

marcus maeder selected works and projects 2007 – 2017



Espirito da floresta/Forest spirit, Installation at the Inter-American Development Bank, Washington, June 2017.

## Espirito da floresta/Forest spirit

An artistic-acoustic observatory 2017/2018

AmazonFACE is a free-air CO, enrichment (FACE) In the installation changes to the soundscape of the experiment assessing the effects of increased atmospheric CO<sub>a</sub> on the ecology and resilience of the Amazon forest. The experiment will simulate the atmospheric CO<sub>2</sub> composition of the future in order to help answer the question: How will rising atmospheric CO.

in the Amazon rainforest is represented acoustically. der an elevated CO<sub>a</sub> concentration? The acoustic emissions of a tree (Ocotea Sp.) and the tion surface), together with the environmental noises processes in the rainforest. (through the video projection surface itself) and the in the forest (through the module behind the projecused to control the generation of sound in the installation's computer. A flute-like synthetic sound is used kom, ZHdK. Programming support: Thomas Peter in for data sonification: this is reproduced for each of Philippe Kocher, ZHdK. Production support sound the three measurement heights, and the current mea-panels: Thomas Tobler, ZHdK. Supported by Fondasured values control the pitch of the three flute-like tion ZHdK.

sounds. By these means the dynamics of the CO. concentration at three different "storeys" in the rainforest are rendered audible.

rainforest at an increased atmospheric CO, concentration in the atmosphere are rendered observable. Beyond that, new acoustic research methods of biodiversity will be tested. The so-called Acoustic Complexity Index ACI is displayed in the video projection. affect the resilience of the Amazon forest, the biodiver- In this acoustic estimate of biodiversity, the amplitude sity it harbors, and the ecosystem services it provides. envelope is being analysed in a number of frequency bands: the greater the number of different volumes Carbon Dioxide was discovered by the flemish chem- measured over a certain amount of time in specified ist Jan Baptist van Helmont in the 17th century. He frequency bands of the audio recordings, the higher called the gas that evaporated from burning wood the acoustically quantifiable biodiversity - what inter-"Spiritus sylvestre", "forest spirit." In the installation ests us here is the dynamic of this value over short "Espirito da floresta/Forest spirit", a local ecosystem and long time periods. Will biodevirsity decrease un-

environmental sounds in the field station of the Ama- The installation "Espirito da floresta/Forest spirit" aims zonFACE research project were recorded in 10-min- to make the processes in a local ecosystem audible ute intervals over three days. The sounds of the tree and acoustically examinable: the noises in a tree and and its inhabitants were recorded using specially its immediate environment change, depending on the developed contact microphones at three positions – time of day and the weather, the CO<sub>2</sub> values increase in the crown, on the trunk, and at the roots. These or decrease on the different "storeys" in the forest, and sounds can be heard through the sound panels of it becomes possible to experience sensually the close the installation (in the module to the right of the projec-connection between environmental conditions and life

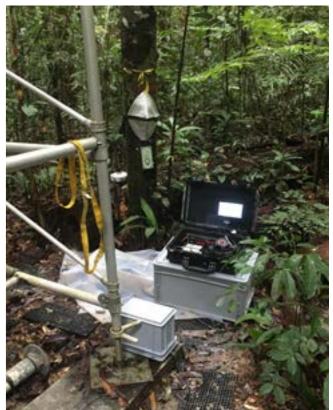
sonification of the CO<sub>2</sub> concentration at three heights Concept and artistic design: Marcus Maeder 2017/2018. Preparation of environmental data: Alestion surface). In the sonification, the CO<sub>2</sub> data flow is sandro Araujo, Empresa Brasileira de Pesquisa Agropecuária (Embrapa). Implementation ACI: Martin Neu-

Video/Sonification excerpt: http://www.domizil.ch/excerpt amazonface lowres.

Inter-American Development Bank IDB, Washington DC, USA. June 2017

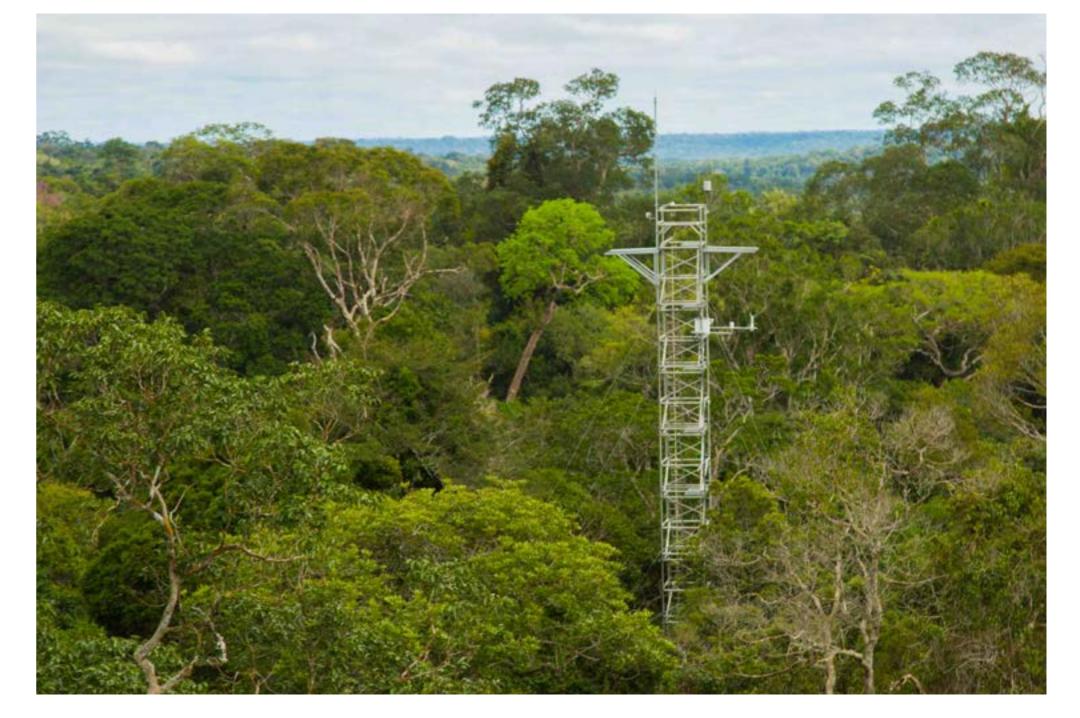
Embassy of Brazil, Washington DC, USA, June 2017

www.amazonface.org



Recording station in the rainforest.





Screenshot of the video part of the installation.

AmazonFACE measurement tower next to the recording station in the rainforest.



Bakar - Kraljevica (45.292898°, 14.572163°). Next page: Measurement station at Bakar bay, summer 2015.



## Bakar-Kraljevica (45.292898°, 14.572163°)

An air quality data sonification installation 2015

The installation "Bakar-Kraljevica (45.292898°, 14.572163°)" renders local air pollution dynamics at the mediterranean sea sonically and musically perceptible. My project consists in creating a contemporary musical landscape "painting" of the Bakar Bay: At the mouth of the bay lies Croatia's largest refinery, and a new motorway runs alongside the bay at a dizzy height. With an artistic/scientific measuring station, which I set up opposite the mouth of Bakar Bay, I have obtained a time-lapse video of day-to-day life on sea and land and have used the data from my own air quality measurements (nitrogen dioxide, ground-level ozone and carbon monoxide) and data from a staterun measuring station in Urinj (sulphur dioxide) on the opposite side of Bakar Bay.

Nitrogen dioxide, ground-level ozone, carbon monoxide and sulphur dioxide are all pollutants arising from

the use of fossil fuels and pose a risk to public, animal, and plant health. Moreover, some of these gases are key drivers in the greenhouse effect, i.e. global warming. The installation creates a sensory experience of the local, weather- and circadian rhythm-dependent air pollutant dynamics by combining data sonification and video images. Daytime, wind direction and approaching weather systems can be observed in the sky and on the sea surface and can be correlated with air pollutant levels and sounds.

The sonification of the four pollutants consists of four string sounds of different pitches, played back in four spherical resonators: The lowest sound (carbon monoxide) is played back in the lowest resonator; the second lowest sound (nitrogen dioxide), in a slightly higher one; the next (sulphur dioxide), in an even higher one; and the highest-pitched sound (ozone), in the highest of the four. The daily dynamics – the rise and fall of pollutant concentrations during the played-back measuring period – are converted into sound: During the second night, it rained briefly, and the following

morning there were virtually no audible sounds as the air had been washed clean. During the course of the week, the sound volume then increased, particularly at noon (nitrogen dioxide and ozone) and in the evening (carbon monoxide). All pollutant levels dropped again significantly during rain and Bura (a stormy fall wind flowing down the mountains towards the sea).

Nitrogen dioxide (NO<sub>2</sub>) is a highly toxic gas arising primarily from the burning of fossil fuels (gas, coal, oil and motor vehicle emissions). Nitrogen dioxide contributes to ozone formation and environmental effects such as acid rain and soil eutrophication. The European limit for nitrogen dioxide is 200 µg/m³ and may be exceeded 18 times a year. Our measurements revealed daily peaks well below the limit, i.e. between 26 and 33 µg/m³ at noon. The low NO<sub>2</sub> values are attributable partly to the coastal location with its constant breeze, which quickly carries away local gas emissions. In addition, at high temperatures (sometimes as high as 43°C at the measuring station), NO<sub>2</sub> reacts readily, forming nitrogen monoxide, ozone and

nitric acid.

Carbon monoxide (CO) is a highly toxic gas, too. It, too, arises from the burning of fossil fuels, mainly Marcus Schaub, Swiss Federal Institute for Forest, by motor vehicles. Our measurements revealed higher concentrations of carbon monoxide towards the Programming support: evening; Carbon monoxide accumulated in the local Philippe Kocher atmosphere during the day as a result of ship and Air quality measurement technology: vehicle traffic in the bay. The European limit for carbon decentlab GmbH monoxide is 10 mg/m³ over eight hours. This average value was not exceeded for the same reasons as those given for nitrogen dioxide.

