding these issues.

Women's Labor has begun with the Embedded Iron instrument, showcased through installation, performance, and presentations at UCLA's Art|Sci Gallery, 2019 Alliance of Women in Media Arts and Technology Conference, NIME 2019, and CCRMA. To highlight the longstanding tradition of "women's work," tools from both the recent past and the present are featured. Currently in progress are the Embedded Iron modeled after an antique charcoal iron, allowing for interface sensors to be embedded within, and the Rheostat Rotary Rack, a mid-20th century wooden umbrella style rotary dryer with wooden pegs and hangers.

In this remote performance, Embedded Iron, using LIDAR technology, ultrasonic sensors, and spectrophotometry to detect position on the ironing board and fabric quality of the textile being ironed, will be featured in a network-music performance, with irons distributed across remote locations.

Women's Labor is supported by Hellman Fellowship, Harvestworks, UCLA Herb Alpert School of Music, and UCLA Lux Labs.

Jocelyn Ho-artistic director, performer, composer.
Jocelyn Ho's artistic practice involves the exploration of the relationship between sound, bodily gesture, and culture, as well as the rethinking of the classical music genre through multimedia technologies, inter-disciplinarity, and audience interactivity. She directs inter-disciplinary performance projects involving collaborators from vastly different fields. Most recently, she is the artistic director and performer of the sold-out music-art-tech concert project Synaesthesia Playground, in which she leads fifteen composers, visual artists, technologists, and fashion designers from all around the world to create an interactive, multimedia experience. Ho is also a Steinway Artist, and her ground-breaking concert programs have taken her to venues including Radio France, the Sydney Opera House, Berlin's Radialsystem V, Abrons Art Center, the Melbourne Recital Centre, New York Symphony Space, Spectrum NYC, and the Boston Isabella Gardner Museum. Ho's compositions include multi-disciplinary collaborations as composer and sound artist with software developers and visual artists featured at the NYC Electroacoustic Music Festival, Stony Brook Faculty Art Exhibition, and the University of Florida Art Gallery. She is an Assistant of Performance Studies at UCLA.

Margaret Schedel- composer, electronic music expert, cellist
Margaret Anne Schedel is a composer and cellist specializing in the creation and performance of ferociously interactive media whose works have been performed throughout the United States and abroad. She is a joint author of Electronic Music and recently edited an issue of Organised Sound on the aesthetics of sonification. Her research focuses on gesture in music, the sustainability of technology in art,

and sonification of data. She sits on the boards of 60x60, the International Computer Music Association, and is a regional editor for Organised Sound. From 2009-2014 she helped run Devotion, a Williamsburg Gallery focused on the intersection of art, science, new media, and design. She ran SUNY's first Coursera Massive Open Online Course (MOOC), an introduction to computational arts. As an Associate Professor of Music at Stony Brook University, she serves as Co-Director of Computer Music and is the Director of cDACT, the consortium for digital art, culture and technology.

Matthew Blessing- composer, sound technologist
Matthew Blessing is a composer, guitarist, and music technologist. Due to graduate this summer with a Doctorate in Experimental Music and Digital Media from Louisiana State University, Blessing's research explores new human-computer interfaces focusing on musical expression. His present work involves the design and digital fabrication of embedded instruments. These instruments run on an embedded Linux CPU, such as the Raspberry Pi, connected to a variety of interactive sensors, amplifiers, and audio drivers. Blessing received his Master degree in Composition at San Diego State University and Bachelor degrees in Music Composition and Classical Guitar Performance from Southern Illinois University-Carbondale.

6:00PM Lab

9:00PM Social Hour

10:00PM Concert Demonstration: NowNet Arts Lab Ensemble
Sarah Weaver, Director, NowNet Arts, Multiple Locations

The NowNet Arts Lab Ensemble is open to contemporary musicians, actors, dancers, and video artists for research and demonstration performances of contemporary network arts works by the director and participants. Since March 2020 the group has been focused on developing, testing, and demonstrating models from home, with 21 presentations involving participants from 17 countries. We will discuss findings and show pieces with the Lab Ensemble.

