

A sound installation by
Mario Lorenzo

Calebasses Labs

A teeming murmur





Sensitive to the issue of noise pollution, **Calebasses Labs** is an installation that explores a low-intensity yet richly textured sound space. Through a “low-tech” setup made primarily of South American calabash bowls and low-energy transducers, this 21st-century “musical laboratory” offers a non-intrusive and unique sound experience. It unfolds a myriad of sound grains, creating a space that is both voluminous and quiet – one we are invited to discover through close-listening sessions. A teeming murmur.

The project

The “low parleurs” ?

Whether we call it a haut-parleur, loudspeaker, or altoparlante, the one who speaks loudly is not necessarily, so to speak, the one who is right. We might recall how National Socialism managed to impose an “acousto-political” power through the use of the Lautsprecher (1). Or even consider the history of the music industry, which, since the early days of sound reproduction, has contributed to the rise in decibel levels in the race toward hi-fi – leading to a true loudness war that shows no sign of ending.(2)

For several decades now, it has been observed that acoustic power is closely linked to our lifestyles – and not without consequences.(3) According to the WHO, noise pollution is currently the second leading environmental factor causing health damage in Europe, after air pollution. It leads not only to hearing loss, of course, but also disrupts sleep, contributes to obesity, diabetes, mental health disorders, cardiovascular diseases, and workplace accidents.(4)

How, then, can we create without fueling the world’s great tam-tam? How can we offer a sound space that is non-intrusive and more attuned to our sensitivity to sound? How can we reduce acoustic power without falling into a denial of expression? What, then, of the “low” speakers – those who don’t need to raise their voice, or those who know how to remain silent when there is nothing to say? And what about natural silences, rich in biophony, constantly threatened by the screeches of our restless activity?(5)

Calebasses Labs Project

The Calebasses Labs project was developed in response to these broad and complex questions. Rather than proposing a solution, it seeks to explore a less intrusive sound environment and to engage with auditory sensitivity through an artistic approach.

Employing a “low-tech” configuration primarily composed of South American calabash bowls and low-power transducers, the installation challenges the traditional concept of sound fidelity by delivering a non-intrusive and distinctive sound diffusion. Through the deployment of a myriad of sonic grains across multiple spatial and temporal scales, the composer Mario Lorenzo constructs an sound environment that is both complex and quite, experienced via close listening sessions.

1. Cornelia Epping-Jäger, *Hitler’s Voice: The Loudspeaker under National Socialism*, 2011
2. Vickers, Earl, *The Loudness War: Background, Speculation, and Recommendations*, 2010
3. Murray Schafer, *The Tuning of the World*, 1977
4. https://www.who.int/europe/health-topics/noise#tab=tab_1
5. Jérôme Sueur, *Histoire naturelle du silence*, 2023



The installation



Video by Mark Brown (@MARKBROWNOFFICIAL)



Information for organizers (1)

Dimensions

The installation is available in two versions, depending on the exhibition space:

- 32-channel version → approx. 21 x 8 feet
- 16-channel version → approx. 180 x 51 in

These dimensions are approximate, as the installation adapts to the available space.

Audience

The installation is suitable for all audiences (ages 6 and up).

The audience is seated in a bi-frontal arrangement, in two rows facing the installation. Visitors enter the space in timed listening sessions (approx. 25 minutes)

Installation and/or Performance

Musicians or other artists may occasionally be invited to perform around the installation.

Exhibition Space

The installation must be presented in a very calm, quiet space—preferably indoors, though not exclusively. If exhibited outdoors, it must be sheltered from bad weather and noise.





16 channels version

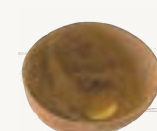
(180 x 51 in)





32 channels version

(255 x 98 in)





Voluminous sound space and low-intensity

Volume and Intensity

There is a common linguistic habit in the field of sound to treat intensity and volume as synonyms. This confusion is likely due to the fact that the volume of air mass displaced by a sound is proportional to the amplitude of its wave. Simply put, a high amplitude would occupy more space than the same wave at a lower amplitude. However, from the perspective of perception, sound intensity and spatial volume go far beyond just signal amplitude. Many other factors come into play (frequency, phase, duration, etc.). Therefore, it is possible to consider them separately.