Ozone (O<sub>2</sub>) is a highly oxidative gas: it causes irritation of the airways in people and animals and leaf necrosis in plants. Ozone is formed when nitrogen Video/sonification excerpt: oxides react with oxygen in the presence of UV radiation. The agents responsible for producing ozone do not originate locally but are carried to Bakar Bay from Exhibitions: further afield, presumably from the south on the Jugo wind blowing along the coast. The European limit for Nixe @ Musikprotokoll im Steirischen Herbst 2015, ozone is 180/240 µg/m³, an 8-hour value which may Joanneum im Lesliehof, Graz be exceeded 25 times a year. This value was not exceeded during our measurements.

Sulphur dioxide (SO<sub>2</sub>) is formed primarily from the burning of coal and heating oil. Main emission sources include combustion plants used for power generation, in industry and in small-scale consumption. At high concentrations, sulphur dioxide has damaging effects on humans, animals and plants. Oxidation products cause acid rain, which endangers fragile ecosystems such as forests and lakes (Scandinavia) and damages buildings and materials.

Concept and artistic implementation:

Marcus Maeder

Scientific advice:

Snow and Landscape Research (WSL)

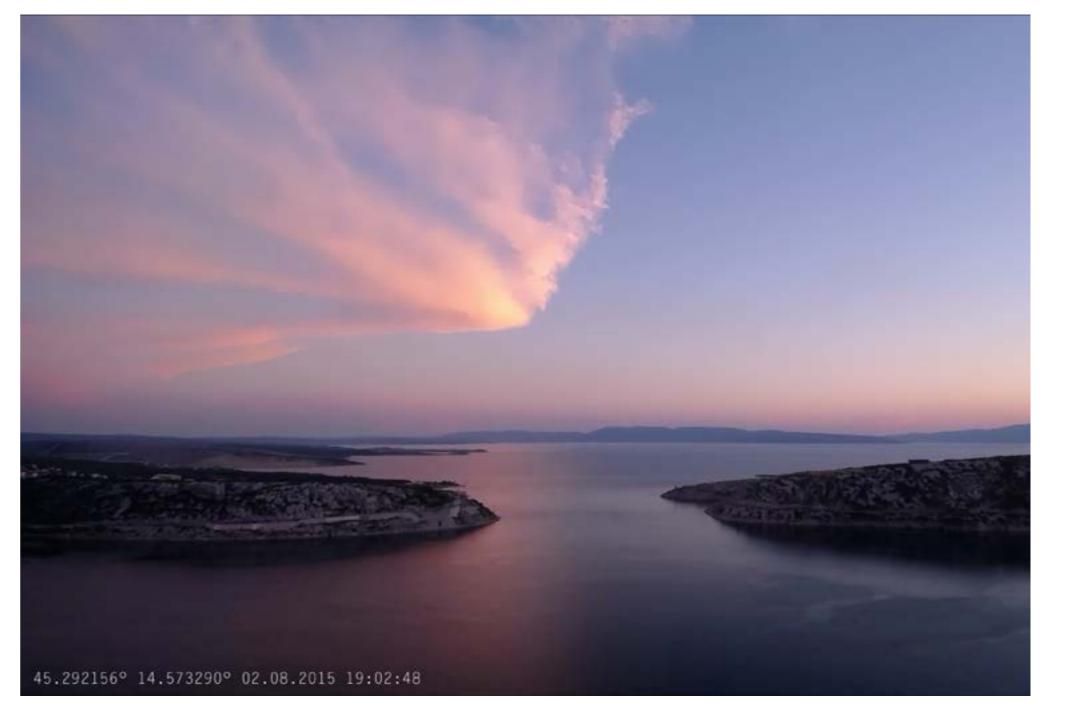
TZ Grada Bakra, Sonja Jelušić;

PZ Dolcina and Ivona Miloš

Source of pollutant information:

Austrian Department of the Environment

http://www.domizil.ch/bakar-kraljevica.mp4



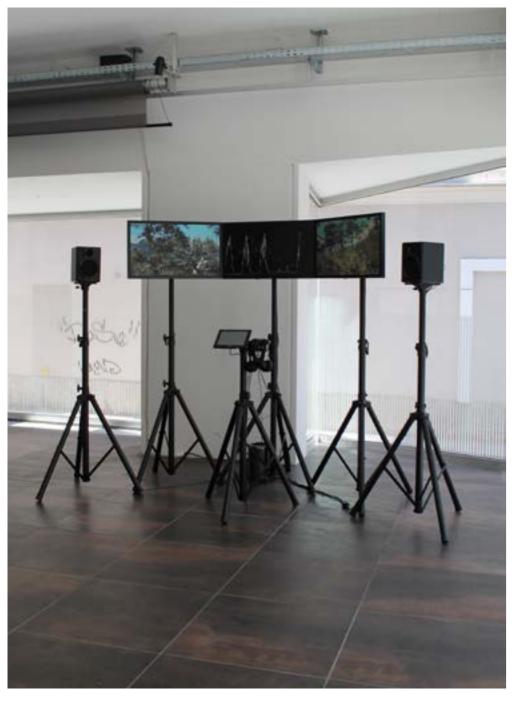
Screenshot of the time lapse movie on the monitor of the installation





trees: Pinus sylvestris, spatial audio version, Creative City, Zurich University of the Arts ZHdK, October 2014

treelab, adaption for ICST's Immersive Lab, San Diego/San Francisco, November 2015





Left: «trees» stereo/headphone version at ESC Medien Kunst Labor, Graz 2015. Right: Adaption of «trees» for ICST's FlowSpace, National Museum of Contemporary Art, Athens

#### trees/treelab

Spatial audio/stereo sound installations 2014 - 2016

The link between trees and various climatic processes is usually not immediately apparent. Trees and plants do not live merely on moisture from rain, sunlight (which drives gas exchange) and nutrients from the soil: they absorb carbon dioxide from the air and produce the oxygen that we breathe, maintaining our climate and biosphere. Gathering ecophysiological data by measuring the local climatic and environmental variables and the physiological processes within a plant in response to changes in these variables has become an important method of researching climate change and vegetation dynamics. It helps to determine physiological thresholds of plants in terms of increasing temperature and consequently drought stress.

sounds for several decades now. Many of these sounds are of transpiratory/hydraulic origin and are therefore related to the circulation of water and air within the plant as part of the transpiration process. Each plant species - in fact each plant individual - has its own acoustic signature, related to its anatomical structure and to the local climatic conditions. Investigating the acoustic emissions of a tree in response to dynamically changing climatic conditions might reveal biological or physical properties that place these emissions in a broader ecophysiological context and enable us to explain processes that are not yet fully Zurich University of the Arts ZHdK. understood.

In our observation system «trees» and «treelab» we combine recordings of acoustic emissions of a tree with sonic representations (sonifications) of ecophysiological data in one single auditory expe-rience, enabling the visitor to experience and comprehend

cause and effect of the plant-atmosphere relationship. The installation replays measurement data from early summer 2015, the peak of the growth period of a Scots pine (Pinus sylvestris) located in the central Swiss Alps in Salgesch in the canton of Valais.

Scots pines in Valais have experienced high mortality Exhibitions: rates for some decades now: this phenomenon is believed to be caused by the effects of climate change, Ars Electronica Festival 2017, Linz e.g. longer drought periods. A downy oak (Quercus pubescens), for example, is able to better withstand the current climatic conditions whereas a Scots pine BOZAR Palais des Beaux-Arts, Bruxelles is pushed beyond its physiological limits despite the fact that both tree species have coexisted there for thousands of years. Consequently, shifts in the abundance of tree species are observed. The ecophysiological knowledge acquired is used to explain the underlying processes: Hence the cooperation between a biologist and an artist opens up new ways to study Nov 13 – 30, 2015 Plant physiologists have known that plants emit the complex relationship between tree physiology and climatic conditions on the one hand and to explore the IDEAS - Calit2 Performative Computing Lab, Atkinson possibilities of acoustic and artistic representations of ecophysiological processes in trees on the other.

> "trees: Rendering ecophysiological process audible" was a research project conducted by the Institute for Computer Music and Sound Technology ICST of the 08.07. - 11.07. 2015 Zurich University of the Arts ZHdK, in collaboration with the Swiss Federal Institute for Forest, Snow and Clarke House, Bombay Landscape Research WSL. "trees" is funded by the Swiss National Science Foundation (SNSF) and the

Artistic realization and programming: Marcus Maeder. Scientific data and analysis: Roman Zweifel (WSL). Programming support: Philippe Kocher, Thomas Peter (ICST). Technical engineering field measurements: Jonas Meyer (ICST, decentlab).

http://blog.zhdk.ch/trees http://immersivelab.zhdk.ch/?page id=1014

Video/sonification excerpt: http://www.domizil.ch/trees.mp4

September 2017

September - October 2017

United Nations Climate Change Conference COP 21, Paris 2015

Gray Area, San Francisco

Hall, UC San Diego October 9, 2015

ICAD Conference 2015 ESC Medien Kunst Labor, Graz

03.06. – 07.06. 2015

SoundReasons Festival, New Delhi, India Outset India 31.10.2014 - 10.11.2014

ICMC SMC 2014 Conference, Athens National Museum of Contemporary Art, Athens September 2014



Cover image of the progeny CD

## progeny

CD, domizil 41, 2015

Nature has presented itself as the idea in the form of otherness. *G. W. F. Hegel* 

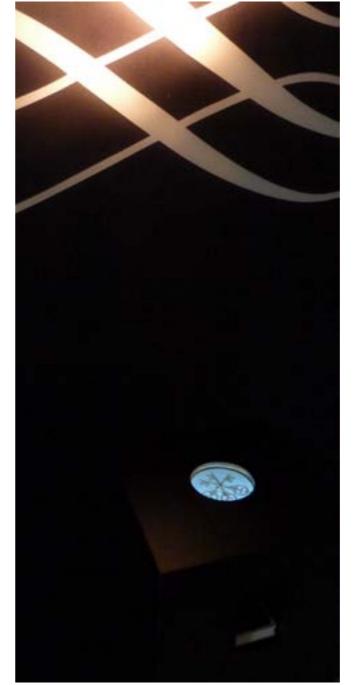
In his work as a research associate at the Institute for Computer Music and Sound Technology of the Zurich University of the Arts, Marcus Maeder has spent a number of years working on the sonification of scientific data. This involves the use of data to control sounds in order to study processes in nature that would ordinarily be beyond the reach of our senses. In observing his research work, Maeder increasingly found himself asking fundamental artistic questions, such as: When a piece of art or music provides new or different insights into the world around us, how do we specify its epistemic content? In other words, when an artist describes a process or phenomenon in nature in musical form, or simulates, imagines it through music, what does such a piece of art achieve? Is music, purely artistic in its approach, capable of casting a new associative and emotional perspective on concepts and theorems in science by isomorphically applying, in its implementation, certain aspects of scientific views?

