

EMPAC

Spatial Audio Summer Seminar

Spatial Audio: Perception and Experience

July 18-20, 2019



Spatial Audio Summer Seminar 2019

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THE 2019 SUMMER SPATIAL AUDIO WORKSHOP IS SUPPORTED IN PART BY
AN AWARD FROM THE NATIONAL ENDOWMENT FOR THE ARTS.



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GRANTS IMPACT INDIVIDUALS AND COMMUNITIES, VISIT WWW.ARTS.GOV.

LECTURES AND TUTORIALS FROM THE 2018 SEMINARS ARE POSTED ONLINE
UNDER [HTTPS://VIMEO.COM/SHOWCASE/5041610](https://vimeo.com/showcase/5041610)

LECTURES AND TUTORIALS FROM 2017 ARE UNDER

[HTTPS://VIMEO.COM/259409246](https://vimeo.com/259409246)

[HTTPS://VIMEO.COM/259414182](https://vimeo.com/259414182)

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Welcome to the third Summer Spatial Audio Seminar at the Curtis R. Priem Experimental Media and Performing Arts Center, EMPAC at Rensselaer Polytechnic Institute.

From the very beginning of the design development in 2001, EMPAC as laid out for “any sound from anywhere”, be it instrumental sound or scores of loudspeakers distributed through a space. The acoustic design of the venues and studios was specifically directed towards this goal from a perceptual perspective as was the technical infrastructure to support production and presentation.

The format of the summer workshops and seminars have been changing over the years. The first workshop in 2017 was conducted in collaboration with IRCAM (the Paris-based Institut de Recherche et Coordination Acoustique/Musique), and HUSEAC (Harvard University Studio for Electroacoustic Composition) with 5 days of lectures and hands-on time for each participant on one of the multi-channel audio installations in different venues. The seminar in 2018 combined lectures on general concepts, workflows, and control mechanisms related to spatial audio with tutorials on introductory, intermediate, and advanced levels of patching for IRCAM’s SPAT software, with a second week for two composers to work with EMPAC’s wave field loudspeaker array.

This year will focus through extensive listening on what we actually hear, perceive and experience with different systems and technologies and how the different technologies are related to specific artistic works they are used for. An emphasis is put on the comparison between different spatial audio delivery configurations and their different potential and characteristics. Since we can set-up such different systems at EMPAC, an immediate listening comparison can gain new insights into the relationship of technology and perception.

All of us who prepared this year’s program and who present over the course of the seminar hope, that your ears and minds will gain new insights and “inlistens”.

— JOHANNES GOEBEL, DIRECTOR

SEMINAR SCHEDULE

EVELYN'S CAFÉ IN THE LOBBY WILL BE OPENED FOR BREAKFAST, SNACKS AND COFFEE DURING THE SEMINAR. LUNCH AND DINNER ARE INCLUDED WITH YOUR REGISTRATION.

THURSDAY , JULY 18

5:30 PM - ARRIVAL AT EMPAC, DINNER BUFFET

6:30 PM - JOHANNES GOEBEL, WELCOME AND WALK THROUGH VENUES

7: 30 PM - NATASHA BARETT, MARK DOWNIE, *POCKETS OF SPACE*
– VIDEO VERSION AND OCULUS VR VERSION

9:30 PM - BRENDAN BAKER, WOLVERINE MARVEL PODCAST
WITH “DRINKS AND CHEESE”

FRIDAY, JULY 19

9 AM - MARKUS NOISTERNIG, COMPARISON OF DIFFERENT SPATIAL AUDIO METHODS
– CONCEPTS, IMPLEMENTATION, PERCEPTION

11:30 AM - CHRIS CHAFE, “CLOSE YOUR EYES AND IMAGINE WHAT YOU WANT TO HEAR.”
– RESEARCH, CRAFT, AND REALITY IN CREATING SPATIAL AUDIO ENVIRONMENTS

1 PM - LUNCH

2 PM - MARKUS NOISTERNIG, ARTISTIC GOALS, AESTHETICS AND REALIZATION
– DETAILED DISCUSSION OF A WORK INTEGRATING SPATIALIZATION

3:45 PM - BRENDAN BAKER, SPATIAL AUDIO IN PODCASTS

5 PM - THE EMPAC HIGH-RESOLUTION MODULAR LOUDSPEAKER ARRAY
FOR WAVE FIELD SYNTHESIS

6 PM - BOBBY MCELVER, PRESENTATION WITH WAVE FIELD SYNTHESIS ARRAYS
ABOVE THE AUDIENCE

7 PM - DINNER BUFFET

8:30 PM - NATASHA BARRETT, CONCERT

SATURDAY, JULY 20

9 AM - MARKUS NOISTERNIG, SPATIALIZATION AT IRCAM
– HOW TECHNICAL DEVELOPMENT, ARTISTIC APPLICATION
AND COMMERCIALIZATION HAVE INFLUENCED EACH OTHER

