Beyond music - from noise to art

Sound (Art & Technology)

Lorenz Schwarz
Karlsruhe University of Arts and Design (HfG)

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Course info

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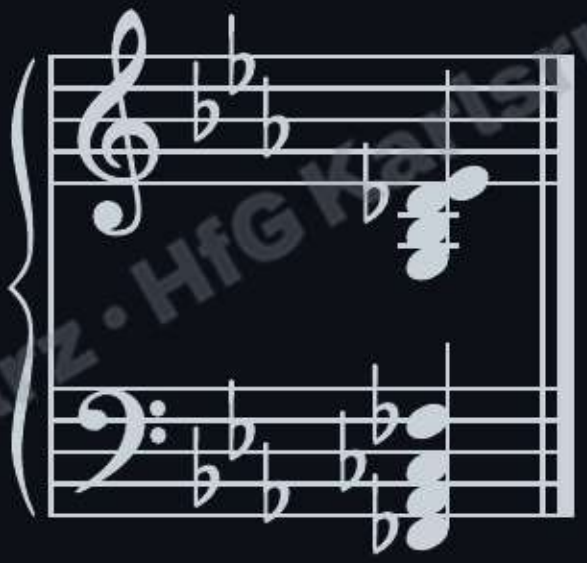
Example Nr 1 (Video):

Excerpt from *The Rite of Spring* (1913) by Igor Stravinsky



Watch: London Symphony Orchestra, conducted by Simon Rattle (2017)

Video: London Symphony Orchestra (LSO), official YouTube channel | Educational fair use

Expanding the boundaries of music

Stravinsky's *The Rite of Spring* provoked outrage at its 1913 Paris premiere:

- Radical rhythmic complexity and irregular meters
- Dense dissonant harmonies
- Ritual-like orchestration

Is this still music?

“WHEREAS, IN THE PAST, THE POINT OF DISAGREEMENT HAS BEEN BETWEEN DISSONANCE AND CONSONANCE, IT WILL BE, IN THE IMMEDIATE FUTURE, BETWEEN NOISE AND SO-CALLED MUSICAL SOUNDS.”

— *John Cage, “The Future of Music: Credo” (1937), in* Silence: Lectures and Writings, p. 4.

Example Nr 2 (Video):

Excerpt from *Water Walk* (1960) by John Cage

Watch: John Cage on *I've Got a Secret*, CBS, January 1960

John Cage, Water Walk (1959), score excerpt (first 30 seconds) | © 1961 Henmar Press Inc. (C.F. Peters Corporation) | Educational fair use

Vibration and sound

Sound begins as a vibration, a physical disturbance that travels through an elastic medium (e.g., air) as pressure variations.

Sound

From Latin *sonus*:

- A distinct auditory impression or tone.
- The distinctive timbre of an instrument, ensemble, or style.
- Adopted into German as a loanword in the 1950s.

Complex relationship between:

- Physical disturbance in a medium and transfer of energy.
- Psychophysical perception and sensory experience of the physical stimuli.

Shape-sound mapping:

Cross-modal perception

Sound and vision influence each other:

- Bouba/Kiki effect: sound shapes our perception of form
- Audio-visual binding in film (Chion)
- Synaesthesia in sound design
- Embodied cognition: sound as multisensory experience

→ *Sound is never perceived in isolation*

Example Nr 3 (Audio):

Demonstration of source identification

▶ Play demonstration

Sound between natural and cultural sciences

The phenomenon of sound is inherently interdisciplinary, bridging scientific and humanistic approaches.

- Natural sciences: physical description of sound
- Cultural sciences: relation to human perception and practice

Sound as artistic practice

Key developments in 20th century:

- Music expands to include noise (Russolo, Cage)
- Recording separates sound from source (phonograph, tape)
- Listening becomes artistic practice (soundscape, installation)
- Space becomes compositional medium (Neuhaus, Zimoun)

→ *Sound art emerges as distinct practice*

Historical precursors

Sound as theatrical and ritual element predates recording technology:

- Ceremonial and ritual contexts (ancient practices)
- Theatrical sound effects (Japan's Kagura, European theater)
- **Luigi Russolo's *Intonarumori* (1913):** First theorization of noise as art

→ *Russolo's manifesto "The Art of Noises" (1913) proposed noise as legitimate musical material*

Questions in the study of sound

- How can a history of acoustics be written?
- What role do technological developments play?
- What psychological impact can sound create?
- What "meaning" does a sound have (subjective vs. objective)?
- How is listening culturally coded?