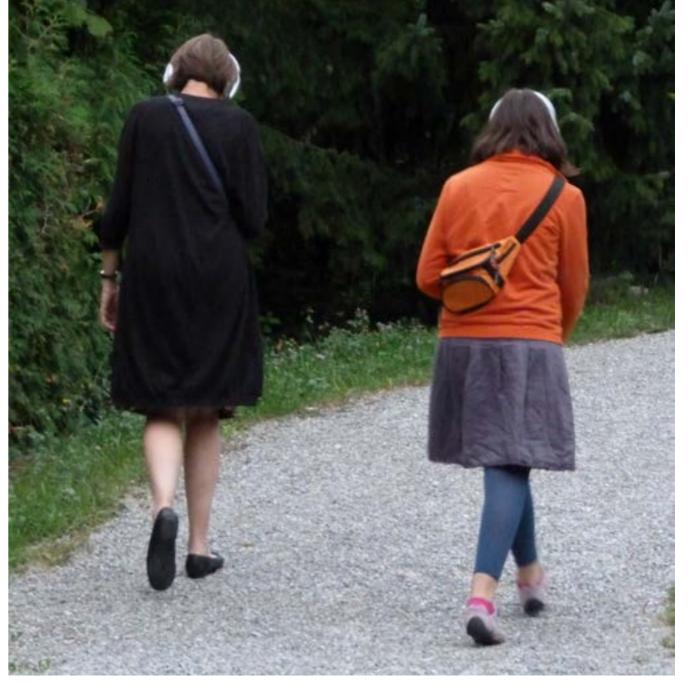
The progeny project has produced ten pieces and attempts at artistic associations of concepts as shaped in Biology and Theoretical Biology, particularly in the Theory of Living Systems. Far from shying away from the label of "ambient music", progeny expressly positions itself in the fields of Ambient Poetics and Environmental Aesthetics, as outlined by American philosopher Timothy Morton. Ambient Poetics develop speculations about nature that transcend our conceptual and ideological limitations of perception, thus reshaping our environment: here,

art is seen as a heuristic act that involves counterposing images and sounds of otherness, on the one hand, and ideological perspectives on nature on the other.

Listen to a piece of this CD: www.domizil.ch/marcus\_maeder/mp3/growth.mp3







Exhibition poster for The Left-Hand Path, Graz and Zurich 2011

Left: Base station/installation at Shedhalle Zurich. Right: Visitors at the Old Botanical Gardens, Zurich – Lange Nacht der Museen 2011



**Der Pfad zur linken Hand** (The Left-Hand Path) A GPS-based audio play app for Smartphones

Graz Path: First showing at Steirischer Herbst, Musikprotokoll, Schlossberg/Stadtpark, Graz, 2011

Zurich Path: First showing as a contribution to "Connect. Art between Media and Reality", an exhibition with media art from the Sitemapping programme (BAK), Shedhalle Zurich/Alter Botanischer Garten, 2011

Direction, Text. Music: Marcus Maeder

Interactivity, Software, Music: Jan Schacher aka. "jasch"

The topographical audio play The Left-Hand Path was developed as a Smartphone app and is available for from the Apple App Store. We set up The Left-Hand Path in 2011 as a GPS-based audio play at the Old Botanical Gardens in Zurich as part of the "Connect" exhibition at Shedhalle Zürich and at Graz Stadtpark for the Musikprotokoll programme of the Styrian Au- Félix Guattari. tumn festival. Equipped with smartphones, headphones and this app – specially developed for this project - visitors are invited to wander around and explore a designated area, where they will come across various sound clips situated at different locations throughout the landscape.

The concept of the Left-Hand Path stems from Indian mythology and denotes religious and worldly practices opposed to the prevailing homogenous, established

Path, one often finds the devil himself as a travelling companion. Listeners of the GPS-based audio play The Left-Hand Path are led along paths of thought characterized by a fundamental opposition of the state of affairs in a "post-everything" society, a society in which social and ecological progress risks stalling as a result of the establishment of global neo-feudal power structures.

Following the economic and terrorist crises of recent

years, conservative thinking seems to be reinstating itself around the world: Right-wing politics and the associated exclusionary attitudes that characterize the maze of thought? wealth gap, be it on the basis of national or ethnic identity or religious belief, are becoming acceptable once again. A renaissance of conservative and religious promises of salvation is drowning out rational discussions on how we wish to lead our lives and how society should evolve in both the West and the East, in rural and in urban areas. Today, we live in a society dominated by monetary relationships and ridden with download free of charge on our project website and myths to the point of becoming a veritable jungle; a society in which power, money and faith are intertwined – (post-)post-modern, global capitalism has Museum of the University of Zurich. Project Partners: become the vast motley painting of everything that has ever been believed painted by Gilles Deleuze and

The question as to what today's enlightenment processes should look like - referring to the processes for raising awareness in society with a view to exposing and dismantling the existing power structures - requires an urgent answer. The Left-Hand Path system is associated with a diabolic figure, which manifests itself as enlightenment in its purest form, as an antagonist, as a rebel and as symbol of polemic and failure, urging listeners, in specific terms, quite simbeliefs. In the West, the term is used to describe ways ply to challenge the established ways of thinking, as of thinking involving opposing views: on the Left-Hand Kant put it in his maxim Sapere aude! Have courage

to use your own reason! On the Left-Hand Path, several fundamental enlightenment-seeking questions arise: What society do we live in? Are we content with our current way of life? How can we determine our own destiny? In the audio play, these questions are posed by individuals characterised by having an oppositional attitude towards their environment: artists, radicals, intellectuals, sectarian gurus, alcoholics, the exploited and supporters of an alternative society. The Left-Hand Path is like a maze: a broad range of views are expressed, but which lines of thought lead out of dead ends? Can listeners find their way out of this

Production: ORF Kunstradio and Musikprotokoll im Steirischen Herbst Graz, Austria Editor: Elisabeth Zimmermann Directors Musikprotokoll im Steirischen Herbst Graz: Susanna Niedermayr, Frank Zimmer

Supported by the Swiss Arts Council Pro Helvetia, Sitemapping of the Swiss Federal Office of Culture, SRF Swiss Radio and Television, Ethnographic HTC (Smartphones) and Holding Graz Schlossberalift-Service.

www.derpfadzurlinkenhand.net http://kunstradio.at/2011B/02 10 11.html http://www.shedhalle.ch/de/marcus-maeder-janschacher-der-pfad-zur-linken-hand





trees: Downy Oak

Spatial audio/stereo sound installations 2012/2014

## "Phytoacoustics"

sounds for several decades now. Many of these sounds are of transpiratory/hydraulic origin and are therefore related to the circulation of water and air withe ultrasonic range, depending on the species-specific characteristics of the plant tissues. Some of the acoustic emissions (so-called cavitation pulses) are indications of embolism in the water transport system, which occurs when a plant is subjected to drought stress and desiccation. The excessive water tension in the water-conducting system leads to the rupture of the water columns in the plant vessels. Each plant species – in fact each plant individual – has its own ders them intuitively perceptible. acoustic signature, related to its structure and to the local climatic conditions.

## Sonification of ecophysiological data

Gathering ecophysiological data (i.e. conducting measurements of the local climatic and environmental conditions and of the physiological processes within a plant in response to these) has become an important method in research on climate change and vegetation dynamics. It helps to determine physiological thresholds of plants in terms of increasing temperature and consequently drought stress. A downy oak (Quercus pubescnes) in the central Alps, for example, is able to withstand the current climatic conditions of

fact that both tree species have coexisted there for thousands of years. Consequently, shifts in the abundance of tree species are observed, and the ecophysiological knowledge acquired explains the underlying processes.

