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**SOUNDS
OF THE
METAVERSE**

4



FOREWORD

DR PRZEMEK DANOWSKI
CHAIRMAN OF THE CONFERENCE

DEAR PARTICIPANTS,

IT IS WITH GREAT ENTHUSIASM THAT WE WELCOME YOU TO THE SECOND EDITION OF THE "SOUNDS OF THE METAVERSE," AN INTERNATIONAL CONFERENCE ON SOUND AND MUSIC IN VIRTUAL ENVIRONMENTS. HOSTED BY THE DEPARTMENT OF MUSIC ACOUSTICS AND MULTIMEDIA AT THE CHOPIN UNIVERSITY OF MUSIC, THIS CONFERENCE IS DEDICATED TO FOSTERING AN INTEGRATED INTERNATIONAL COMMUNITY OF RESEARCHERS, CREATORS, AND INDUSTRY PROFESSIONALS WORKING AT THE FOREFRONT OF AUDIO IN DIGITAL AND VIRTUAL SPACES.

OUR AIM IS TO BRIDGE DIVERSE APPROACHES TO SOUND IN VIRTUAL ENVIRONMENTS, SPANNING FROM PRACTICAL APPLICATIONS IN COMPUTER GAME ENGINES TO THEORETICAL FRAMEWORKS IN CULTURAL STUDIES. OVER THE NEXT TWO DAYS, WE WILL IMMERSE OURSELVES IN A DYNAMIC PROGRAM FEATURING LECTURES, DISCUSSIONS, AND PRESENTATIONS FROM EXPERTS. OUR INTERNATIONAL PANEL OF PRESENTERS BRINGS A BROAD ARRAY OF PERSPECTIVES AND EXPERTISE, ENRICHING OUR UNDERSTANDING OF SOUND'S IMPACT ACROSS VIRTUAL AND AUGMENTED REALITIES, INTERACTIVE AUDIO, AND DIGITAL STORYTELLING.

BEYOND TECHNOLOGICAL INNOVATION, THIS CONFERENCE ENCOURAGES CRITICAL REFLECTION ON HOW SOUND SHAPES OUR INTERACTIONS AND EXPERIENCES WITHIN THESE SPACES. WE WILL EXPLORE NOT ONLY THE TECHNICAL CHALLENGES AND CREATIVE POSSIBILITIES OF VIRTUAL SOUND DESIGN BUT ALSO THE CULTURAL IMPLICATIONS OF THESE RAPIDLY ADVANCING ENVIRONMENTS. BY ADDRESSING BOTH THE PRACTICAL AND CULTURAL FACETS OF SOUND IN THE METAVERSE, WE HOPE TO INSPIRE NEW WAYS OF THINKING AND COLLABORATION.

THANK YOU FOR JOINING US IN THIS EXPLORATION OF SOUND'S TRANSFORMATIVE POWER IN THE DIGITAL AGE. WE ARE EXCITED TO SHARE THIS EXPERIENCE WITH YOU AND LOOK FORWARD TO THE INSIGHTFUL DISCUSSIONS AND EXCHANGES THAT WILL EMERGE OVER THESE TWO DAYS.

THANK YOU FOR BEING PART OF THIS JOURNEY.

12:30

DAY 1 23.11.2024

**OPENING
REMARKS**

DR PRZEMEK DANOWSKI
CHOPIN UNIVERSITY OF MUSIC

12:50

**KEYNOTE: HEARING DIVERSITY
IN THE METAVERSE**

PROF. STEFANIA SERAFIN
AALBORG UNIVERSITY

13:35

**IMMERSIVE
ENVIRONMENTS
FOR NETWORK MUSIC
PERFORMANCES IN
MIXED REALITY**

DR MARTA GOSPODAREK
CHOPIN UNIVERSITY OF MUSIC

14:10

**NEW TEXTURES OF SOUND
-VIRTUAL EXPERIMENTS
WITH RADIOART**

DR ANTONI MICHNIK
GLISSANDO

14:30

BREAK

16:00

**AVATAR ORCHESTRA METAVERSE
IMMERSIVE INSTALLATION "ENTANGLEMENTS
IN CYBERSPACE"**

PERFORMED BY: BJÖRN ERIKSSON (SWEDEN), JOHANNES RIEDMANN (GERMANY), CHRIS WITTKOWSKY, (GERMANY), MAX D. WELL (GERMANY), HARALD MUENZ (GERMANY), BIAGIO FRANCA (ITALY), FRIEDA KUTERNA (BELGIUM), NORMAN LOWREY (USA), BRENDA HUTCHINSON (USA), DANI WILLIAMSON (USA, ISRAEL), TINA PEARSON (CANADA)

17:00

BREAK

17:20

**KEYNOTE: ENTANGLEMENTS
IN CYBERSPACE**

AVATAR ORCHESTRA METAVERSE

18:20

END OF DAY 1

10:00

DAY 2 24.11.2024

**OPENING
REMARKS**

DR PRZEMEK DANOWSKI
CHOPIN UNIVERSITY OF MUSIC

10:15

**EMBODIED SOUNDSCAPE - CREATIVE
WRITING WITH SOUNDS FOR SPOKEN
WORD POETRY AND PERFORMATIVE XR**

DR WERONIKA LEWANDOWSKA
INSTITUTE FOR SOCIAL STUDIES, UNIVERSITY
OF WARSAW

11:00

**XR SOUND DESIGN
STRATEGIES. TOWARDS
HEART-BRAIN COHERENCE**

MGR POLA BORKIEWICZ
INSTITUTE OF CULTURE, FACULTY OF MANAGEMENT
AND SOCIAL COMMUNICATION, JAGIELLONIAN
UNIVERSITY & INSTITUTE OF
PSYCHOLOGY, POLISH ACADEMY
OF SCIENCES

