

# **Composing space: ambisonic arrays and the sound of the future**

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In coordination with the Blended Reality Lab at the Yale Center for Collaborative Arts and Media

# Motivation

Immersive musical technologies can effect positive change

- Individual level
  - Mental health (CBT, immersion therapy)
  - Physical health (rhythm treatment, speech & hearing)
- Community level
  - Accessible musical interfaces
  - Education & interdisciplinary collaboration
  - Group therapies
- Societal level
  - Experimental music & installations; storytelling
  - High-fidelity archival documentation

# Some (loose) definitions

**Musical phenomenology** – an intersection of neurology, psychology, culture, and craft; a set of tools used to examine the experience of a musical event

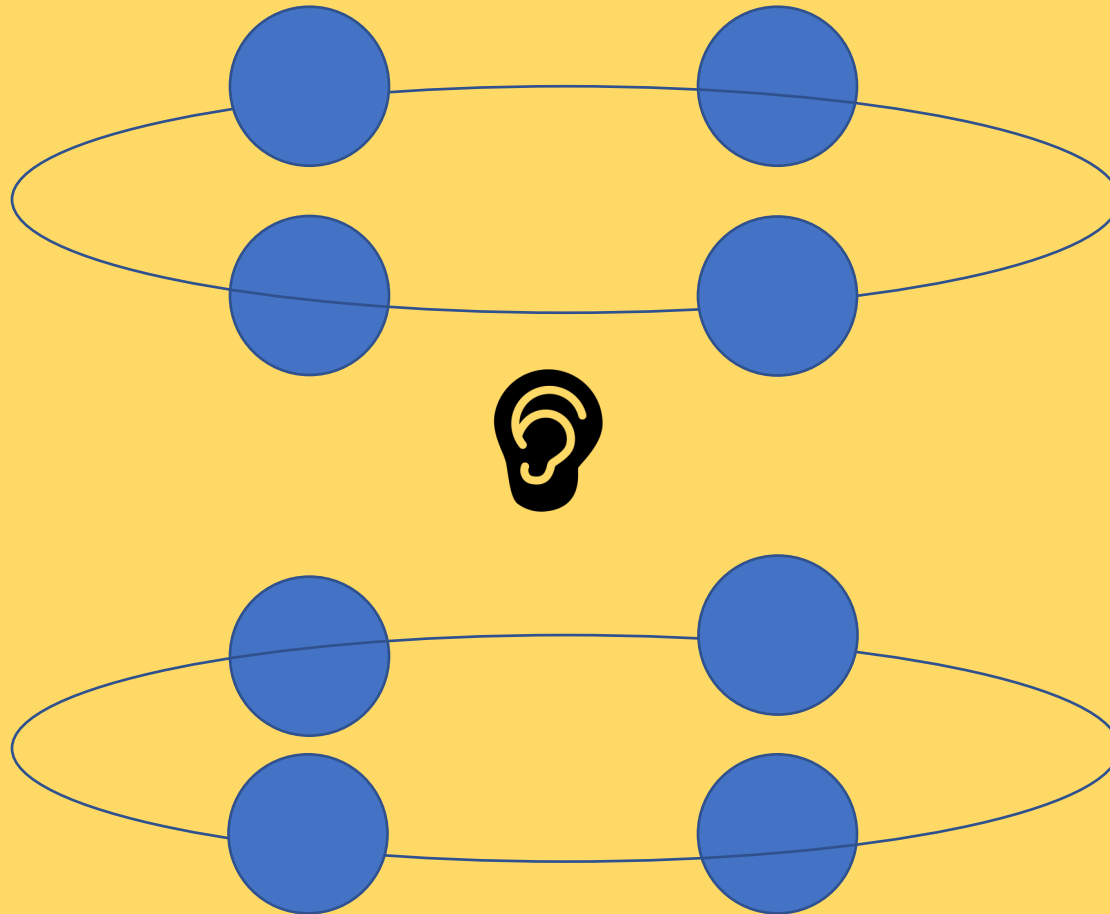
**Musical interventions** – an emergent conceptual umbrella including sound art, music therapy, education, social activism and musical community-building

