

# Music Performance with Crowdsourced Sounds: Collaboration by Chance

**MUST5001 Aesthetics and Ideas in the Sonic Arts**  
**Week 8**

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# Materials

- All links to readings / videos / websites on Blackboard under Learning Materials.
- Temporary link to all the recommended readings in PDF here:  


# Legends

 Essential Reading

 Recommended Reading

 Essential Media (Video, Audio)

 Recommended Media (Video, Audio)

 Essential Website

 Recommended Website

# **Some Definitions...**



*Wikipedia contributors. (2020, November 3). Crowdsourcing. In Wikipedia, The Free Encyclopedia. Retrieved November 24, 2020, from <https://en.wikipedia.org/w/index.php?title=Crowdsourcing&oldid=986905186>*

***Crowdsourcing (crowd + outsourcing) refers to a sourcing model in which individuals or organizations obtain goods and services, including ideas, voting, micro-tasks and finances, from a large, relatively open and often rapidly evolving group of participants.***

**Currently, crowdsourcing typically involves using the internet, but it is not necessarily an online activity.**

*Crowdsourced sounds* refers here to sounds created by other people / musicians / creators than the persons / musicians / creators who are using these sounds.

*Corpus-based concatenative synthesis is a sound synthesis method, based on descriptor analysis of any number of existing or live-recorded sounds, and synthesis by selection of sound segments from the database matching given sound characteristics.*



Schwarz, Diemo. (2012). *The Sound Space as Musical Instrument: Playing Corpus-Based Concatenative Synthesis*. In *Proceedings of the International Conference on New Interfaces for Musical Expression*.

*Audio repurposing* refers here to sampling and manipulating audio samples, generally from other artists, through retrieval (e.g., using queries by filter or similarity) from a database. Live audio repurposing refers to this practice in real time, suitable for performance.



Xambó, A., Lerch, A. and Freeman, J. (2019) “Music Information Retrieval in Live Coding: A Theoretical Framework”. *Computer Music Journal*, 42(4), Winter 2018, pp. 9-25.

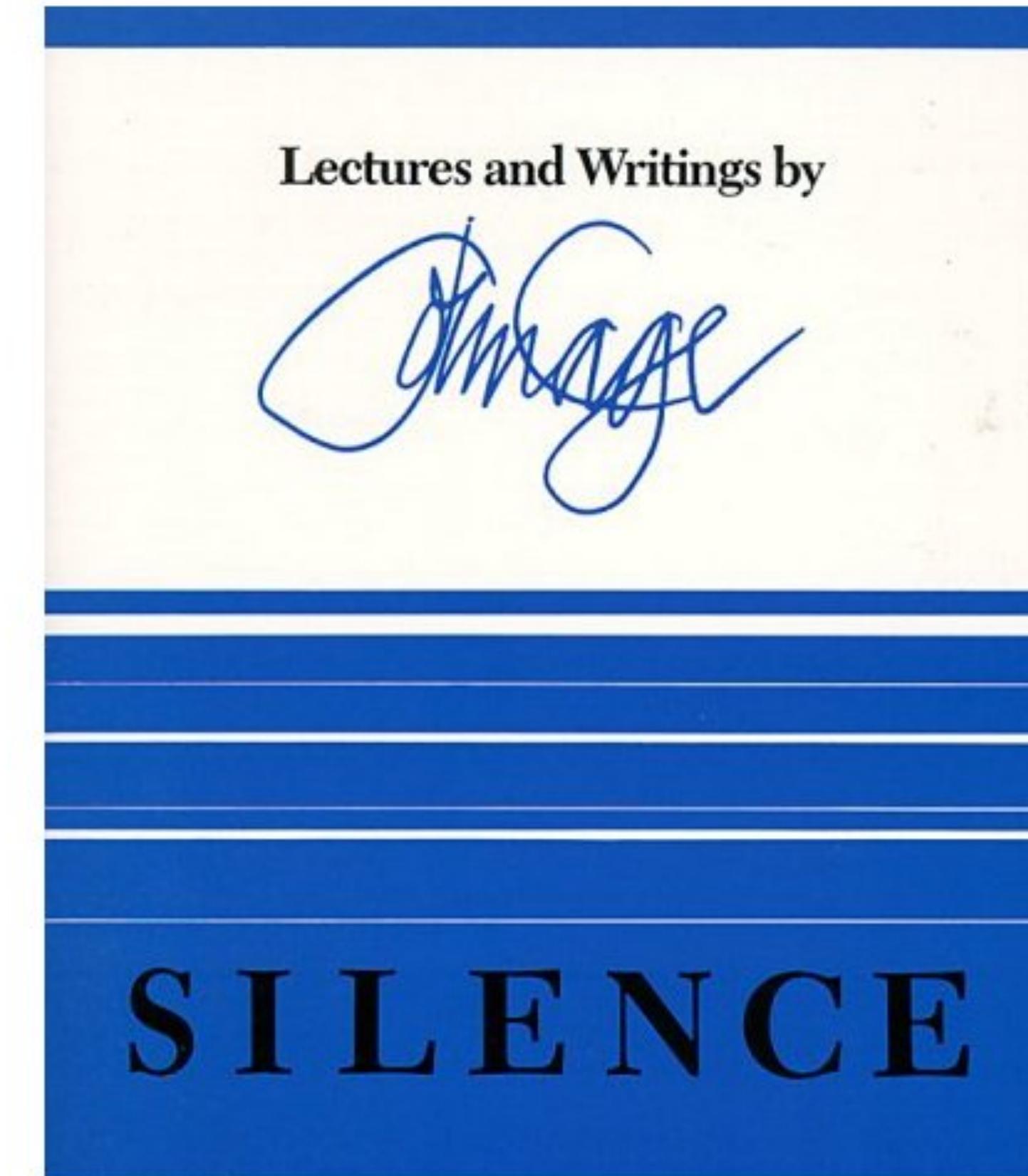
# Outline

- **Precedents**
- Comfort Break (5')
- **Web 2.0**
- **Corpus-based performance**
- Comfort Break (5')
- **Soundmap-based performance**
- **Crowdsourced based performance**

# Precedents

# John Cage

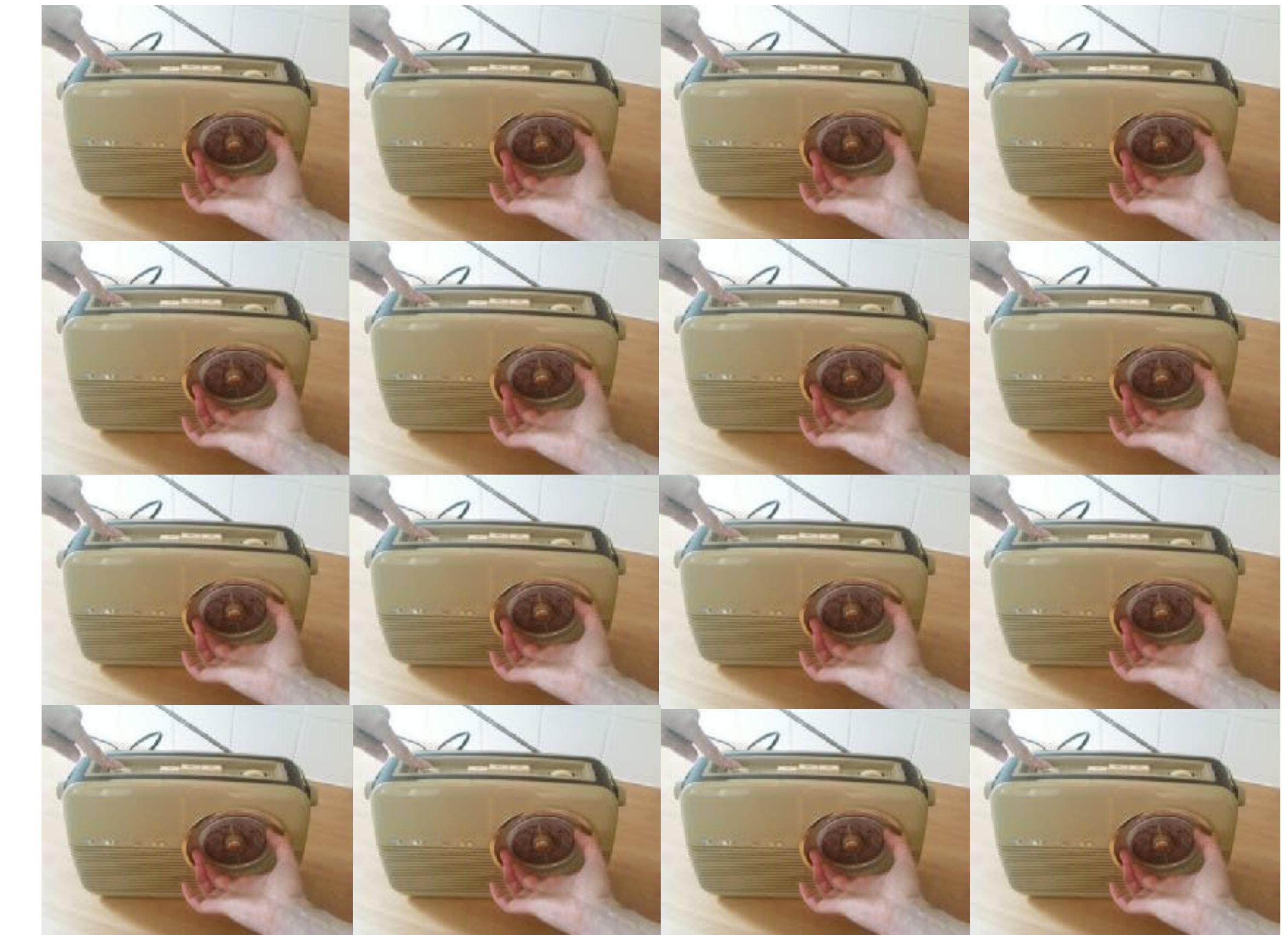
- The Chinese classic book *I Ching* (Book of Changes) was used as a tool to compose using chance. Questions are asked to the *I Ching* when composing.
- One prominent early result of composing using chance is “Imaginary Landscape No. 4” for 12 audio receivers, and “Music of Changes” for piano.



Cage, J. (1973). *Silence: Lectures and Writings*. Wesleyan University Press.