From this perspective, one can perceive a large or voluminous sound space yet low in intensity. Take, for example, a quiet forest. If one listens closely, this silence is actually filled with a multitude of small sounds coming from all directions: the wind, leaves, insects, birds, creaking branches, water, etc. This "natural silence," as Jérôme Sueur calls it, is "full," yet it is neither overwhelming nor aggressive. Quite the opposite, it can be beneficial to us. (1)(2)

Multiplicity of Sound Grains

With Calebasses Labs, Mario Lorenzo explores this phenomenon without aiming to reproduce it. (3) Indeed, the work does not consist of playing back field recordings of nature or other sources, but is instead a true act of composition of polyphonic writing or, more precisely, multi-scale composition. Through techniques of sound synthesis and transformation, a myriad of sound grains at multiple scales -a granular density- is diffused, with micro-temporal shifts (4), through the calabashes, creating a spacious, low-intensity sound environment that elicits both aesthetic wonder and a feeling of calm. (5)

1. This phenomenon is not exclusive to nature. There are social situations in which density and low intensity combine. One might think, for example, of a reading room in a library, a church, a hospital, a quiet restaurant, etc.

2. Several scientific studies highlight the health benefits of listening to certain natural sounds. See, for example, Rachel T. Buxton, "A synthesis of health benefits of natural sounds and their distribution in national parks," 2021.

3. The installation is not a reproduction system. See below: "Exploration Beyond Sound Fidelity."

4. Phase decorrelation of a single sound source plays a significant role in the perception of spatiality. See Horacio Vaggione. « Décorrélation microtemporelle, morphologies et figurations spatiales », 2002

5. One must also consider the audible frequency range in which piezo elements can effectively operate. Their efficiency lies more in the upper part of the sound spectrum. Owing to this limitation, the installation emits sounds from approximately 600 Hz and above. By definition, higher-frequency waves are physically shorter and therefore occupy less space. In contrast, low frequencies are highly invasive. See <https://lejournal.cnrs.fr/articles/infrasons-ces-ondes-sonores-que-rien-narrete>

Close attentive listening

The installation therefore requires close listening. Even when set up in an intimate and quiet space, the diffusion level remains at the lower end of the decibel scale. (1) It is up to the visitor-listener to actively seek out the sound relationships proposed by the composer. Standing on either side of the installation, one can follow the music in its finest details, appreciating its diversity across multiple scales, near and distant, repetitive, varied, or singular.



Listening and the Attention Economy

Dedicating 20 minutes to listening also invites us to reflect on the importance of attention—a precious resource targeted in the relentless race of the digital economy through our screens. (2)

Attentive Listening Sessions

The installation is not interactive in the traditional sense. It offers a space to settle in and a moment for attentive listening. Access is organized by listening sessions.

- Sessions without instruments (approx. 20 min)

The musical composition includes a large number of figures at various spatio-temporal scales, but these figures are not entirely fixed. Indeed, the writing includes several formalizations of random event distribution. As a result, each session is unique and invites focused attention to sounds encounters. They are crafted with varying degrees of indeterminacy in their attributes and thus can change, transform, emerge at different moments, fall silent, etc. Consequently in each session—even though the framework remains the same—new interactions arise.

- Sessions with instruments (approx. 25 min)

Musicians may play intermittently around the installation. Pre-composed figures serve as the basis for instrumental improvisation sessions. Lasting about 25 minutes, the session can vary depending on the number of performers interacting with the installation.

- Live-coding sessions (approx. 40 min)

Occasionally, a longer listening session may be scheduled featuring a real-time coding performance.

1. As an example, a classical concert can reach up to 80 decibels, while amplified music can go up to 110 dB or even more. The installation ranges between 10 and 40 dB.

2. See L'Économie de l'attention. Nouvel horizon du capitalisme ? Yves Citton (dir.), 2014 ; see also the concept of "arts of noticing" developed in Anna Lowenhaupt Tsing's book *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*, 2017; and Claire Dutrait, « Les arts de l'attention : une catharsis pour les temps extrêmes » 2021. See also: *L'art de l'attention : se concentrer dans un environnement de distractions*, Didier Noyé, 2024 ; *Un art de l'attention*, Jean-Yves Leloup, 2000



Exploration beyond reproduction and “hi-fidelity”

From Bell Labs to Calabasses Labs

From the early inventions aimed at amplifying electrical signals at Bell Labs in the United States to the present day, the music industry –and more generally, of sound recording and reproduction– has been guided by the pursuit of hi-fi: capturing and reproducing the sonic world as faithfully as possible to reality, even if that required inventing from scratch the narrative of 'technological transparency' (1).