Acoustic Turn

A paradigm shift in how scholars approach sound:

- Cultural practice and social phenomenon
- Mediated and technologically constructed
- Spatial and embodied experience
- Historical and political object

Key contributors: *Corbin (1998), Sterne (2003), Smith (1999), Pinch & Bijsterveld (2004), Blesser & Salter (2007), Altman (1992), and Chion (1994).*

→ *Establishing sound as worthy of serious academic inquiry*

Historical perspectives on sound aesthetics

- "Sketch of a New Esthetic of Music" (1907) by Ferruccio Busoni
- "The Art of Noises" (1916) by Luigi Russolo
- "La Radia" (1933) by Filippo Tommaso Marinetti and Pino Masnata

→ *Futurism explored elements of what would later become sound art.*

Luigi Russolo's Intonarumori, 19[illegible].

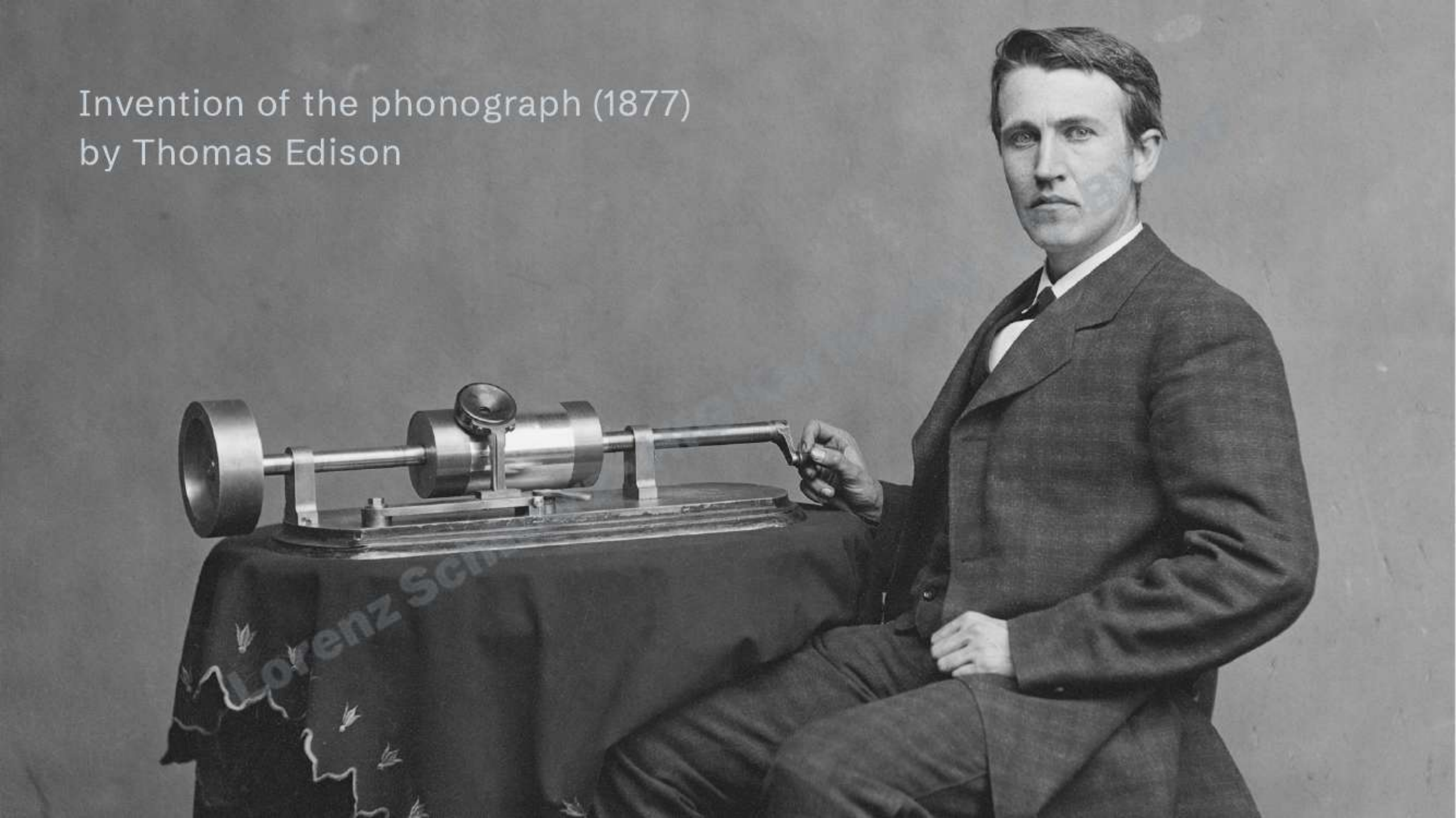
Public domain.