12:30

**8TH STUDENT 3D AUDIO
PRODUCTION COMPETITION
PRESENTATION**

„MIRRORED: CEILINGS, FLOORS, WALLS” (8’),
YOUNGJAE CHO, UNIVERSITY OF THE ARTS BREMEN (DE) ///
GOLD WINNER IN CATEGORY 1: CONTEMPORARY MUSIC, COMPUTER
MUSIC

12:00

BREAK

„INTERSPACE” (8’), ÁGNES KLÁRA MÁTHÉ, LISZT
FERENC ACADEMY OF MUSIC, BUDAPEST (HU) /// SILVER WINNER IN
CATEGORY 1: CONTEMPORARY MUSIC, COMPUTER MUSIC

13:30

**ISSUES OF IMMERSIVE
RECORDING PRODUCTION**

DR ENG. BARTŁOMIEJ MRÓZ
GDANSK UNIVERSITY OF TECHNOLOGY

„D4” (8’), AVENAR KASSZIAN BANFÖLDI, HOCHSCHULE
FÜR MUSIK HANNS EISLER BERLIN (DE) /// BRONZE WINNER IN
CATEGORY 1: CONTEMPORARY MUSIC, COMPUTER MUSIC

„MARINE MELODIES: INSIDE THE BATTLE AGAINST
OCEANIC NOISE POLLUTION” (5’), WERONIKA
WRZOSEK, GRAZ (AT), /// GOLD-WINNER IN CATEGORY 2: AUDIO
DRAMA / DOCUMENTARY / SOUNDSCAPES

„ANY REASON”, (4’) EDUARD TELIK, DETMOLD (DE) ///
GOLD WINNER IN CATEGORY 3: MUSIC RECORDING / STUDIO
PRODUCTION

14:05

END OF DAY 2

„CERTAIN MISERY BY SWCCT & RANDO” (4’), JULI
GRÖNEFELD, BERLIN (DE) / GRAZ (AT) /// SILVER WINNER IN
CATEGORY 3: MUSIC RECORDING / STUDIO PRODUCTION

„NONAGE” (6’), BARBARA ZACH, WIKTOR
SKRZYPCZYŃSKI, CHOPIN UNIVERSITY
OF MUSIC (PL)



SOUNDS
OF THE
METAVERSE

KAROL SZYMANOWSKI AUDITORIUM
CHOPIN UNIVERSITY OF MUSIC
WARSAW

HEARING DIVERSITY IN THE METAVERSE

PROF. STEFANIA SERAFIN
AALBORG UNIVERSITY IN COPENHAGEN



In recent years, aural diversity has emerged as a discipline acknowledging the fact that all humans have different hearing abilities that develop during a lifetime (Drever&Hugill, 2022).

Moreover, extended reality technologies and the concept of the metaverse have progressed in such a way that can be taken out of laboratory settings and used to train individuals with different abilities.

In this talk I will present an overview of the technologies we have developed in our Multisensory Experience lab at Aalborg University in Copenhagen to address different hearing abilities. The applications range from VR training of spatial awareness for children with hearing impairment, to augmented reality based solutions to regain musical skills to coping with auditory hallucinations.

STEFANIA SERAFIN IS PROFESSOR OF SONIC INTERACTION DESIGN AT AALBORG UNIVERSITY IN COPENHAGEN AND THE LEADER OF THE MULTISENSORY EXPERIENCE LAB.

SHE IS THE PRESIDENT OF THE SOUND AND MUSIC COMPUTING ASSOCIATION, PROJECT LEADER OF THE NORDIC SOUND AND MUSIC COMPUTING NETWORK AND LEAD OF THE SOUND AND MUSIC COMPUTING MASTER AT AALBORG UNIVERSITY. STEFANIA RECEIVED HER PHD ENTITLED "THE SOUND OF FRICTION: COMPUTER MODELS, PLAYABILITY AND MUSICAL APPLICATIONS" FROM STANFORD UNIVERSITY IN 2004, SUPERVISED BY PROFESSOR JULIUS SMITH III.

HER RESEARCH ON SONIC INTERACTION DESIGN, SOUND FOR VIRTUAL AND AUGMENTED REALITY WITH APPLICATIONS IN HEALTH AND CULTURE CAN BE FOUND HERE: [HTTPS://TINYURL.COM/35WJK3JN](https://tinyurl.com/35WJK3JN)

IMMERSIVE ENVIRONMENTS FOR NETWORK MUSIC PERFORMANCES IN MIXED REALITY

MARTA GOSPODAREK, PHD
CHOPIN UNIVERSITY OF MUSIC



The presentation introduces a framework for integrating Networked Music Performances (NMPs) with immersive media technologies, facilitating one-way live collaborative multimedia concerts. By leveraging local acoustic data and digital twin assets, the workflow combines remote and local performers into a unified experience through audio spatialization and auralization techniques. This hybrid VR and MR approach creates interactive concerts that enhance auditory realism and immersive interaction. The discussion highlights innovations in the Holodeck and Corelink platforms, addressing latency, interactive virtual displays, and new musical practices. This work envisions advancing the Musical Metaverse, offering transformative immersive concert experiences for audiences and performers alike.

MARTA GOSPODAREK WORKS IN THE AREAS OF SPATIAL AUDIO, SOUND DESIGN, AND PSYCHOACOUSTICS, WITH A FOCUS ON AUGMENTED REALITY (AR) AND VIRTUAL REALITY (VR).

