‚degrees of freedom‘

Foreign agency in artistic artworks and artefacts
Prof. Ursula Damm

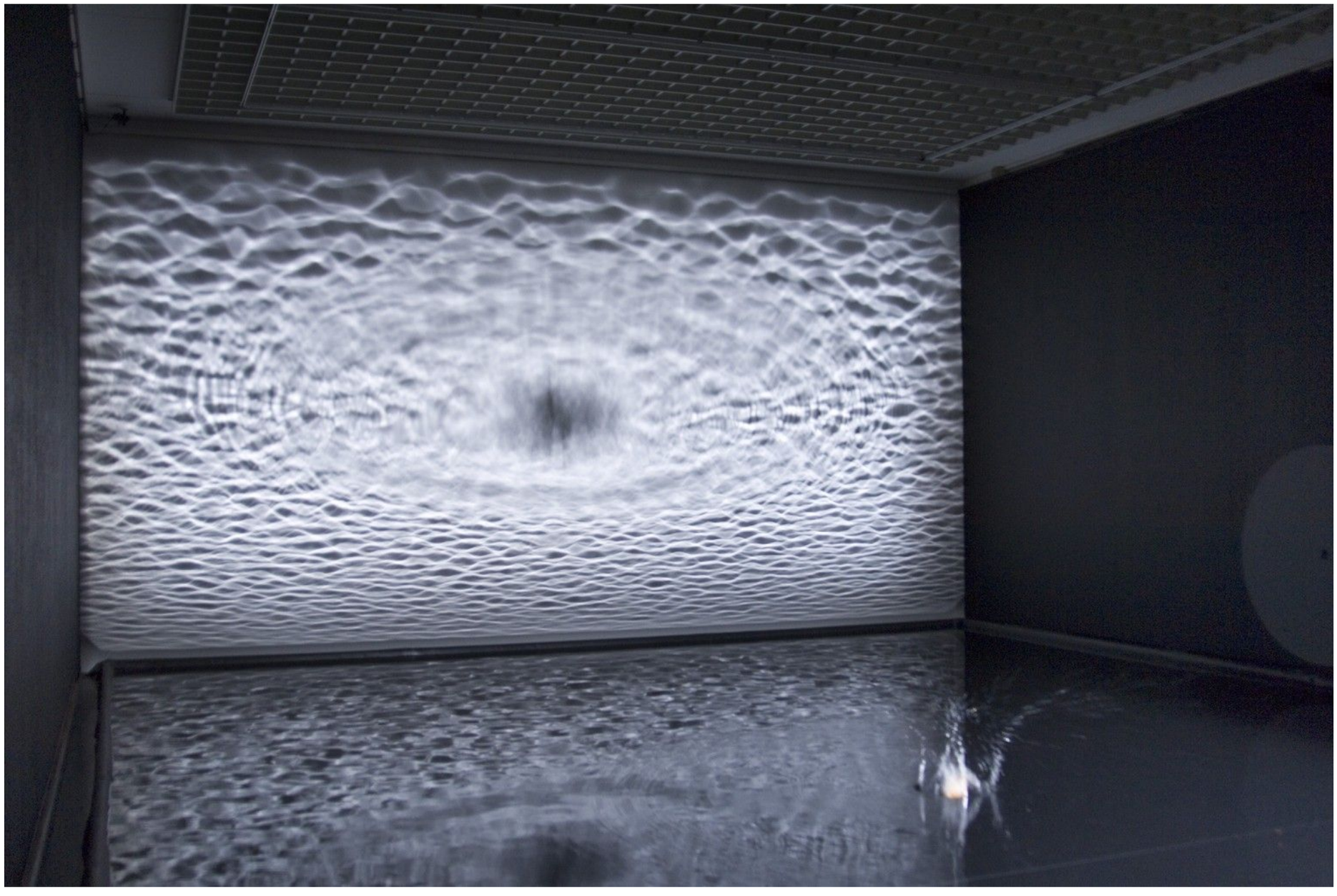
Angela Bulloch

Grid Drawing Machine (1992)

https://www.estherschipper.com/de/exhibitions/151-time-line-angela-bulloch/video

Olafur Eliasson

Notion Motion 2005



video on the installation of an exhibition

Timothy Knowles

Individual Fullmoos (2008)