The installation also explores a move beyond the idea of “sound fidelity” and, more widely, beyond sound reproduction and its expansionist logic (2), proposing instead a non-intrusive and unique mode of diffusion. The advertising rhetoric of “original and copy,” “mediation,” “transparency,” “sound quality,” or “pure sound” gives way to an inquiry into sound as it emerges from each calabash. Thus, with composition and diffusion being inseparable, the installation is neither an instrument nor a reproduction device. It is what it is: a singularity.

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28 )
29
30
31 (
32 -f_02= Pdef (\fig_02,
33   Pbind(
34     \instrument, \grainbuf_f,
35     \buf, ~son_03,
36     \dur, Prand ([0.1, 0.005, 0.08, Pn(0.004,5), 0.004, 0.12], inf),
37     \graindur, Prand ([0.06, 0.05, 0.03, 0.02, 0.01],1000),
38     \windowbuf, ~hann,
39     \pos, Pseg(Pwhite (0.1, 0.2), 0.1, \lin),
40     \amp, ~amp2 = Pseg (Pseq ([0, 0.1, Prand ([0.3,0.34, 0.38, 0.25],inf)],inf), Pseq ([0.5, 0.1
inf), \lin)
41 ));
42 -f_03= Pdef (\fig_03,
43   Ptpar ([
44     {rrand(0.01, 0.025)}, Pbindf (~f_02, \pan, 0),
45     {rrand(0.01, 0.025)}, Pbindf (~f_02, \pan, -1),
46     {rrand(0.01, 0.025)}, Pbindf (~f_02, \pan, 1)
47   ], 1)
48 );
49 )
50
51 (
52 -f_04 = Pdef (\fig_04,
53   Pseq ([
54     Pseq ([-f_26, Rest(1), Pn(~f_26,2)], 1),
55     ~f_12,
56     Ptpar ([
57       0, ~f_16 = Ppar ([-f_13,-f_15,-f_19], 1),
58       0.5, Ppar ([-f_01,-f_08], 1),
59       0.55, ~f_03,
60       0.8, Pseq ([-f_17,Rest(2),-f_17], 1),
61       0.9, Ppar([-f_05,-f_09], 1),
62       1.3, ~f_25 = Pdef (\fig_25, Pn(Pbindf(~f_20,\pan, -1),2)),
63       2, Pbindf(~f_13, \amp,0.3),