Sound, technology, and audio

Sound becomes increasingly produced, synthesized, reproduced, and transmitted through technical media.

→ *Sound as a genuinely media-based aesthetic concept*

Invention of the phonograph (1877)
by Thomas Edison



Symphony of sound

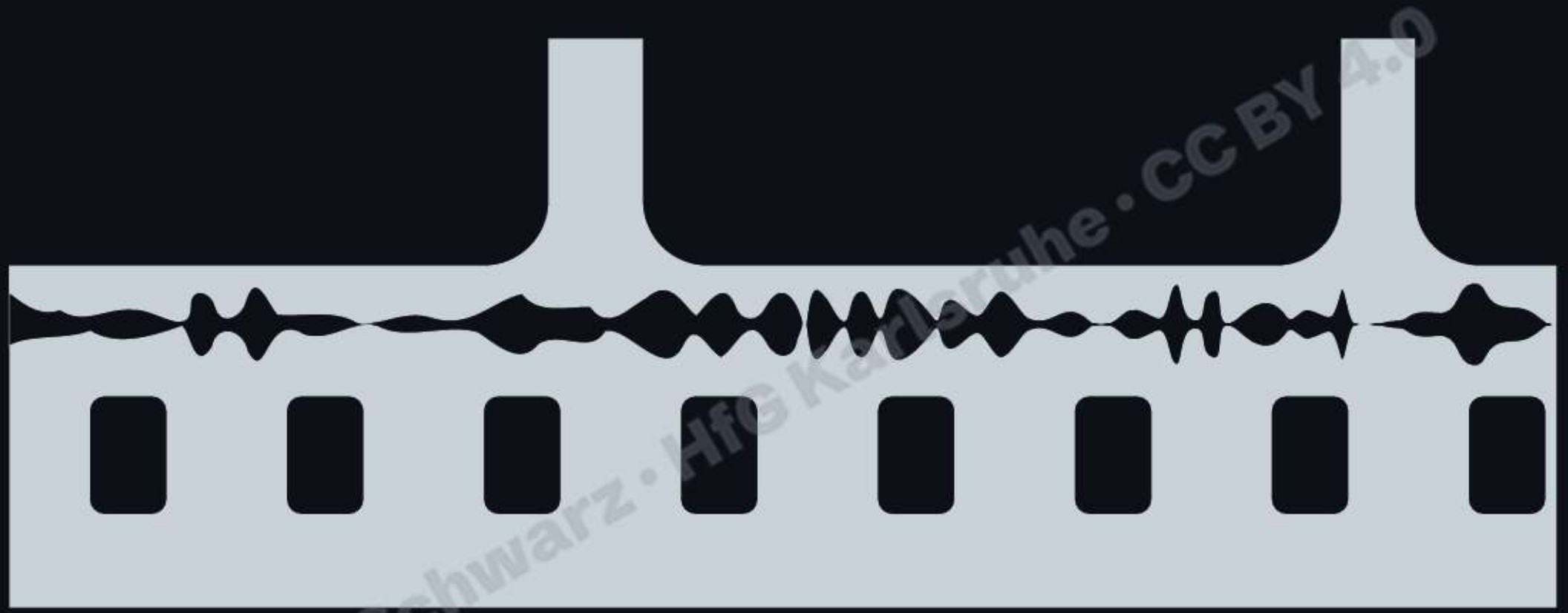
Walter Ruttmann's audio montage *Weekend* (1930) is widely regarded as a groundbreaking work in the evolution of sound collages and audio plays:

- **Sound film without pictures:** Pioneering work of musique concrète
- **Depicting the soundscape of Berlin:** urban noise, human voices, and environmental sounds

Example Nr 4 (Audio):

Weekend (1930, excerpt) by Walter Ruttmann

▶ Play excerpt



Walter Ruttmann's *Weekend* was recorded using optical sound, where audio is encoded as visual waveform on the film strip.

Musique concrète

Sounds are altered using the medium tape, through techniques such as splicing, looping, reversing, pitch shifting, and layering.

Example Nr 5 (Audio):

Excerpt from *Voile d'Orphée* (1953) by Pierre Henry

▶ Play excerpt

Studer A80, Photo: JacoTen (CC BY-SA 3.0)

Composing with the medium of tape

Working with recorded sound replaced traditional notation and instruments, redefining the relationship between composer, sound, and performance.

Example Nr 6 (Audio and Video):

Sound-image-source relations in perception and association

▶ Synchrèse

▶ Rain sounds?

Videos: Educational fair use for demonstrating audio-visual binding (synchresis) | Audio: Sound object demonstration

Musique concrète and the sound object

Magnetic tape enabled the technical separation of sound and source and introduced new ways of listening and composing.

- Sound object (l'objet sonore): sound as an autonomous material, detached from its source
- Acousmatic listening: focus on the auditory image rather than visual cause

→ *Digital technology (1980s onward) democratized these techniques through sampling, sound design, and DAW-based music production.*

Marcel Duchamp, *Fountain* (1917/1964)
Tate Modern, London
Photo: Romainbehar (CC0), Wikimedia Commons

Example Nr 7 (Video):

Excerpt from *4'33"* (1952) by John Cage, performed by David Tudor in 1989

Watch: David Tudor performing *4'33"* by John Cage

From the documentary *Journeys in Sound* by Allan Miller & Paul Smaczny (2012)

“There is no such thing as silence.”

— *John Cage, “Composition as Process,”*
in *Silence: Lectures and Writings.*

Readymade and non-intentional music

Marcel Duchamp's *Fountain* (1917):

- Everyday object declared "art" by context
- Gallery transforms perception
- Challenges institutional definitions

John Cage's *4'33"* (1952):

- Everyday sound declared "music" by framing
- Concert hall transforms listening
- Challenges compositional definitions

Soundscape

Extending Cage's environmental listening, R. Murray Schafer (1933 - 2021) introduced the term *soundscape* in *The Tuning of the World* (1977) focusing on the sonic aspects of urban and rural environments.

- **Etymology:** A neologism modeled after the term *landscape*.

From: Schafer, R. Murray. *The Tuning of the World*. Knopf, 1977.
Used for educational purposes under fair use.

Acoustic ecology

The study of environmental sound and its interactions with humans, nature, and technology gave rise to a new research discipline at the intersection of science, society, and art.

→ *Consciously understanding everyday auditory phenomena*

> …Behold the new orchestra! The sonic universe!
>
> — *R. Murray Schafer, "Yes, but Is It Music?" in* The New Soundscape: A Handbook for the Modern Music Teacher.