In this installation, we have combined field recordings Plant physiologists have known that plants emit of meteorological phenomena, recordings of acoustic emissions in a tree and acoustic representations (sonifications) of ecophysiological data, collected by Roman Zweifel (WSL) and Fabienne Zeugin of the Swiss thin the plant as part of the transpiration process. The Federal Institute of Technology (ETH) on a downy oak Artistic realization and programming: Marcus Maeder frequencies of these acoustic emissions lie mostly in at Salgesch in the Swiss mountains in 2003 and 2004. Zweifel and Zeugin measured relative air humidity, sap flow, stem radius changes and ultrasonic acoustic emissions (UAE) throughout an entire tree growth cycle and recorded the data at ten-minute intervals throughout the day and night. As the data relating to the Meyer (ICST, decentlab) ecophysiological processes was multidimensional, an analytical system is needed that focuses on the key factors and the interrelations between these and ren-

## Downy Oak: Data sonification

The sonification system is based on a combination of different sonification techniques, i.e. playback of original acoustic emission recordings (by transposing them — into the audible domain) and parameter mapping sonification, whereby the sound parameters of a sample player (amplitude, pitch and filters) and the sound distribution system (spatial position or movements of virtual sound sources) are controlled by the data flow. The different sonification modules are implemented in a set of Max Patches, which replays the measurement data of a downy oak throughout an entire growth cycle (April-October 2004). A larger number of ecothe air and soil whereas a Scots pine (Pinus sylvestris) physiological and meteorological phenomena do not is pushed beyond its physiological limits despite the manifest themselves acoustically, and it is a challen-

ging task to generate metaphorical sounds to portray a single phenomenon, such as sunlight or air humidity effectively. Besides the diurnal course of the tree's response to sunlight, there are many other recognizable patterns: As it gets drier in the summer, the cavitation events become longer, sometimes lasting deep into the night; the stressed plant needs more time to refill with water from the soil. In addition, the number of cavitation sounds is greater when a plant is well drained and exposed to full sunlight than in very dry periods.

Scientific data and analysis: Roman Zweifel (WSL), Fabienne Zeugin (ETH)

Programming support: Philippe Kocher (ICST) Technical engineering field measurements: Jonas

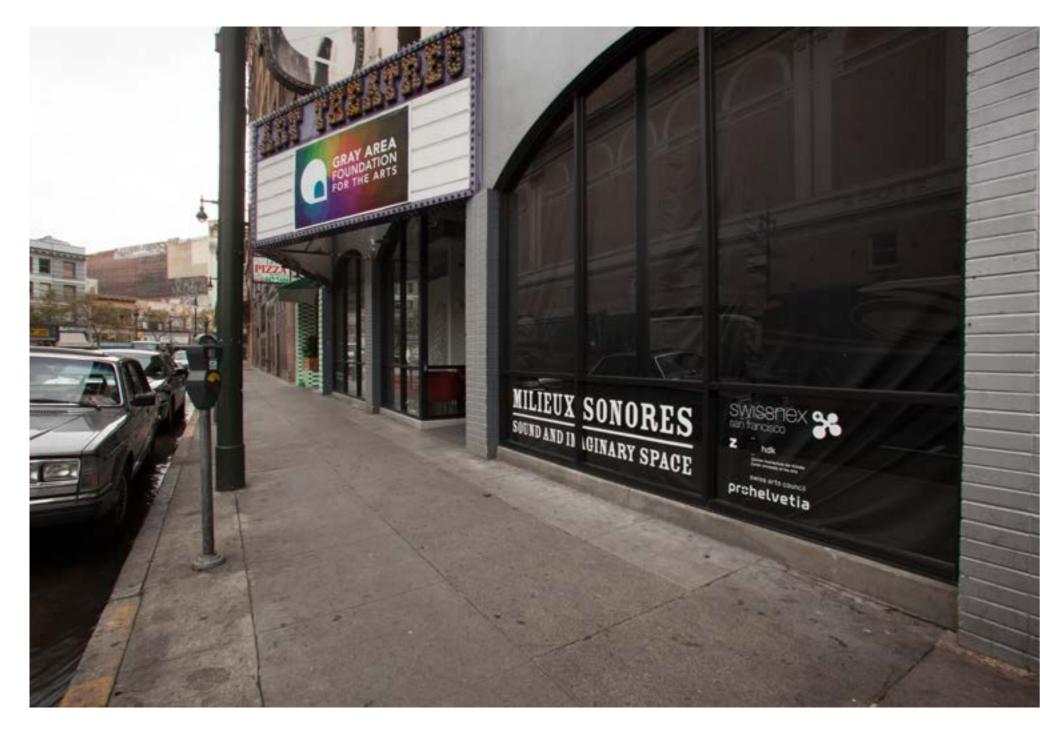
www.swissnexsanfrancisco.org/event/tuningintrees/ http://blog.zhdk.ch/downyoak/

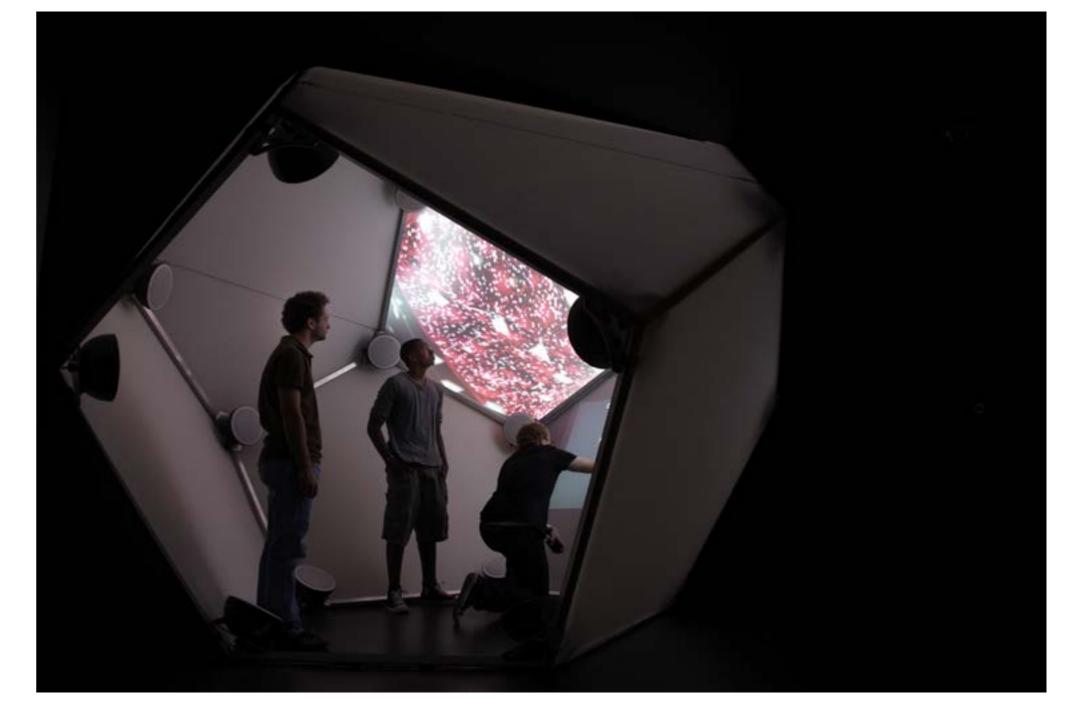
Exhibitions:

Baum/Mensch/Klang/Kunst Alpen Adria University, Klagenfurt May - June 2014

swissnex San Francisco Juli – August 2012

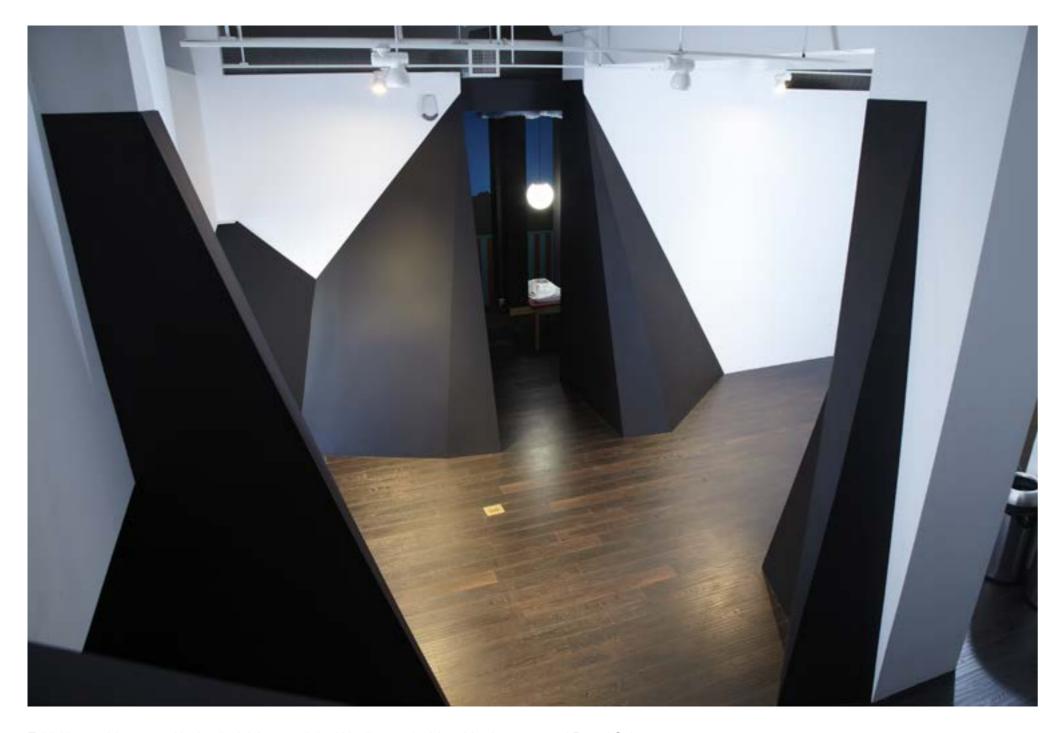
Left: trees: Downy oak - spatial audio version at swissnex San Francisco, 2012. Right: trees: Downy oak - stereo version at Alpen Adria University, Klagenfurt 2014





Milieux Sonores – sound and imaginary space. An exhibition at Grey Area Foundaten, San Francisco, 2010.

