徐 维 静 | vivian xu

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site: https://www.vivianxu.studio

@: vivian.xwj@gmail.com

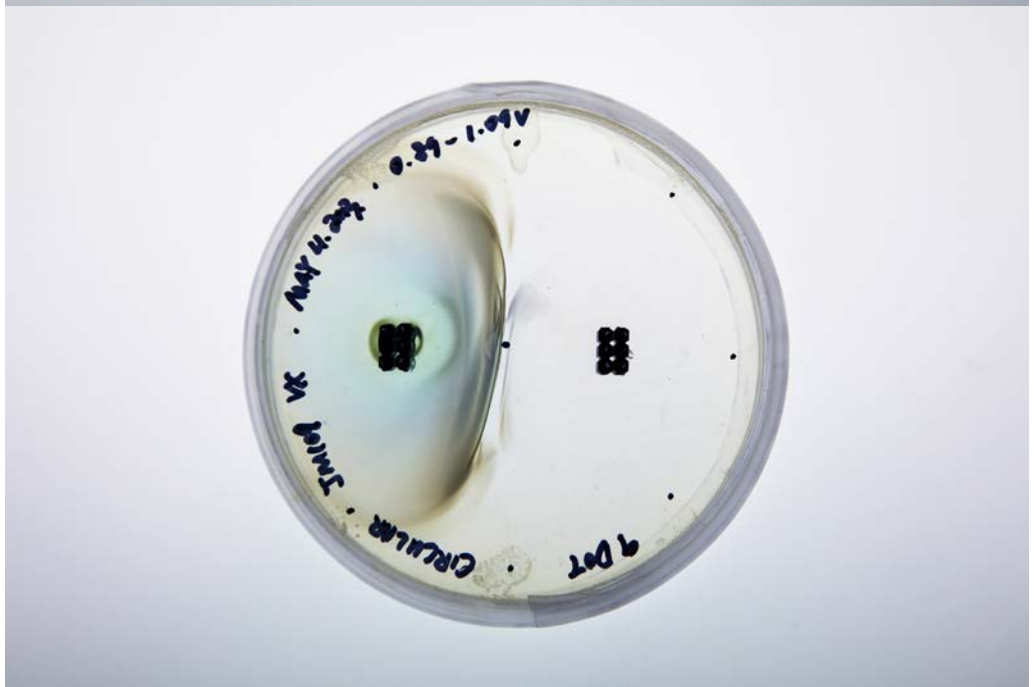
#: (US) +1 (312) 669-4751 | (CN) +86 1561 891 3252

For full information on my work, please visit my website.

Vivian Xu is an interdisciplinary artist, designer, and researcher. Her work investigates issues at the intersection of biology, technology, material fabrication, and design. These works often take the form of objects, installations, wearables, and toolkits that transcend the boundaries of biological and digital media. Her creative practice is deeply informed by emerging practices between the arts and sciences that merges approaches from the studio and the laboratory. Her process is research driven and grounded in design methodology.

Xu's work has been exhibited at various institutions in China, the USA, and Europe, including the National Art Museum of China (China), the Shanghai Symphony Orchestra (China), China Design Museum (China), Power Station of Art (China), NTU Center for Contemporary Art (Singapore), the New York Science Museum (United States), Art Laboratory Berlin (Germany), Kapelica Gallery (Ljubljana). She has also been awarded research residencies at institutions such as SymbioticA at the University of Western Australia (Perth) and the Max Planck Institute for the History of Science (Berlin). Her work and practice have been profiled by media such as VICE Creators Project (China), Global China Television (China), Elle (USA), Tagesspiegel (Berlin), Neural Magazine (Italy), and CLOT (EU). In 2022, her work The Silkworm Project was selected for the Lumen Prize for Art and Technology Hua Awards Shortlist.

Xu is currently an Assistant Professor of Design at DePaul University in Chicago. She also co-directs the Design, Technology, and Radical Media Lab with Prof. Benjamin Bacon.



Stimulation results, E. coli in agar, 2013. (left)

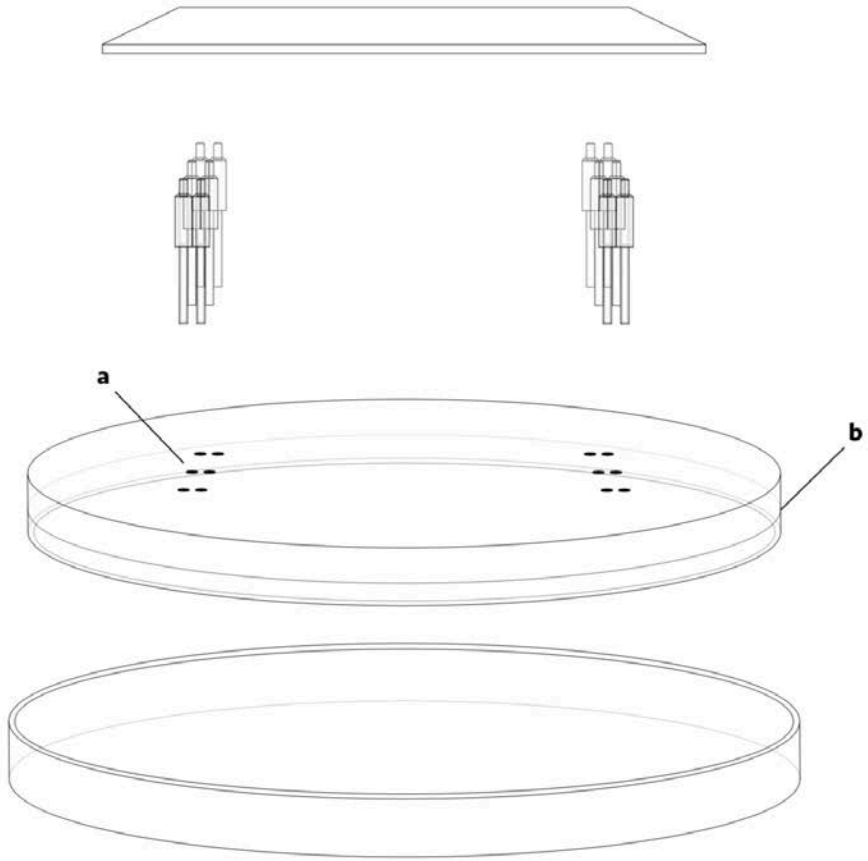
living devices

2012 - 2013
E.coli, petri plates, electronics, agar

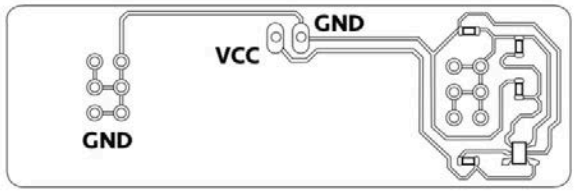
Living Devices investigates the possibility of creating a series of devices that explore the simple concept of functionality between biological and technological components. Function could be understood here as the completion of a process or action. In this case, the device's function would need to rely on both its biological and technological components to be fully realized. The work plays on the hypothesis that organisms exist within a certain spectrum of the environment, and when conditions change, the organisms will no longer grow in that environment. The artist chose to work with bacteria and the petri plate for this project. The JM109 strain of E. coli bacteria was used as the prototype organism due to easy access and availability in the lab. The design of the device is very simple: through modularly configured electrical stimulation, the user can generate different biological growth patterns realized by E. coli bacteria colonies. The artist developed custom petri plates that could allow electrode plug-ins without contaminating the growth environment. The project mainly focused on developing a method that could be applied to other types of bacteria, and in doing so, create the capacity to extend the series of work.