64       3,Pbindf(~f_25,\pan, 1),
65       4, ~f_10,
66       8, Pseq ([-f_12, ~f_01], 1),
67       10,-fig_24 = Ppar ([-f_21, -f_22], 1),
68       18, ~fig_23 = Pn(~f_20,2),
69       19, Pseq ([Ppar ([-fig_23, -f_10],1), ~fig_24], 1),
70       32, ~fig_23
71     ], 1)], 1)
72 ).play
73 )
74
75 (
76 -f_05 = Pdef (\fig_05,
77   Pspawn(
78     Pbind(
79       \method,\par,
80       \pattern, Pfunc {
81         Pbindf(~f_03, \amp, ~amp2*0.5)
82       },
83       \delta, Pwhite (0.03, 0.05, 20)
```



1. See Thomson, Emily, “Machines, Music, and the Quest for Fidelity: Marketing the Edison Phonograph in America, 1877-1925,” *The Musical Quarterly*, 1995. On the question of mediation and, more broadly, the history of sound recording and reproduction, see Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction*, 2003

2. According to the 2022 report by the Centre national de la musique of France, the estimated total emissions from the recorded music sector amounted to 2,780 kilotonnes of carbon dioxide equivalent (2,780 ktCO₂e)—the equivalent of over one million round-trip flights between Paris and New York. This diagnosis is compounded by forward-looking trends projecting the risk of a threefold increase in emissions between 2022 and 2030, mainly due to market growth and rising audio and video quality demands. https://cnm.fr/wp-content/uploads/2024/09/240918_Communique-de-presse-REC.pdf

The “Low” as a means of expression