SHE EARNED HER PH.D. IN MUSIC TECHNOLOGY FROM NEW YORK UNIVERSITY, WHERE HER RESEARCH EXPLORED THE ACOUSTIC AND PERCEPTUAL FACTORS INFLUENCING THE PLAUSIBILITY OF SOUND DESIGN IN AR ENVIRONMENTS. DR GOSPODAREK HAS WORKED AS A SPATIAL AUDIO RESEARCHER AT IRCAM IN PARIS, WHERE SHE LED PERCEPTUAL STUDIES AND DEVELOPED AR AUDIO SYSTEMS WITH REAL-ROOM ACOUSTIC SIMULATIONS. HER INNOVATIVE WORK IN IMMERSIVE AUDIO HAS CONTRIBUTED TO THE DEVELOPMENT OF SPATIAL SOUND TECHNOLOGIES FOR COLLABORATIVE MUSIC PERFORMANCE IN VIRTUAL ENVIRONMENTS AND THE ADVANCEMENT OF VR-BASED THERAPEUTIC APPLICATIONS. HER EXPERIENCE ALSO INCLUDES CONTRIBUTING TO VR/AR PROJECTS AT NYU'S FUTURE REALITY LAB, WHERE SHE DESIGNED SOUND FOR COLLOCATED XR PROJECTS SHOWCASED AT EVENTS LIKE THE TRIBECA FILM FESTIVAL AND SIGGRAPH. IN ADDITION TO HER RESEARCH, DR GOSPODAREK HAS TAUGHT MUSIC TECHNOLOGY COURSES AT THE CHOPIN UNIVERSITY OF MUSIC AND NEW YORK UNIVERSITY. SHE HAS RECEIVED NUMEROUS ACCOLADES, INCLUDING THE STEM CHATEAUBRIAND FELLOWSHIP AND THE AES EDUCATIONAL GRANT.

NEW TEXTURES OF SOUND - VIRTUAL EXPERIMENTS WITH RADIO ART

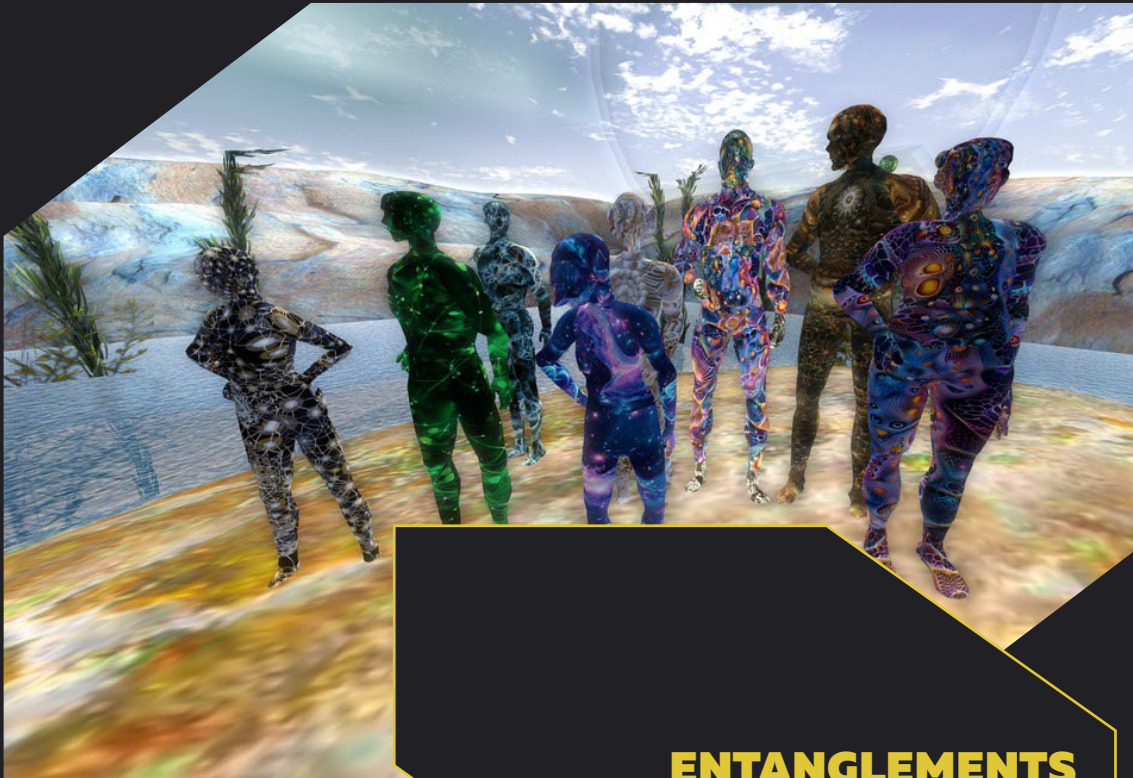
ANTONI MICHNIK, PHD
INSTITUTE OF ART
OF THE POLISH ACADEMY OF SCIENCES



During the 21st century, radio, many times pronounced dead, is transforming in front of our eyes into a virtual, internet-based medium. For over thirty years, various experiments between radio art, internet act, and interactive media have been conducted. The paper will present different forms of such experiments - from modern uses of the web for signal transmission and manipulation (as well as improvisation and networking) to audio walks using geolocation to determine the flow of the pre recorded material. Against such a backdrop, the main focus will be on "The Texture of Sound" (Laura Mitchison of On the Record, Olivia Bellas of ScreenDeep, Nicole Robson, and others) - a captivating transmedia radio play about two British Hospitals. How do such radio art experiments function within contemporary virtual spaces and online platforms? How do they reshape the concepts of radio play and radio art?