Long exposure photographs of the fullmoon reflected on undulating water.

on his website

Timothy Knowles

Postal Works (2011)

A series of works produced as they travel through the postal system

on his website

Timothy Knowles

Trans-Alp Project (2006)

A drawing generated by the forces at work within a car, the journey's twists and turns, starts and stops, recorded on a roll of slowly moving paper.
The act of delivery becoming an act of production, departing from London with only an apparatus installed in the back of a hire car, arriving in Northern Italy with a piece of work for the exhibition.

on his website

Timothy Knowles

Tree Drawings

A series of drawings produced using drawing implements attached to the tips of tree branches, the wind's effects on the tree, recorded on paper. Like signatures each drawing reveals the different qualities and characteristics of each tree.

on his website

Christoph Kilian

Tuchfühler 2010

A silk cloth hangs from the ceiling of the room all the way to the floor. As people move through the space the air surrounding them also moves, in turn causing the cloth to move.

Behind the cloth is a group of electromechanical units. Each unit has a motor which moves a thin carbon fibre rod. First the rod gently approaches the cloth and in doing so, slides through two steel tubes which are electrically isolated from one another. If the rod comes into contact with the cloth, it will slightly bend. By bending, the rod connects the two steel tubes and thus completes an internal signal circuit. This causes the rod to move back away from the cloth for a moment.

The silk cloth is also transformed by the touch of the rod. The retreat of the cloth stimulates the surrounding units to approach it again, and thus transforming it further. So the attempt to determine the position of the cloth in space leads to a perpetual interplay of the observers.