In the installation, the calabash serves as a sound box. However, it is not paired with strings or wooden keys as it typically is in instruments from the Southern Hemisphere. Instead, it amplifies the vibrations of low-power piezoelectric transducers. These small, low-tech speakers, shaped like golden metal discs, are mechanically vibrated by an electrical signal coming from low-energy mini amplifiers via a thin copper wire. The musical composition is written in alphanumeric code on a computer, which sends the signal to a sound card and then to the piezos.

Having said that, this “laboratory” is not in pursuit of a model or prototype intended for industrial production. It does not align with the logic of endless progress, a myth that has dominated European and North American civilizations for over a century. (1) Through an aesthetic research process, and in light of the current state of emergency, the notion of “low” here points instead to a less conquering, more attentive attitude toward the needs of human expression.

1. This project does not reject the idea of progress—understood as a movement toward something better for society—quite the contrary. Rather, it contributes to a critical awareness of the “modern myth of progress” (Georg H. von Wright, 1993), that is, the belief in unlimited and eternal progress fueled by technology and industrial production. See also J. Bouveresse, *Le mythe moderne du progrès* (2023).

Concerts with the sound installation



Séance d'improvisation avec la flûtiste Keiko Murakami

The “Labs” dimension of the installation also signifies an exploratory process with musicians. Still operating within a low-intensity register, the aim is to integrate acoustic instruments into the sound space of the installation. This experimentation also seeks to explore alternative forms of diffusion in a mixed music context, where the acoustic projection of the instruments interacts with the electroacoustic sounds of the calabashes.