Stimulation results, E.coli agar plates. 2013.

Sample electro-stimulous petri plate design. 2013.

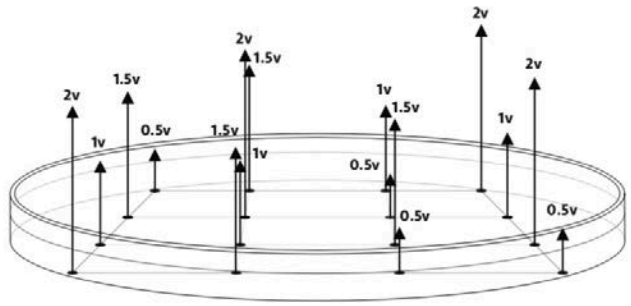


1 电压控制板
Voltage Control Circuit

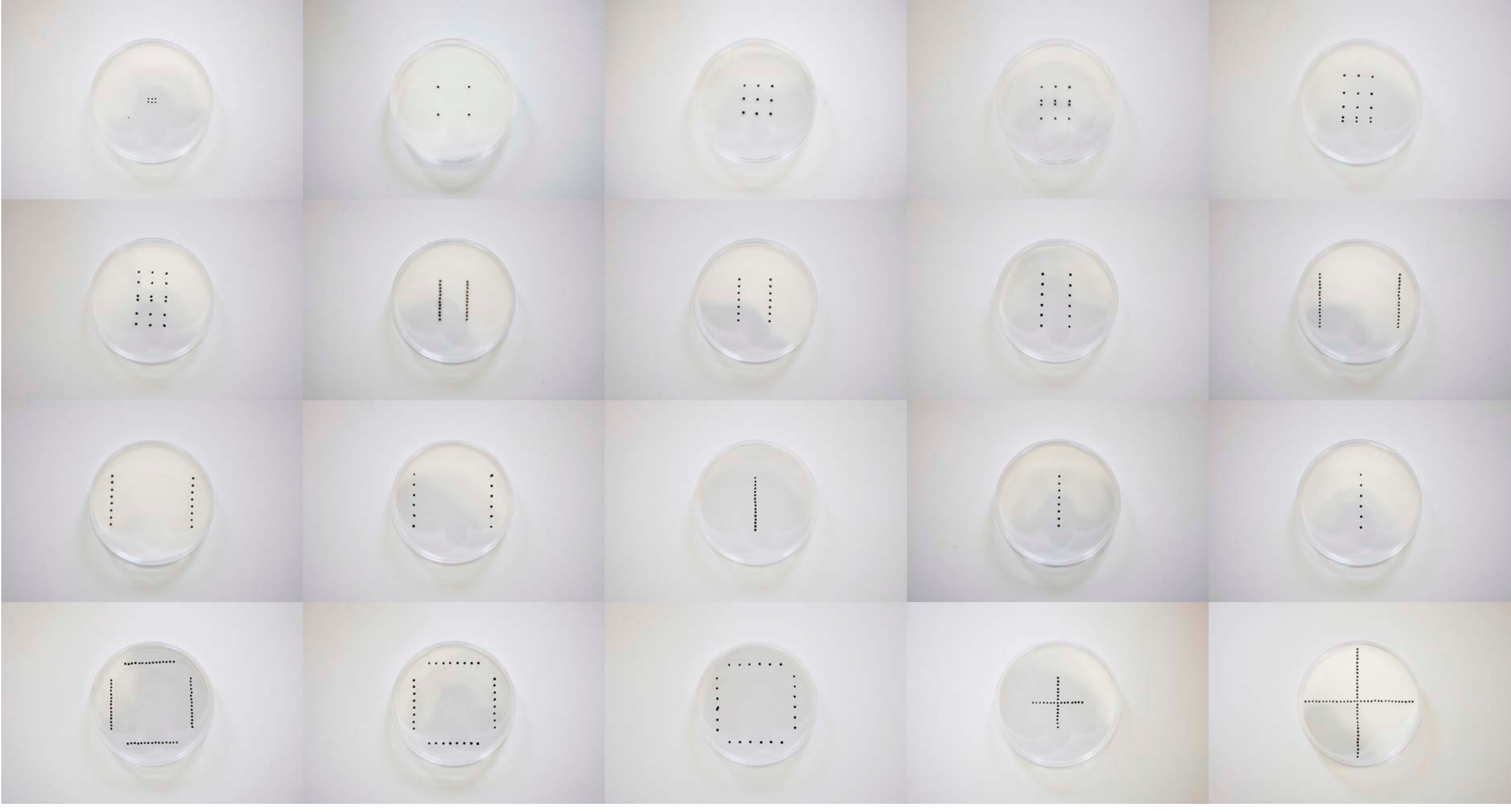


2 电极
Electrode for Stimulation

3 细菌培养皿容器，含琼脂营养物
Petri Dish with Agar



4 细菌培养皿盖子
Petri Dish Lid



Different stimulation setups. 2013.

Machine III: Levitation, front, 2019. (left)