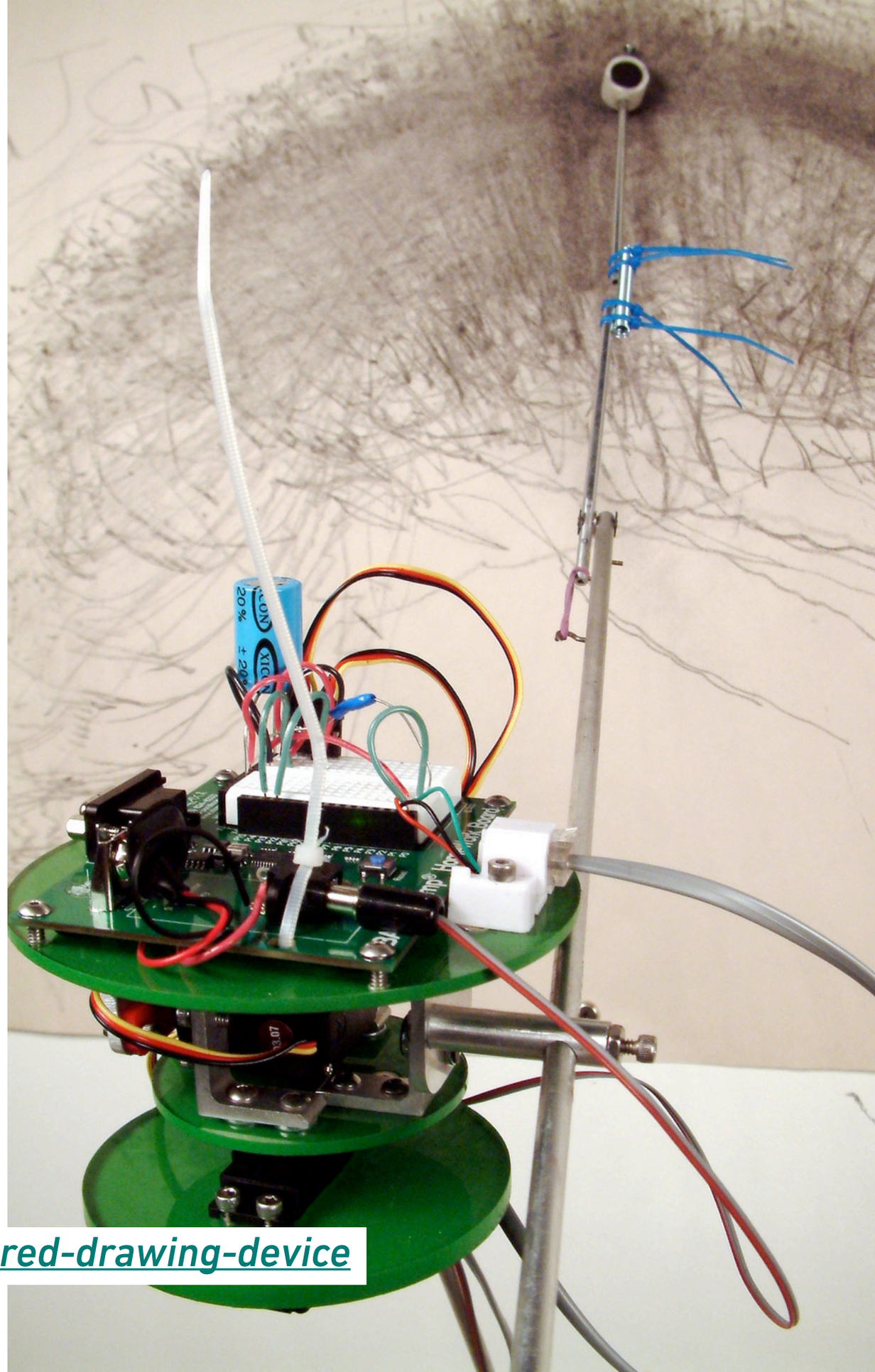
documentation video

David Bowen

Remote Infrared drawing device 2004

,remote infrared drawing device consists of four individual drawing arms which are installed in a gallery space and are connected to four different infrared sensor arrays. The sensor arrays are mounted in different locations throughout a particular building. The information gathered from the sensor arrays, through people's interaction with them, is sent to each corresponding drawing arm. The drawing arms move in real time based on the information they gather.

https://www.dwbowen.com/remote-infrared-drawing-device



Andreas Muxel

CONNECT / 2008
feedback-driven sculpture

In each of thirteen units, a steel ball is suspended from a rubber string which is driven yo-yo like for a short period, by a motor it is suspended from. The only other component of the work is a short carbon rod with a magnet at each end. At the outset it is attached to one ball. Its presence causes the ball to which it is attached to become excited, which in turn causes the loose end of the rod to swing around. The structure built by the ball-string and magnet-rod pair behaves as a “double pendulum” – an iconic chaotic movement generator. Eventually, the loose magnet finds a second ball and a new connection is built. This assemblage swings around, until one magnet breaks away continuing the aimless wandering of the carbon rod across the matrix. There is no main controller outside of the sculpture and no digital connection between the units. The program logic of each element’s microcontroller is based on identical rules, but the always rebuilt structure of the sculpture becomes its own analog algorithm for non-linear behavior. The system produces complex behavior, although its structure and rules are very simple.