# Imaginary Landscape No. 4 (John Cage)

- Composition for 24 performers on 12 radios from 1951.
- Example of a fully indeterminate composition.
- Performance: <https://youtu.be/oPfwrFl1FHM>



# The League of Automatic Music Composers / The Hub

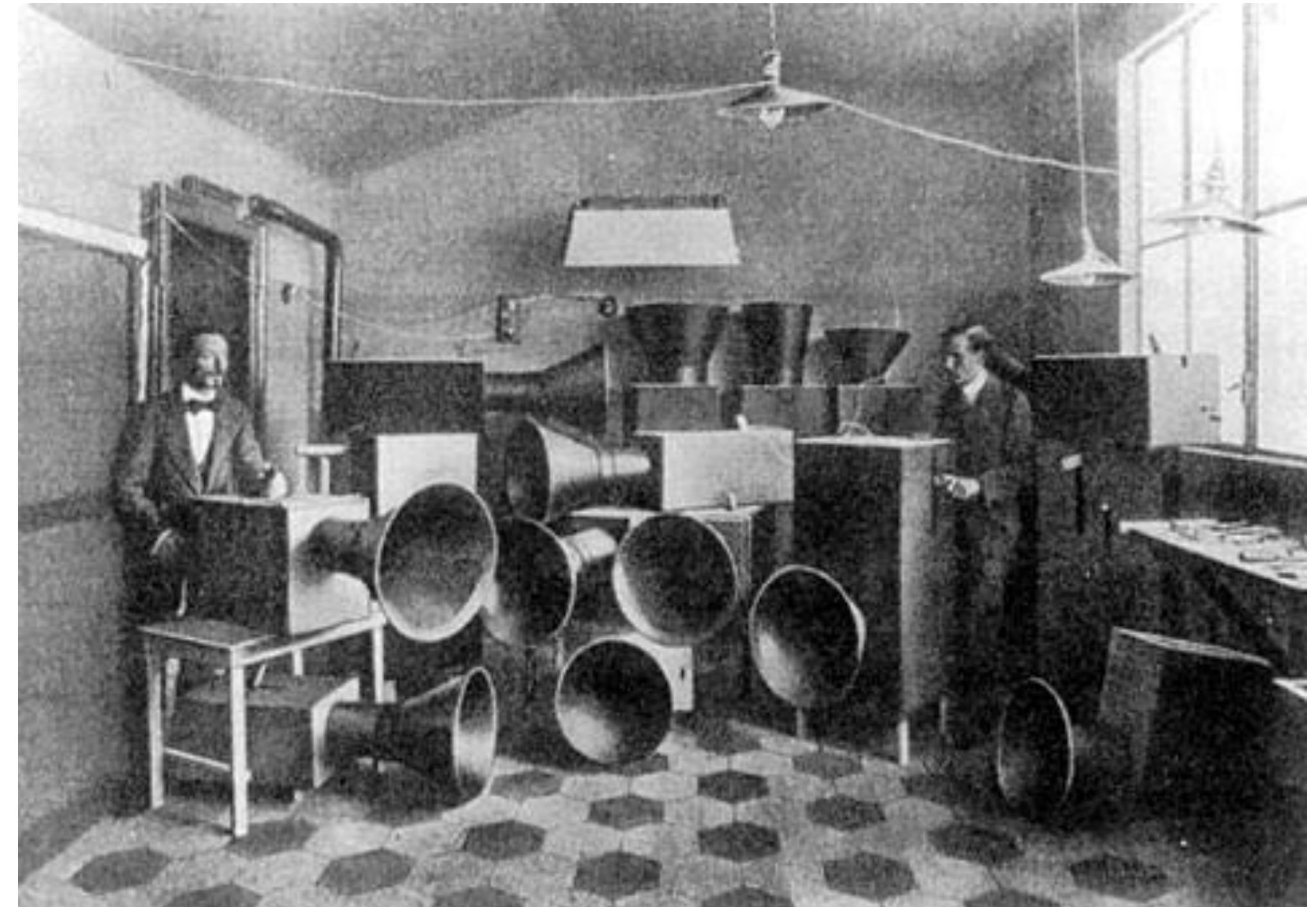
- Concert at the Blind Lemon by The League of Automatic Music Composers (1978):  
<https://archive.org/details/1978-1983-11977>
- “Hub” concerts since 1985: network-based concerts: first over phone lines via modem, then internet.



★ Gresham-Lancaster, Scot. (1998). "The Aesthetics and History of the Hub: The Effects of Changing Technology". *Leonardo Music Journal*. Vol. 8, pp. 39–44.

# Intonarumori ('noise makers')

- Luigi Russolo released the Art of Noises manifesto in 1913 which pronounced “we get infinitely more pleasure imagining combinations of the sounds of trolleys, autos and other vehicles, and loud crowds, than listening once more, for instance, to the heroic or pastoral symphonies” ([http://artype.de/Sammlung/pdf/russolo\\_noise.pdf](http://artype.de/Sammlung/pdf/russolo_noise.pdf))
  - Russolo made and performed with an orchestra of noise machines called ‘Intonarumori’.
- Video: <https://youtu.be/8GpN5FHO60c>



# Pierre Schaeffer

- Key figure in the development of *musique concrète* and the use or recorded sounds as raw material.
- Pioneer in contemporary recording and sampling techniques.



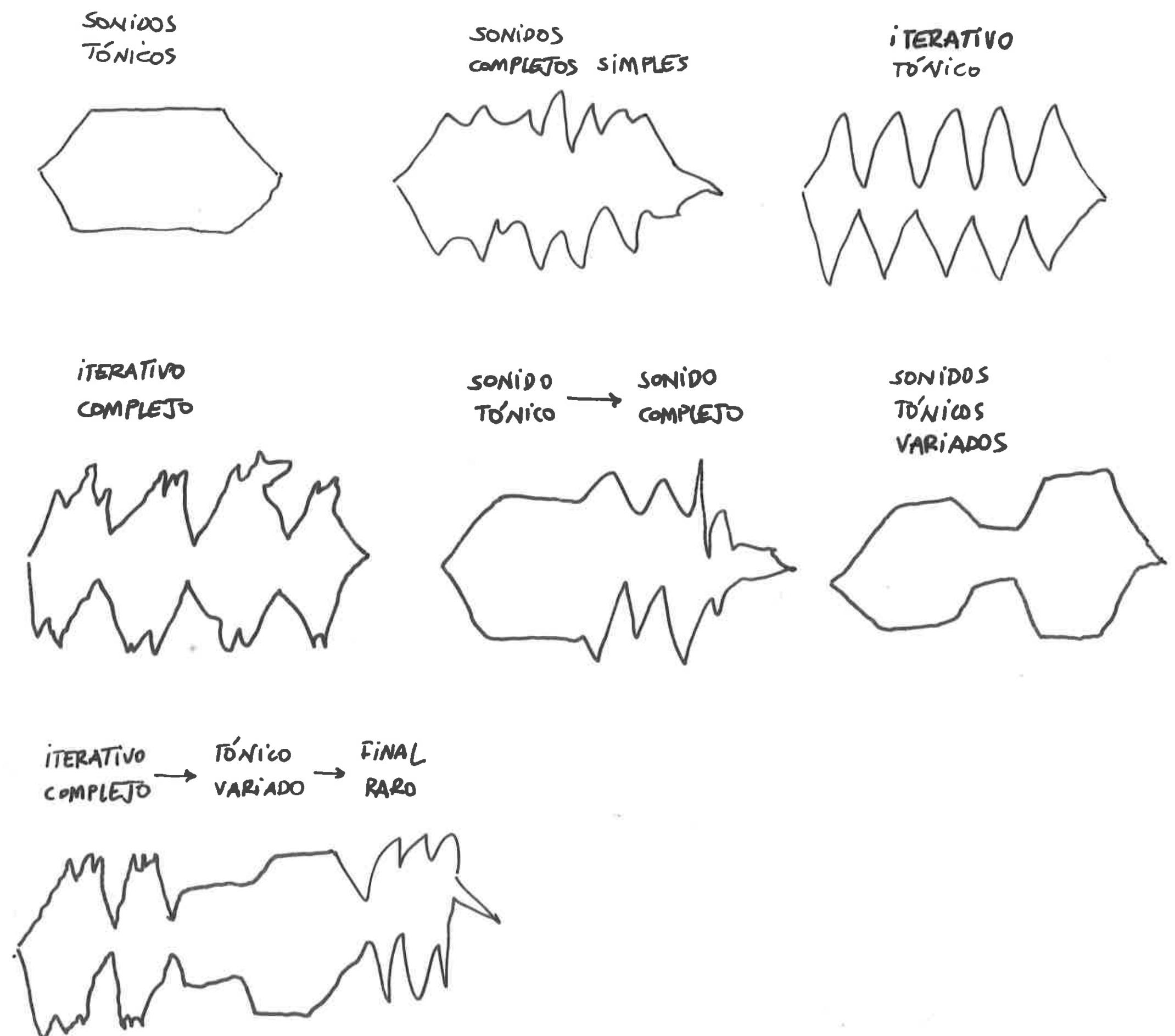
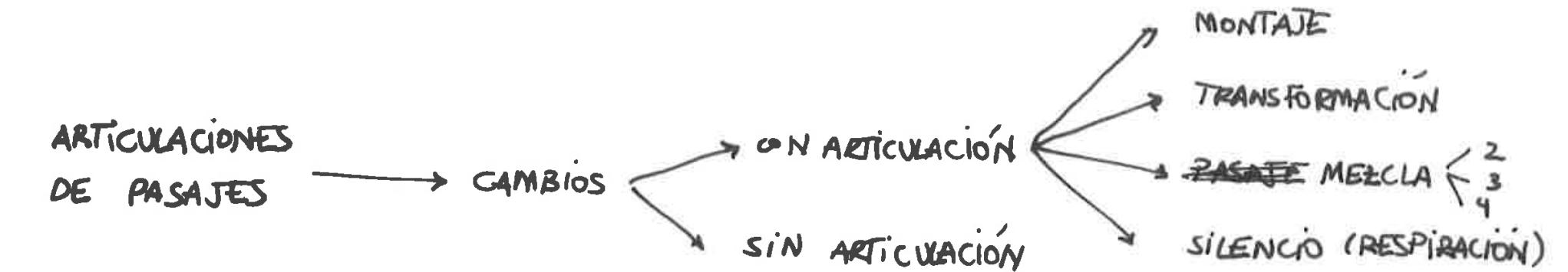
★ Schaeffer, Pierre. *Treatise on Musical Objects: An Essay Across Disciplines*. Vol. 20. Univ of California Press, 2017. (Originally published: 1966)