silkworm project

2012 - 2019
silkworm, silk, teak wood, electronics, glass

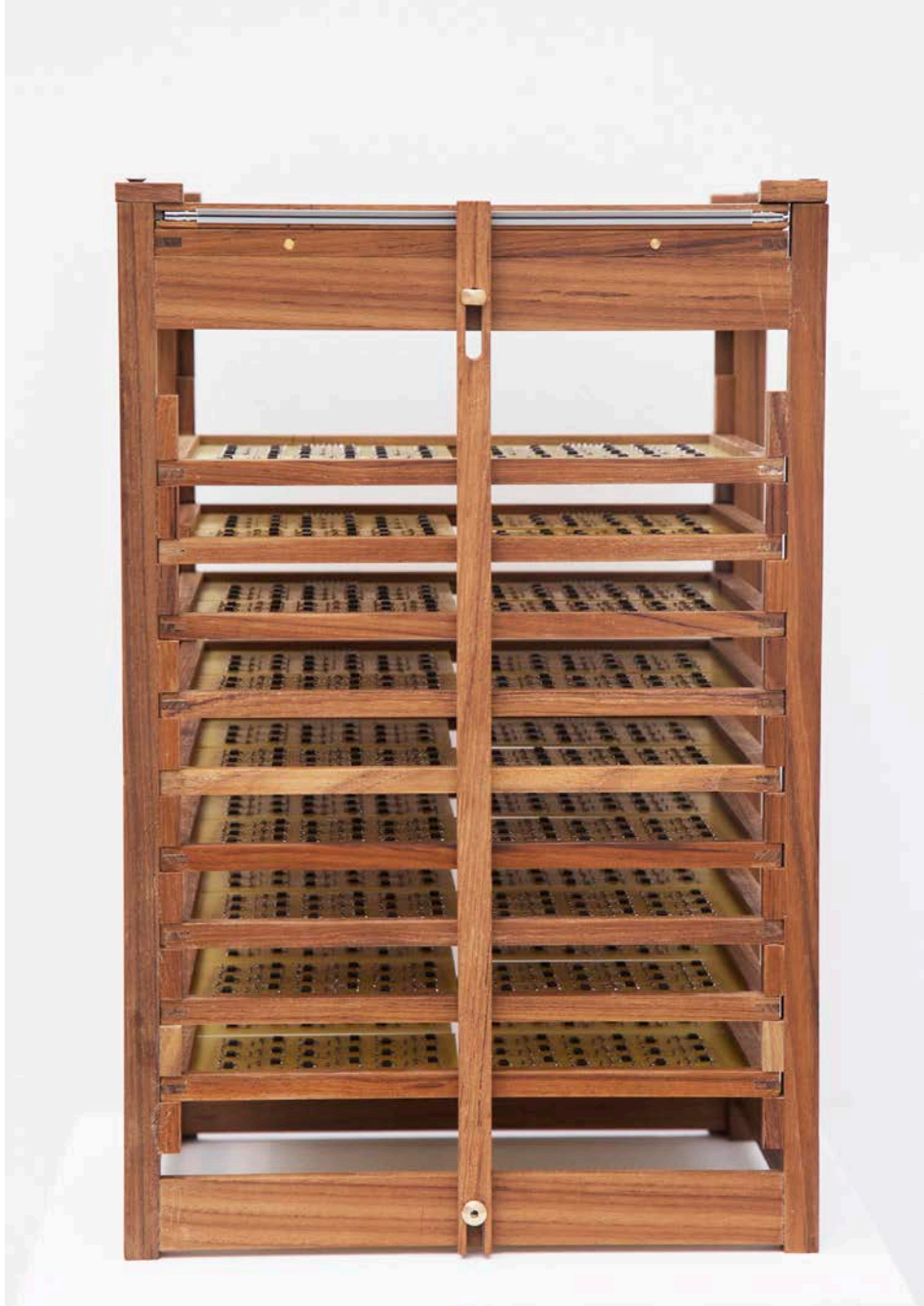
The Silkworm Project is an installation series consisting of machine objects, experimentation and artifacts that explore the possibilities of hybrid bio-machine worlds that can generate self-organizing silk structures. The series explores possibilities of creating automated production machine systems with the intervention of insects.

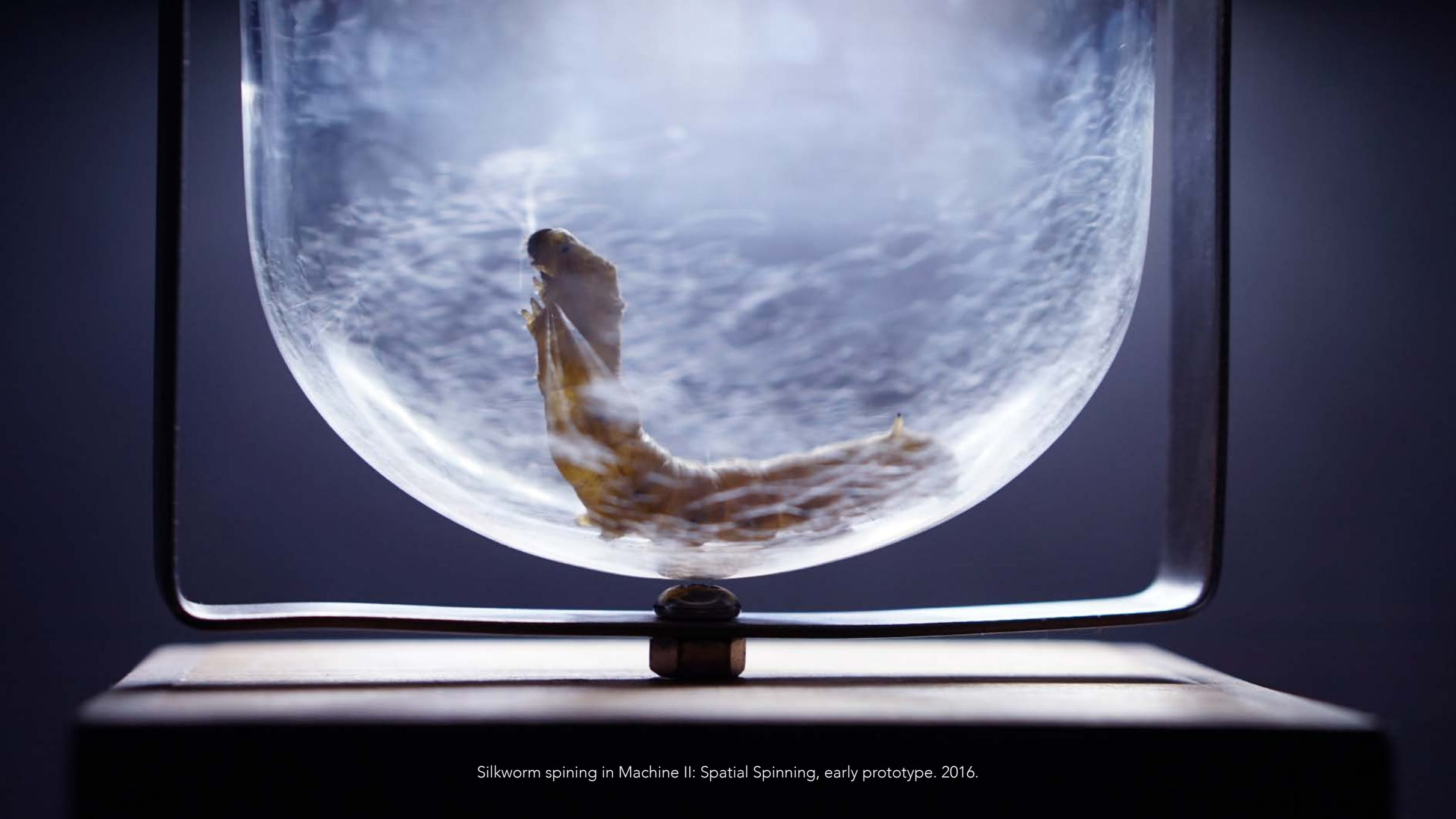
The silk machines create a closed feedback loop between the silkworm and the machine to form one fluid eco-system that provides an arena for autonomous interaction between worm and machine. The goal of the series is to develop a system where silkworm input drives the output of the machine in generating silk structures that are not mere cocoons. The result of the spun silk represents both the silkworm and machine's influence on each other. The series consists of three chapters in three machine artifacts: ***Machine I: Flat Spinning***, ***Machine II: Spatial Spinning***, and ***Machine III: Levitation***. The design of these machines begins from a human-centric cartesian perspective and gradually evolve towards a silkworm-