hardware/software

In first experiments a computer simulation, built with Processing was used to emulate the behavior of the later sculpture. Through a simple GUI the user was able to set the main parameters of the software and change the values in realtime. In the final scultpure all microcontrollers are based on the physical computing plattform Arduino and are custom built for this installation. A piezoelectric sensor is used to analyze the swinging behavior of a steel ball. This kind of sensor is just capable of measuring frequency and amplitude of the yo-yo like swinging ball. Therefore movement is always required for the measurement and on each restart of the system every ball gets excited in the beginning. In a next step the software on each microcontroller detects if the carbon rod is connected to a ball or not. This is achieved by having a look on the sum of the amplitude. If a ball is not connected, the carbon rod’s swinging amplitude is higher and more regular. If connected the measured frequency is used to re-activate the swinging of the ball in a perfect manner. The subtitle of the work “feedback-driven sculpture” refers to this mechanism. First of all this logic is just implemented in the code. To have an influence to the analog sculpture an actuator – a mechanical device for moving or controlling a mechanism – has to be attached to the microcontroller. Here a stepper motor is used to re-activate the swinging of the suspended ball.

http://www.andreasmuxel.com/

Andreas Muxel

https://vimeo.com/3776807
https://www.andreasmuxel.com/artresearch/connect/

Verena Friedrich

The long now 2017

http://heavythinking.org/the-long-now/
https://vimeo.com/148218383
interview on 'the long now'