**HISTORIAN OF CULTURE, SOUND
STUDIES SCHOLAR, WRITER,
EDITOR, PERFORMER, CURATOR.**

CO-FOUNDER OF GRUPA ETC, GROUP OF AVANT-GARDE RESEARCHERS AND PERFORMERS, EDITOR IN GLISSANDO QUARTERLY (SINCE 2013). HE PUBLISHED IN VARIOUS JOURNALS (I. A. KWARTALNIK FILMOWY, KONTEKSTY, KULTURA WSPÓŁCZESNA, DIALOG, DWUTYGODNIK.COM, SZUM, RUCH MUZYCZNY, ZESZYTY LITERACKIE) EDITED EXHIBITION CATALOGUES AND CONFERENCE PUBLICATIONS, CURATED EXHIBITIONS (I.A. FOR TRAF0 IN SZCZECIN) AS WELL AS PROGRAMME FOR AD LIBITUM AND NEOARTE FESTIVALS. CO-EDITOR (WITH KLAUDIA RACHUBIŃSKA) OF THE FIRST BOOK WRITTEN ON FLUXUS BY POLISH AUTHORS, NARRACJE - ESTETYKI - GEOGRAFIE. FLUXUS W TRZECH AKTACH BY GRUPA ETC (2014), AND CO-AUTHOR (WITH IZABELA SMELCZYŃSKA) POZA REJESTREM: ROZMOWY O PRAWIE AUTORSKIM (2015).



ENTANGLEMENTS IN CYBERSPACE

AVATAR ORCHESTRA
METAVERSE

For the Sounds of the Metaverse Conference, the Avatar Orchestra Metaverse (AOM) has created an evolving audio visual landscape in Second Life through a linked and related series of environments, which are all part of a conceptual, multi-sensorial whole.

Building on AOM's long practice of collaborative deep listening in the dynamic landscape of digital space, this new live performance installation focuses on mycelial and oceanic networks. Much like the neural connections of Earth, these networks embody the potential of empathic organisms thriving in cyberspace.

'Entanglements in Cyberspace' reflects interdependence and interconnectedness. Just as the ocean and mycelia nurture life beneath the surface, this digital symbiosis resonates within our collective intelligence, transcending traditional and hierarchical structures and physical boundaries.

'Entanglements in Cyberspace' reflects interdependence and interconnectedness. Just as the ocean and mycelia nurture life beneath the surface, this digital symbiosis resonates within our collective intelligence, transcending traditional and hierarchical structures and physical boundaries.

THE AVATAR ORCHESTRA METAVERSE (AOM) IS A COLLECTIVE OF MULTI-DISCIPLINED ARTISTS COOPERATING IN VIRTUAL SPACES OVER MULTIPLE TIME ZONES. SINCE 2007, GROUP MEMBERS HAVE DEVELOPED SUSTAINED TELEMATIC RELATIONSHIPS THAT INFORM THEIR LISTENING, CREATION, AND PERFORMANCE SKILLS, PIONEERING A NEW WAY OF ATTENDING TOGETHER THROUGH THE WORLD WIDE WEB. WORKING PRIMARILY IN THE ONLINE WORLD OF SECOND LIFE, AOM USES THE PLATFORM AS AN INSTRUMENT ITSELF, EXPLORING THE CREATIVE AND COMMUNICATIVE POSSIBILITIES OF REAL TIME TELEMATIC CONNECTIONS WITHIN A VIRTUAL 3D AUDIOVISUAL ENVIRONMENT. RATHER THAN STREAMING SOUND INTO THE ONLINE PLATFORM, AOM'S CUSTOM 'INSTRUMENTS' ARE CREATED WITHIN THE SECOND LIFE ENVIRONMENT, MAKING IT POSSIBLE FOR EACH PERFORMER IN THE ORCHESTRA TO TRIGGER SOUNDS, VISUALS, AND ANIMATIONS INDEPENDENT FROM ONE ANOTHER AND TO PLAY TOGETHER IN REAL TIME. COMBINED WITH OTHERWORLDLY VIRTUAL SETS, SHIFTING COLOURS, TEXTURES, AND LIGHT, AN AOM PERFORMANCE INVITES A NEW KIND OF LISTENING, WITH SUBTLE YET POWERFUL MIND CONNECTIONS MADE AUDIBLE WITHIN A RICH AND WILDLY VARYING SONIC WORLD.

COMPOSITIONS CREATED WITH THE AVATAR ORCHESTRA, BUILT AROUND SPECIFICALLY DESIGNED VIRTUAL INSTRUMENTS, INCLUDE EARLY WORKS WHICH EXPLORED THE SECOND LIFE ENVIRONMENT INTERFACE AND THE EXTREME MANIFESTATIONS OF REAL 3-D SOUND; PIECES WHICH EXPLORE THE INTIMACIES OF A SINGLE SOUND SOURCE; PERFORMANCE ART-LIKE PIECES THAT REFERENCE ICONIC CLASSICALLY-INFLUENCED NEW MUSIC COMPOSITIONS WITH SENSATIONAL VIRTUAL SETS AND GAME RULES; SOUND ART WORKS THAT EXPLORE SONIC PHENOMENA AND PER-

CEPTION; AND SPECTACULAR WORKS THAT MIX DRAMATIC NOISES WITH MUSICAL SOUND WHILE ANIMATING AVATARS WITH STUNNING VISUAL EFFECTS AND MOVEMENTS. A MESMERIZING SET OF AVATAR MASKS THAT EMIT IMAGES, FLORA AND FAUNA SOUNDS, AND ANIMATIONS OFFER RITUALISTIC PERFORMANCE PRACTICES, AND A SET OF INSTRUMENTS EMIT SAMPLES OF THE LATE PAULINE OLIVEROS' ACCORDION SOUNDS. A MAJOR COLLABORATION WITH OLIVEROS AND AUSTRALIAN ARTIST STELARC INCLUDED GIANT ROTATING BRAINS AND VIRTUAL HEART, THE SOUNDS OF THE NERVOUS SYSTEM, MACHINES, AND DISEMBODIED VOICES WITHIN A SONIC EXPLORATION OF THE AC CURRENTS OF NORTH AMERICA AND EUROPE.