Machine I: Flat Spinning, front, 2014. (right)

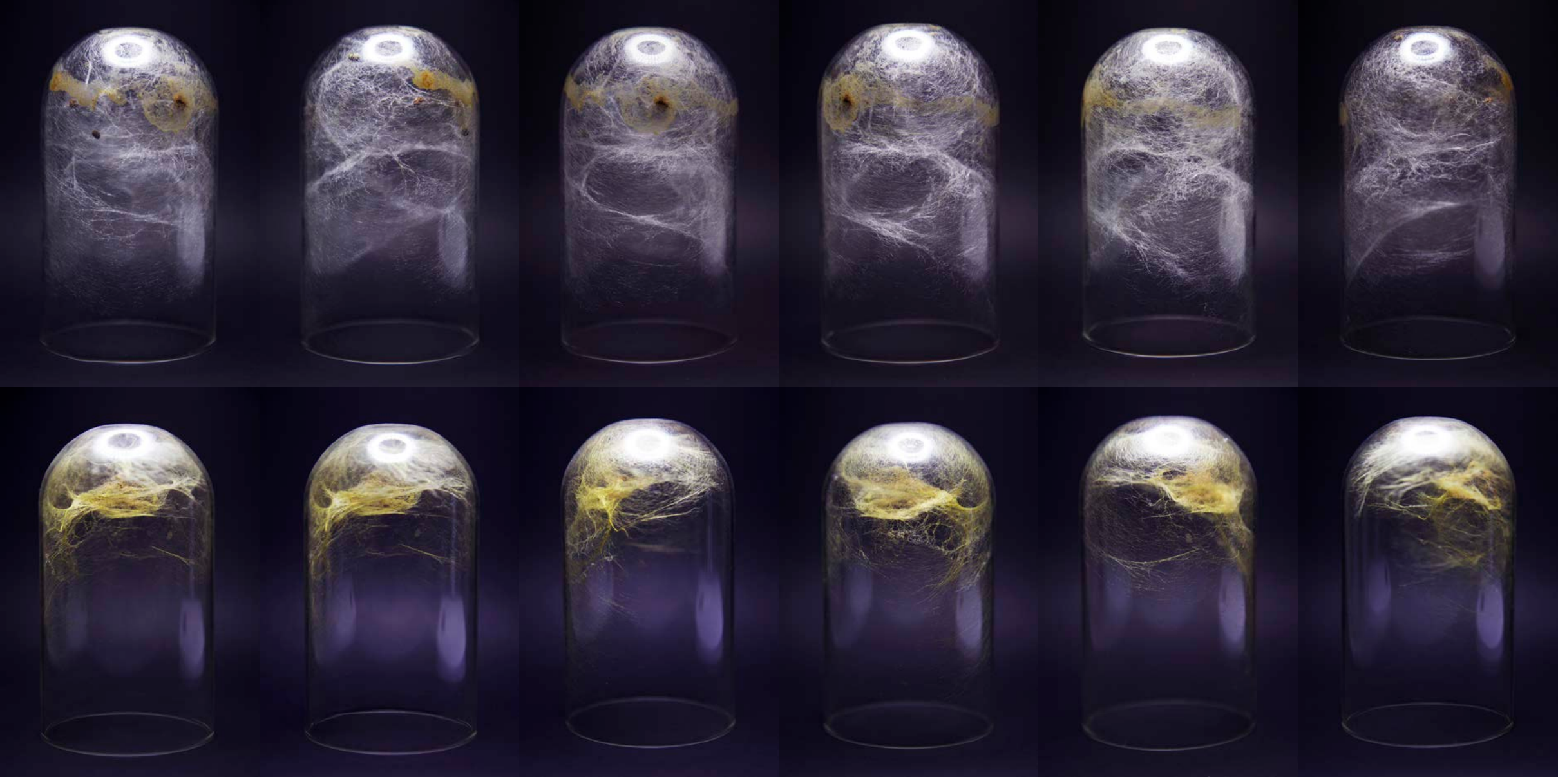
centric insect perspective. This transformation reflects the artist's evolving understanding of the silkworm's spinning and building behavior as she rears and studies silkworms every spring for the duration of the project. By understanding how the worm perceives and measures space with its body while spinning, after trial and error, ***Machine III: Levitation*** was able to hack that spatial perception to a small degree in creating self-generated silk sculptures.

In 2022, this piece was selected for the Lumen Prize HUA Awards Shortlist. You can find more details about each specific chapter in this series in the below sections.





Silkworm spining in Machine II: Spatial Spinning, early prototype. 2016.