Kerstin Ergenzinger

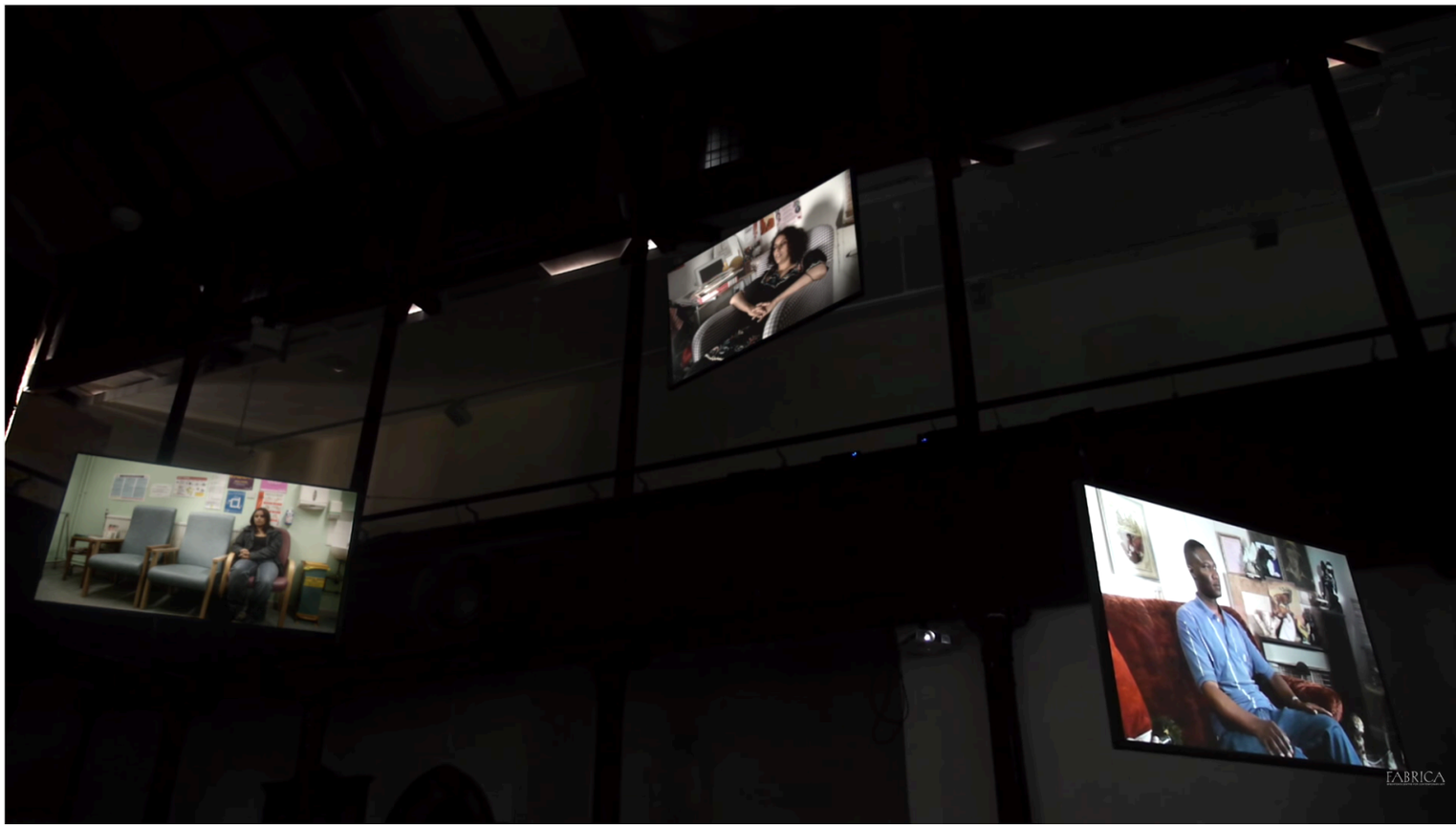
Rotes Rauschen

https://www.nodegree.de/work/rotes-rauschen/
https://vimeo.com/263001465

example:

Dawn Chorus

Artistic research project



Dawn Chorus was an immersive multi-screen film installation that used unique digital methods to explore the relationship between birdsong and the human voice, and similarities between bird and human behaviour.

Nineteen individual singers uncannily recreated birdsong and bird movement. Together they formed a chorus that accurately simulated the sounds and timings of a natural dawn chorus. With each singer depicted in an everyday location: an underground car park, an osteopathic clinic, a bedroom, a bathtub, Dawn Chorus was as much a portrait of British people and their daily habits as it was of the natural world.

Documentary of the project

footage of the recordings

Natalie Jeremijenko

OOZ (for the birds) 2006

[Natalie Jeremijenko OOZ (...for the birds)]
[Artist speaks about her work OOZ]