Lisa Sokolov, voice (New York), Jon Raskin, saxophone (California), Christian Pincock, trombone (Seattle), Angelo Branford, guitar (New York), Prawit Siriwat, guitar, electronics (New York), Colin James Gibson, guitar (Toronto), Diane Roblin, piano (Toronto), Tom Zlabinger, bass (New York), Jim Mansfield, drums (New York), Dirk Stromberg, electronics (Singapore), Anna Pasztor, multidisciplinary (New York), Sarah Weaver, conductor (New York)

SUNDAY NOVEMBER 8

9:00AM Lab

10:00AM Art Installation Demonstration: Electo Electro 2020
Mike Richison, Monmouth University, New Jersey

Electo Electro 2020 is an interactive art installation that combines audience participation, technology, music, news footage, and politics. iMacs running an original software patch designed in the Max MSP Jitter environment are housed in voting booths that once held Diebold Accuvote TS voting computers. The software allows participants to remix footage from the 2020 American presidential election cycle in a structured sixteen-beat loop, encouraging a participant's transformation from voter to amateur electronic music producer. The touchscreen design of Electo Electro 2020 is a parody of the touchscreen system employed by the Diebold Accuvote TS, a voting system that is difficult to audit and susceptible to hacking. This presentation will highlight an installation of the project.

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.

11:00AM Presentation: Digital Vitality - Vital Digitality
Kat Mustatea, EdgeCut Performance Series

I am one of the curators of EdgeCut (www.edgecut.org), a monthly performance series that convenes at NEW INC, the art, tech and design incubator at The New Museum of Art in New York. Started in January 2020, we present short works of live performance that explore our complex relationship to the digital—looking at the many ways interactivity, games, robotics, wearables, AI and other digital technologies inform new practices in live performance.

We do this in monthly shows around a theme; our first two themes were ABSURDITY and HYBRIDITY, and then we had to cancel our March show on COMPLEXITY. Works we present are 5-20 minutes in length and can include music, dance, theatrical storytelling, literature, film or code.

Because EdgeCut's in-person events are currently on pause, this summer we are instead holding a series of online provocations around two themes: CAPTIVITY and SANITY. In acknowledgement of the limited modes for live performance currently, we are starting from the other end of the spectrum—the digital—to ask: What is liveness now? What is public space digitally? How do we create collective experience and transformative gatherings in this moment of "a crisis within a crisis" (in the words of choreographer Jamar Roberts)—that speaks to transition, change, healing, humanity? We are especially interested in incubating experiments with liveness online, looking to

uncover surprising new ways of connecting with one another.

Kat Mustatea is a playwright, technologist, and imagination engine whose tech-native storytelling stretches theater into the digital age. She has written plays in which people turn into lizards, a woman has a sexual relationship with a swan, and a one-eyed cyclops tries to fit into Manhattan society by getting a second eye surgically implanted in his head. Her TED talk originates a novel thesis about puppets and algorithms. She is a co-curator of EdgeCut, a live performance series that explores our complex relationship to the digital. She speaks frequently about the intersection of cutting edge technology and art (most recently at SXSW, The Pompidou Center in Paris, and Creative Tech Week in NYC). Her plays have been performed in New York, Chicago, Berlin, and Oslo. Her essays appear in Forbes, The Week, and Hyperallergic.

12:00PM Lab

1:00PM Presentation and Concert Demonstration: Three States of Wax
Juan Parra Cancino, Orpheus Institute Belgium
Jonathan Impett, Orpheus Institute Belgium

This presentation will introduce the "Three States of Wax" project, which aims to merge Parra's work on "Timbre Networks" with Impett's research on the use of A-Life to design interactive environments for electronic music performance. We aim to address the terms and definitions of complex systems as a metaphor for structuring improvisation. We are looking at the notion of complex systems from two perspectives:

From the perspective of network architecture, where actors and acting agencies are articulated as nodes and threads. In this approach, particular structures determine the connections and interdependences between nodes and the potential affordances of connecting multiple nodes, and, As A-Life, where we focus on the inner nature and behavior of the actor-nodes themselves: Phenomena such as recursivity, decay and acceleration are then embodied as primary musical behaviours.

On this view, network architecture becomes an emergent (musical) structure.
The interaction and affect/effect of the resulting friction between these simultaneous perspectives unfolds itself as the network, and the performance.
The presentation will introduce our initial motivations and concepts, describe the architecture of the setup and will conclude with a musical demonstration.