# ● Acoustic composition's workshop by Beatriz Ferreyra (2014)

## Algorithmic methods for music creation

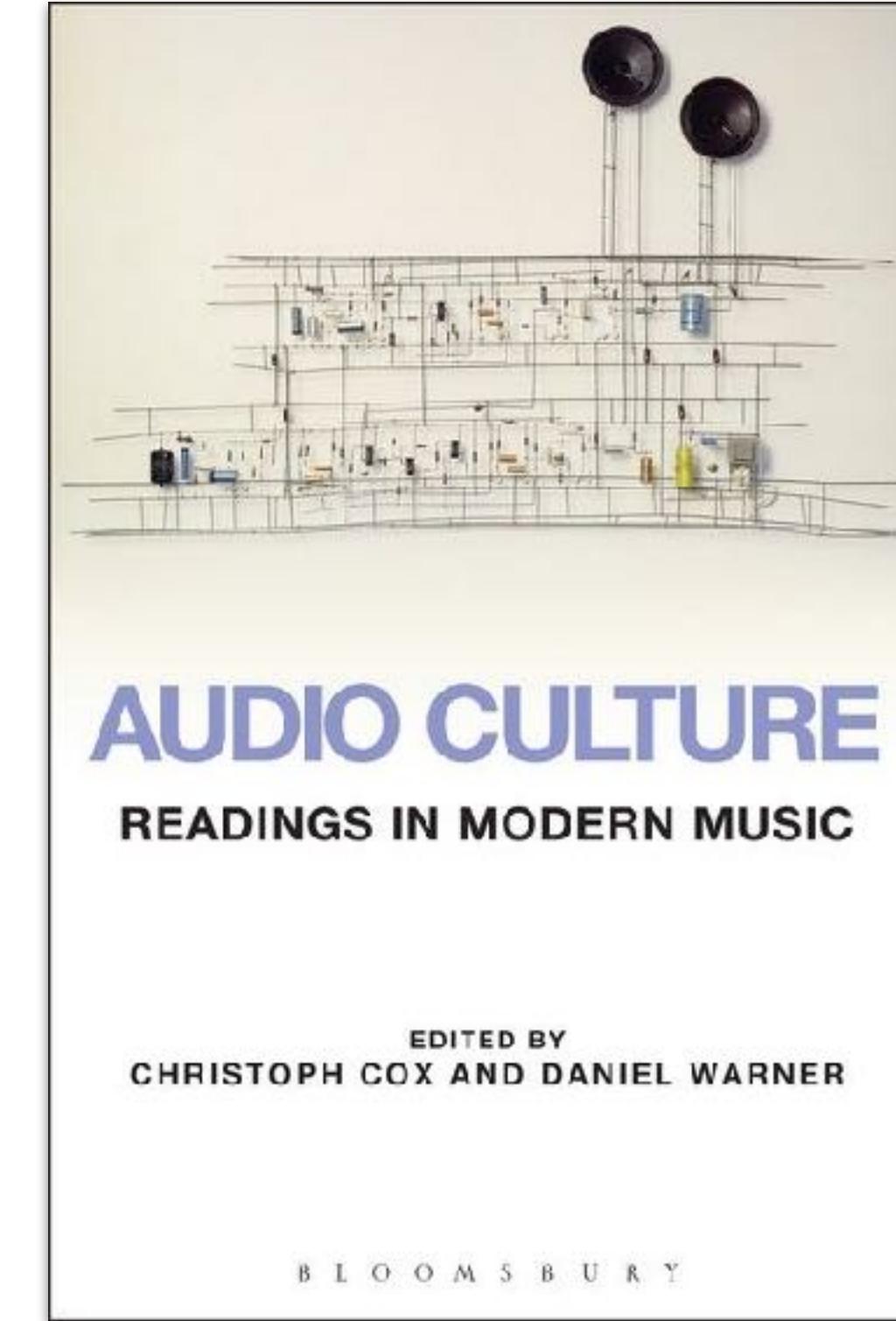
Self-projection of sounds using voice that can be later used for music composition (embodiment)

Physical relation with the sound



# Audio Culture

- Exhaustive mapping of new aural and discursive terrain of the current vanguard music.
- Audio Culture explores the interconnections among such forms as minimalism, indeterminacy, *musique concrète*, free improvisation, experimental music, avant-rock, dub reggae, Ambient music, HipHop, and Techno.
- Writings from John Cage, Brian Eno, Glenn Gould, Umberto Eco, Ornette Coleman, Jacques Attali, Simon Reynolds, Pauline Oliveros, Paul D. Miller, David Toop, John Zorn, Karlheinz Stockhausen, and so on.



Cox, Christoph, and Daniel Warner, eds. (2017). *Audio Culture, Revised Edition: Readings in Modern Music*. Bloomsbury Publishing USA. (Originally published: 2004)



# Comfort Break

# **Web 2.0**

# **A socio-technological change**



***Web 2.0 (also known as Participative (or Participatory) and Social Web) refers to websites that emphasise user-generated content, ease of use, participatory culture and interoperability (i.e., compatible with other products, systems, and devices) for end users.***

*Wikipedia contributors. (2020, November 5). Web 2.0. In Wikipedia, The Free Encyclopedia. Retrieved November 24, 2020, from [https://en.wikipedia.org/w/index.php?title=Web\\_2.0&oldid=987269970](https://en.wikipedia.org/w/index.php?title=Web_2.0&oldid=987269970)*

# Online Media Databases

- The Internet provides access to hundreds of thousands of digital audio files.
- There exists a range of online services that offer both free or paid access to a varied range of multimedia content (e.g. SoundCloud for music, Freesound for sounds, YouTube for videos, Flickr for photos, and so on).
- New ways of managing this content have emerged (e.g. sharing, reusing, remixing and repurposing), which has led to a new community of **prosumers** who both produce and consume online digital content.



Xambó, A., Font, F., Fazekas, G. and Barthet, M. (2019) “Leveraging Online Audio Commons Content For Media Production”. In Michael Filimowicz (ed.) *Foundations in Sound Design for Linear Media: An Interdisciplinary Approach*, Routledge. pp. 248-282.

# Free Culture

- Reported how copyright has expanded in duration, scope, reach, control, concentration of the media industry and used to limit competition.
- The scientific, artistic and cultural progress is constrained by current legal and economic environment of copyright.
- To support “open source and free software” (Richard Stallman and Free Software Foundation) is not to oppose copyright.
- Promotion of the structure of Creative Commons (CC) as complement to copyright to allow for derivative works. Internet was important as a new medium of content distribution to set CC.
- The development of CC licenses has offered a finer-grained level of licensing possibilities, compared to the classical copyright model, which was too strict for the new practices around the generation and reuse of digital content



★ Lessig, L. (2004). *Free Culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity*. (<http://free-culture.cc/freeculture.pdf>)

# Creative Commons

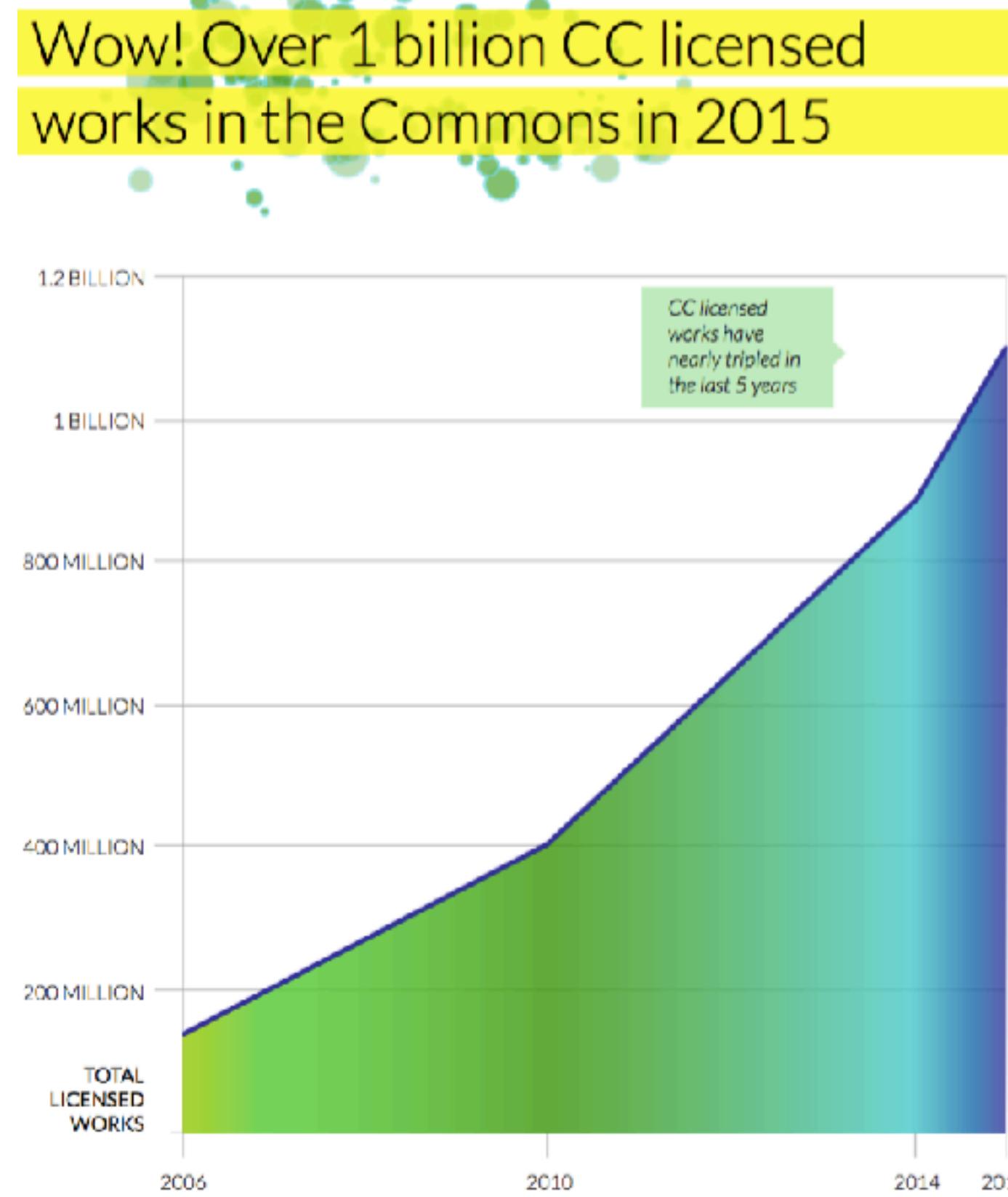
- A change brought by the Internet has been Creative Commons (CC).
- CC is a mechanism founded in 2001 to establish a legal and technical infrastructure for sharing content.
- CC offers a range of licenses and has helped to foster the WWW as we know it nowadays.

<i>CC Elements</i>	<i>Description</i>
<b>BY</b>	Attribution or the need to credit the original creation.
<b>NC</b>	Noncommercial or building upon the original work noncommercially.
<b>ND</b>	Nonderivatives or keeping unchanged the original creation.
<b>SA</b>	Share alike or license the new creations under identical terms than the original creation.