Rethinking soundscape

Schafer's concept has been critiqued:

- Romanticizes "natural" and rural sounds over urban environments
- Treats urban noise as pollution rather than cultural expression

→ *Soundscape concept remains influential but requires critical engagement*

Example Nr 8 (Audio):

Excerpt from *Presque rien No. 1 - Le Lever du jour au bord de la mer* (1970) by Luc Ferrari

▶ Play excerpt

New listening techniques

Exploring ways of perceiving, analyzing, and interpreting sound within its contextual, cultural, and sensory dimensions.

- Deep listening and sonic awareness (Pauline Oliveros)
- Soundwalk and acoustic ecology (Hildegard Westerkamp)
- Detachment from classical concert spaces
- Inclusion of sounds from non-musical environments

→ *Contributing to the emergence of genres such as ambient, muzak, glitch, and noise*

Spatial listening

Soundscape involves engagement with spatial aspects:

- Scenic listening
- Spherical listening
- Immersive experience
- Binaural listening

Music outside of a concert hall

In the mid-to-late 1960s, artist Max Neuhaus (1939-2009) developed listening excursions, involving small groups of participants walking through city environments:

- Reframing existing urban noise as a form of artistic expression

Max Neuhaus, *Times Square*
Photo: Found5dollar, CC BY SA 4.0

Example Nr 9 (Video):

Times Square (1977-1992) by Max Neuhaus (1939-2009)

Watch on Dia Art Foundation

Sound art

Max Neuhaus coined the term *sound installation* for his unmarked sound pieces installed in stairwells, subway stations, swimming pools, and elevators.

- Defining a place through music
- Site-specific integration of sound into (architectural) spaces

"Traditionally, composers have located the elements of a composition in time. One idea which I am interested in is locating them, instead, in space, and letting the listener place them in his own time."

— Max Neuhaus, "Program Notes," in *Max Neuhaus: Inscription, Sound Works Volume I* (Ostfildern: Cantz, 1994), p. 34.

Sound installation

Explores the connection between sound, space, and visual experience, where sound interacts with its environment rather than existing only in time.

- Relation between sound and visual aspects
- Interaction between listener, object, and environment
- Sound unfolds through spatial experience rather than temporal sequence

→ The listener becomes part of the work, defining its time through movement and perception.

Sound, space and perception

Sound installations articulate space as an artistic medium, combining architectural, acoustical, and representational dimensions (Sharma, 2023).

- **Architectural space:** physical and social structure shaping sonic experience
- **Acoustical space:** perception of volume, reverberation, and localization
- **Representational space:** cultural or conceptual meanings evoked by sound

→ *Sound in installation art produces space, rather than merely occupying it.*

Zimoun, *150 prepared dc-motors, 270g wood, 210m string wire* (2015)

Example Nr 10 (Video):

Excerpts from works by *Zimoun*

Watch: Sound Installations & Sound Sculptures (2008-2025)