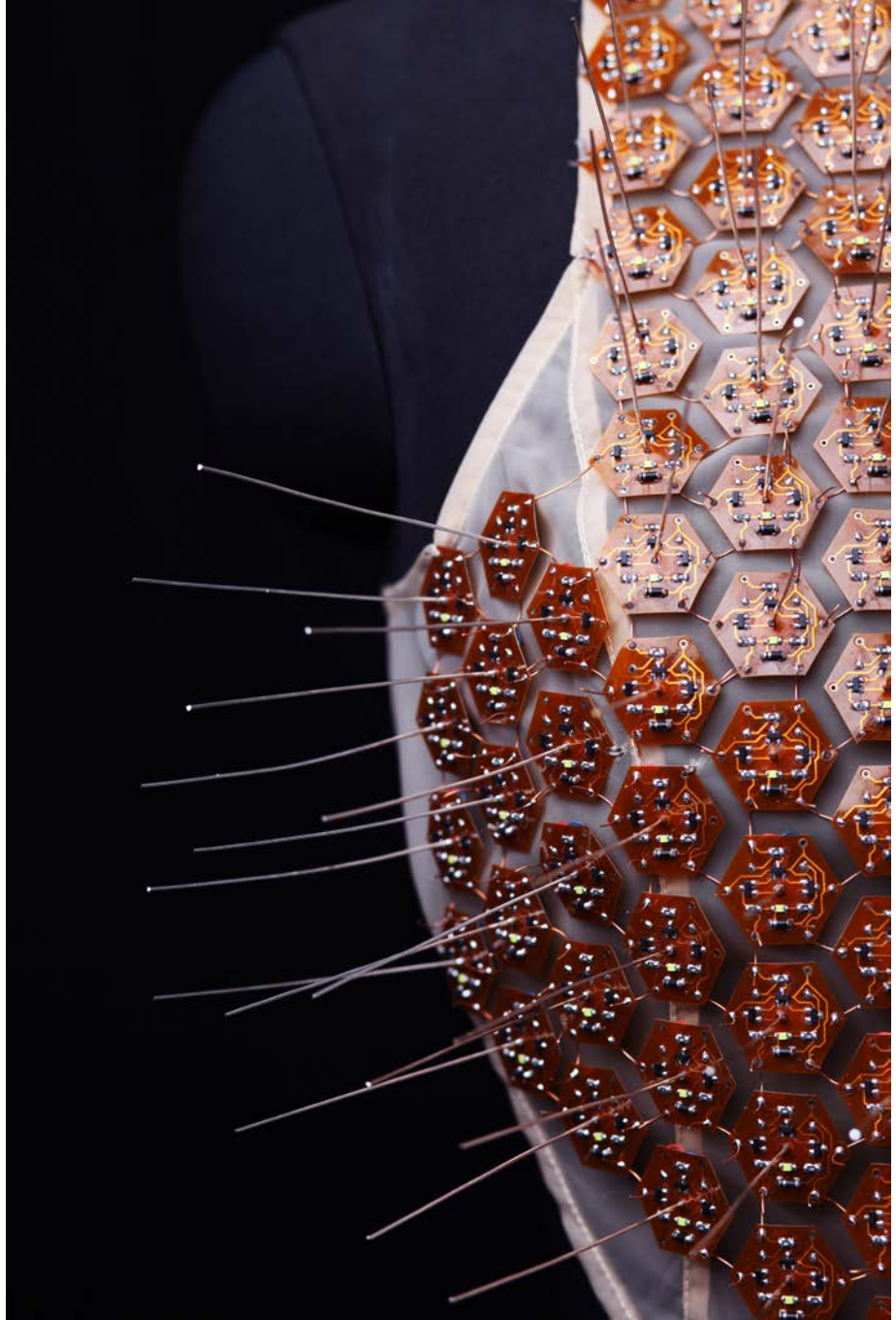
Silkworm spun structures.
2018

Silkworm Machine I and Machine II
NTU Center for Contemporary Art
Singapore

1970s Magnetic Core Memory Artifact
NTU Center for Contemporary Art
Singapore

Machine I, Machine II, Machine III and Artifacts
Kapelica Gallery, Ljubjana, Slovenia

Machine III
Kapelica Gallery, Ljubjana, Slovenia



Electric Skin, front, detail, 2016. (left)

skin series

2016, 2018
electronics, textiles

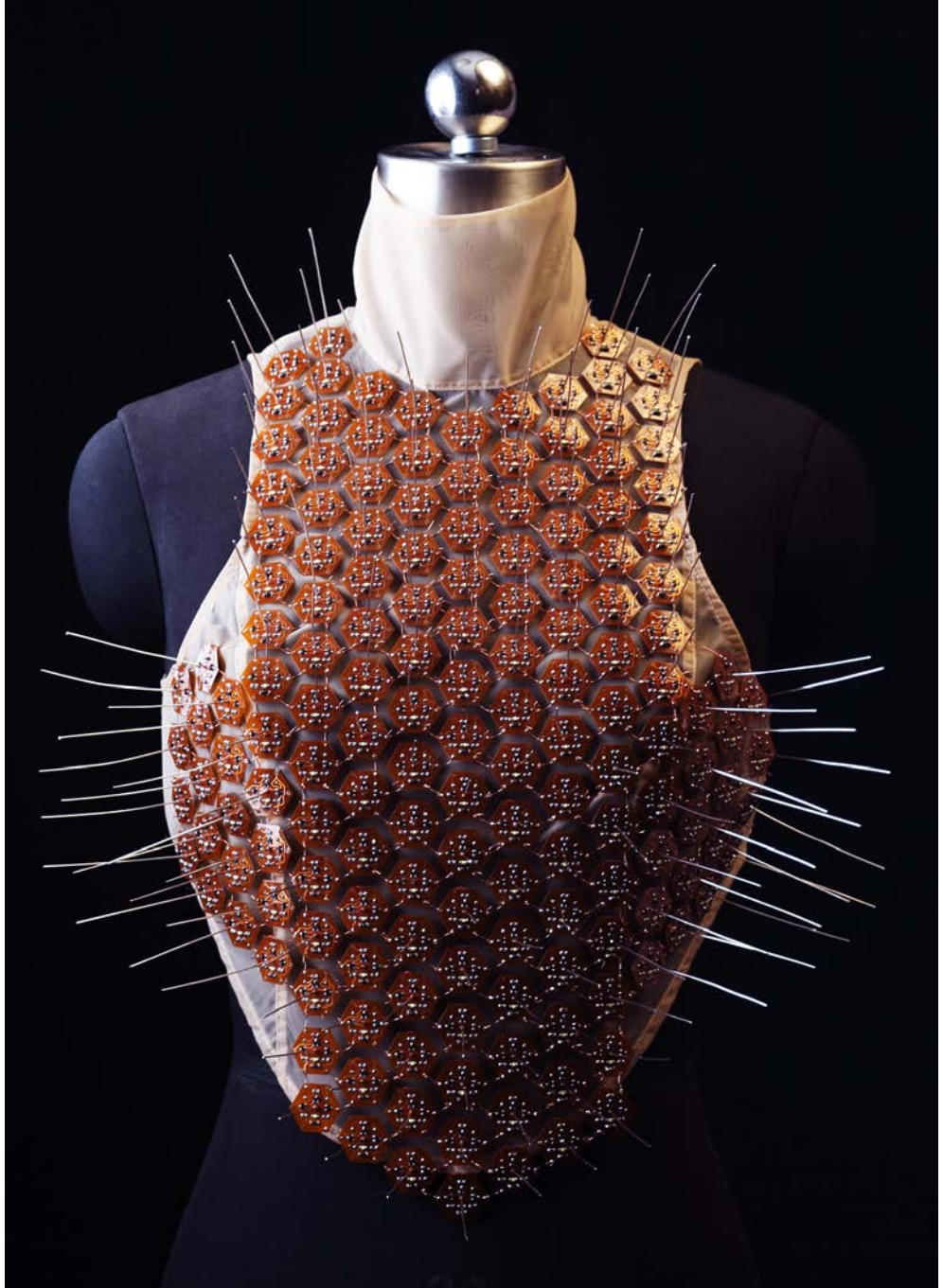
Skin Series explores the future of human perception, and how emerging possibilities in wearable technology can reinvent our relationship with our environment. Using the skin as an interface and venue for experimentation, ***Skin Series*** proposes the concept of wearables as prosthetic extensions of ourselves into the world that can evolve the boundary between our internal and external selves. The series explores the possible co-evolution of man and technology, seeing the two as hybrid communication system, and draws attention to the role of environmental influence on our sensory perception that in turn changes our behavior. The series currently has two pieces: ***Electric Skin*** and ***Sonic Skin***.