Concert version with the ensemble L'Imaginaire. Keiko Murakami (bass flute) and Wychariy Cruz (soprano saxophone)

Mario Lorenzo

Mario Lorenzo is a composer of electroacoustic and instrumental music. His work explores a multi-scale approach, weaving together a wide array of figures of varying sizes—both independent and interrelated—in a dynamic interplay between micro- and macro-time.

With an academic background, he completed a PhD dissertation focused on a conceptual clarification of the notion of choice in musical composition, examined through the lens of the philosophy of language.

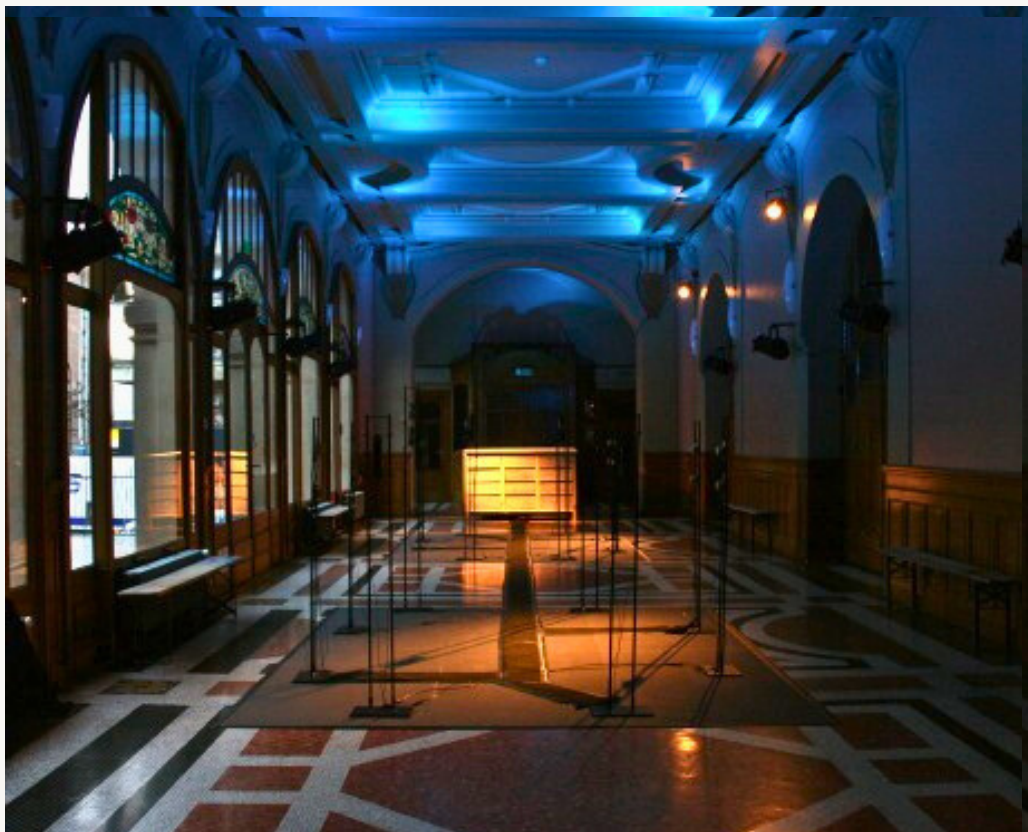
His body of work includes *La obra tiene al sembrador* for instrumental ensemble; *Five pieces* for wind quintet; the opera *Richter* for baritone, mezzo-soprano, tenor, two pianos, percussion, and choir; the electroacoustic pieces *Erre* and *YV*; the sound installation *Compost*; as well as mixed works such as *Craa* and the cycle *Fig-ures sur la corde* for guitar and electronics, commissioned by the French Ministry of Culture.

As an independent researcher, he is affiliated with the CICM at the Maison des Sciences de l'Homme Paris-Nord and currently participates in the ANR-funded *SublimAE* project (EHESS, ENS).



Other works (selection)

Compost



Compost is an interactive sound installation made with recycled materials, notably loudspeakers.

The project was selected by the CDMC (Centre de Documentation de la Musique Contemporaine) for the 2012 "Musical Composition and Gardens" event, and was later programmed at the Archipel Festival in Geneva for its world premiere in 2013. The installation was also featured as part of the 50th anniversary of the Royaumont Foundation and the Voix Nouvelles Festival at the Royaumont Abbey in 2014.