10:30 AM - PANEL AND DISCUSSION, PRACTICAL ISSUES OF SPATIALIZATION
IN PERFORMANCE, PRODUCTION AND INSTALLATION

12:30 PM - LUNCH

BIOGRAPHIES

NATASHA BARRETT is a composer of acousmatic and live electroacoustic concert works, sound and multi-media installations, and interactive music. She is highly active as a composer and is a leading voice in the new wave of artists working with ambisonics, 3-D sound, and its contemporary music context. Her inspiration comes from the immediate sounding matter of the world around us, as well as the way it behaves, the way it is generated, and by systems and the traces that those systems reveal. These interests have led her into worlds of cutting-edge audio technologies, geoscience, sonification, motion tracking and some exciting collaborations leading into the unknown – involving solo performers and chamber ensembles, visual artists, architects and scientists. Binding together these inspirations is an overarching search for new music and the way it can touch the listener.

Her work is commissioned, performed and broadcast throughout the world by festivals, organisations and individuals, and includes a regular schedule of portrait concerts and featured programs. Besides commissions for specific works, throughout her career she has received grants and artist's residence invitations, and a solid list of international awards and prizes. Active in performance, education and research, she is co-director of the Norwegian spatial-music performance ensemble Electric Audio Unit (EAU), founder and chairman of 3DA (the Norwegian society for 3-D sound-art) and a member of Ocean Design Research Association. She currently holds a professorship at the Norwegian Academy for Music, Oslo. www.natashabarrett.org

BRENDAN PATRICK BAKER creates highly-crafted radio and podcast productions and is the founder of Phenomophon, a boutique creative audio production house and consultancy specializing in “3D” ambisonic spatial audio. With a background in music composition and over a decade of production experience throughout the public radio and podcast industry—widely regarded as one of its premier sound designers—Brendan offers a set of skills rarely found in a single producer. From documentary to fiction, writing to composition, editing to engineering, Brendan takes a holistic approach toward creating narrative audio works.

Director for Marvel's *Wolverine: The Lost Trail*, *Wolverine: The Long Night*, and previously a producer for the critically acclaimed experimental documentary podcast, *Love + Radio*, his work has been featured on numerous podcasts and radio programs including *This American Life* and *Radiolab*. His mix and sound design work can also be heard on *The Message* podcast and the first season of NPR's *Invisibilia*. He and his team won a 2019 Webby Award for Best Original Music/Sound Design in podcast for *Wolverine: The Lost Trail*. His contribution to the 10th Edition “Mixage Fou” competition was recognized by IRCAM/Centre Pompidou. He has production credits on four of *The Atlantic's* “50 Best Podcast Episodes of 2015,” and has received multiple awards from the Third Coast International Audio Festival

(the so-called “Oscars for radio”): Best Documentary for “The Wisdom of Jay Thunderbolt” in 2011, an Honorable Mention for “Jack and Ellen” in 2013, and Director’s Choice for “The Living Room” in 2015. www.drivebyhighfive.net

CHRIS CHAFE is a composer, improviser, 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) and will have guest professorships in the coming year in Berlin, Turin and Vancouver. At IRCAM (Paris) and The Banff Centre (Alberta), he pursued methods for digital synthesis, music performance and real-time internet collaboration. Online collaboration software including jacktrip and research into latency factors continue to evolve. An active performer either on the net or physically present, his music reaches audiences in dozens of countries and sometimes at novel venues. A simultaneous five-country concert was hosted at the United Nations a decade ago. Gallery and museum music installations involve “musifications” resulting from collaborations with artists, scientists and MD’s. Recent work includes the Brain Stethoscope project, PolarTide for the Venice Biennale, Tomato Quintet for the transLife:media Festival at the National Art Museum of China and Sun Shot played by the horns of large ships in the port of St. Johns, Newfoundland. www.chrischafe.net

MARC DOWNIE born in 1977 in Aberdeen, Scotland, is a digital artist and filmmaker based in Chicago whose pioneering approach to digital art frequently combines three signature elements: non-photorealistic 3D rendering, the incorporation of body movement by motion-capture and other means, and the autonomy of artworks directed or assisted by artificial intelligence. He has enjoyed a long-standing artistic collaboration with Paul Kaiser as part of OpenEndedGroup. Together they have worked across a range of disciplines and venues, having created experimental 3D films shown at the New York Film Festival, Sundance, and MoMA; and site specific installations commissioned in the US by Lincoln Center, Barclays Center, the Isabella Stewart Gardner Museum, and the Museum of the Moving Image, and in the UK by the Hayward Gallery, Sadler’s Wells, the Wellcome Trust, and the York Minster. They are also well-known for their collaborations in the field of dance, working most closely with Merce Cunningham, but also with Trisha Brown, Bill T. Jones, and Wayne McGregor. www.openendedgroup.com