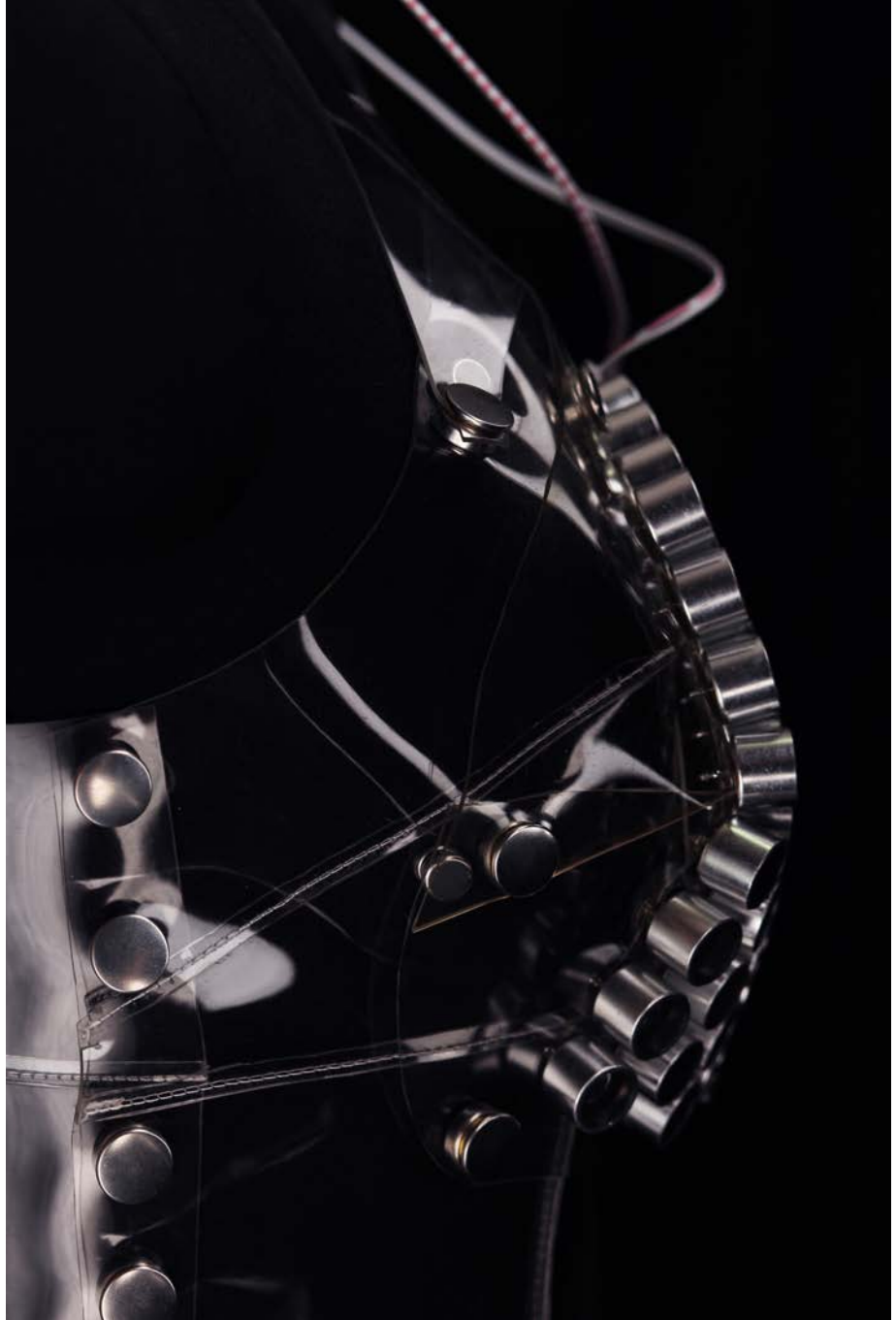
Electric Skin, front, 2016. (right)

ELECTRIC SKIN
2016

The invisible landscape of electromagnetic signals has changed with the development and proliferation of electronic technology. It is more omnipresent in our surrounding environment than ever before, and is a major part of the fabric of our contemporary lives. But for better or worse, as our habitat changes with technology, are we prone to change with it as well?

The ***Electric Skin*** creates a wearable that extends the functionality of the skin to sense electrostatic flux in the environment and translates that information into touch sensation. The wearable consists of two main functional parts: a matrix of omnidirectional antennas that act as sensors and probes and corresponding vibration motors that stimulate the skin of the wearer.





Sonic Skin, side, detail, 2018. (left)

SONIC SKIN
2018

The ***Sonic Skin*** projects directional sound like a sound amour from the contours of the body, much like a bat's or a whale's sonar system, where the journey of the sound is audible to the audience and illustrates the physical relationship between wearer and environment.

The 2018 prototype was generously supported by UNArt Center in Shanghai.