AOM CREATES AND PERFORMS WITH A DEDICATED CORE OF 8 TO 12 MEMBERS IN LOCATIONS THROUGH EUROPE AND NORTH AMERICA. AOM HAS CREATED AND PERFORMED OVER 35 AUDIOVISUAL WORKS SCREENED LIVE AT MUSIC AND MEDIA EVENTS, IN FESTIVALS AND CINEMAS, AND ON TELEVISION INTERNATIONALLY. ITS COMPOSERS AND CONTRIBUTING ARTISTS HAVE INCLUDED *BJORN ERIKSSON (SWEDEN); LEIF INGE (NORWAY); ANDREAS MUELLER, *JOHANNES RIEDMANN, *CHRIS WITKOWSKY, *MAX D. WELL, AND *HARALD MUENZ (GERMANY); SHINTARO MIYAZAKI (SWITZERLAND); *BIAGIO FRANZIA (ITALY); *FRIEDA KUTERNA (BELGIUM); VIV CORRINGHAM, *NORMAN LOWREY, PAULINE OLIVEROS, *BRENDA HUTCHINSON, *DANI WILLIAMSON, AND TIM RISHER (USA); AND *TINA PEARSON, ERIK RZEPKA, LIZ SOLO, CATHY FERN LEWIS, AND JEREMY OWEN TURNER (CANADA); AMONG OTHERS.

*AOM MEMBERS PRESENTING FOR THE SOUNDS OF THE METAVERSE

HARALD MUENZ



ITALIAN-GERMAN CITIZEN, CREATES TRANSDISCIPLINARY INSTRUMENTAL, VOCAL, RADIOPHONIC & DIGITAL SOUND-WORK WITH AN ARTISTIC FOCUS ON PHONETIC SPEECH COMPOSITION. HARALD'S MUSIC HAS BEEN PERFORMED & BROADCAST INTERNATIONALLY & IS AVAILABLE ON SEVERAL CDS (E.G. PORTRAIT-CD NEARLY-FAST WITH ENSEMBLE MOSAIK BERLIN ON COVIELLO).

COMPOSITIONS HAVE BEEN COMMISSIONED BY ENSEMBLES SUCH AS APARTMENT HOUSE, AUDITIVOKAL, HAND WERK, KNM BERLIN, MODERN, MOSAIK, MUSIKFABRIK, HESSISCHER RUNDFUNK, WESTDEUTSCHER RUNDFUNK, THE BBC, DEUTSCHLANDFUNK & DLF KULTUR.

ALSO ACTIVE AS A MULTILINGUAL LANGUAGE PERFORMER (INCLUDING SPRACHKUNSTTRIO SPRECHBOHRER SINCE 2004), AUTHOR & OCCASIONAL LECTURER. PERFORMANCE DUO FAKE MUSIC ASSOCIATION WITH THE EXTREME VOCALIST BETTINA WENZEL. FREQUENT COLLABORATIONS WITH EXPERIMENTAL POETS (INCLUDING F. NEUNER, M. TRAXLER, C. FORTE, C. FILIPS, R. DOMAŚCZYNA).

2021-22 THE POETS' SOUNDS: FUNDED BY THE

GERMAN FEDERAL CULTURAL FOUNDATION, COOPERATION ENSEMBLE SPRECHBOHRER / LETTRÉPAGE BERLIN, WITH 6 INTERNATIONAL POETS & EUROPEAN TOUR.

HARALD (AKA AVATAR CUIREC D'ERC) HAS REALISED SEVERAL INTERACTIVE SOUND INSTALLATIONS ON THE VR PLATFORM SECOND LIFE & HAS BEEN A MEMBER OF THE AVATAR ORCHESTRA METAVERSE (AOM) SINCE 2017.

SINCE THE PANDEMIC, HE HAS SIGNIFICANTLY INCREASED HIS ACTIVITIES IN THE DIGITAL SPACE & INTEREST IN AUDIOVISUAL EXTENSIONS.

HARALD'S WORK IS SHAPED BY HIS OWN QUEER & TRANSCULTURAL BACKGROUND. IT ENCOMPASSES ISSUES OF LANGUAGE, IDENTITY & CULTURAL DIVERSITY, ALLOWING FOR MULTIPLE FORMS OF COMMUNICATIVE & INTERACTIVE CONNECTIONS.



**DANI
WILLIAMSON**

MULTIDISCIPLINARY ARTIST WORKING WITH VIDEO, SOUND, TEXT, AND PERFORMANCE. THEY EXPLORE EMBODIED PERCEPTIONS OF SPACE ATTUNING TO THE TENSIONS BETWEEN VIRTUAL AND PHYSICAL REALMS. THEIR PRACTICE CENTERS ON QUESTIONS OF “PLACE-NESS” AND THE “PHENOMENOLOGY OF THE IN-BETWEEN” WITH CREATIVE OUTPUTS SPANNING FROM LARGE SCALE VIDEO PROJECTIONS, ONLINE WRITING GROUPS, TO SITE-SPECIFIC AUDIOVISUAL PERFORMANCES WHICH ENGAGE SURROUNDING LOCATIONS, ARTISTS AND COMMUNITIES.