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 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. 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. Since 2009 Parra is a fellow researcher at the Orpheus Institute (Ghent, BE), focused on performance practice in Computer Music.

Jonathan Impett's professional and research activities cover many aspects of contemporary musical practice, as trumpet player, composer and theorist. In the field of historical performance, he is a long-standing member of both The Orchestra of the Eighteenth Century and The Amsterdam Baroque Orchestra. He is also a member of the experimental chamber ensemble Apartment House. As a soloist he has given premieres of works by composers including Scelsi, Berio, Harvey and Finnissy. He directed the live electronic chamber ensemble Metanoia, and was awarded a Prix Ars Electronica for his development of the meta-trumpet. His compositions have been broadcast throughout Europe; a new CD will be released by Attacca. As an improviser he has played with musicians as diverse as Paul Dunmall and Amit Chaudhuri.

Work in the space between composition and improvisation has led to continuous research in the areas of interactive systems and interfaces. The current 'active sound space' project uses ALife populations of wave models to create interactive works combining aspects of composition and sound art. A monograph on the music of Luigi Nono will be published by Ashgate in 2018, and Jonathan is currently working on a project considering the nature of the contemporary musical object, 'The work without content'.

2:00PM Concert Demonstration: Digital Void
Lynn Baker, University of Denver
Conrad Kehn, University of Denver

Baker/Kehn Duo constructs extemporaneous compositions in a telemetric environment. Two of the principle voices are Tenor Saxophone (Baker) and Voice (Kehn). However, the duo is also running Ableton Live and is able to engage in live sonic manipulation, not only of their own sounds, but of each other's materials. This results in a sometimes complex and surprising blending of elements the sum of which greatly exceeds its parts.

Baker and Kehn have been performing together for over a decade and worked many years with guitarist Alan Joseph before his untimely death. That ensemble, Rhythmic Void, specialized in ambient sonic environments that reflected the individuals' individual musical voices. This new duo draws more from a common palette of urban groove samples, chant traditions, and contemporary producer aesthetics to produce an ever-evolving tribute to contemporary improvisation.

Malcolm Lynn Baker is an active saxophone performer and clinician, performing with his own Lynn Baker Quartet, Miguel Espinoza's Flamenco Fusion, The Bottesini Project,

and the beats-electronic-free improvisation trio Gemstone Debris. He is a Conn-Selmer Artist Clinician and has made appearances at colleges, universities, high schools, and festivals, which have taken him across North America, Europe, and to Asia. He is an Origin Records recording artist with Azure Intention released in 2010 and LectroCoustic in 2013. Lynn is an award-winning composer, performer, and educator winning the 1995 COVisions Award for Jazz Composition, 1987 Westside Composer Award (Minneapolis, MN), 1980 Ruth Loraine Close award in performance from the University of Oregon, and 2005 Downbeat Magazine award for Outstanding Achievement in Jazz Education – College Level. Lynn's compositions are published by UNC Jazz Press and Malcor Music Publishing. His unique and innovative texts on jazz improvisation; The Shape Method, and accompanying books Etude Supplements, Vols. 1 and 2 can be purchased at amazon. He has also published a set of exercise books that combine jazz foundational materials with flamenco rhythmic concept – Jazz Fundamentals in Flamenco. Lynn is a Recording Academy/Grammy-nominated educator and the former Director of the Jazz Studies and Commercial Music Program at the Lamont School of Music, University of Denver, where he currently teaches Jazz and Improvised Music.

Conrad Kehn is a composer, performer, educator, and arts administrator. He is the founding Director of The Playground; a chamber ensemble dedicated to modern music. An award-winning composer, his output includes contemporary and traditional chamber music, multi-media works, and popular music. His work lives comfortably in the concert hall, gallery, club and underground DIY warehouse. As a vocalist, Conrad specializes in electronic music, improvisation, and contemporary chamber music. An advocate for arts education, Conrad is lead teaching artist and administrator for Young Composers Playground. His efforts are responsible for the creation and recording or over 50 new K12 chamber works annually. He is also the Director of the Lamont Summer Academy, a 2-week live-on-campus summer music camp for 14-18 year olds. In addition to performing Conrad maintains an active schedule of speaking engagements and master classes sharing his experience in musical entrepreneurship, chamber ensemble management, music technology, composition, and creativity in the K12 music curriculum. He currently teaches music technology classes for the University of Denver's Lamont School of Music, and the Community College of Denver.