Semiconductor

Earthworks 2016

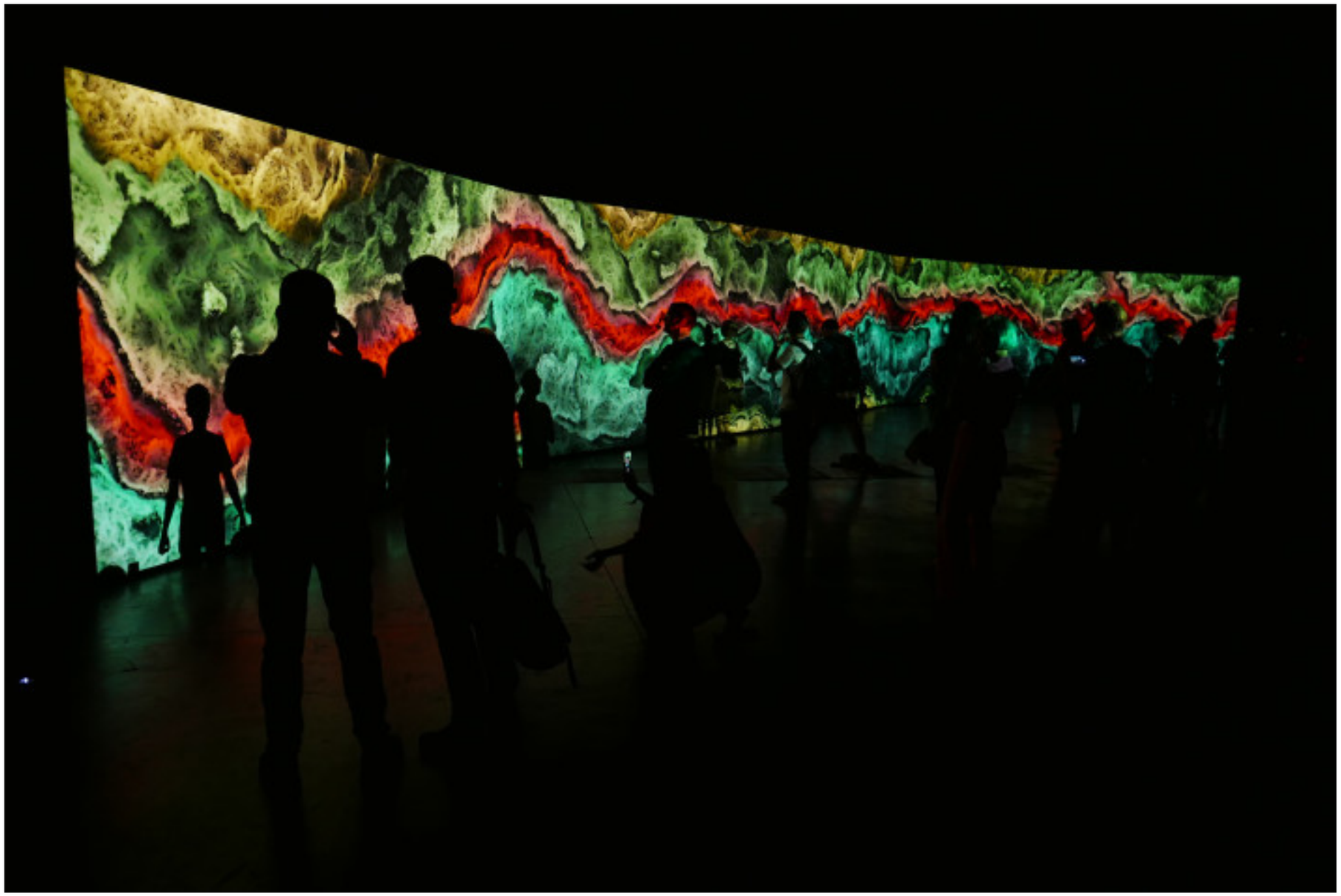
Earthworks is a five channel computer generated animation, which creates an immersive experience of the phenomena of **landscape formation** through the scientific and technological devices that are used to study it.
Masses of colourful layers are animated by the sound-scapes of **earthquake, volcanic, glacial and human activity, recorded as seismic waves**, which form spectacular fluctuating marbled waveforms. Semiconductor have employed the scientific technique of **Analogue Modelling**, which uses layers of real world multi-coloured particles and application of pressure and motion **to simulate tectonic and seismic forces**. As the layers become deformed they reproduce the generation and evolution of landscapes in nature over thousands of years, revealing them to be in a constant state of flux.

Semiconductor have acquired seismic data captured as a result of land shifting and forming, from all over the world. There are four distinct sections to the work, each using a different set of seismic data. This includes; glacial, earthquake, volcano and man-made seismic activity captured at La Planta quarry, Spain, to represent the Anthropocene, a new geological era influenced by humans. The data has been translated to audio to form the soundtrack of the work, and simultaneously control the animation of the layers. The data as sound directly sculpts the image, re-animates the landscape, and reflects the symbiotic relationship between landscape formation and seismic vibrations. The seismic audio is rich and full of the intricacies of the dynamics of our planet in motion.