DANI IS A CO-ARTISTIC DIRECTOR AND PERFORMER IN PTILIA ENSEMBLE (HAIFA) AND CO-CREATOR OF QUEERED FUTURES LAB. THEY HAVE BEEN A PARTICIPATING MEMBER OF THE AVATAR ORCHESTRA METAVERSE (AOM) SINCE 2023.

BORN IN A CORNFIELD IN THE MIDWEST, UNITED STATES, DANI GRADUATED IN 2011 WITH A BA IN FILM FROM SIU, CARBONDALE, ILLINOIS AND IN 2014 WITH AN MFA IN DIGITAL ARTS + NEW MEDIA FROM UC SANTA CRUZ, CALIFORNIA.



**CHRIS
WITTKOWSKY**

BORN IN WEIDEN / GERMANY (1964)

WORKING SINCE 1987 IN SEVERAL ART FIELDS AND FORMATS LIKE MEDIA ART, DESIGN, SOUND ART, PAINTING, OBJECT AND CONCEPT ART. EXHIBITIONS AND INSTALLATIONS IN VARIOUS COUNTRIES. DIVERSE ART WORKS ARE PART OF PRIVATE AND PUBLIC COLLECTIONS (GERMANY, BRASIL, CZECH REPUBLIC, GREAT BRITAIN, BANGLADESH, DENMARK, AUSTRIA).

ART GROUPS / COLLECTIVES:
POMODORO BOLZANO (FOUNDED 1993 WITH MAX D. WELL)
AVATAR ORCHESTRA METAVERSE – AOM (FOUNDING MEMBER 2007)
COLLABORATIONS / SOUND ART: JORI TOKYO (TOKYO LAB)

**JOHANNES
RIEDMANN**

MEDIA ARTIST FROM REGENSBURG(GER) BORN IN 1973. INSPIRED BY SURREALISM, DADA, FLUXUS AND THE CREATIVE POSSIBILITIES OF NEW TECHNOLOGIES, HE RESEARCHES AND WORKS IN THE FIELDS OF SOUND ART, NET-ART, ARTISTIC PERFORMANCE, CONCEPTUAL ART, VIRTUAL WORLDS (METAVERSES) AND MEDIA-ART. SINCE THE TURN OF THE MILLENNIUM, JOHANNES RIEDMANN HAS BEEN A MEMBER OF THE MEDIA ART GROUP "POMODORO BOLZANO". HE ALSO WORKS CONCEPTUALLY AND PERFORMATIVELY WITH THE AVATAR ORCHESTRA METAVERSE. JOHANNES RIEDMANN AND HIS ART GROUP POMODORO BOLZANO HAVE BEEN MEMBERS OF THE PROFESSIONAL ASSOCIATION OF VISUAL ARTISTS SINCE 2005 AND WERE AWARDED THE CITY OF REGENSBURG'S CULTURAL PROMOTION PRIZE IN THE SAME YEAR.

IN ADDITION TO SOLO EXHIBITIONS LIKE "BIOTEKTUREN", NUMEROUS PERFORMANCES AND EXHIBITIONS/ INSTALLATIONS SUCH AS "7 UP", "MOBILE HOME MEMORY" OR "GRAMMAR" HAVE TAKEN PLACE WITH POMODORO BOLZANO. CURRENT AND ONGOING ARTISTIC PROJECTS SUCH AS "TOKYOLAB – AUDIO-DIMENSIONAL BROADCAST", "PB GALLERY @ ICEWATER – METAVERSAL ART EXHIBITION", "JORITOKYO – AUDIO VISUAL FLUXUS" ARE THE ARTIST'S MAIN ARTISTIC ACTIVITIES, IN ADDITION TO HIS ANNUAL PARTICIPATION IN THE GLOBAL ART'S BIRTHDAY NETWORK.

EMBODIED SOUNDSCAPE - CREATIVE WRITING WITH SOUNDS FOR SPOKEN WORD POETRY AND PERFORMATIVE XR

WERONIKA LEWANDOWSKA, PHD
INSTITUTE FOR SOCIAL STUDIES,
UNIVERSITY OF WARSAW



Sound is more than vibration - it's an anchor for space, memory, and emotion, resonating in both the body and imagination. Roland Barthes' grain of the voice highlights sound as a deeply sensory and physical experience, where the texture of words holds as much power as their meaning. Performing for international audiences has shown me how not understanding words can heighten the perception of language's embodiment, unlocking spaces of meaning rooted in sound and presence. In XR, this concept evolves: the grain of the voice becomes intertwined with the grain of spatial sound, merging the tactile resonance of language with immersive soundscapes.

This journey reimagines storytelling: spatial sound doesn't just accompany the narrative; it sculpts it. The sounds of language shape environments, sparking imagination and crafting connections that feel invisible yet profound. In the metaverse, where virtual and physical realms intertwine, sound bridges these dimensions, extending language beyond words and anchoring it in shared, embodied experience.

**WERONIKA M LEWANDOWSKA –
COORDINATOR OF DOK EXCHANGE
XR, POET, AND PERFORMER WITH A
PHD IN CULTURAL STUDIES.
CO-CREATOR OF NIGHTSSS,
PREMIERED AT SUNDANCE.
MENTORS CLIMATE CHALLENGE XR
FOR ESA, WRITES XR CLIMATE
GAMES FOR GUEST XR AT THE
UNIVERSITY OF WARSAW. SHE
CURATES INNOVATIVE XR
SHOWCASES.**

Beyond ASMR aspects of sound in VR, this approach amplifies the materiality of sound, weaving words and spaces into a unified sensory experience. In performative XR, sound becomes a living force—one that redefines how language, space, and emotion intertwine, creating stories that resonate within us long after they are told.