Merkley, R. (2015). *State of the Commons*. Available at: <https://apo.org.au/node/60681/>

# State of the Commons



- Audio tracks (4 millions reported in 2015 from 16 platforms.



Merkley, R. (2015). *State of the Commons*. Available at: <https://apo.org.au/node/60681/>

# Freesound

- Freesound aims to create a huge collaborative database of audio snippets, samples, recordings, bleeps, ... released under Creative Commons licenses that allow their reuse.

◆ Website: <https://freesound.org>

The screenshot shows the Freesound website homepage. At the top right are links for "Register", "Log In", and "Upload Sounds". Below that is a search bar with the placeholder "search sounds". The main content area features a "Random sound of the day" section with a thumbnail of a waveform for a file named "bamboochimeDVR.wav" by "NoiseCollector". The file is described as a "Lofi handheld memo recording of bamboo wind chimes". Below this are two blog entries: "SIAS project: Sound Art in Colombia" dated July 6th, 2020, and "Barcelona Confinement Soundscape" dated April 29th, 2020. To the right, there's a yellow box titled "Welcome to Freesound" stating "Freesound is a collaborative database of Creative Commons Licensed sounds. Browse, download and share sounds." Below it is a "Support Us" section with a "T-Shirt" image and buttons for "Europe" and "US Canada and Asia". At the bottom is a "Love Freesound?" section with a "Donate Now" button.

# **Corpus-based Performance**

# BBCut

- Automated breakbeat cutting.
  - Algorithmic techniques used to cut up any source of audio.
- ◆ Phone app: <https://composerprogrammer.com/iphone.html#BBCut>
- LiveCut (based on BBCut): <https://youtu.be/sNHzhjE2Zgo>



★ Collins, N. 2002. "The BBCut Library." In *Proceedings of the International Computer Music Conference*, pp. 313–316.

# The Sound Space as Musical Instrument

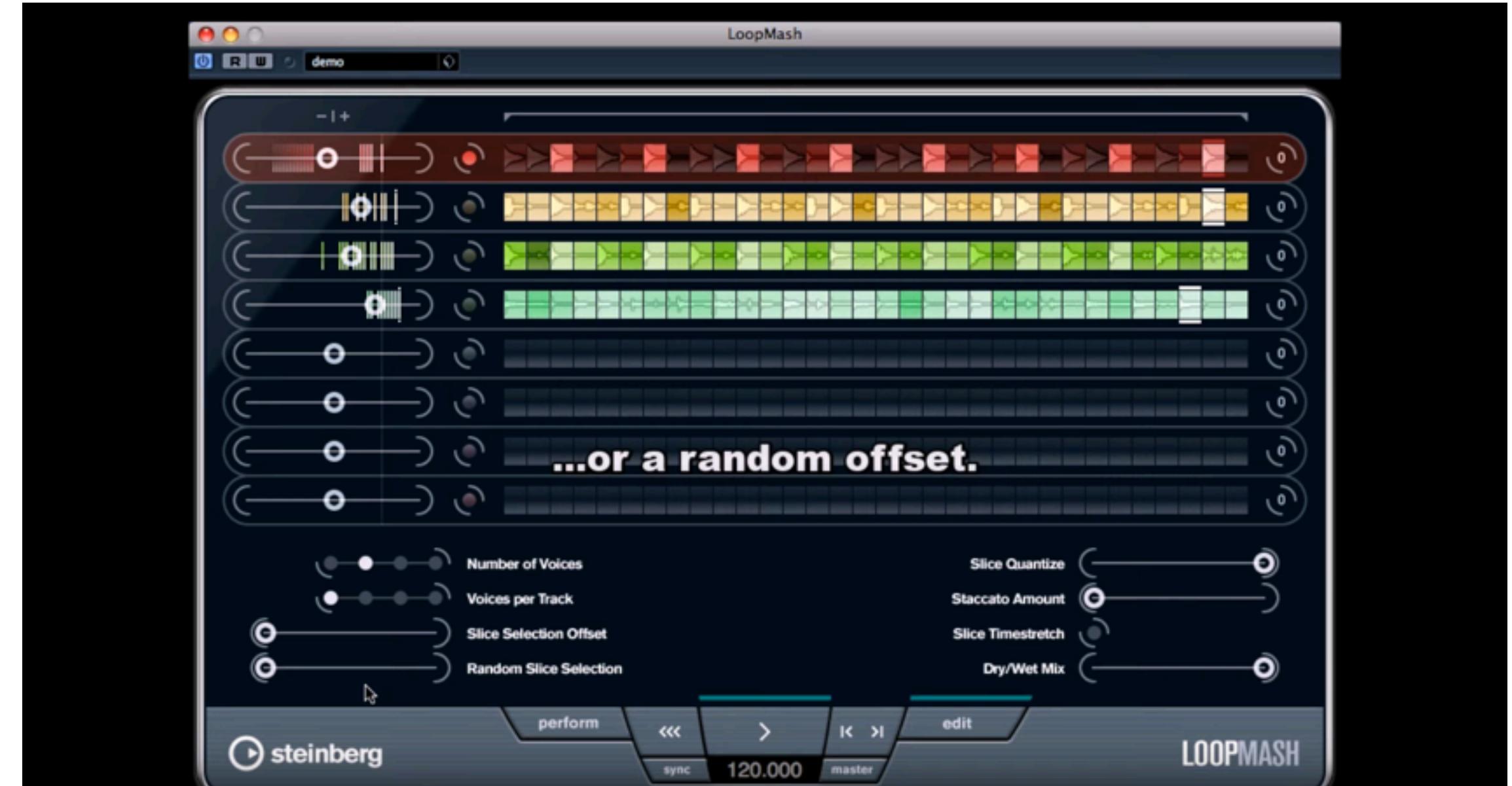
- Descriptor analysis of any number of existing or live-recorded sounds, and synthesis by selection of sound segments from the database matching given sound characteristics.
  - The actual instrument is the space of sound characteristics, through which the performer navigates with gestures
- ◆ CataRT instrument: [http://imtr.ircam.fr/imtr/CataRT\\_Instrument](http://imtr.ircam.fr/imtr/CataRT_Instrument)
- Diemo Schwarz - CataRT Tangible Timbre Spaces: <https://youtu.be/VE5Rc46fk4Y>



★ Schwarz, Diemo. (2012). *The Sound Space as Musical Instrument: Playing Corpus-Based Concatenative Synthesis*. In *Proceedings of the International Conference on New Interfaces for Musical Expression*.

# LoopMashVST

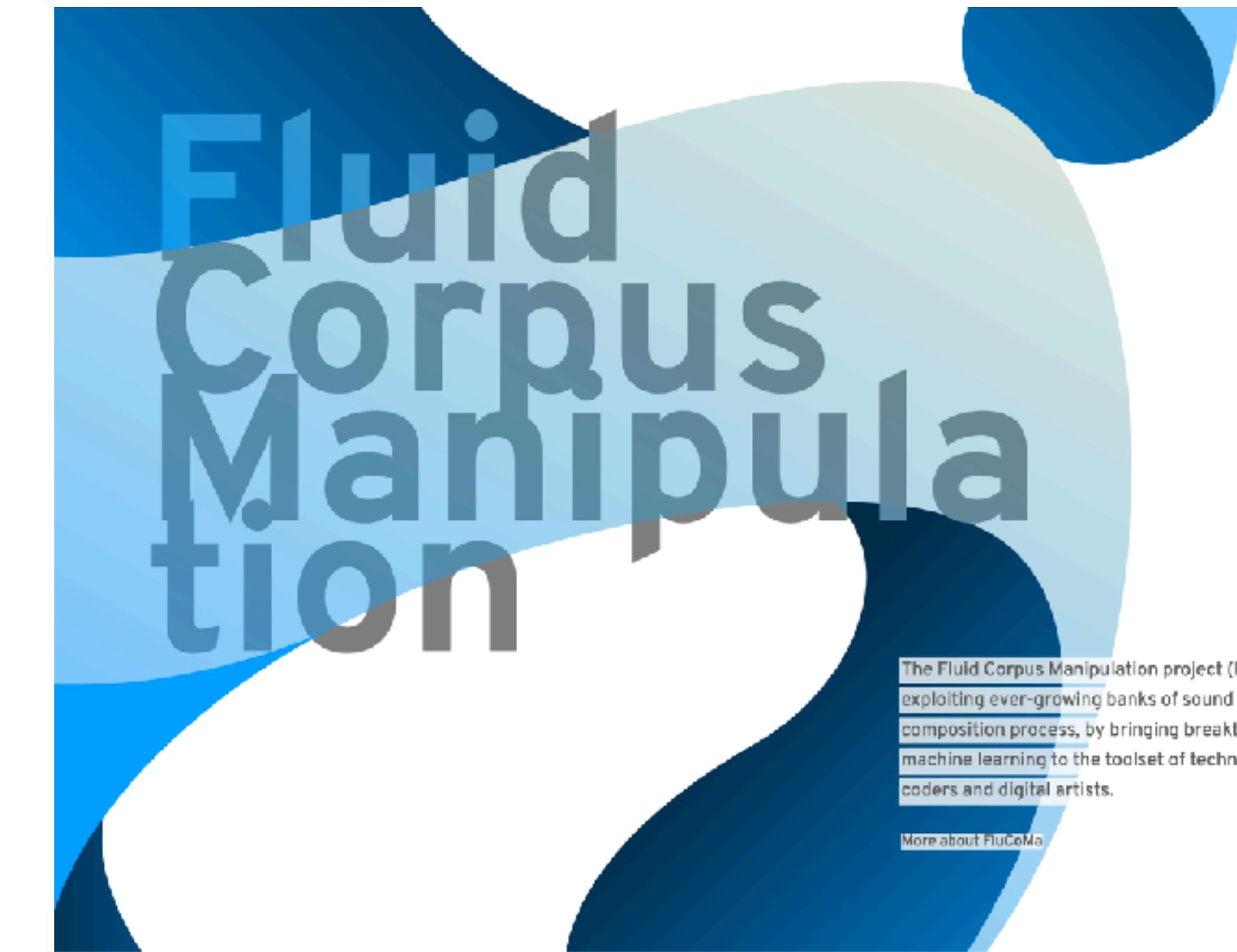
- Virtual instrument that offers a way of creatively working with loops and beats to create rhythms and grooves.
  - Developed in a team effort by MTG, Steinberg and Yamaha, and integrated into Cubase 5.
- LoopMash VST demo: <http://youtu.be/SuwVV9zBq5g>



# FluCoMa

- The Fluid Corpus Manipulation project (FluCoMA) instigates new musical ways of exploiting ever-growing banks of sound and gestures within the digital composition process, by bringing breakthroughs of signal decomposition DSP and machine learning to the tool set of techno-fluent computer composers, creative coders and digital artists.