Sonic Skin, front and back, 2018

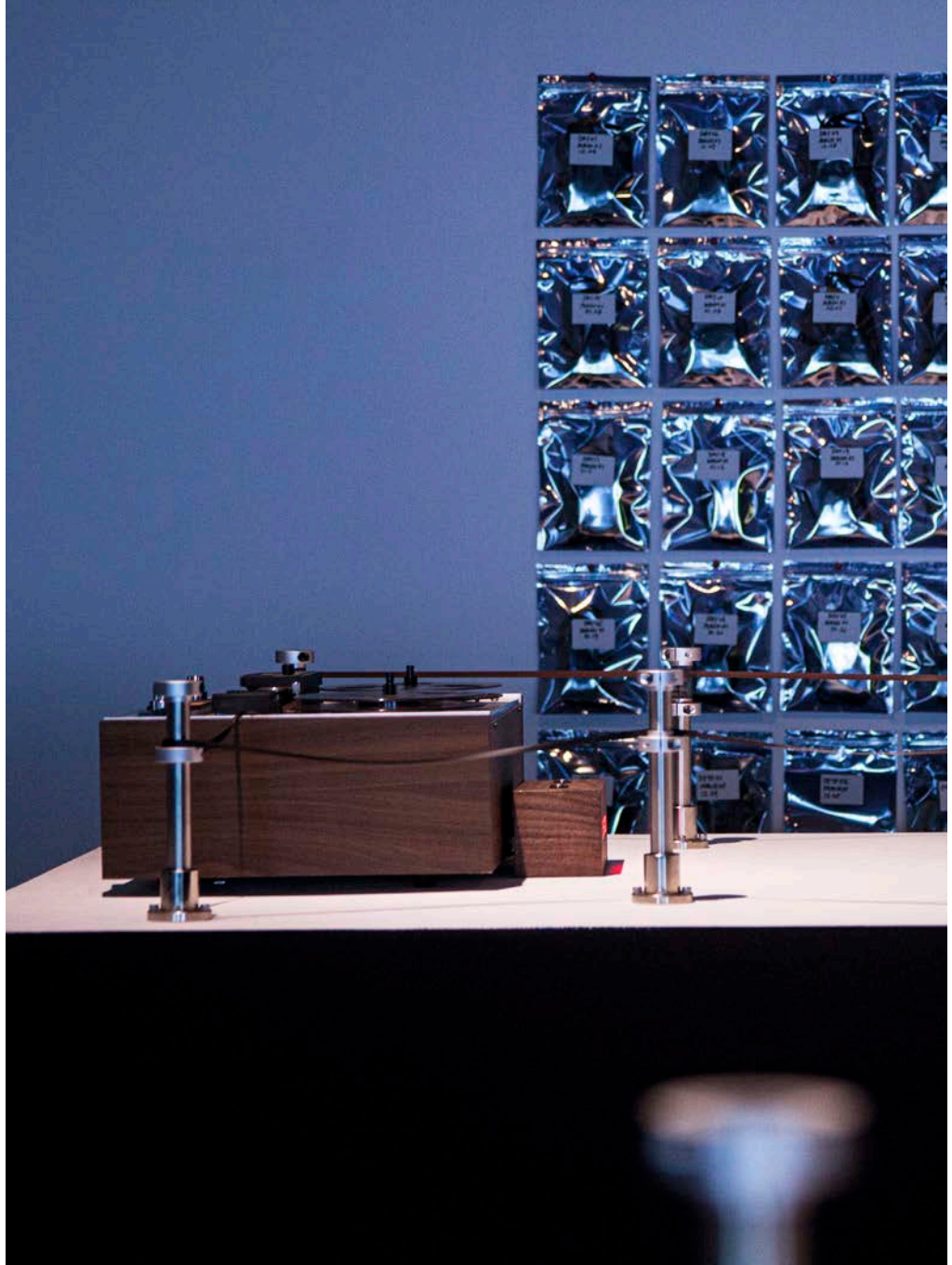
bioharmonic quartet

2018

Artists: Benjamin Bacon, Vivian Xu
Performers: B6 (Lou Nanli), Wang Wenwei, Shanghai Philharmonic String Quartet

The Bio-harmonic Quartet is a hybrid performance system that links together several musicians and artists via a biofeedback network. This network acts as a musical interface and uses the collective data of participants' bodily activities to generate music and soundscapes in collaboration with ML models. The work is an exploration into human-machine relationships within the context of music creation. The piece began as an exploration into BCI and ML technologies and how they might disrupt and evolve music creation, production, and performance. It moves beyond the artist's earlier exploration of machine networks and human-machine interaction models to create a more complex human machine system that works in harmony towards creative expression. The piece consists of machine learning models and basic wearable sensory systems that capture muscle movement, pulse, and BCI data. Further research with multi-nodal open source BCI sensors is ongoing to further develop this work.

Benjamin Bacon, B6, Vivian Xu (from left to right)
Shanghai Symphony Orchestra Hall, 2018



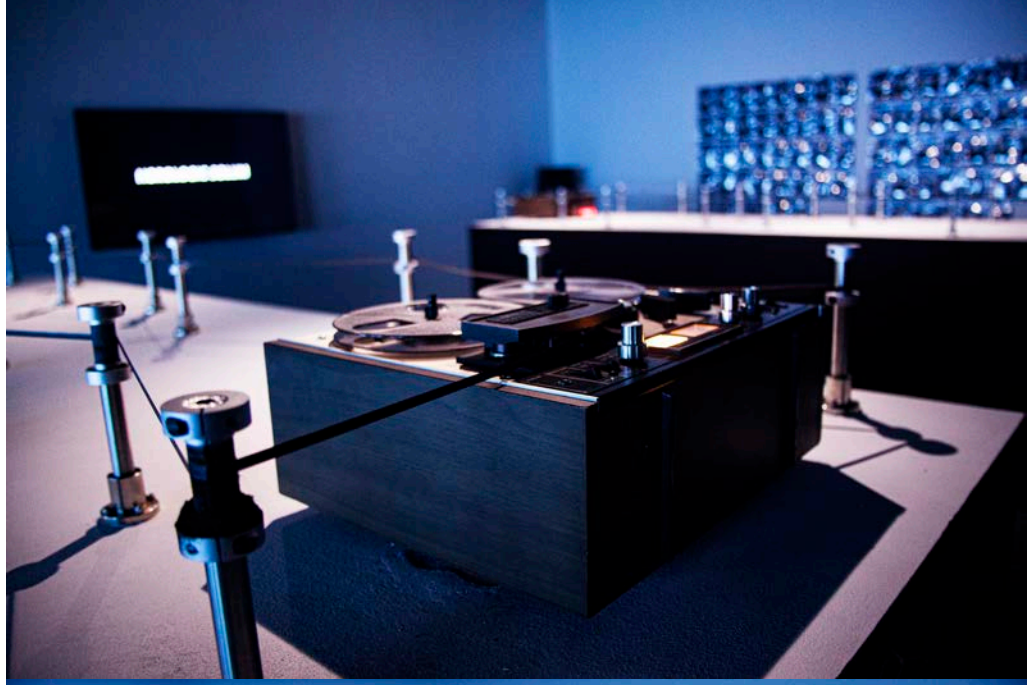
Horologic Solum, Shenzhen Science Technology and Art Festival, 2020