3:00PM Concert Demonstration: #OtherBeats: The Web Browser as a Sonic Landscape Outside the Grid
Marcel Zaes, Brown University, Rhode Island

For #OtherBeats, Marcel Zaes prompted artists across the world to send him homemade beats, "alternative" metronomes and skewed pulses, recorded from their shelter-in-place locations with lo-fi gear. This archive of rhythm collected via social networks is enlivened by Zaes who turns it into a browser-based experimental mixed media piece that is involved with different notions of timekeeping, otherness and grids inherent in the processes of making, collecting, selecting, juxtaposing and distributing of rhythm. For #OtherBeats, he developed algorithms that render the rhythm aesthetically "other" by means of both web-based and offline processing.

Artificial ruptures, cuts, lags and breaks are added to the rhythms that might have been odd in the first place. As a result, the listener can never be sure to what extent the temporal deviations are intended, or to what extent they reflect a defiant networked system. The composite collage, manifest in a hypermediated web "landscape", is a dense array of rhythm that oscillates between – echoing current discourses – the ambiguous notions of the "organic," "techno," "broken," "digital," "grid," and "otherness." #OtherBeats might be neither techno nor organic, but in fact, both.

In this concert demonstration, Zaes will perform a "guided tour" through the browser landscape, and will offer a talk that includes the technicalities of it (Pure Data, WebPD, WebAudio API, technologies for time keeping and drum machines) as well as thinking the project through the lens of critical theory (what does it mean to design alternative modalities of time keeping in digital, networked sound practices?).

Marcel Zaes is a performer-composer, artist, and artistic researcher. He holds an M.A. in Music & Media Arts from Bern University of the Arts, an M.A. in Music Composition from Zurich University of the Arts and has additionally completed

composition studies with Alvin Curran in Rome and with Peter Ablinger in Berlin. Currently, he is pursuing his Ph.D. in Music & Multimedia Composition at Brown University. Marcel explores rhythm in an interdisciplinary framework that encompasses its socio-cultural backgrounds, its politics and perception, and the use of mechanical rhythm machines in music making – such as metronomes, drum machines and step sequencers. Marcel creates textures and beats that emerge as installation pieces, sound performances, concert music for ensembles or as electronic solo performances. To date, he has published ten albums with Tonus Music Records, Dumpf Edition and Prefermusic, and his 2020 Yarn/Wire album is forthcoming with Editions Verde in New York.

3:30PM Concert Demonstration: The ACCAD Sonic Arts Ensemble (United States, Argentina, Germany)
Marc Ainger, Fede Cámara Halac, Directors
Ohio State University

The ACCAD Sonic Arts Ensemble is built around a core group from the Advanced Center for Computing in the Arts (ACCAD) at the Ohio State University, along with other participants in the United States, Argentina, and Germany. We will perform several works that use a mixture of "traditional instruments" along with processing of these instruments, and electronic and concrète sound. Our presentation will include combinations of improvisation and various approaches to the use of scores. We will talk about the various means that we have used to connect and create in the current multiverse.

The ACCAD Sonic Arts Ensemble is co-directed by Marc Ainger and Federico Camara Halac.

Josef Woodward (Los Angeles Times) wrote "Closing the program with an invigorating coda, Ainger's Spoonbenders was at once a compelling curiosity and a medium-oriented send-up (it's helpful to note that Ainger is, amongst other things, an audio engineer). Flutist Stimson once again provided the live sound source. Sultry, smart-alecky flute and voice parts were refried by Ainger's machinery - but with a refreshingly rough-hewn quality. Disjointed shifts in the sound spectrum were reminiscent of Godard's jerky jump-cut approach to film editing - viewing events from different angles and different temporal attitudes. Pregnant pauses spilled into sudden densities, and the jumbled whole was graced with a sort of ironic suspense factor..."