Exhibition detail: "Flow Space" by Daniel Bisig, Jan Schacher and Martin Neukom



Exhibition architecture with detail of "Mutmassliche Windlasten" by Yves Netzhammer and Bernd Schurer

## Milieux Sonores: Sound and imaginary space

Exhibitions and book project, 2009/2010

Edited and curated by Marcus Maeder

place at Kunstraum Walcheturm from 16. 1. 2009 -21, 2, 2009, Version 2,0 from 11, 9, – 19, 11, 2010 at Gray Area Foundation for the Arts, San Francisco, support of the Swiss Arts Council Pro Helvetia.

Participating artists: Daniel Bisig/Jan Schacher/Martin Neukom, Jason Kahn, Yves Netzhammer/Bernd Schurer, Felix Profos, Jeroen Strijbos/Rob van Rijwsijk a. o.

Contributors to the Milieux Sonores publication: Daniel Bisig, Sabine Gebhardt Fink, Marcus Maeder, Yves Netzhammer, Martin Neukom, Mathias Oechslin. Nils Röller

## The exhibition

The so-called "spatial turn", the "topological turn", has since the end of the eighties been a topic of cultural and social studies. Topological termini are broadly or groups of elements influencing each other. More recently, physical, social, geographical, psychological spatial categories; the concept of space has always our thinking to be grasped in linguistic terms.

Without any doubt, reasons for this stronger emphasis on the spatial aspect can be found in the increasingly important role spatially oriented media plays in our or remote spaces, sounding artificial life forms - they living environment. Whether it is the simulation of space used in almost every computer game, GPS navigation systems or space metaphors in the internet such Version 1.0 of the Milieux Sonores exhibition took as chat rooms: the large share of virtuality structured in analogy to space is defining of our discourse on the and more artificial." world. Furthermore, through recent media technology, a veritable topos of media related experience and ac- In the exhibition Milieux Sonores, we focused on arin collaboration with swissnex San Francisco and the ting is taking on form, an ontology of the virtual is in the making. With cinema, DVDs and computer games the spatial design of sound and the sonic design of space has gained importance. Surround technologies allow to simulate complex acoustical spaces: the "virtual" acoustic space has become a widely discussed subject. If we view the fields of media and sound art, of electronic music, of game and sound design from at the music department of the Zurich University of such a perspective, it is striking that especially in these disciplines, topological terms become parameters in artistic and medial work. Furthermore, sounds do not only exist in a spatial relationship to one another, they are on a level of imagination and creation part of a consciously generated sonic and spatial milieu.

If we understand artificially generated sound spaces as fields of imagination that are composed of sound milieus structured in space and time, they are nonetheless primarily composed of technically generated used in disciplines that deal with systems, entireties signals that trigger sensations. The producer's as well The idea for this book came up during preparations as the artist's and the recipient's imagination through acoustic sensations creates a space for association or physiological structures have been described using which brings into relation our knowledge about the real world and the simulation of the possible. Under served to define relations between things in our imagination, thus interpreting reality. According to Japanese about by media technology, the conception of realiphilosopher Kitaro Nishida, space can be seen as a ty begins to change. Space simulations created by place that absorbs ideas and allows the expansion of artists, be it in films, in installations or musical works,

create "hyper-natural", surreal spaces of experience that are filled with strange sound objects, impossible create mental landscapes which become part of our environment. On this phenomenon, Gilles Deleuze and Félix Guattari noted in the dawn of the computer age: "The real is not impossible, but it becomes more

tistic and musical designs of sound spaces, on working with sound and the visualization of imaginary space. Milieux Sonores presented five different artistic approaches, each of which either creates, in its own unique way, a world of sounds and a space for a framework of sounds or transforms and redefines space through sound. Two of the five works were developed the Arts, namely Vier Nebenräume by Felix Profos and Flow Space by Daniel Bisig, Martin Neukom and Jan Schacher from the Institute for Computer Music and Sound Technology.

### The book

## Milieux Sonores/Klangliche Milieus

Sound, Space and Virtuality

for the Milieux Sonores exposition. Inspired by the numerous reactions of a very interested public, the contributions in this book aim to reflect the multi-facetted aspects of sound and the acoustic space within the current discussion of virtuality. The examination of musical methods and practices in the virtual sphere as a veritable intersection of research and art has only

If we understand artificially generated sound spaces as fields of imagination that are composed of sound milieus structured in space and time, they are nonetheless primarily composed of technically generated signals that trigger sensations. The producer's as well as the artist's and the recipient's imagination through acoustic sensations creates a space for association which brings into relation our knowledge about the real world and the simulation of the possible. Under the influence of our perception's expansion brought about by media technology, the conception of reality begins to change. Space simulations created by artists, be it in films, in installations or musical works, create "hyper-natural", surreal spaces of experience that are filled with strange sound objects, impossible or remote spaces, sounding artificial life forms – they create mental landscapes which become part of our environment. This approach comes close to a long held dream of surrealists. Leading surrealist thinker André Breton wrote in his first surrealist manifesto back in 1924: "I believe in the future resolution of these two states – outwardly so contradictory – which are dream and reality, into a sort of absolute reality, a surreality, so to speak. I am aiming for its conquest, certain that I myself shall not attain it, but too indifferent to my death not to calculate the joys of such possession."

Editor: Marcus Maeder, Institute for Computer Music and Sound Technology, Zurich University of the Arts (ZHdK)

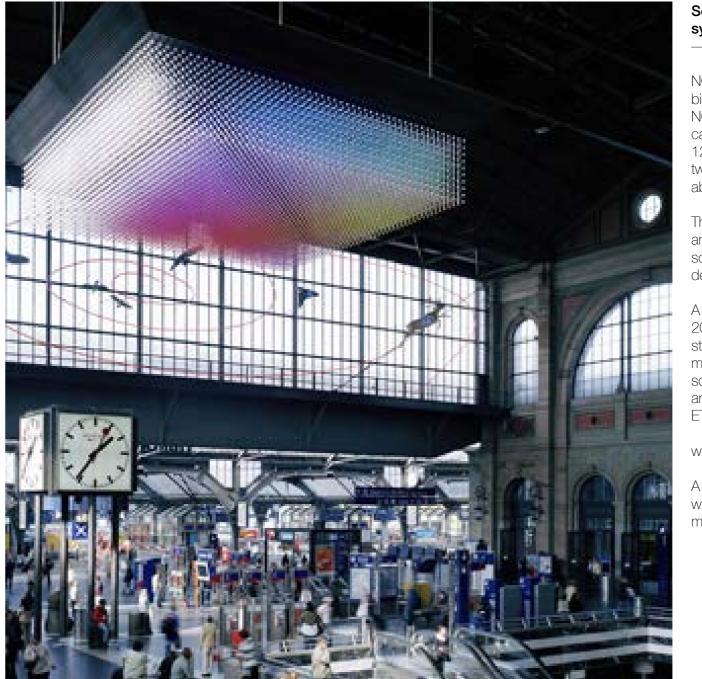
Publisher: Transcript Verlag, Bielefeld

Authors: Daniel Bisig, Sabine Gebhardt Fink, Marcus Maeder. Yves Netzhammer, Martin Neukom, Mathias

Oechslin and Nils Röller Publication: July 2010

www.transcript-verlag.de/ts1313/ts1313.php





# Sonifications and Music for the NOVA display system 2008

NOVA is a three-dimensional screen with the capability to display dynamic visuals in three dimensions. NOVA consists of 25 000 luminescent spheres, which can be activated one by one, which are equipped by 12 light emitting diodes each. The display can show two-dimensional images as well as three-dimensional abstract content.

The NOVA of ETH Zurich served as a platform for art and science displaying algorithms from a variety of scientific departments of the ETH Zurich (Swiss Federal Institute of Technology).

A prototype of the system was been installed from 2005 until 2012 on the ceiling of Zurich's main train station, and the console was located at the group meeting point at the centre of the hall, where Maeder's sonifications and music accompanying the scientific animations and visualizations of all departments of the ETH have been broadcasted.

www.nova.ethz.ch

A video simulation: www.domizil.ch/ETH\_Boomsma\_Concentration\_1.



Die Wunschmaschinen

(The Desiring-Machines) Surround Play/Live Installation, 2008

Based on Anti-Oedipus: Capitalism and Schizophrenia I by Gilles Deleuze and Félix Guattari. Cast: Antonin Artaud, Hélène Barat, Ivan Chtcheglov, Guy Débord, Eliza, Sigmund Freud. Music based on Kraftwerk, Velvet Underground, Nick Cave and Richard Wagner.

## The desiring-machines

In the aftermath of 1968, the desiring-machines embodied the unconscious in a world fundamentally affected by technology for the philosopher Gilles Deleuze and the psychiatrist Félix Guattari. An unconscious, which is not seen as a theatre of symbolic representations - criticism belonged to psychoanalysis - but www.wunschmaschinen.net more politically understood, as a productive factory. The productive, reality-producing desires are desiring-machines; they are our desires in the interaction Presentations: with the world. The desiring-machines are a critical affair: the market, the media and politics know how to Kunstraum Walcheturm, Zurich, 19.04.2008 use the desiring-productions; in its delimitation, psychiatry treats them as illness. The machines splutter, 40 Jahre 1968, Frankfurt, 23.07.2008 overheat, break down, and, again and again, break up into new structures of a schizophrenic, capitalist Cabaret Voltaire, Zurich, 18.03.2009 society, without ever having realised themselves.

One who sets off on his own in order to liberate his desiring-machines is the Schizo. We roam with him through the psychogeography of a city where he encounters others who have, in their social and creative delineation and delimitation, themselves become revolution: eccentrics, schizophrenics, artists and writers – existences on the thin line between passion and pathology.

The play is performed in acousmatic form (a loudspeaker performance/installation) using Ambisonics technology, a special surround sound system that can create three-dimensional spatial audio.