**Musical immersion** – a state of psychological flow induced by or during participation in a musical event

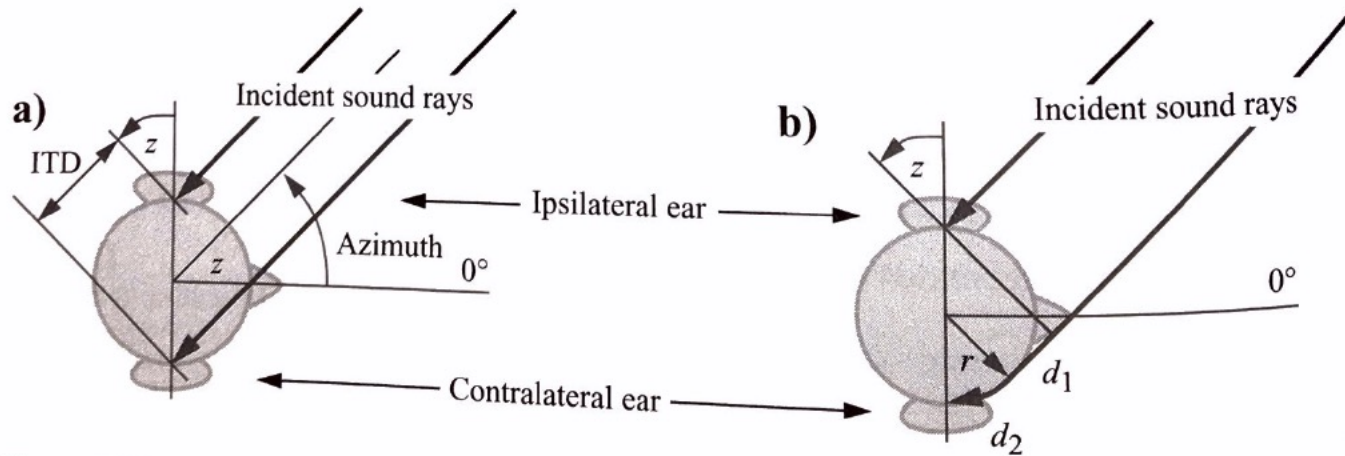
# **A brief history of sound in space**

- 1500s – motets & the cocktail party problem
- 1600s – the Monteverdi orchestra, the first opera house
- 1700s – developments in staging & acoustic architecture
- 1800s – the romantic opera, Bayreuth, wax cylinders
- 1900s – vinyl, tape, early electronic music, mono/stereo/quadro/surround sound, Fantasound, binaural audio
- 2000s – streaming, high-order ambisonics, soundfield synthesis

# A brief explanation of ambisonics



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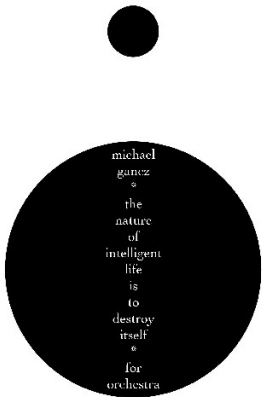


**Figure 6.22**  
ITD, spherical head.

# Ambisonic installation: *the nature of intelligent life is to destroy itself*



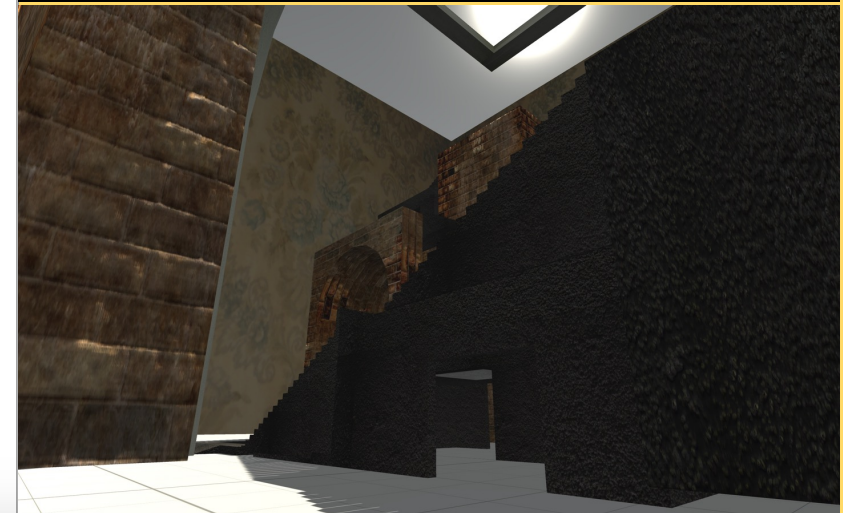
# Ambisonic installation: *the nature of intelligent life is to destroy itself*



the nature of  
intelligent life  
is to destroy itself  
by michael gancz  
12-12-21

wasd to move  
space to jump  
mouse to look  
shift to dash  
esc to quit  
headphones recommended  
press x to start

special thanks: justin berry, johannes kleiberer, kathryn alexander, samuel kaczmarek



# What does my project accomplish?

- Engage practically with the social limits of technology
  - How will people respond to my piece?
  - How will people feel in the space?
  - Can we actually get it to work?
- Potential for nonmusical applications
  - Medical training & simulation
  - Immersive therapies
  - Telecommunications & archival work
  - UI allows for new installations & real-time experimentation

# Possible future work

- Head & location tracking
- Collaborations with YSM & YNNH
- Collaborations with XRPeds
- Higher fidelity setup
- Bespoke GUI
- More installations and events
- New visual designs for the room

**Musical phenomenology is  
inseparable from the technology  
that enables musical experience**

# Special thanks

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