- ◆ Fluid Corpus Manipulation website: <https://www.flucoma.org>
- Fluid Corpus Manipulation YouTube channel: <https://www.youtube.com/channel/UCw44GjWHPQs0PKnj2OJmWCA>

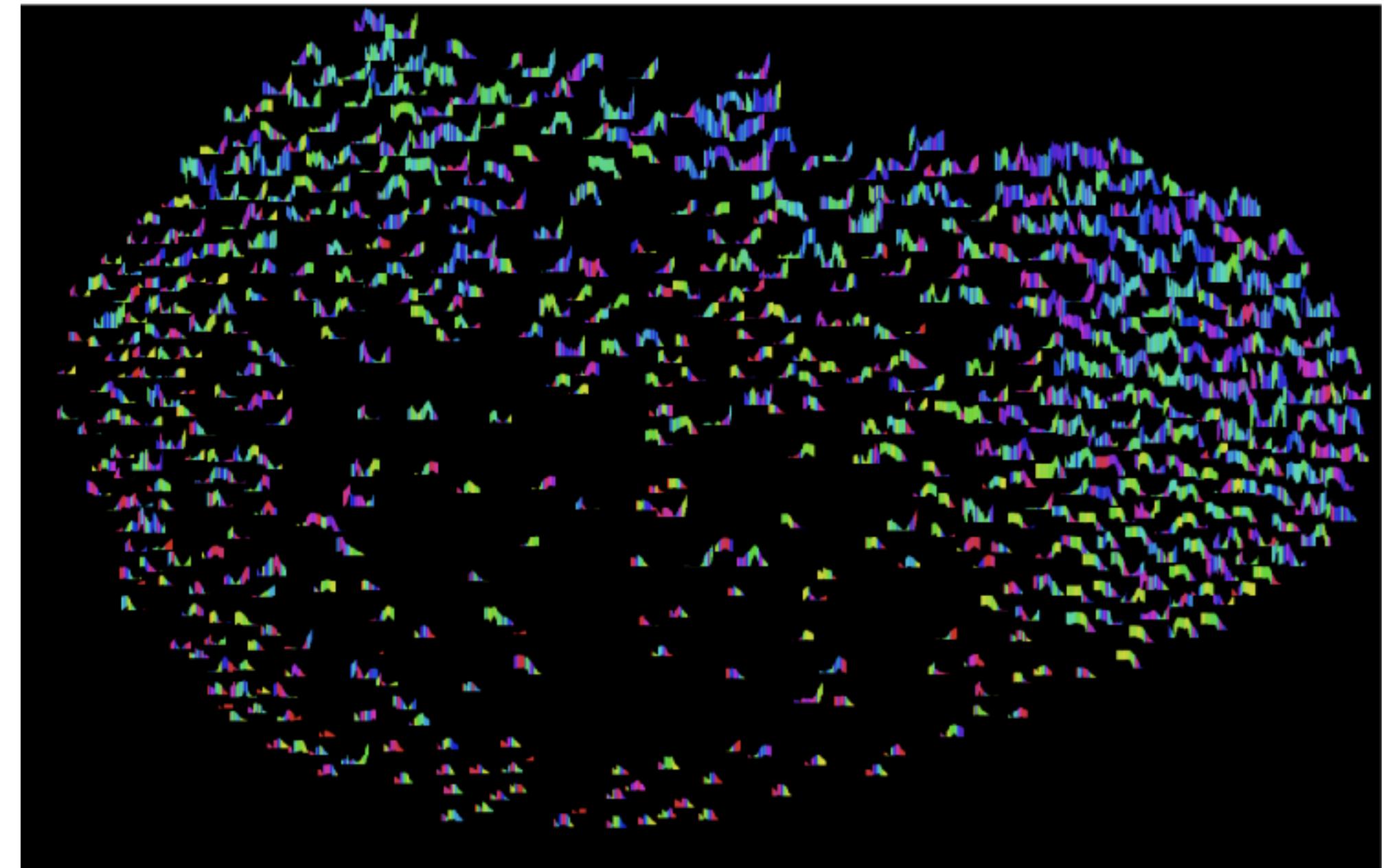


★ Tremblay, P. A., Green, O., & Roma, G. (2019) *From Collections to Corpora: Exploring Sounds through Fluid Decomposition* In *Proceedings of the ICMC-2019*.

★ Roma, G., Green, O., & Tremblay, P. A. (2019). *Adaptive Mapping of Sound Collections for Data-driven Musical Interfaces*. In *Proceedings of the Conference on New Interfaces for Musical Expression 2019*.

# map mop

- Generated “sound maps” visualisations of sound collections generated automatically from audio analysis.
- Performance “map mop” by Gerard Roma:  
[https://youtu.be/Cwm\\_njSp1IQ](https://youtu.be/Cwm_njSp1IQ)



★ Roma, G. (2019). “map mop”. In *Proceedings of the International Web Audio Conference*. pp. 166.



# Comfort Break

# **Soundmap-based Performance**



**Sound maps** refer to digital geographical maps that put emphasis on the sonic representation of a specific location. Sound maps are created by associating landmarks (streets in a city, train stations, stores, pathways, factories, oil pumps, etc.) and soundscapes.

**Sound maps are in many ways the most effective auditory archive of an environment.**

*Wikipedia contributors. (2020, October 3). Sound map. In Wikipedia, The Free Encyclopedia. Retrieved 00:02, November 25, 2020, from [https://en.wikipedia.org/w/index.php?title=Sound\\_map&oldid=981598806](https://en.wikipedia.org/w/index.php?title=Sound_map&oldid=981598806)*



## The World as an Instrument

–Workshop by Francisco López (2006)



López, Francisco. "Environmental sound matter." *La Selva (Sound environments from a Neotropical rain forest)* (CD). Holanda: V2\_Archief. Cobertura (1998). [https://youtu.be/1\\_slk9NmGGM](https://youtu.be/1_slk9NmGGM)

**“Everyday listening is the experience of hearing events in the world rather than sounds per se”**

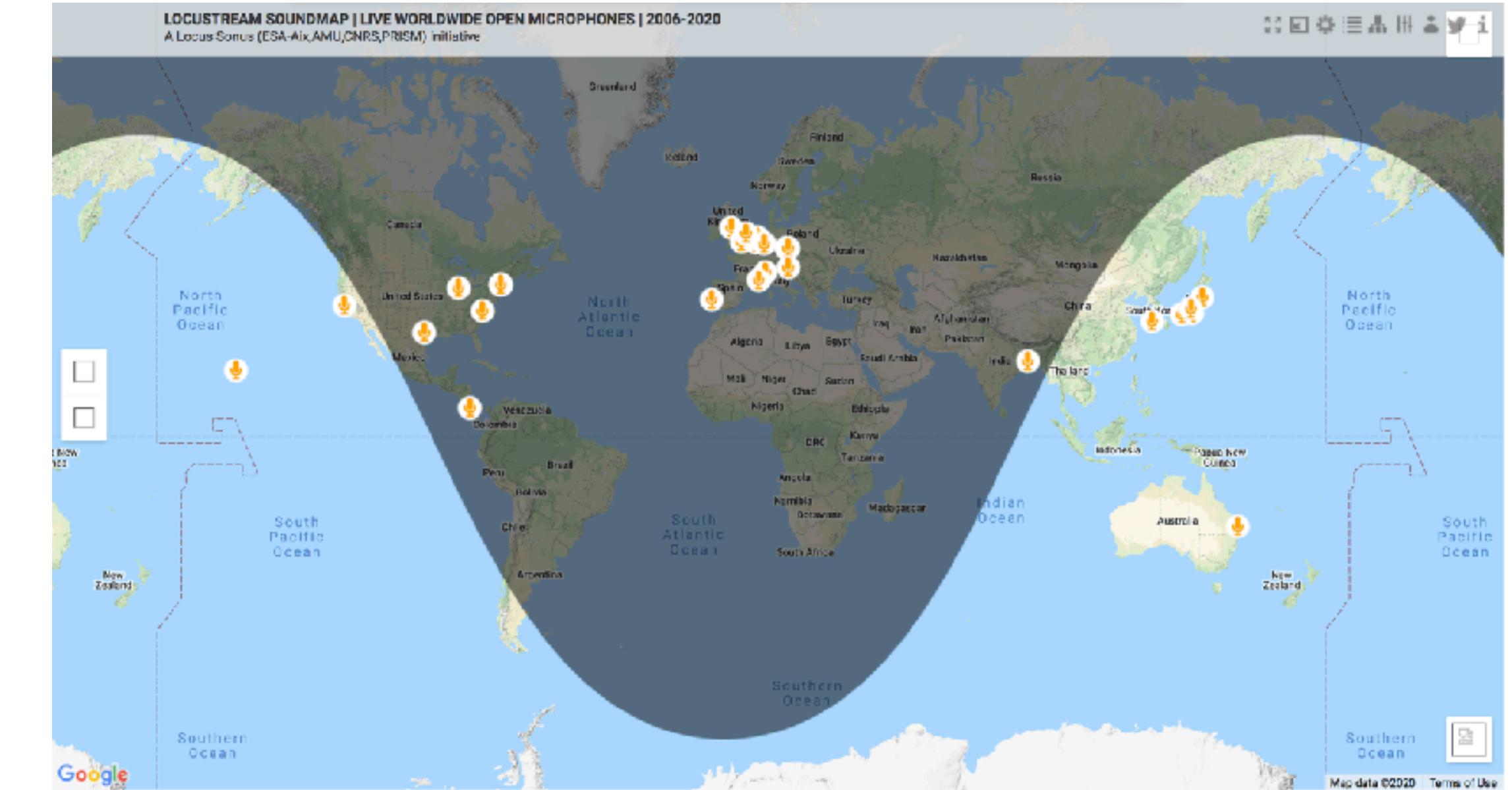
*–William W. Gaver*



Gaver, William W. (1993) “*What in the world do we hear?: An ecological approach to auditory event perception.*” *Ecological psychology* 5.1 (1993): 1-29.

# Locus Sonus Soundmap

- Live worldwide open microphones.
- ◆ Website: <http://locusonus.org/soundmap/051>



# LiveShout mobile app

- An interactive audio streaming mobile app.
- ◆ Website: <https://pure.qub.ac.uk/en/publications/liveshout-iphone-and-android-versions-an-interactive-audio-stream>



★ Chaves, R. and Rebelo, P. (2011). *Sensing Shared Places: Designing a mobile audio streaming environment*. *Body, Space & Technology*, 10(1).