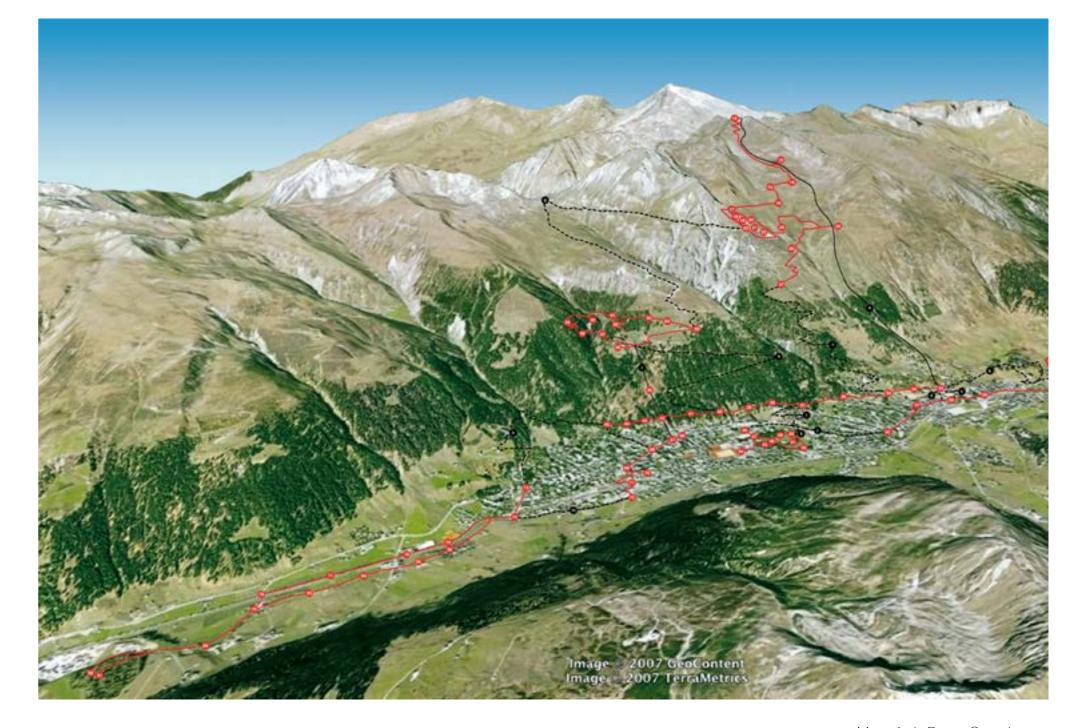
Direction, Music: Marcus Maeder, A production of the Institute for Computer Music and Sound Technology, Zurich University of the Arts, Music Department. Speakers: Sascha Gersak, Pilu Lydlow, Dagmar Gabriel, Edward Piccin, Yves Raeber, Oleg Lips, Helmut Schüschner, Jörg Reichlin. Casting, Locations, Assistant Director: Bettina Disler. Production Manager: Simon Könz. Recording Technology: Silvan Gretener, Tobias Stritt. Programming: Jan Schacher, Philippe Kocher. Ambisonic Technology: Peter Färber. Composition Studio Support: Johannes Schuett.

http://zhdkrecords.zhdk.ch



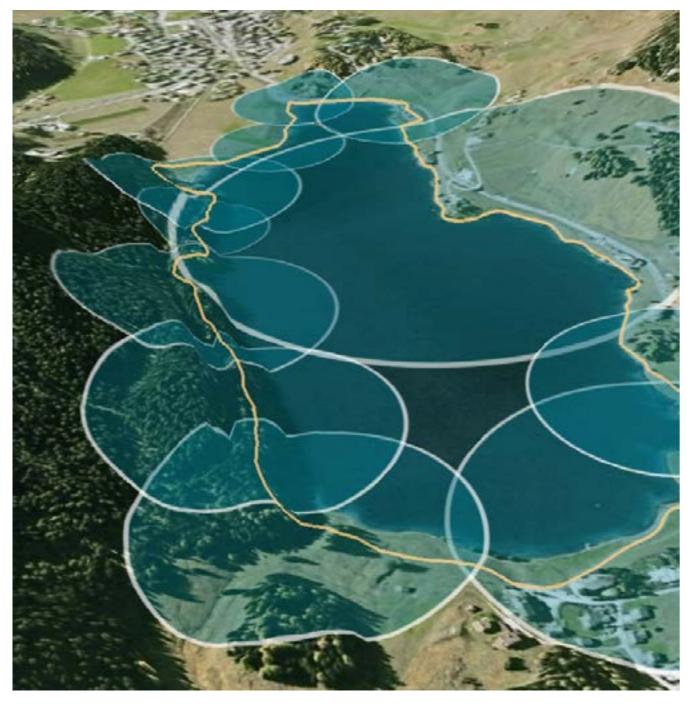






.ds Davos Soundscape: Landmark of a sound segment, Davos 2007

Map of .ds Davos Soundscape





.ds - davos soundscape

A topographical composition by Jan Schacher and Marcus Maeder for the Davos Festival 2007

the area where a piece of music or sound is located Earth has been an invaluable tool and composition aid regional provenance. for .ds – dayos soundscape.

.ds davos soundscape is based upon two concepts. territory.

In their seminal book A Thousand Plateaus the two We plant a number of sound zones or acoustic mar-

trist Félix Guattari - have addressed the territoriality of sound and music in an extremely inspiring way. Their approach to the concept of the ritornello is quite unique. The term ritornello is known from baroque music: it denotes the part of a rondo that re-The experience and composition of .ds - davos turns periodically, like a refrain during the course of soundscape emerges from the movement, pere- the piece. Deleuze und Guattari consider the ritornello grination and strolling of the listeners throughout the in an extended sense as the sound(track) or melody landscape of Davos and surroundings. Ten micro- or acoustic signature that defines a natural territory. computers equipped with GPS were available for rent Humans and animals produce this kind of ritornello. A at the Davos Tourist Office. Together with the device child that sings a song in the dark does this to block the visitor received a map (see image p. 13) with the out its fear, to create through song a stabilizing centre proposed routes and a diagram showing the locations in the "chaos" of the unknown and to establish a safe of sound fragments. These sound-zones or so-called territory. Birds establish through their repeated song "sweet spots" were placed in the landscape with a pattern their territory and thus build an acoustic barrier ... ds davos soundscape creates a composition and surveyor's stake painted in a fluorescent color to mark around it. The ritornello is territorial or localized and according to Deleuze and Guattari even the keys and and to simplify the acoustic "treasure hunt"; Google rhythms in music are territorial and influenced by their

Sounds form territorial structures and from this fact originates the term 'soundscape': a sonic landscape. The first – The Open Work – stems from Umberto Eco A sonic landscape consists of acoustic environments and is the title of one of the most influential writings that can be traversed. They overlap, are defined and about contemporary aesthetics. The text, which dashift in relationship to each other. Sonic environments tes to the year 1962, defines an open work as one can be entered, traversed and left: this constitutes that doesn't intent to convey a definite meaning to the territories – according to Deleuze and Guattari the river to the woods cemetery are idyllic and on a stroll be comprehended by the audience. The creation of defining of a territory is the act, the action which inthe work of art is much rather an act into which the fluences sounds and environments and territorializes perceiving individual is directly involved by assigning them by using their specific characteristics. When the work a personal meaning, In .ds dayos soundscathe sonic and acoustic factors and components of pe we intend to intensify this relationship insofar as an environment cease being functional and acquire we establish a composition in the landscape whose an expressive quality they generate a territory. In .ds landscape is produced. temporal structure and sonic attributes are generated dayos soundscape we shape the sonic environments by the presence and movement of the public in a real by marking them acoustically and giving geographical www.davosoundscape.ch elements a musical shape.

authors - philosopher Gilles Deleuze and psychia-kings in Davos' landscape. Sound engineers call the

area within a loudspeaker setup, which gives the best listening result the "sweet spot". By taking this concept into the landscape our "sweet spots" become the centers of topographical, acoustic and musical circles. We define and compose the sonic territory specifically in relationship to the characteristics present in such a zone. The starting points and basic materials for the sound of an area are located on these spots. Fascinated by the specific natural sound ambience of a place, for instance the murmuring of a brook or the geographical properties of a stretch of forest we might be inspired to compose a romantic motif of melody-loop.

sonic landscape from a number of sound territories and overlapping sonic circles. By moving through the zones and areas the visitors create their own open composition. The routes proposed on the .ds map can be followed in any direction and may be experienced in shorter sections. The totality of the zones emphasizes the eclectic and sometimes contradictory character of Davos's landscape: Davos Dorf and Platz present an urban face, the zones of Schatzalp and Weissfluhjoch show their alpine character, whereas the path around the lake and along the Landwasser in the Kurpark and along the high promenade a more cultivated experience ensues. By following the routes and zones in an personal manner, varying chronologies and superpositions of our sounds emerge and a non-linear soundtrack to a movement through the

Left: Sound segments at Davos lake, Davos. Right: Visitor with microcomputer and headphones



Recurrence Plot, Helmhaus Zürich, 2005

## Selected exhibtions and projects

2017

treelab

Ars Flectronica Festival, Linz BOZAR Palais des Beaux-Arts, Bruxelles

AmazonFACE: Espirito da floresta/Forest spirit Inter-American Development Bank, Wahington DC; Embassy of Brazil, Washington DC

2016

trees: Pinus sylvestris - Stereo version Klimagarten 2085, Old Botanical Garden, Zurich

2015

trees: Pinus sylvestris - Stereo version UN Climate Change Conference COP 21, Paris