website
earthworks documentary
installation documentation

Semiconductor

Earthworks 2016



https://vimeo.com/169208885

Teo Jansen

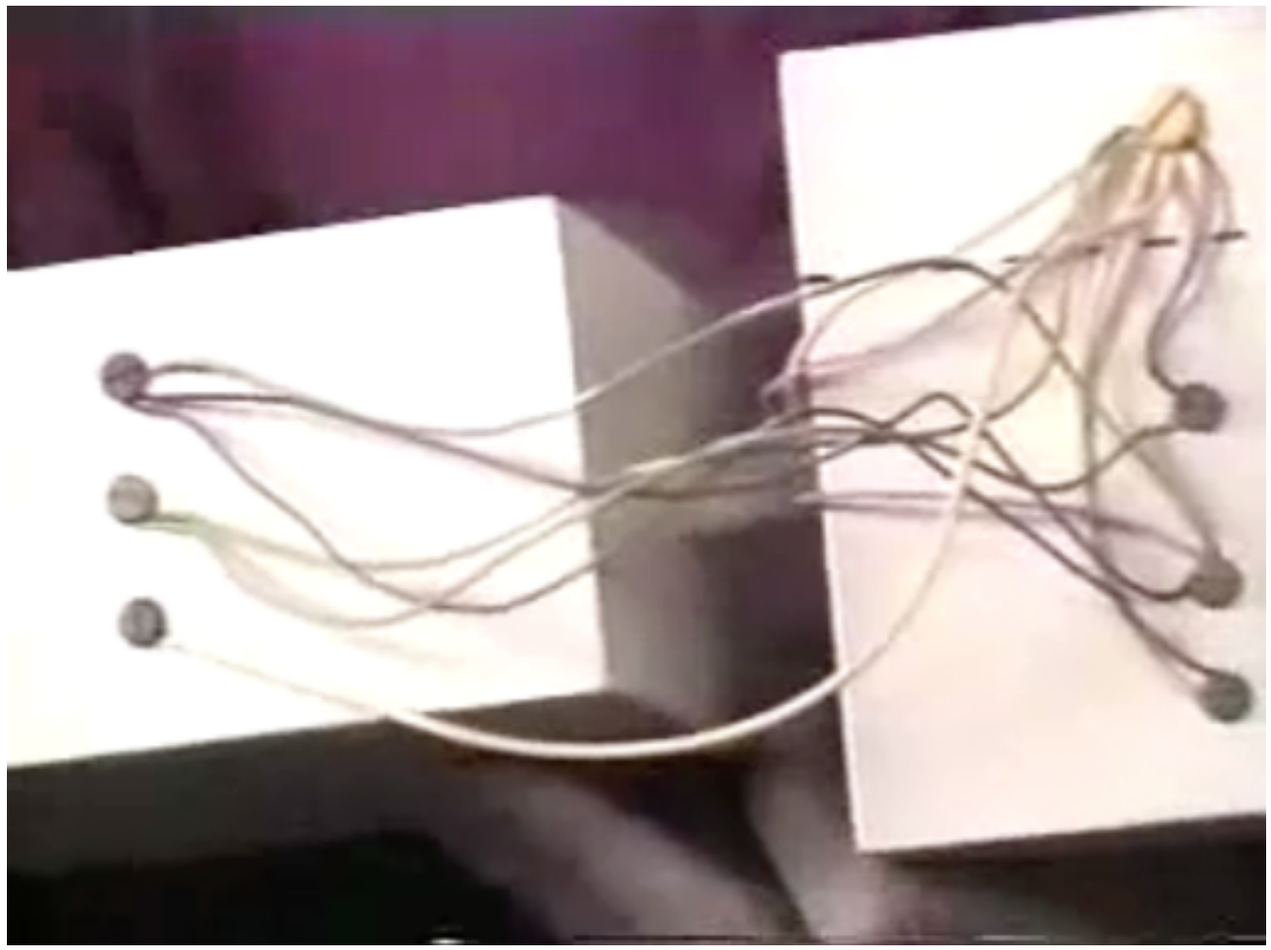
Strandbeetsen since 1990

https://youtu.be/LewVEF2B_pM
https://www.strandbeest.com/

Karl Sims

his first work was an installation with different monitors, on which synthetic, with genetic algorithms developed images were presented. A visitor could select and judge these images. Based on this selection, the images have been further developed with the synthetic genetics.
Installation table

Karl Sims developed virtual creatures in reference to Richard Dawkins, simulating a physical environment on a computer and submitting simple „creatures“ to a selection and reproduction process.



Daniel Dennett - Is Evolution an Algorithmic Process? Part 4 - on Karl Sims creatures

https://youtu.be/b1rHS3R0llU