XR SOUND DESIGN STRATEGIES. TOWARDS HEART-BRAIN COHERENCE

POLA BORKIEWICZ

INSTITUTE OF CULTURE, FACULTY OF MANAGEMENT AND SOCIAL
COMMUNICATION, JAGIELLONIAN UNIVERSITY & INSTITUTE OF
PSYCHOLOGY, POLISH ACADEMY OF SCIENCES



Designing digital worlds that in equal measure engage and constitute a source of experience and reflection requires addressing the issue of multisensoriality that belongs to the domain of human psychophysiology and thus activating cross-domain competences. In practice, working seamlessly at the intersection of Art, Science and Technology domains is a wishful assumption rather than a principle anchored in systemic solutions.

Addressing complex reality problems, I propose adopting the optics of Neuroaesthetics as a research framework to outline the broader context and identify gaps in the current state of knowledge. It demands taking into account measurable changes in brain and body activity allowing for the aforementioned translation of science into practice while providing for audience wellbeing.

Based on my artistic and research practice ranging from art-based research to audience perception studies, I will attempt to trace selected aspects of the design process in terms of sound and image and strategies towards stress reduction and increased cardiac coherence.

POLA BORKIEWICZ IS AN ARTIST, RESEARCHER, COGNITIVE SCIENTIST, DESIGNER, DIRECTOR, CREATIVE PRODUCER, CURATOR. SHE WORKS AT THE INTERSECTION OF ART AND SCIENCE AS A TRANSLATIONAL RESEARCHER PROTOTYPING SOLUTIONS FOR COMPLEX REALITY PROBLEMS. SHE HAS ADDRESSED CHALLENGES SUCH AS HOW TO DIRECT DREAMS FOR DIFFERENT HEALTH CONDITIONS USING NEUROAESTHETICS, SLEEP SCIENCE AND TECHNOLOGY OR HOW TO CREATE A NEW NARRATIVE LANGUAGE FOR DIGITAL WORLDS.

SHE IS CURRENTLY WORKING AS A RESEARCHER AT THE INSTITUTE OF CULTURE AT THE FACULTY OF MANAGEMENT AND SOCIAL COMMUNICATION OF THE JAGIELLONIAN UNIVERSITY. SHE HEADED THE VR/AR STUDIO AT THE VISUAL NARRATION LABORATORY VNLAB AT THE FILM SCHOOL IN LODZ WHERE SHE LED ARTISTIC AND RESEARCH XR PROJECTS.

FROM 2019 TO 2023 SHE CONDUCTED A TRANSDISCIPLINARY VR RESEARCH PROJECT NEW FORMS AND TECHNOLOGIES OF NARRATION FUNDED BY THE MINISTRY OF EDUCATION AND SCIENCE IN COLLABORATION WITH SIX RESEARCH CENTERS, INSTITUTE OF PSYCHOLOGY POLISH ACADEMY OF SCIENCES, NATIONAL INFORMATION PROCESSING INSTITUTE, POLISH JAPANESE ACADEMY OF INFORMATION TECHNOLOGY, KOBO ASSOCIATION AND UNIVERSITY OF LODZ. ASSOCIATE OF THE VIRTUAL REALITY AND PSYCHOPHYSIOLOGY LAB AT THE INSTITUTE OF PSYCHOLOGY POLISH ACADEMY OF SCIENCES. SHE HOLDS A MASTER OF ARTS IN DESIGN FROM THE ACADEMY OF FINE ARTS IN LODZ. GUEST LECTURER AT LODZ FILM SCHOOL, ACADEMY OF FINE ARTS IN WARSAW AND WARSAW UNIVERSITY. SHE IS THE CREATIVE PRODUCER OF NEARLY TWENTY VR/XR WORKS PREMIERED AND PRESENTED AT INTERNATIONAL FILM AND NEW MEDIA FESTIVALS. DIRECTOR OF THE FILM ESSAY SERIES AND THE VR EXPERIENCE IHABITAT. DESIGNER OF THE CURATOR VR GAME. SHE HAS SUPPORTED THE PROMOTION AND DISTRIBUTION OF THE VR/AR STUDIO'S WORKS AT MORE THAN THIRTY FESTIVALS ABROAD, SUCH AS THE SUNDANCE FILM FESTIVAL, IDFA, DOK LEIPZIG, JIHLAVA, ONE WORLD FF OR VR DAYS, AND DOMESTICALLY AT EVENTS SUCH AS THE KRAKOW FILM FESTIVAL, GDYNIA FILM FESTIVAL, NEW HORIZONS, MILLENNIUM DOCS AGAINST GRAVITY OR WRO BIENNALE. SHE IS WORKING ON A MONOGRAPHIC PUBLICATION TOWARDS THE NEW PARADIGM OF XR NARRATION. SHE PROTOTYPES, DEVELOPS AND PUBLISHES IN THE FIELDS OF HUMAN INTERACTION WITH HYBRID REALITY, INTERACTIVE DIGITAL NARRATIVES, NEUROAESTHETICS, SLEEP AND DREAM RESEARCH, BIOETHICAL IMPLICATIONS OF THE DEVELOPMENT OF VIRTUAL ENVIRONMENTS AND ARTIFICIAL INTELLIGENCE.