Bakar/Kralievica Musikprotokoll im Steirischen Herbst Joanneum im Lesliehof, Graz

trees: Pinus sylvestris – Stereo version ESC Medien Kunst Labor, Graz

trees: Pinus sylvestris - Stereo version Clarke House, Bombay

2014

trees: Pinus sylvestris - Stereo version SoundReasons Festival, Outset India, New Delhi

trees: Pinus sylvestris – Spatial audio version Creative City, Zurich University of the Arts

trees: Pinus sylvestris – Stereo version

Swiss Federal Institute for Forest, Snow and Landsca-

pe Research WSL, Birmensdorf

trees: Downy Oak 2 -

Baum/Klang/Kunst/Mensch, an exhibition of the Alpen Adria University, Klagenfurt, with Ch. Kubisch, B. Music for theatre: Migrantenstadl – Tim Zulauf, Traubeck, W. Ritsch

2012

trees: Downy Oak - Exhibition, Workshop, Symposium. swissnex San Francisco

2011

The Left-Hand Path – An interactive audio play, in collaboration with ORF Kunstradio, Zurich: Shed- 2002 halle/Old botanical garden. Graz: Musikprotokoll im Music and sound design for the national exhibition Steirischen Herbst

2010

Curating of the Milieux Sonores Exhibition, Kunstraum Walcheturm, Zurich/swissnex San Francisco

Die Wunschmaschinen – Surround play/Installation with musicians, artists and designers after Deleuze and Guattari's Anti Oedipus: Presentations at Kunstraum Walcheturm, Zurich (premiere) and We Are Somewhere Else Already – Swiss Institute, the "40 years 1968" festivities, Frankfurt

Davos Soundscape – Topographical composition for the Davos Festival 2007, together with Jan Schacher ISEA Festival, Manchester: Revolting®

2005

Recurrence Plot – Audio installation at Helmhaus Zürich, Stipendia exhibition

2004

Transient Travels - World New Music Days 2004, Switzerland; composition and installation with Jasch, COH, AGF, Hecker and Ilios

Radio play for Swiss Broadcasting Corporation SRF Foundation of the music label domizil, with Bernd 2: Tenderenda der Phantast by Hugo Ball with Bernd Schurer Schurer and Marc Matter.

Fabriktheater, Zurich, with Bernd Schurer

Participation at Electronic Music Archive, an exhibition curated by Gianni Jetzer and Norbert Möslang (Voice Crack), Kunsthalle St. Gallen

Expo.02, Expoagricole, Murten

Music for theatre: Die Stelle im Park – Tim Zulauf. Theater am Neumarkt, Zurich

Co-founding of the k3000 Medialab in Zurich together

New York: Group exhibition and presentation Viper Festival, Lucerne: Das metaphysische Kabinett, with Felix Kubin, Amus Tietchens. a. o.

Participation and presentation

Hörnetz 2 [listening network]: Contemporary radio work and counter-information, Shedhalle, Zurich: Organization of workshops and conferences

Co-founding of Kombirama, an independent art spa-



## Selected live performances

201

20 years domizil, Silent Green, Berlin/Kunstraum Walcheturm, Zurich

2015

Mehrspur Club, Zurich Biennal of Independent Art Spaces, Geneva

2014

SoundReasons Festival, New Delhi, India

HEAD, Geneva

2013

@PTT, Geneva

2012

The Lodge, Zurich, with Michael Northam and Deer Happy Place

Nov

Nova and Music, Zurich Main Train Station, with Steinbrüchel, Biosphere a. o.

2010

Présences Electroniques, Geneva with Monolake, Leila, Biosphere a. o.

Cabaret Voltaire, Zurich with Asmus Tietchens, Biosphere a. o.

MOS ESPA, Geneva

2009

domizil USA Tour: Sonic Circuits Festival, Washington; SFAI, San Francisco; LACE, Los Angeles; swissnex, San Francisco Electron Festival, Geneva

2008

MMKamp 2008, Dubrovnik,

Die Wunschmaschinen, Surround Radio Play, Malsehn, Kino, Frankfurt, "40 Years 1968" Synthèse Festival 2008, Bourges, France Contribution to the concert of CIME Suisse

Die Wunschmaschinen, Surround Radio Play, Premiere, Kunstraum Walcheturm, Zurich

2007

Dorkbots Tokyo, Yokohama, Japan, with The Interactive Swarm Orchestra

Hotel Schatzalp, Davos Festival 2007 – with Jan Schacher

SonicDays, Fri-Art, Fribourg, with Schurer, Steinbrüchel, Fennesz, DAT Politics a. o.

"Tenderenda der Phantast", Cabaret Voltaire

2006

Cuba, Münster – with Schurer and Frank Niehusman

EEI Festival, Labin, Croatia

Walcheturm, Zurich, with Jasch (Visuals) and Ryoichi Kurokawa

2005

Unsound Festival, Krakow – with Schurer, Steinbruchel, Günter Müller

Club 1955, Warsaw – with Schurer, Steinbruchel, Günter Müller

2004

Horse Hospital, London

World New Music Days 2004, Zurich Gare du Nord, Basel

La Suisse Festival, Regents Studio, London

Club Transmediale, Construction Sonor, Berlin

2003

Ausland, Berlin

Electrograph Festival, Athens – with Bernd Schurer, Marc Behrens, Dieb 13 a. o.

200

Domizil vs. Antifrost Tour – with Bernd Schurer, Steinbruchel, Jason Kahn, Ilios, Coti

Ear we are Festival, Bienne - with Teleform, Stephan Wittwer, Barre Phillips a. o.

Substrat, Zurich

Boa, Lucerne - with Dat Politics

Rote Fabrik, Zurich - with Coil

Expo.02, SonarSound, Neuchatel, with Teleform

Le Crime, Lille - with Teleform, Steinbruchel Batofar, ...cherche la Suisse Festival, Paris

## Discography

2016 non-human, CD, domizil 46

2015 progeny, CD, domizil 41

topographie sinusoïdale, CD, domizil 38

2010 annex, Mini CD, domizil 35

2009 subsegmental, CD, domizil 32

2008
Die Wunschmaschinen, DVD, domizil 30/ZHdK
Records

This ship in trouble, Mini CD, domizil 24

2005 Opera Calling, CD (Compilation)

2004
Transient Travels, VA, CD, domizil 23 (Compilation)

2003 domizil vs. Antifrost live, - Live CD, domizil 19 (Compilation)

Club Transmediale, CD, Data Error (Compilation)

La Suisse, CD, SME (Compilation)

Bees & Honey, Andrey Kiritchenko, CD, Zeromoon (Remix)

2002 Quiconque, CD, domizil 17

Poisonhats, CD, Arts Centre Dublin (Compilation)

2000 Substrat, CD, Stattmusik (Compilation)

Institut für Feinmotorik: Verschiedene, CD, IFFM (Compilation)

1999 solipsistic motion, 12", domizil 10

## Prizes/Grants

STARTS Prize of the European Comission and Prix Ars Electronica - Honorary Mention for ,treelab'

2016
City of Zurich, grant for arts and cultural mediation - 20 years domizil

2010 MediaProject: The Left-Hand Path, Sitemapping, Bundesamt für Kultur

2009
Composition comission by the Swiss Arts Council
Pro Helvetia

2006
Composition comission by the Swiss Arts Council
Pro Helvetia

1995 Studio grant of the Binz 39 Foundation in Scoul/Switzerland

#### **Publications**

Maeder, M. (Ed.) 2017. "Kunst Wissenschaft Natur. Zur Ästhetik und Epistemologie der künstlerisch-wissenschaftlichen Naturbeobachtung, Bielefeld: Transcript Verlag. OH-800

Maeder, M. 2016. "trees: Pinus sylvestris". Journal for maeder@domizil.ch Artistic Research JAR, edition 11, www.jar-online.net

Maeder, M. Zweifel, R. 2016. "trees: An artistic-scientific observation system", proceedings SMC/SMAC Conference 2016, Hamburg, Germany

Maeder, M. 2014. "Ambient culture: Coping musically with the environment", proceedings ICMC/SMC Conference, Athens, 2014 http://blog.zhdk.ch/marcusmaeder www.avataradio.net www.thelefthandpath.net

Maeder, M. 2014. "Der Klang der Bäume", in: Christoph Flamm: Baum/Mensch/Klang/Kunst, Ritter Verlag, 2014

Maeder, M. and Zweifel, R. 2013. Downy Oak: Rendering Ecophysiological Processes In Plants Audible. Proceedings SMC/SMAC 2013, Stockholm, Sweden.

Maeder, M., Schacher, J. 2011. "The left Hand path", in: Connect. Kunst zwischen Medien und Wirklichkeit, Nürnberg: Verlag für moderne Kunst, 2011

Maeder, M. 2010. "Elektronische Musik, Kunst, Popund Subkultur – in der Schweiz und anderswo". In: Bruno Spoerri: Musik aus dem Nichts – Elektronische Musik in der Schweiz. Zürich: Chronos Verlag, 2010

Maeder, M. (Ed.) 2010. Milieux Sonores - Klangliche Milieus. Klang, Raum und Virtualität. Bielefeld: Transcript Verlag

#### Contact

domizil
Marcus Maeder
Schoeneggstrasse 5
CH-8004 Zürich
T/F +41 (0)44 241 59 52
maeder@domizil.ch

## Websites

www.marcusmaeder.net
www.domizil.ch
http://blog.zhdk.ch/marcusmaec
www.avataradio.net
www.thelefthandpath.net
www.wunschmaschinen.net
www.davosoundscape.ch
www.transienttravels.net
www.kombirama.ch
www.k3000.ch



## Marcus Maeder

Marcus Maeder studied Fine Arts at the University of Applied Sciences and Arts of Lucerne and Philosophy at the University of Hagen. He is currently working on his PhD thesis in Environmental Systems Science at ETH Zurich. Maeder runs the music label domizil, which he co-founded in 1996 with Bernd Schurer. He has worked as an editor and producer for the Swiss radio station DRS and has been working as a curator and research associate at the Institute for Computer Music and Sound Technology since 2005. His artistic work focuses mainly on sound and media art, electronic music and the artistic and media extensions of the term. As an author, Maeder has written on a number of topics in the fields of sound art and artistic research.

http://neural.it/2015/02/phytoacoustics-listening-to-trees/ Sonntag, 9. November 2014 / Nr. 45 Zentralschweiz am Sonntag

## Die Inne Symphome der Bäume - Monik - Kultur - Schweizen Radio und Fernselsen SELECTION AND ADDRESS AND ADDRESS OF THE PARTY OF THE PARTY. NEWS SPECIF BULLTURE UNITERNALTURAL REDNIUM GESCHICHEST WISSEN & DIGITAL FILM & SERIEN GESTLISCHAFT & RELIGION LITERATUR WILLS KUNST WEILESE WIFOKUS

## Die leise Symphonie der Bäume

Mitteeco, 4. Juni 2014, 8:10 Uhr Theresa Beyer

Sind Pflanzen einfach stumme, grüne Materie? Ganz und gar nicht: Je nach Wetter und Tageszeit rauscht, wispert und knirscht es gehörig in ihrem Inneren. Diese akustischen Fingerabdrücke interessieren nicht nur Biologen, sondern auch Klangkünstler wie Marcus Maeder.