Marc Ainger (USA) is a composer and sound artist who works with concert music, computer and electronic sound, film, dance, and theater. He is interested in the relationships between the real and the imagined - the ways in which the visceral world of sound and sound production inform our imagined worlds of sound, and the ways our imagined worlds, in turn, inform our concrete experiences. Performances of Ainger's works have included the New York Philharmonic Biennial; the GRM; the Royal

Danish Ballet; CBGB; Late Night with David Letterman; the Goethe Institute; the American Film Institute; Guangdong Modern Dance; the Palais de Tokyo (Paris); FolkwangWoche NeueMusik;(Essen);Gaggego!(Gothenburg); the Joyce Theater (New York); and New Circus artists. Awards include the Boulez/LA Philharmonic Composition Fellowship, the Irino International Chamber Music Competition, Musica Nova, Meet the Composer, the Esperia Foundation, and the Ohio Arts Council. As a sound designer he has worked with the Los Angeles Philharmonic, the Olympic Arts Festival, Pacific Coast Soundworks, and the Waveframe Corporation, among others.

Fede Cámara Halac researches and makes sounds, navigates and designs images, and plays with databases and multimedia. He has a PhD in Composition and Music Theory from New York University where he studied with Jaime Oliver and Elizabeth Hoffman. He is a postdoctoral scholar in Immersive Audio at The Ohio State University.

4:30PM Concert Demonstration: New Artistic Practices Born of Social Distancing Limitations
Katherine Liberovskaya, Performer, New York
Dafna Naphtali, Performer, New York
Barbara Held, Performer, Barcelona

For many of us performers who have tried to continue to stay active during the Covid-19 world-wide lock-down the web video conferencing environment has become the new stage setting. This setting, as we all continue to discover with every performance, comes with many limitations as to our usual physical practices but at the same time brings about new possibilities and even inspires new directions of work or practice. The proposed visual & music concert aims to demonstrate examples of some such new practices in a collaborative improvisatory performance between Katherine

Liberovskaya (live visuals), Dafna Naphtali (live voice, processing and electronics) and Barbara Held (live flute and electronics).

For Katherine Liberovskaya transitioning to the on-line performance environment meant that none of her usual live visuals techniques or strategies could work (usually via a combination of Jitter, mixing pre-recorded video clips, with live cameras and feedback) for various reasons like older versions of software and OS and so not being able to connect to conferencing platforms, etc. In desperation she came up with an emergency solution approach relying solely on the webcam and the live manipulation of various objects and materials in front of it to create moving images. Over multiple performances this approach has developed into a whole new live visuals practice using multiple different cameras (laptop webcam, HDMI camera, USB microscope cameras…) switched between by way of the Zoom/Jitsi video preferences with a wide array of materials, objects and gadgets based on what could be found in the home (as many things one had the idea to use were simply impossible to obtain) and working with the lag/delay and often stuttering that is inherent to web conferencing. It has thus resulted in a move from almost entirely digital/electronic techniques to a practice hugely based on physical matter and the physical skill to manipulate it. This new

practice out of necessity, that Liberovskaya calls "Visual Foley", now serves as inspiration for future projects not at all necessarily in network arts.

Dafna Naphtali's usual practice as an electronic musician and sound artist is rooted in the site-specificity of current location. She does this in her performances by processing the sound of her fellow musicians and her voice and flittering those sounds via the room acoustics and feedback, or by creating multi-channel performances and installations to play the speakers as sound making instruments rather than to create 3D illusions. In March as the pandemic started, Naphtali willingly threw herself directly into the deep end of the pool of online performance activities, because of her teaching and out of empathy with the students in her Electronic Music performance ensemble at New York University. She was committed to having her students explore, together, how to best play as an ensemble online in spite of the often great distances they had had to move back to (one even to New Zealand!). In many cases they had little or no equipment and slow internet connections, so she had to find solutions for peer-to-peer networked performance, without big resources, in stereo, and creating a sense of space and room acoustics. Concurrently, for her own network performance work, Naphtali continues research into other low bandwidth data communication as solution, notably Open Sound Control, along with local media synthesis and manipulation. Social distancing has her completely rethinking how to still "be here now" when the "here" might be online and the virtual presence is the only one available.