# Telematic performance with LiveShout

- *Absurdity* (concept by Franziska Schroeder and Matilde Meireles).
  - “*I’ve always belonged to what isn’t where I am and to what I could never be*” (Fernando Pessoa).
  - A distributed performance using LiveSHOUT with members from the Female Laptop Orchestra (FLO).
- ◆ Website: <https://www.federicovisi.com/physically-distant-2-more-online-talks-on-telematic-performance>
- ◆ Blog post: <https://femalelaptoporchestra.wordpress.com/2020/07/28/flo-at/>



# Crowdsourced-based Performance

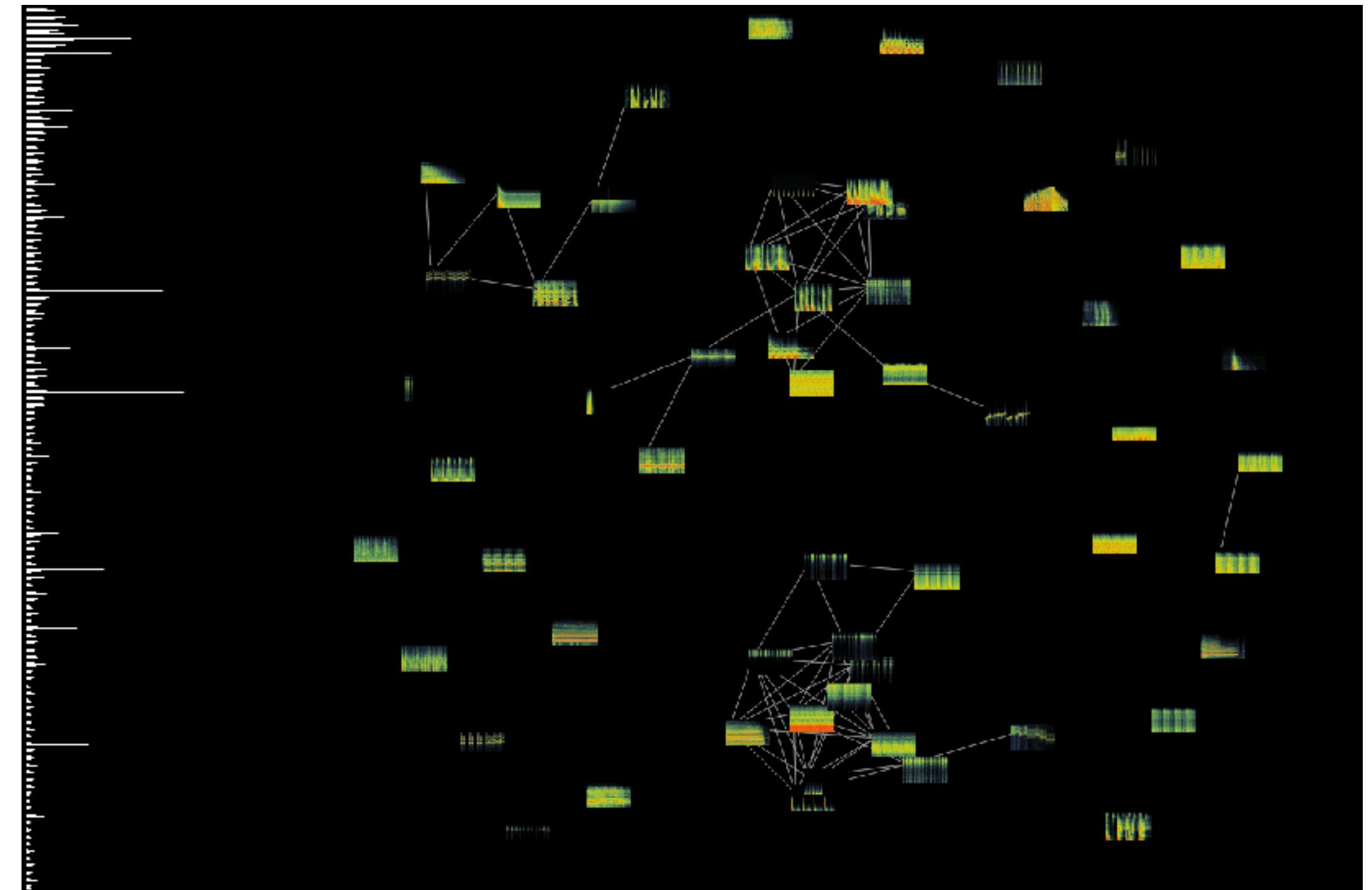
# Elementary Gestalts for Gesture Sonification

- Sound is conceived as a representation of basic gesture elements.
  - Sounds retrieved from [freesound.org](http://freesound.org) by means of specific keywords.
- ◆ Website: [http://www.visualsonic.eu/  
performance.html](http://www.visualsonic.eu/performance.html)
- Performance Swish & Break (2010) by Maurizio Goina, Pietro Polotti & Sarah Taylor: <https://vimeo.com/13954606>



# Floop

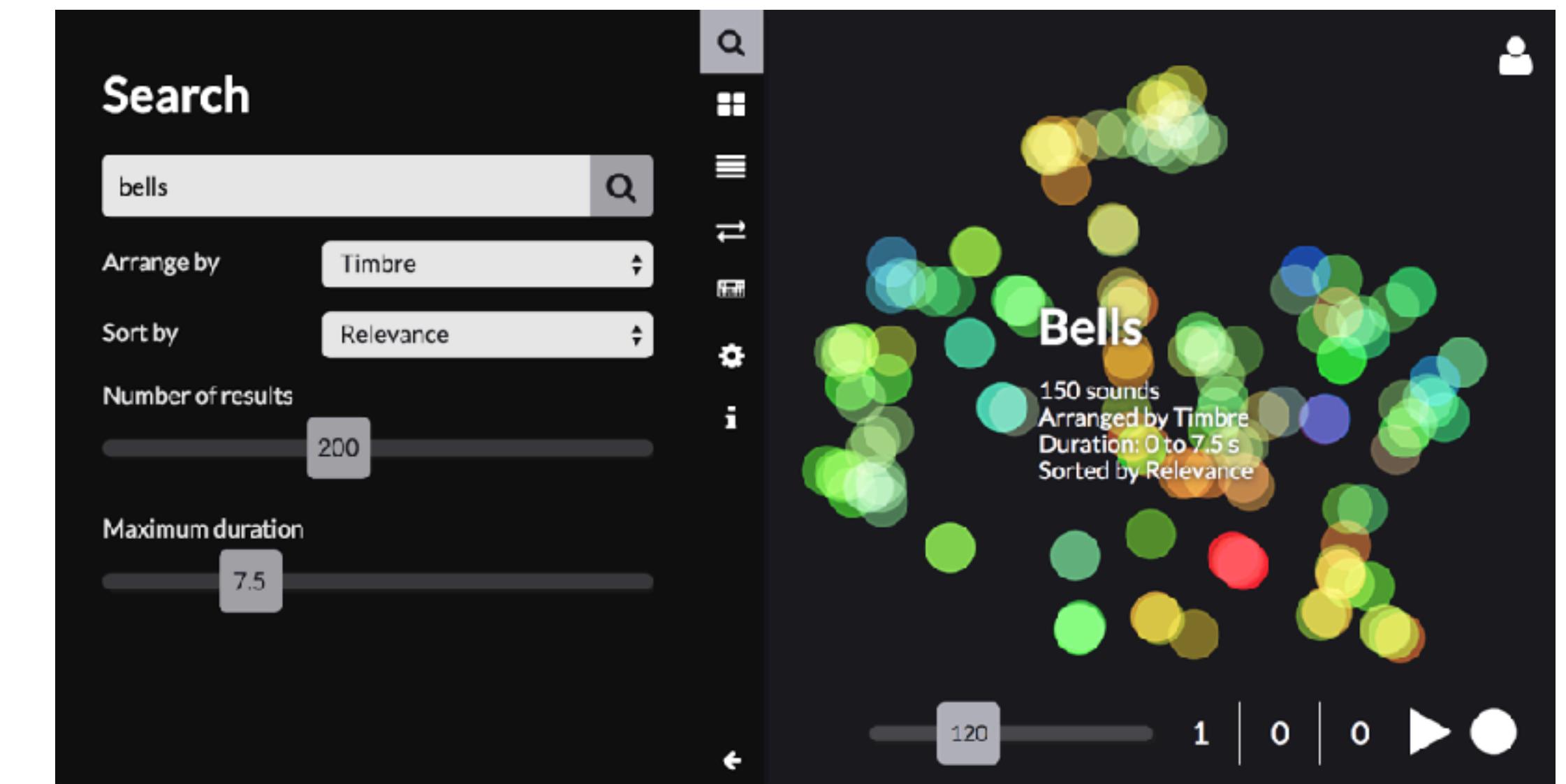
- Audio clips constrained to their rhythm.
  - Use of visualisation tools for exploring the database content. This requires an offline analysis of the data.
- ◆ Website: <https://labs.freesound.org/apps/2015/02/01/floop.html>
- ◆ Performance Floop Jam: <https://networkmusicfestival.org/programme/performances/floop-jam/> (*video offline*)



★ Roma, G. and Serra, X. (2015). "Music Performance by Discovering Community Loops". In *Proceedings of the International Web Audio Conference*.