[Read more](#)

Figures sur la corde



The cycle Figures sur la corde is a musical composition for classical guitar and electronics.

Commissioned by the French Ministry of Culture and composed for guitarist Caroline Delume, its world premiere took place in November 2017 at the Arsenal Auditorium in Metz. Figures sur la corde was selected for the "Archiving the Present" program, supported by the SSHRC Insight program, the Labex Arts-H2H, and the ALN|NT2 Research Chair (UQAM).

[Read more](#)

Cuerdos



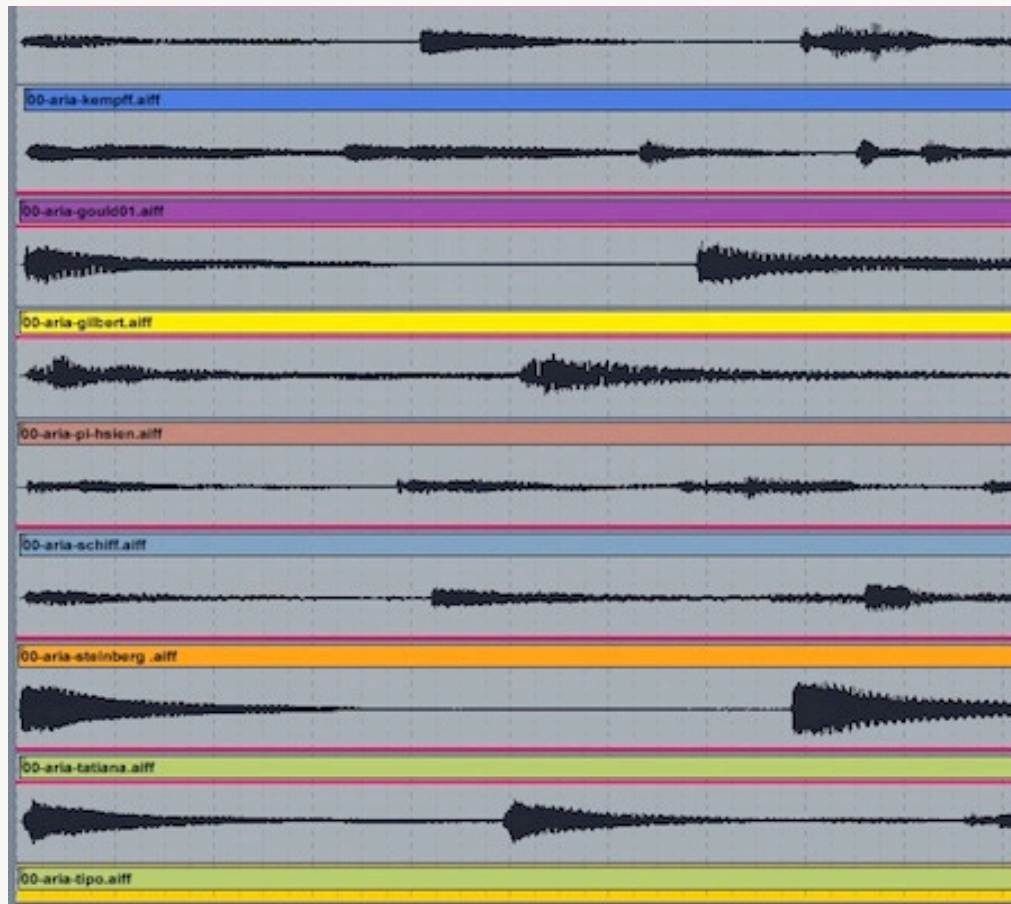
Cuerdos is a sound installation that invites physical interaction or can simply be observed and listened to. It is made of strings and metal rods, two wooden boards, hooks, cables, 16 loudspeakers, a multichannel sound card, a computer, and four amplifiers.

The world premiere took place during La Semaine de la Francophonie at the Centre Rennes in Paris, 2015.

[Read more](#)

Other works (selection)

BWV 988 RMX : Nuit blanche pour endormir l'ambassadeur

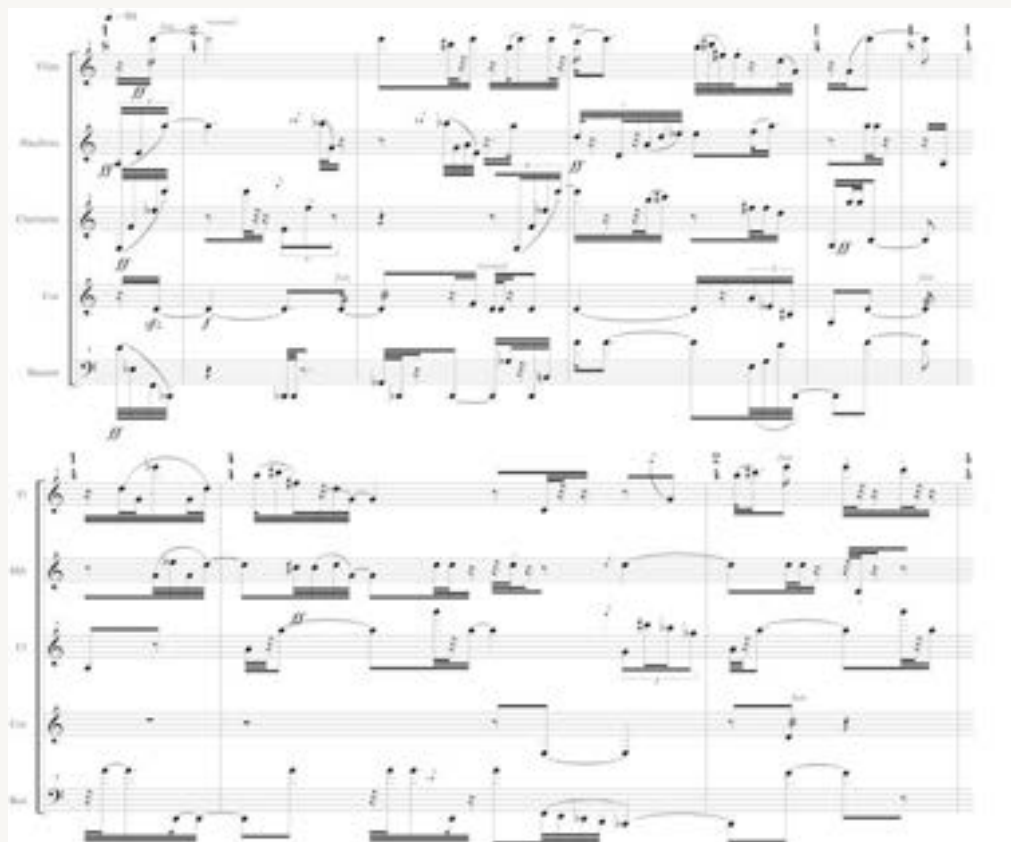


BWV 988 RMX is a remix based on the many recordings of Bach's Goldberg Variations. More specifically, it is a work of transformation, editing, and micro-mixing focused on the interpretive differences of the famous aria from opus BWV 988. Over thirty recorded versions were examined in detail through analysis, processing, and composition. This research resulted in a collection of sounds and operations that are reactivated and reinterpreted with each performance.