BOBBY MCELVER is a New York based Sound Designer and Composer working with sound, technology, and music in the performing arts. He specializes in the use of spatial audio, such as Wave Field Synthesis, for experimental theater and dance. In 2017, Bobby became the first sound designer to use overhead WFS in a theater context, for Andrew Schneider's AFTER, which was developed at EMPAC. During the show, sounds move throughout the audience, accurately localizing in front of the array, at ear height for specific seats. To continue development and touring of the show, he hand-fabricated a 372-channel WFS array based on the research and development done by the team at EMPAC. It is a close duplicate to the EMPAC array, and is modular and tourable, having already toured to NYC, Portland, Seattle, and Washington D.C. From 2011-2016 he was a company member of The Wooster Group. Other collaborators include Andrew Schneider, Faye Driscoll, NYC Players, Half Straddle, Palissimo, Erin Markey. Nominated for a 2015 BESSIE for Outstanding Sound Design / Original Music. www.bobbymcelver.com

MARKUS NOISTERNIG is Researcher at IRCAM STMS Lab, CNRS, and Sorbonne University in Paris, Visiting Professor in Media Art at the Karlsruhe College of Arts and Design, and Lecturer at the Music Department of the Zurich University of the Arts and the Institute of Electronic Music and Acoustics of the University of Music and Performing Arts Graz. As an undergraduate and postgraduate he studied Electrical Engineering and Audio Engineering as well as Computer Music Composition at the University of Technology and the University of Music and Performing Arts in Graz. He later earned a doctorate in Digital Audio Signal Processing and Psychoacoustics. Markus' expertise is in digital signal processing and immersive 3-D audio, topics that he teaches and in which he has published more than 100 papers and articles in books, journals and conference proceedings. Markus Noisternig bridges the fields of experimental music and scientific research in immersive 3-D audio, and is widely known for his works at the intersection of artistic creativity and scientific discovery. As an artist and performer of electronic music, he has participated in numerous collaborative projects with well-known composers and ensembles of New Music, which have performed in key European and international festivals. www.noisternig.com

STAFF

GEOFF ABBAS / DIRECTOR FOR STAGE TECHNOLOGIES
DAVID BEBB / SENIOR NETWORK ADMINISTRATOR
PETER BELLAMY / SENIOR SYSTEMS ADMINISTRATOR
MICK BELLO / VIDEO ENGINEER
VIC BROOKS / SENIOR CURATOR, TIME-BASED VISUAL ART
ERIC BRUCKER / LEAD VIDEO ENGINEER
BRUCE BRYNE / MASTER CARPENTER
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GORDON CLEMENT / MEDIA SYSTEMS INTEGRATOR
JOHN COOK / BOX OFFICE MANAGER
DOROTHY DÁVILA-EVANS / ADMINISTRATIVE SPECIALIST
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IAN HAMELIN / PROJECT MANAGER
MICHAEL HANRAHAN / SENIOR EVENT TECHNICIAN
RYAN JENKINS / VIDEO ENGINEER
SHANNON JOHNSON / WEB MANAGER
MICHAEL LAKE / PRODUCTION TECHNICIAN
ANNE LEILEHUA LANZILOTTI / CURATOR, MUSIC (STARTING 9/2019)
ROBIN MASSEY / SENIOR BUSINESS ADMINISTRATOR
STEPHEN MCLAUGHLIN / AUDIO ENGINEER
DANIEL MELTZER / MASTER ELECTRICIAN
JOSH POTTER / MARKETING AND COMMUNICATIONS MANAGER
SHARINEKA PHILLIPS / BUSINESS COORDINATOR
AVERY STEMPEL / FRONT OF HOUSE MANAGER
KIM STROSAHL / PRODUCTION COORDINATOR
JEFFREY SVATEK / AUDIO ENGINEER
MICHAEL VALIQUETTE / GRAPHIC DESIGNER
TODD VOS / LEAD AUDIO ENGINEER

A SPECIAL THANKS GOES TO EMPAC'S AUDIO TEAM - TODD VOS,
JEFFREY SVATEK, STEPHEN MCLAUGHLIN AND SEAMUS CAREY
- WHO CONCEPTUALIZED, INTEGRATED AND INSTALLED ALL SOUND
SYSTEM COMPONENTS AND OPERATE THEM THROUGHOUT THE SEMINAR.