# Freesound Explorer

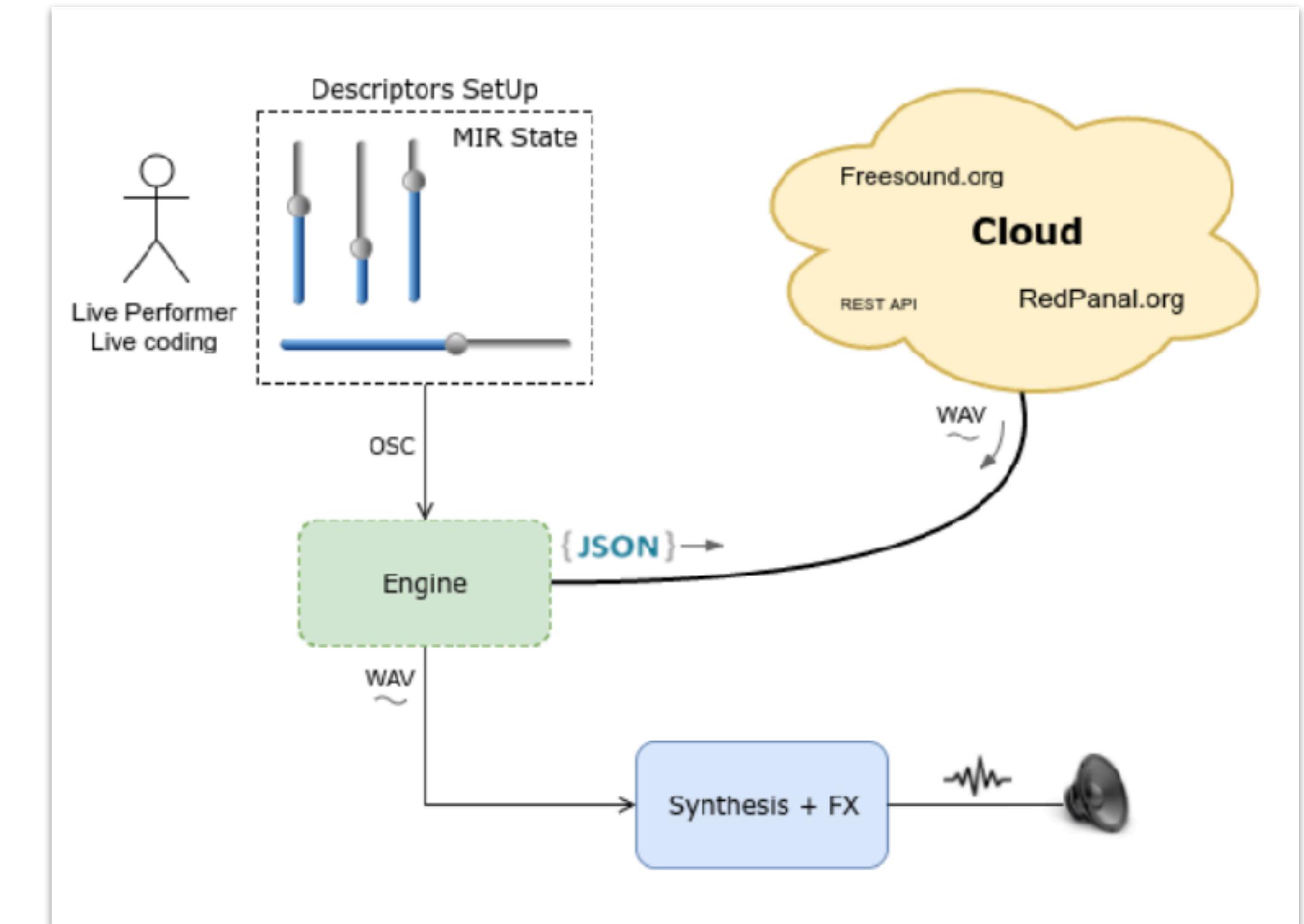
- Use of visualisation tools for exploring the database content.
  - Sounds are organised by similarity. Music is created by linking content in this space.
- ◆ Website: <https://labs.freesound.org/apps/2017/08/21/freesound-explorer.html>



★ Font, F. and Bandiera, G. (2017). “Freesound Explorer: Make Music While Discovering Freesound!”. In *Proceedings of the International Web Audio Conference*.

# APICultor

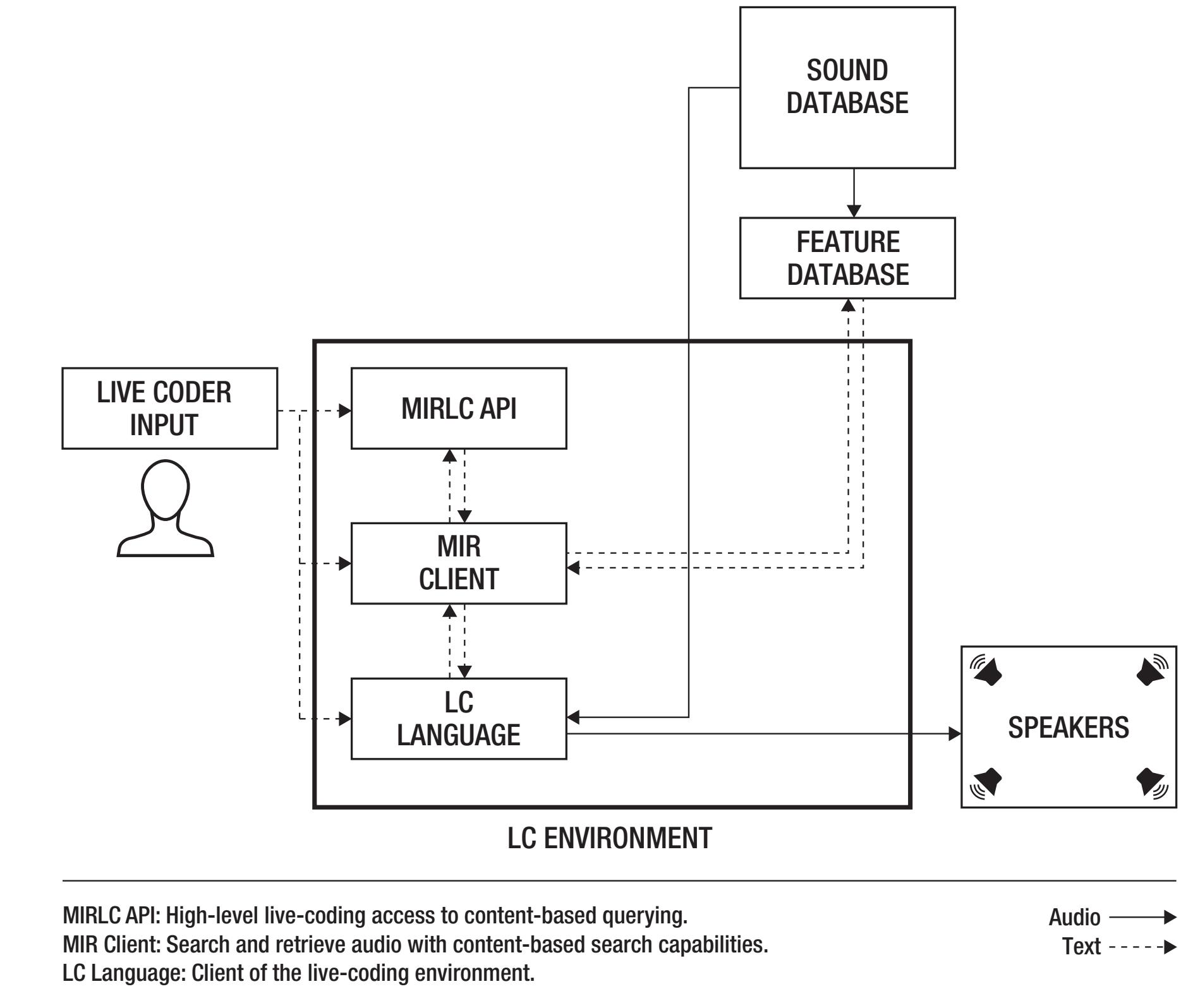
- Retrieval of audio samples from the web, mix and transform them in real time.
  - Designed as a “cloud” instrument.
- Audio samples: <http://redpanal.org/p/reciclado-de-samples>



★ Ordiales, H., and M. L. Bruno. (2017). “Sound Recycling from Public Databases: Another BigData Approach to Sound Collections.” In Proceedings of the International Audio Mostly Conference.

# MIRLCRep

- Provides a high-level musical approach to operate with audio clips in live coding using music information retrieval techniques.
  - Mid- and high-level content-based queries (e.g., duration, bpm, pitch, key, or scale) and text-based queries (i.e., tags).
  - Use of an online database with preanalyzed audio features.
  - It is designed for repurposing audio samples from Freesound using Su- perCollider.
- Demo: <https://vimeo.com/249968326> (8:36)

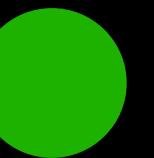


★ Xambó, A., Lerch, A. and Freeman, J. (2019). "Music Information Retrieval in Live Coding: A Theoretical Framework". *Computer Music Journal*, 42(4), Winter 2018, pp. 9-25.

# MIRLCRep: Music Improvisation by Jack Armitage

## Sound samples used:

Ambience, Jacksonville Zoo, A.wav by InspectorJ <https://freesound.org/people/InspectorJ/sounds/400831/>  
Birds Singing 03.wav by DCPoke <https://freesound.org/people/DCPoke/sounds/387978/>  
Birds in the forest.wav by straget <https://freesound.org/people/straget/sounds/402809/>  
Bird Whistling, Single, Robin, A.wav by InspectorJ <https://freesound.org/people/InspectorJ/sounds/416529/>  
Wind long.ogg by vandale <https://freesound.org/people/vandale/sounds/379465/>  
Children screaming in a Pirate Ship Playground, church bell in background by felix.blume <https://freesound.org/people/felix.blume/sounds/410518/>  
Ambience, Children Playing, Distant, A.wav by InspectorJ <https://freesound.org/people/InspectorJ/sounds/398160/>  
lawnmower.wav by gadzooks <https://freesound.org/people/gadzooks/sounds/20737/>  
Cat, Screaming, A.wav by InspectorJ <https://freesound.org/people/InspectorJ/sounds/415209/>  
High Street of Gandia (Valencia, Spain) by Jormarp <https://freesound.org/people/Jormarp/sounds/207208/>  
Dog Barking, Single, A.wav by InspectorJ <https://freesound.org/people/InspectorJ/sounds/406085/>  
TRAIN\_VOICE.mp3 by Manicciola <https://freesound.org/people/Manicciola/sounds/173314/>  
Walking in Long Grass.wav by Leafs67 <https://freesound.org/people/Leafs67/sounds/155589/>  
Group\_of\_Dogs\_Barking.WAV by ivolipa <https://freesound.org/people/ivolipa/sounds/337101/>  
Dog Barking, Single, A.wav by InspectorJ <https://freesound.org/people/InspectorJ/sounds/406085/>  
Two Barks.wav by Puniho <https://freesound.org/people/Puniho/sounds/115536/>  
cat meow II by tuberatanka <https://freesound.org/people/tuberatanka/sounds/110010/>  
Cat, Screaming, A.wav by InspectorJ <https://freesound.org/people/InspectorJ/sounds/415209/>  
cat meow by tuberatanka <https://freesound.org/people/tuberatanka/sounds/110011/>  
Ambience, London Street, A.wav by InspectorJ <https://freesound.org/people/InspectorJ/sounds/398159/>  
High Street of Gandia (Valencia, Spain) by Jormarp <https://freesound.org/people/Jormarp/sounds/207208/>  
On A Bus by thef1like <https://freesound.org/people/thef1like/sounds/412932/>  
political\_discussion(IT) by Manicciola <https://freesound.org/people/Manicciola/sounds/182860/>  
TRAIN\_VOICE.mp3 by Manicciola <https://freesound.org/people/Manicciola/sounds/173314/>  
Inside Car Ambience Next to School More Quiet Version.wav by 15050\_Francois [https://freesound.org/people/15050\\_Francois/sounds/326146/](https://freesound.org/people/15050_Francois/sounds/326146/)  
Heavy Rain by lebcraftlp <https://freesound.org/people/lebcraftlp/sounds/243627/>  
Train upon us.wav by markedit <https://freesound.org/people/markedit/sounds/157873/>  
Large\_crowd\_medium\_distance\_stereo.wav by eguobyte <https://freesound.org/people/eguobyte/sounds/360703/>  
On A Bus by thef1like <https://freesound.org/people/thef1like/sounds/412932/>  
Coffee Maker by Villaperros <https://freesound.org/people/Villaperros/sounds/170621/>  
London Underground, Arriving, A.wav by InspectorJ <https://freesound.org/people/InspectorJ/sounds/401989/>  
German / English Airport Announcement by euromir <https://freesound.org/people/euromir/sounds/256878/>  
tannoying remix of 245957\_kwahmah-02\_tannoy-chime-05.flac by Timbre <https://freesound.org/people/Timbre/sounds/246322/>  
Spaceship Fly-by, A by InspectorJ <https://freesound.org/people/InspectorJ/sounds/397948/>  
plane.wav by inchadney <https://freesound.org/people/inchadney/sounds/275138/>  
20070117.takeoff.wav by dobroide <https://freesound.org/people/dobroide/sounds/29612/>