ISSUES OF IMMERSIVE RECORDING PRODUCTION

BARTŁOMIEJ MRÓZ, PHD
GDANSK UNIVERSITY OF TECHNOLOGY



This presentation examines four immersive audio formats: Ambisonics, Dolby Atmos, Sony 360 Reality Audio, and Auro-3D. Ambisonics captures 360° soundfields for VR and binaural rendering. Dolby Atmos uses object-based audio for precise spatialization, ideal for cinema and streaming. Sony 360 Reality Audio enables spherical positioning of sound for immersive music, while Auro-3D adds vertical layers to surround sound for heightened realism in cinemas and live performances.

The analysis covers workflows, from encoding to playback optimization across speaker and headphone setups. Ambisonics offers real-time interactivity, Atmos provides scalability, Sony focuses on music content, and Auro-3D emphasizes natural immersion. These technologies address diverse creative needs and redefine immersive audio's future across industries.

BARTŁOMIEJ MRÓZ GRADUATED WITH HONORS FROM GDAŃSK UNIVERSITY OF TECHNOLOGY IN 2017, EARNING A MASTER'S DEGREE IN ENGINEERING. DURING HIS STUDIES, HE PARTICIPATED TWICE IN THE ERASMUS+ PROGRAM, BOTH FOR ENGINEERING AND MASTER'S STUDIES, AT THE UNIVERSITY OF LJUBLJANA (SLOVENIA) AND GRAZ UNIVERSITY OF TECHNOLOGY (AUSTRIA), RESPECTIVELY. IN AUSTRIA, HE CONDUCTED RESEARCH UNDER PROF. FRANZ ZOTTER OF THE INSTITUTE FOR ELECTRONIC MUSIC AND ACOUSTICS (DAS INSTITUT FÜR ELEKTRONISCHE MUSIK UND AKUSTIK – IEM GRAZ) ON AMBISONICS AND BINAURAL SOUND. HE THEN UNDERTOOK DOCTORAL STUDIES AT GDAŃSK UNIVERSITY OF TECHNOLOGY, TAKING PART IN THE INTERPHD2 PROJECT. IN 2023, HE DEFENDED WITH DISTINCTION HIS DISSERTATION ENTITLED "SPATIAL AUDIO FOR NETWORKED MUSIC PERFORMANCES." HE IS FURTHER DEVELOPING HIS RESEARCH ON IMMERSIVE AUDIO THROUGH AN IDUB ARGENTUM GRANT AWARDED IN 2024. IT IS ALSO WORTH MENTIONING THE COOPERATION WITH ZYLIA (POZNAŃ) OR THE DEPARTMENT OF ACOUSTICS AT THE FACULTY OF SOUND DIRECTION AT THE FRYDERYK CHOPIN UNIVERSITY OF MUSIC (WARSAW), WHICH RESULTED IN MANY EXPERIMENTS AND PROJECTS.

IN ADDITION, SINCE THE BEGINNING OF HIS STUDIES, HE HAS BEEN ASSOCIATED WITH THE ACADEMIC CHOIR OF GDAŃSK UNIVERSITY OF TECHNOLOGY, WHERE HE HAS BEEN INVOLVED IN RECORDING PRODUCTION SINCE 2017. AMONG HIS GREATEST RECORDING SUCCESSES ARE: 1ST PLACE AT THE NTAV 2022 RECORDING COMPETITION, 3RD PLACE AT THE NTAV 2024 RECORDING COMPETITION, AND HONORABLE MENTION AT THE S3DAPC 2023 3D SOUND PRODUCTION COMPETITION.

8TH STUDENT 3D AUDIO PRODUCTION COMPETITION

STUDENT 3D AUDIO PRODUCTION COMPETITION, ORGANIZED BY THE IEM - INSTITUTE FOR ELECTRONIC MUSIC AND ACOUSTICS, PROVIDES AN EXCITING PLATFORM FOR EMERGING TALENTS TO SHOWCASE THEIR SKILLS IN IMMERSIVE AUDIO DESIGN. OPEN TO STUDENTS WORLDWIDE, THIS COMPETITION CELEBRATES CREATIVITY, TECHNICAL EXPERTISE, AND INNOVATIVE APPROACHES TO 3D AUDIO IN VARIOUS APPLICATIONS, FROM VIRTUAL AND AUGMENTED REALITIES TO SOUNDSCAPES AND INTERACTIVE MEDIA. PARTICIPANTS ARE INVITED TO SUBMIT PROJECTS THAT PUSH THE BOUNDARIES OF SPATIAL SOUND, DEMONSTRATING THE POWER OF AUDIO TO TRANSFORM DIGITAL EXPERIENCES.

JUDGED BY A PANEL OF INDUSTRY PROFESSIONALS AND ACADEMIC EXPERTS, THE COMPETITION OFFERS INVALUABLE FEEDBACK, NETWORKING OPPORTUNITIES, AND RECOGNITION FOR EXCELLENCE IN 3D AUDIO PRODUCTION.

THE STUDENT 3D AUDIO PRODUCTION COMPETITION 2024 IS A PRODUCTION OF THE IEM - INSTITUTE FOR ELECTRONIC MUSIC AND ACOUSTICS, KUG - UNIVERSITY OF MUSIC AND PERFORMING ARTS GRAZ IN COOPERATION WITH THE VDT - ASSOCIATION OF GERMAN SOUND ENGINEERS, ORF MUSIKPROTOKOLL AND SOUNDING FUTURE. ORGANIZATION AND CONCEPT: MATTHIAS FRANK AND FRANZ ZOTTER.

Ministry of Science and Higher Education
Republic of Poland

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Uniwersytet Muzyczny
Fryderyka Chopina

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