In recent years Barbara Held has been experimenting with the time-frame and structure of performance, building installation works that emerge from live performance, or of concert works with tasks that attempt to break out of the "overdrive" of classical

performance practice. In relation to network performance she says: "we are all now faced with the challenge of performing online, playing from our comfortable at-home location, with little or no sense of what the final sound is like as it passes through software systems. I think that it's an interesting challenge to improvise with collaborators who may be receiving a very different kind of sound than what is resonating in familiar space, and to be open to manipulation of the sound and interaction with the players on the other side of the circuit".

For their collaborative 30 minute concert demonstration, Katherine Liberovskaya and Dafna Naphtali with Barbara Held will present an audiovisual performance. Liberovskaya will create visuals in real time using her new "Visual Foley" approach of multiple cameras with diverse objects and materials, either remotely from downtown NYC or directly on location at Stony Brook. Naphtali will join, either on location at Stony Brook or remotely from Brooklyn, with live voice and electronics sonifying Liberovskaya's visuals, and processing her own voice as well as Held's flute. Barbara Held will participate from Barcelona, Spain, with live flute accompanied by simple synthesizer lines.

Katherine Liberovskaya is a Canadian intermedia artist based in New York City. Involved in experimental video since the 80's, she has produced numerous single-channel video art pieces, video installations and video performances, as well as works in other media, that have shown around the world. Since 2001 her work predominantly focuses on the intersection of moving image with sound/music in various both ephemeral and fixed forms (projections, installations, performances), notably through collaborations with many composers and sound artists in improvised live video+sound concert situations where her live visuals seek to create improvisatory "music" for the eyes. Frequent collaborators include: Phill Niblock, Keiko Uenishi, Shelley Hirsch, Barbara Held, Mia Zabelka, Al Margolis (IF,BWANA), David Watson, among many others. Concurrently she curates and organizes the yearly Screen Compositions evenings at Experimental Intermedia NYC since 2005 and, since 2006 the OptoSonic Tea salons (co-curated with Ursula Scherrer) in NYC and various nomadic locations in North America and Europe and lately on-line. In 2014 she completed a PhD in art practice entitled "Improvisatory Live Visuals: Playing Images Like a Musical Instrument" at the Universite du Quebec in Montreal (UQAM). www.facebook.com/liberovskaya

Dafna Naphtali is a singer/electronic-musician/sound-artist and improviser/composer of experimental, interactive electro-acoustic music. Active since the mid-90's, she writes custom computer programs for projects in live sound processing of voice and other instruments, multi-channel audio, musical robots, and audio-augmented reality soundwalks. Drawing on an eclectic musical background to interpret Cage, Stockhausen and other composers, she collaborates with musicians/video artists around the world. Recent releases include: "Microcosmopolitan", (Contour Editions) Chatter Blip w/Chuck Bettis, "We Q", w/saxophonist Edith Lettner (upcoming, Clang), "Landmine" for Kathleen Supové, Disklavier piano, live processing ("Ear to Ivory", Starkland). Her soundwalk (w/U-GRUVE AR by Richard Rodkin) include Walkie Talkie Dream Angles

(Washington Square Park NYC) and Walkie Talkie Dream Garden (waterfront in Hamburg/Germany and Brooklyn/NY). Her "Audio Chandelier" multi-channel sound installation/sculpture, created with metalsmith Ayala Naphtali, will be on Governor's Island (August or summer 2021, pandemic/rescheduled) presented by Harvestworks. www.dafna.info

Barbara Held is a flutist and composer based in Barcelona. Her practice as a classically trained musician gives priority to a lifetime of collaboration, of interdisciplinary work in relation to other artists. Known for her subtle exploration of the minutae of sonic material, she creates sensitive, focused sound work that exposes the detail of the physical space of listening in equal part to a keen attention to how we listen as bodies moving through the world. She has commissioned and performed a very personal body of new repertoire for flute by both Spanish and American composers including Alvin Lucier, Carles Santos and Joan Brossa, and was flutist with New York's Bowery Ensemble, a group with close ties to Cage and Feldman. Her current collaborative audiovisual projects explore questions of duration, in extended performance/installation works that use a generative process to shape the experience of acoustic space through subtle variations in the harmonic structure of the sound of the flute. https://barbaraheld.com

5:00PM Closing Session and Social Hour