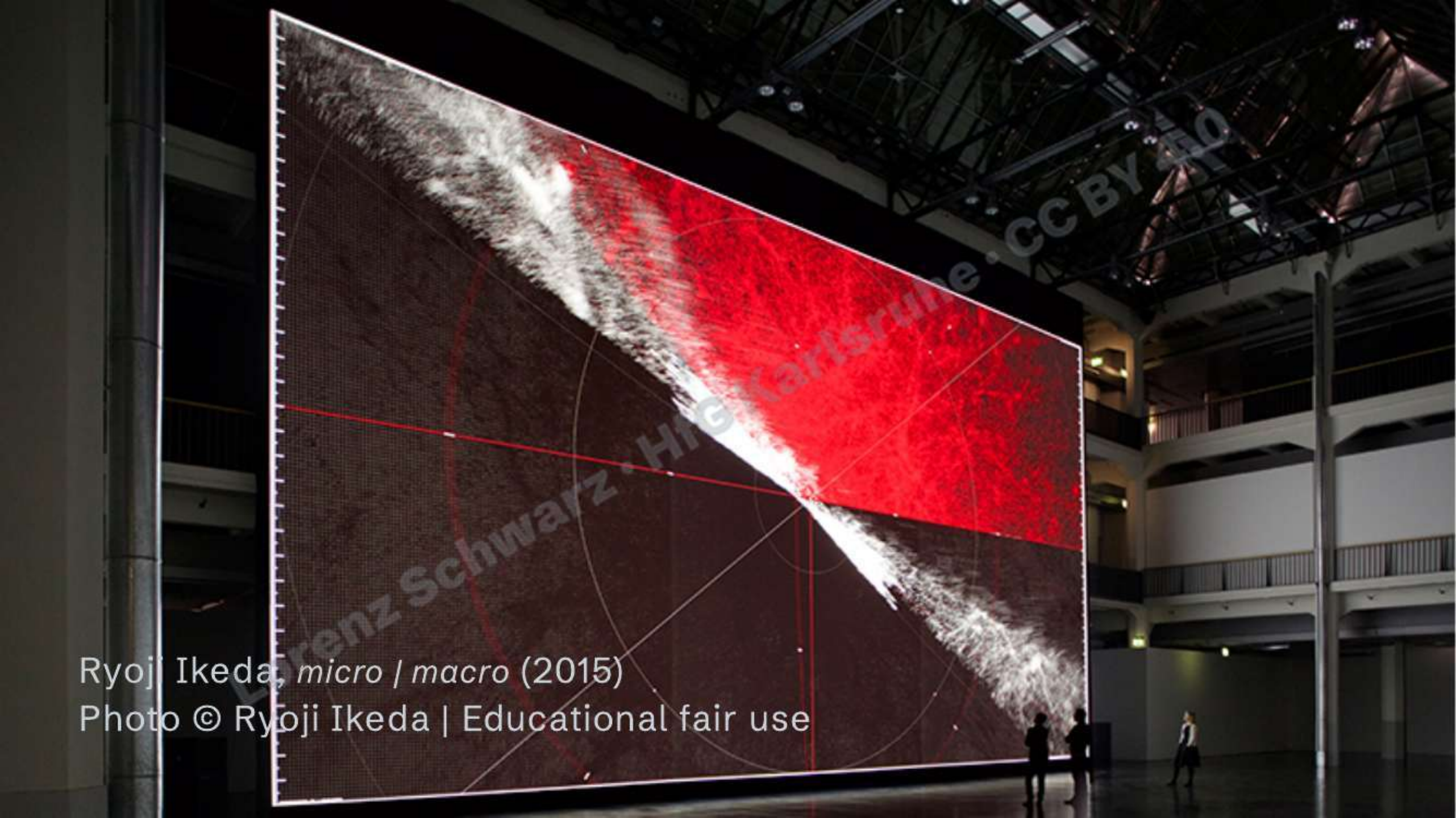
Digital approaches

Ryoji Ikeda (* 1966), Japanese sound artist and electronic composer

Works with data, mathematics, and digital aesthetics to create immersive audiovisual installations exploring extremes of frequency, rhythm, and scale.

Artist residency at CERN (2014-2015): Developed works based on particle physics and cosmology, including *micro / macro* (2015) commissioned by ZKM.

→ *Sound as digital/mathematical phenomenon*



Ryoji Ikeda, *micro / macro* (2015)
Photo © Ryoji Ikeda | Educational fair use

micro / macro at ZKM Karlsruhe (2015)

Site-specific installation commissioned by ZKM, transforming the former munitions factory's 7,000 m² atriums into an immersive audiovisual datascape.

Visualizes scales from quantum particles (*micro*) to observable universe (*macro*) through synchronized projections, stroboscopic light, and high-frequency tones—developed during Ikeda's CERN residency.

Watch: ZKM Video Documentation

The transformation of sound in the 20th century

Our understanding of sound transformed across the 20th century:

- **Recording technology:** separated sound from source (phonograph, tape)
- **Cage:** reframed listening as compositional act (non-intentional music)
- **Schafer:** politicized the acoustic environment (soundscape, ecology)
- **Installation art:** sound in architectural space (Neuhaus, Ikeda)
- **Sound sculpture:** kinetic objects producing sound (Zimoun, van der Heide, DeMarinis)

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Contact: lschwarz@hfg-karlsruhe.de