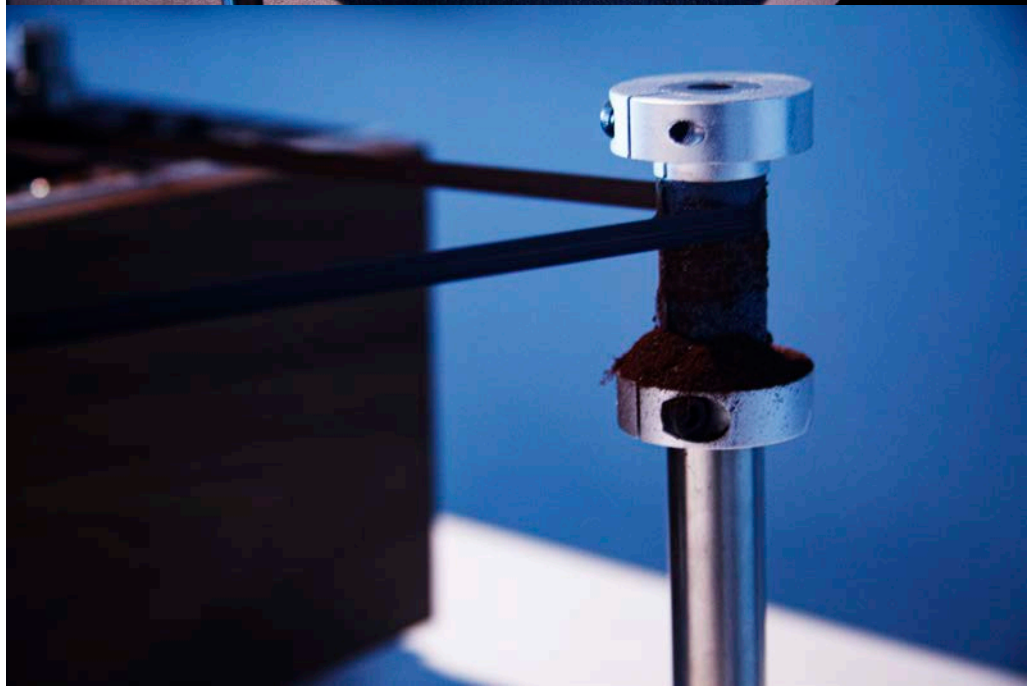
| h o r o l o g i c s o l u m

2020 - 2021
tape machines, tape, metal

Artists: Benjamin Bacon, Vivian Xu

Horologic Solum is a case study and exploration into media memory, its configurative logic, materiality, cultural functionality, and the information that gets stored on it, distorted, decayed, and reinterpreted. The piece interrogates archival media modes, communication technologies and how they fail to transform and translate across expansive stretches of space and time. Using the NASA Golden Record as an artifact of human civilization, the contents of the records are run through a "system of decay", as meaning and memory dissolve. The installation consists of two tables each with a tape machine, a timer clock, and a cassette tape running system. The installation works with 5 layers of time (see website for which 5 layers) and reality in creating connections between the past, the present, and the future. As the tapes cycle through the installation, their materiality is eaten away, the process sonified as the content is destroyed. The clock keeps a steady count of the time elapsed until the media dies.





Horologic Solum, Shenzhen Science Technology and Art Festival, 2020

There are ***5 layers of time***:

1) The time of the original Golden Record for the voyager when it was first created in the 70s. It was a cultural snapshot of our own perception of human culture.

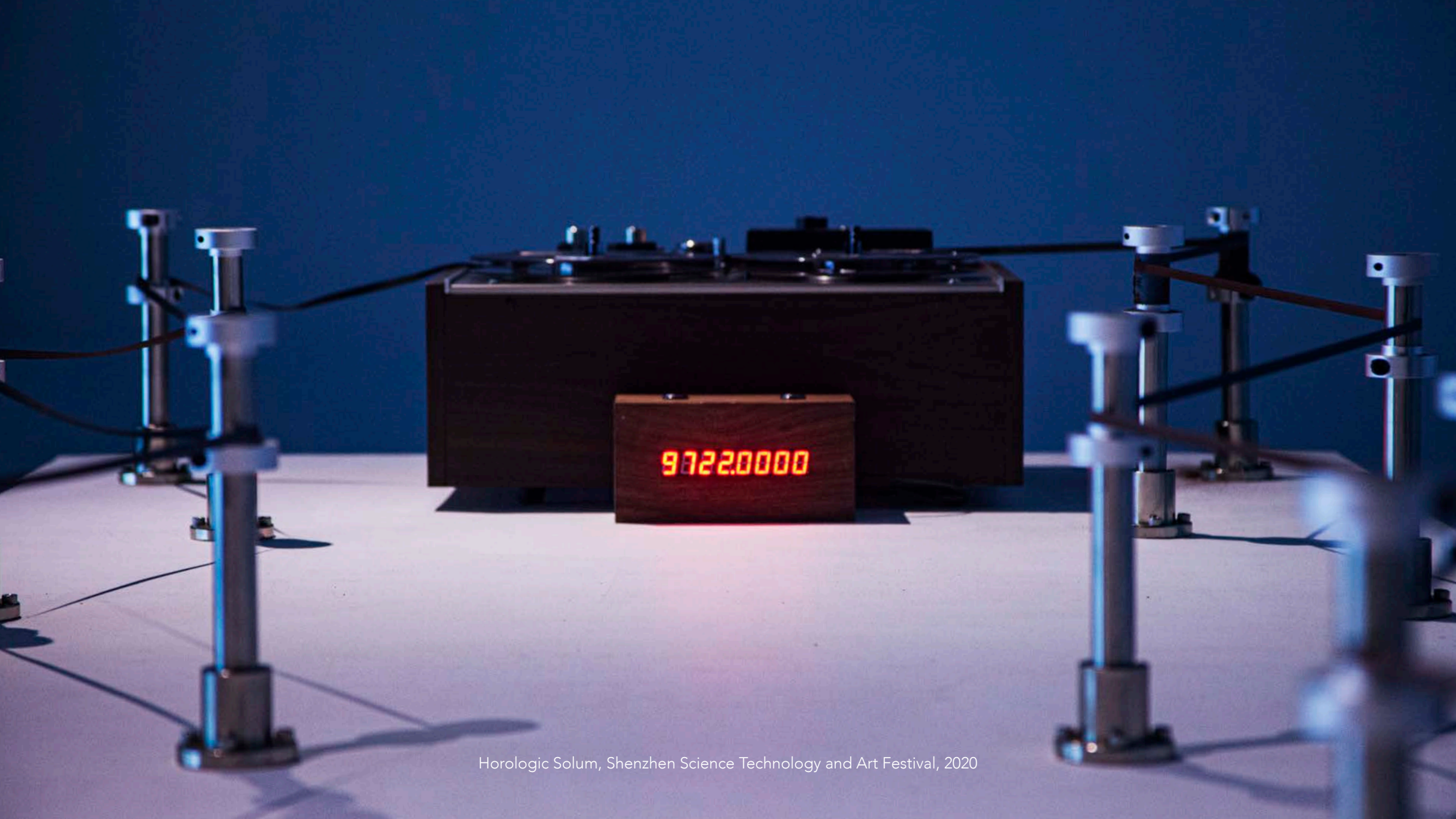
2) The time of the Golden Record, as cultural repercussion of the original artifact.

3) The time of the tape deck machine, or machine time, is the innate time of the medium. Throughout the show, we recorded the number of repetitions before the tape breaks.

4) The time of the performance, from the beginning of the playing of the recording to the moment that the tape breaks, which we recorded in seconds.

5) Finally, the time and space in which the audience exists, exhibition time, which we recorded on archival bags that were used to collect the remnants of the tapes at the end of the show.

This work was funded by the STArts Festival (Shenzhen).



Horologic Solum, Shenzhen Science Technology and Art Festival, 2020

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