# MIRLCRep: Music Improvisation

## by Alo Allik

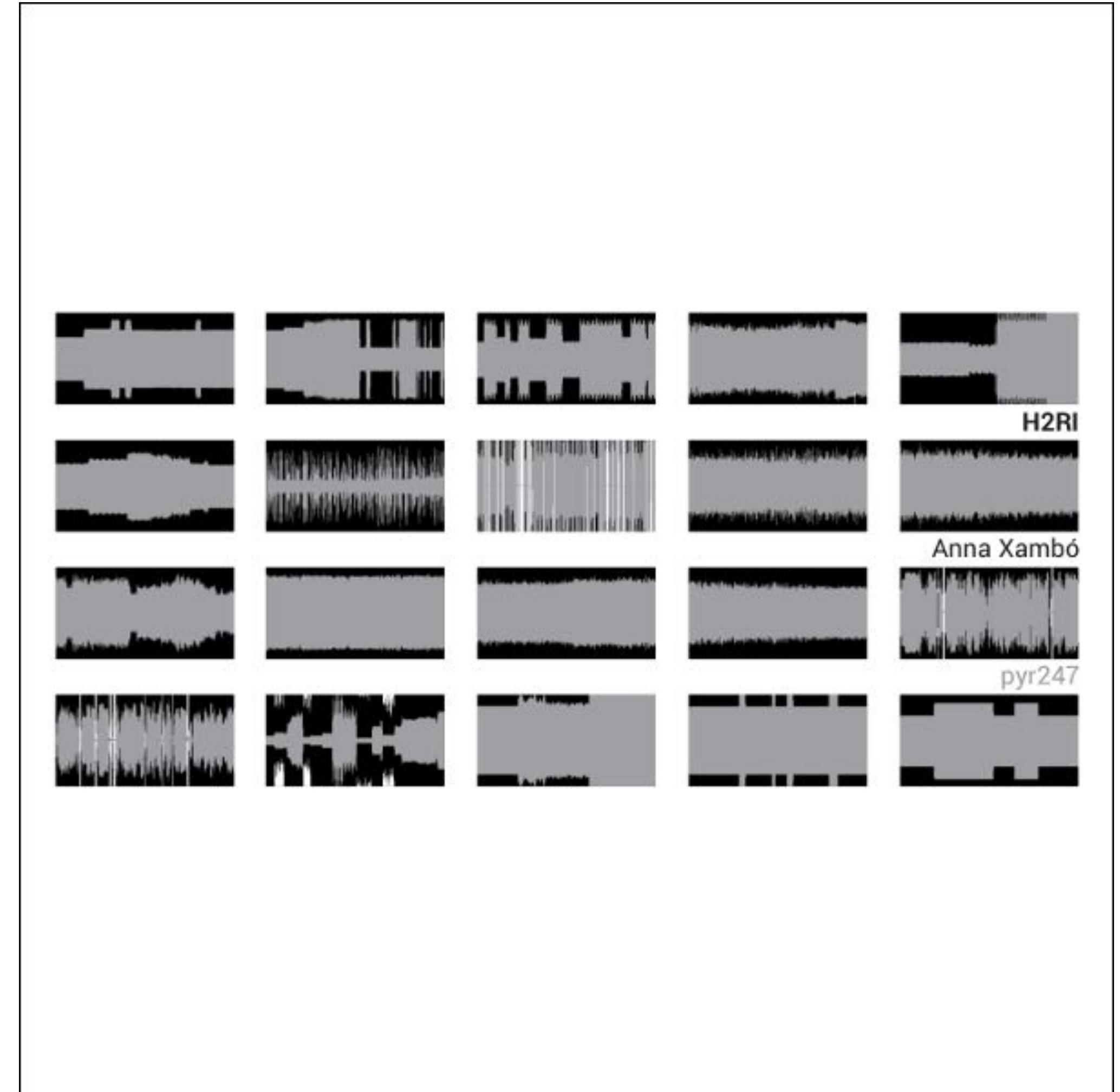
Sound samples used:

Rainstick 2.wav by gevaroy <https://freesound.org/people/gevaroy/sounds/347380/>  
Instrument\_rainstick.aif by vrodge <https://freesound.org/people/vrodge/sounds/119547/>  
Glass Smash, Bottle, E.wav by InspectorJ <https://freesound.org/people/InspectorJ/sounds/344272/>  
sword\_01.wav by dermotte <https://freesound.org/people/dermotte/sounds/263015/>  
Footsteps, Ice, A.wav by InspectorJ <https://freesound.org/people/InspectorJ/sounds/338265/>  
Celery crunch.wav by xenognosis <https://freesound.org/people/xenognosis/sounds/137228/>  
b1.wav by deleted\_user\_2195044 [https://freesound.org/people/deleted\\_user\\_2195044/sounds/243212/](https://freesound.org/people/deleted_user_2195044/sounds/243212/)  
Bullroarer by m.newlove <https://freesound.org/people/m.newlove/sounds/242926/>  
Didgeridoo, A.wav by InspectorJ <https://freesound.org/people/InspectorJ/sounds/398272/>  
Infrasound - 12hz - Sine Wave.wav by Headphaze <https://freesound.org/people/Headphaze/sounds/235209/>  
Infrasound - 20hz - Sine Wave.wav by Headphaze <https://freesound.org/people/Headphaze/sounds/235212/>  
Laser/Machine humming by Shredster7 <https://freesound.org/people/Shredster7/sounds/166098/>  
bit.aif by matthewgeorge <https://freesound.org/people/matthewgeorge/sounds/34909/>  
Infrasound - 12hz - Sine Wave.wav by Headphaze <https://freesound.org/people/Headphaze/sounds/235209/>  
Apple crunch.wav by xenognosis <https://freesound.org/people/xenognosis/sounds/137231/>  
Eating chips by giddster <https://freesound.org/people/giddster/sounds/383398/>  
Boots on Scree going downhill.wav by corble <https://freesound.org/people/corble/sounds/402846/>  
Glass Smash, Bottle, E.wav by InspectorJ <https://freesound.org/people/InspectorJ/sounds/344272/>

# H2RI (pan y rosas, 2018)

*H2RI is an instance of a generative album created by Anna Xambó in 2018. The 20 tracks of 1' each have been generated using her self-built tool MIRLC, a library for using music information retrieval techniques in live coding. A basic rule has shaped the audio sources of the album: the only use of sounds of short duration from the crowdsourced online sound database Freesound. Each track is complemented with the code in SuperCollider and the attribution to the authors of the original sounds.*

- ◆ Website: [www.panyrosasdiscos.net/pyr247-anna-xambo-h2ri](http://www.panyrosasdiscos.net/pyr247-anna-xambo-h2ri)



```
a = MIRLCRep.new  
  
s.record  
  
(  
var index = 0;  
t = Routine({  
    var delta, dur;  
    loop {  
        index = index + 1;  
        delta = rrand(0.4, 4);  
        dur = rrand(0.01, 0.04);  
        if ([false, true].choose,  
            {a.content(2, 'dur', dur, 'conf', 'lo');},  
            { a.solo(rrand(1,index)) }  
        );  
        delta.yield;  
    }  
});  
)  
  
t.play
```

postrockcafe, A Closer Listen, May 30, 2018

(...) The mind struggles to make sense of these tracks, hearing Atari beeps in the fifth track, a teletype machine in the seventh, a hearing test in the closing duo. Once tentative assignments are achieved, the noise no longer sounds like noise. The same process holds true for those acclimating to the sound of cities: after a while, we no longer hear the machines.

# Unwanted Situations: The Guitar Case

n02-peterMann  
from [noiselets](#) by [carpal tunnel](#)

04:13 / 11:10

**Digital Track**  
Streaming + Download  
Includes high-quality download in MP3, FLAC and more. Paying supporters also get unlimited streaming via the free Bandcamp app.

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from [noiselets](#), released January 8, 2018  
List of sounds used from [Freesound.org](#) coming soon.

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 [https://carpal-tunnel.bandcamp.com/  
track/n02-petermann](https://carpal-tunnel.bandcamp.com/track/n02-petermann) (around 04:26)

 peterMann

Share / Embed Wishlist

[https://carpal-tunnel.bandcamp.com/  
track/n02-petermann](https://carpal-tunnel.bandcamp.com/track/n02-petermann) (around 04:26)

# Research Question

Can we build a **virtual agent live coder companion** that **learns** from human live coders using **machine learning** algorithms and a **large dataset of sounds** which goes beyond the approach of following live coder actions (also known as the call-response strategy) and creates **legible and negotiable actions**?

```
36 // mstr: grain, illo, sin
37 // source, overlay, onsets, amps, beats
38 // free, placeServer
39
40 // fc: revert, delay, lowpf, highpf, bandpf, bitcrush
41
42 // Space
43 // East Midlands
44 // Neil Armstrong
45
46
47 a = MIRLCAuto2.new
48 a.tag('east+midlands+train')
49 auverb
50
51
52 b = MIRLCAuto2.new
53 b.tag('Neil+Armstrong')
54 b.play(-2)
55
56
57 c = MIRLCAuto2.new
58 c.source
59 c.onsets
60 c.onsets(10)
61 c.onsets(10)
62 c.delay
63
64
65 FAILURE IN SERVER /n_free Node 1097 not found
66
67
68
```

Interpreter: Active Server: 8.20% 5.00% 256a 19a 11g 1454 0.01s

## MIRLCAuto: A Virtual Agent for Music Information Retrieval in Live Coding

In collaboration with: IKLECTIK, Leicester Hackspace,  
L'Ull Cec, Phonos, MTI<sup>2</sup>

Awarded with an EPSRC HDI Network Plus Grant

IKLECTIK [off-site]



phonos



# **Thanks for listening!**