The world premiere took place at the Nuit Blanche Festival in Paris in 2006, performed by Mario Lorenzo.

[Read more](#)

Cinq pièces pour quintette à vent



Five Pieces for Wind Quintet, commissioned by Radio France for the program Alla Breve, were performed by the ensemble Artedie under the direction of Teresa Blotta.

The premiere took place at Radio France in 2002.

[Read more](#)

Opera Richter



Richter is a chamber documentary opera for baritone, tenor, mezzo-soprano, two pianos, percussion, choir, and electroacoustics. Libretto by Esteban Buch.

Commissioned by the Festival d'Automne in Paris and T&M, the world premiere took place at the Festival Internacional de Teatro de Buenos Aires, and the French premiere at the Festival d'Automne in Paris, in 2003.

[Read more](#)

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Website

mario-lorenzo.com

Project page

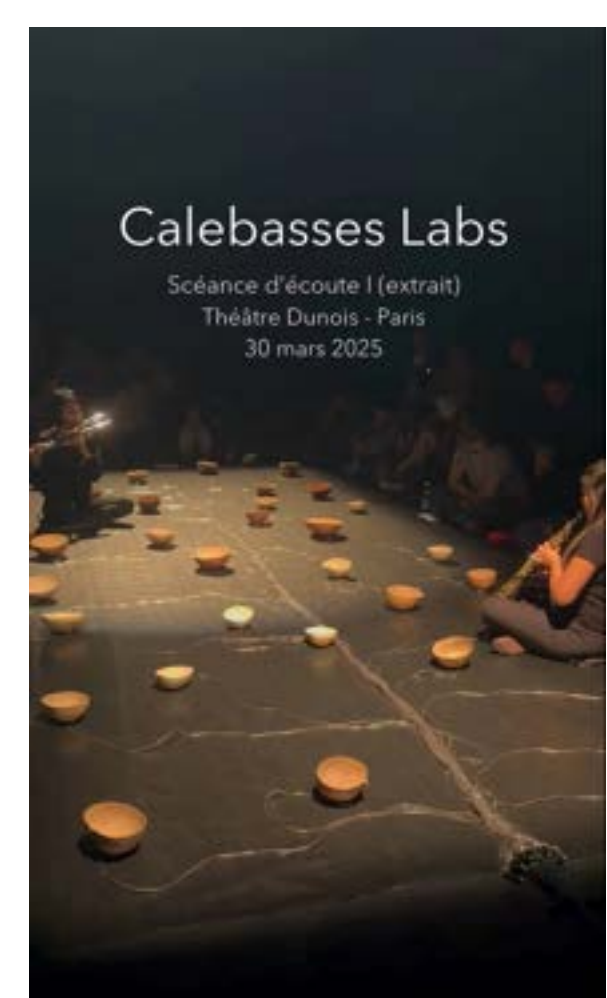
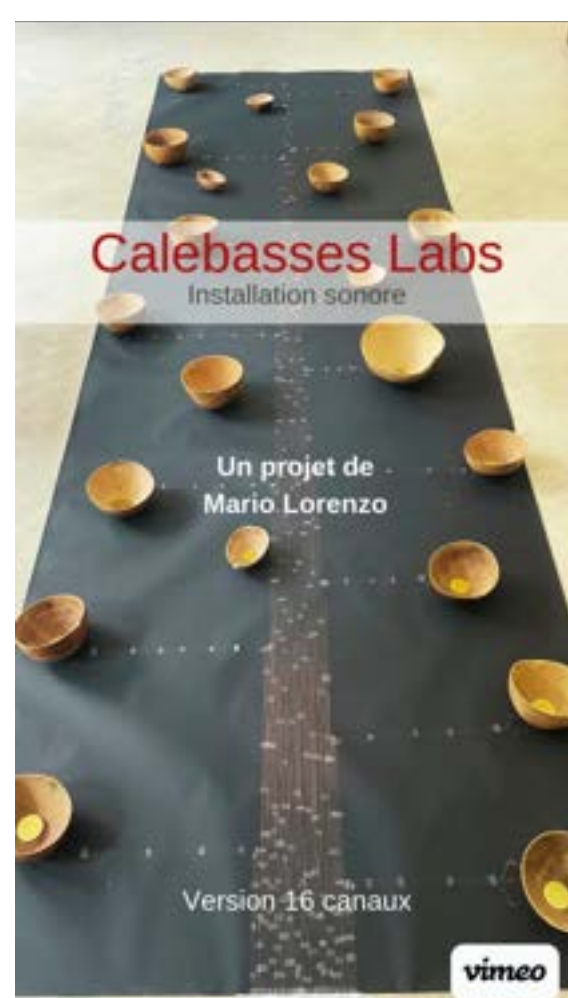
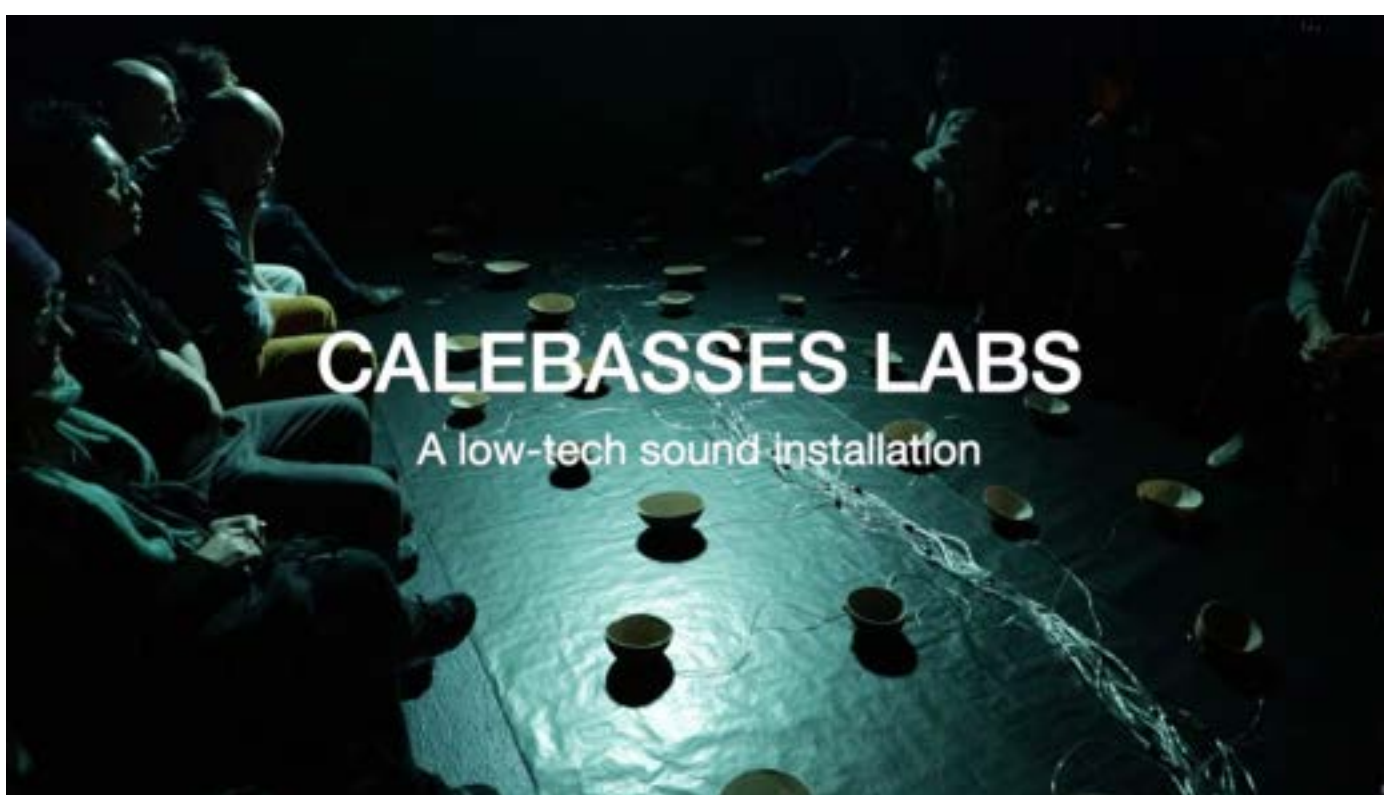
mario-lorenzo.com/calebasses-labs-en

Download

[Files and technical rider](#)

Project media

Videos



Audio records



Composition extracts

Please note: these are stereo reductions reproduced in your sound device. From this point of view, the extracts are only partially representative of the installation.





16 channel version

(Indoors)





32 channel version

(Indoors)





32 channel version

(Outdoors)



Calebasses Labs Project



Calebasses Labs was created thanks to French government aid program: "Aide à l'écriture d'une œuvre musicale originale du Ministère de la Culture/Direction régionale des affaires culturelles d'Île-de-France, 2024



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