Date Traper and a Tringer, arthrophy, min on the frequent size fittings attings of a committee for the

Sound of Yrees: Assistische Emissionen einer Waldführe 127 mm, was Musikmagacan nom-

Mitte der 60er-Jahre steckte der englische Forscher John Milburn die Nadel eines Plantamapialars in dan Stall sines. Phizmusbieltes. Über die Kopfhürer nahm er ganz loise wahr, dass es in dessen litherstan. peheimnievoli rauscht, flüstert und knackt.

Diese Klänge untersucht auch ein heutiges

Forschungsprojekt. Es heisst «Trace: Ökophysiologische Prozesse hörber mechen». Zwei ganz unterschiedliche Institutionen untersuchen das akustische Innerlieben der Bäume: die Zürcher Hochschule der Künste und die Eidgenössische Fürschungsanstalt für Weld, Schnee und Landschaft.

#### Eine verkabelte Föhre

Haute fahren die Forscher allerdings schwerere Geschütze auf als Millium vor 50 Jahren: Am Stamm thoss Probanden - es int eine Woldfohre im Waltis - wienneit es nur so von Geräten: Von Akustiksensoren über Saftfusssensoren bis zu Dendrometern, welche die Verlinderungen im Stammdurchmesser ermitteln.

## Die Bäume wachsen hören

sollen verraten, wie er wächst und wie er auf Sonnenschein Kälte, Trockenheit und weitere Einflüsse reagiert. Ein Biologe und ein Klangkünstler suchen einen neuen Zugang zur Natur.

Ein Knacken in unregelmässigen Ab-ständen, nicht immer gleich hoch, nicht immer gleich laut: Das Geräusch, mit dem sich der Botaniker Roman Zweif tigt, klingt ein bisschen wie Popcorn, das in der heissen Pfanne aufplatzt. Mit litze hat es denn auch zu tun, und mit in einem Baum plötzlich die feiner rfäden ahreissen, die dicht unte einer Rinde von den Wurzeln bis in die Slätter führen – sei dies, weil das Wasse dunetet als es aus den Wurzeln nach verdunstet, as es aus den wurzen nach-fliessen kann, oder weil im Boden nicht genügend Nässe vorhanden ist, die der Baum in seine Blätter befördern könnte. Bereits in den 1960er-Jahren haben For-schende das Phänene beschrieben, das seither in der Fachwelt als «Kavitation» bekannt ist. Roman Zweifel arbeitet an der Eid

genössischen Forschungsanstalt für Wald, Schnee und Landschaft und möchte mit Hilfe dieser und weiterer Geräusche besser verstehen, welche Prozesse innerhalb eines Baumes ablaufen, wie genau er Wasser und Nähr er atmet. Und auch, wie er auf seine Umwelt reagiert, auf Schwankungen im Wetter, auf Veränderungen des Klimas. «Im Wallis beobachten wir in den letz-ten Jahrzehnten, dass Waldföhren verten Jahrzehnten, dass Waldföhren ver-mehrt absterben und teilweise von Flaumeichen verdrängt werden», sagt er Laut Zweifel haben zwar bereits ver-schiedene Studien gezeigt, dass dies eine Reaktion der Biume auf das Klima ist, das in den letzten 30 Jahren wärmer und trockener geworden ist. «Wissen-schaftlich sind aber viele Details noch nicht annibend uperstanden.

Geflüster im Ultraschallbereich Im Hitzesommer 2003 hat der For scher an Bäumen im Wallis erstmal Sehr starke sogar – aber gehört hat er sie damals noch nicht, denn sie sind in inem so hohen Frequenzbereich, das las menschliche Ohr sie nicht wahr nehmen kann. So hat er die feiner Schwingungen, die er mir Ultraschall-sensoren an der Baumoberfläche mass. s Zahlenreihen und Kurven auf den omnuter ausgewertet. Dort hat er sie

Geräusche gefunden die wir noch nicht erklären können.»

messen als Klimadaten wile Tempera oet Luffeuchtut, Sonneneinstrahlung oder Luffeuchtut, Sonneneinstrahlung ober Luffeuchund knacksten die Föhren immer länger

unden Leiber immer länger

unden Jene Leiber immer länger

unden Jene Leiber immer länger

und knacksten die Föhren immer länger

und kanksten länger länger länger länger länger länger

man länger länger länger die Föhren die Blätter

in die Akste fallen, setzen Stept und die Akste fallen, sab dam, die Akste falle

#### Auf gleicher Wellenlänge

wissenschaftlicher Mitarbeiter am Institut für Computermusik und Klanghänomene des Klimawandels auch ler hat Störgeräusche aber auch positiv

and Angelesteinen und seiner Jesteinen der Standeren der Standeren Jesteinen der Standeren Jesteinen Standeren Jesteinen Standeren Jesteinen Standeren Jesteinen Standeren Jesteinen Jesteinen Standeren Jesteinen Jestein J

Die Resultate waren siehter Baumklänge aufgezeichnet sowie begleiet von Klängen, die eine musika richt versprechend: ahlreiche weitere Daten, die eine Interlanden das Anfangs waren die praction erlauben sollen. Wilt haben daten dasztellen. Beispielsweise ist die

Auf gleicher Wellenlänge
Ein Jahr später starteten sie gemeinsind dies Hilfe lies nicht lange auf
sich warten: Durch Medienberichte auf
gische Prozesse hörbar machen-, das
troppen sind so laut, dass sie sämliche das Thema aufmerksam geworden, vom Schweizerischen Nationalfonds Geräusche aus dem Innern des Baumes nahm im Jahr 2009 Marcus Maeder zu finanziert wird. Das Ziel ist einerseits übertönen», sagt Maeder. Deshalb sollen Zweifel Kontakt auf, Klangkünster und ein wissenschaftliches: nämlich durch die Messungen noch miestens ein

Tonkünstler Marcus Maeder hat in Salgesch VS eine Föhre mit jeder Menge

Technik bestückt, um den Baumgeräuschen auf die Spur zu komme

Prozesse hörbar machen

Zum Trockenstress der Bäume werden
die neusten Daten allerdings nur wenig
am liebsten eine CD davon mit nach





### Phytoacoustics - Listening To Trees



naudible. For several ecades scientists have been studying the acoustic emissions of plants in order to gain insights into plant physiology. A paper published by Milburn and lohnson in 1966 on the conduction of sap describes a method that the researchers developed to measure a

phenomenon termed "cavitation", a kind of embolism occurring in a plant's vascular system when it becomes dehydrated. The researchers attached severed leafs of a plant to the needle of a record player and observed how the leafs, while gradually drying up and desiccating, would produce acoustic clicks that the record player was able to amplify. While these scientists employed an instrument designed for the reproduction of music to study the acoustic emissions of plants, more recently Marcus Maeder has approached this field from the opposite end, using scientific measurement tools to create works of sound art. Maeder is leading the research project "Trees: Rendering Ecophysiological Processes Audible" at the Institute for Computer Music and Sound Technology in Zurich. Having gathered audio recordings and environmental data from several forest areas and species of trees, the material obtained is presented within a series of spatial sound installations that employ a matrix of custom-built omnidirectional loudspeakers. The loudspeakers are suspended in the shape of a cube formed by 9 columns of 4 speakers each. Using virtual imaging techniques field recordings of climate conditions are projected outside of the boundaries of the installation, while recordings of the acoustic emissions of trees are reproduced within the installation on individual speaker columns. Physiological data gathered from the forest environment and from the trees is used to articulate the playback parameters of the audio recordings, so that parameters such as the recorded temperature affect the loudness of the installation. Visitors are presented with an auditory experience in which the combination of both recognizable and previously unheard sounds create a sonic representation of natural processes, attempting to convey the complexity of specific ecological systems through correlations between processed environmental data and recordings of acoustic phenomena. Matteo Marangoni

Marcus Maeder live at the Lodge/Zurich - excerpt

## «Beeindruckt»: Burkhalter besucht «Milieux sonores» in San Francisco

Montag, 1. November 2010, 1:40 Uhr, Aktualisiert 07:16 Uhr

Bundesrat Didier Burkhalter hat im Rahmen seines USA-Besuchs in San Francisco die Schweizer Ausstellung «Milieux sonores» besucht. Die Klanginstallationen, die Anfang letzten Jahres in Zürich gezeigt wurden, gefielen dem Kulturminister sehr gut. Burkhalter sei von der Ausstellung «sehr beeindruckt» gewesen, sagte sein Sprecher Jean-Marc Crevoisier.

Nachrichten abonnieren

Mehr zum Thema

Artikel bewerten

\*\*\*

Artikel teilen

Facebook

Twitter

E-Mail

«Milieux sonores» in

San Francisco



«Sehr beeindruckt» von Schweizer Kunst-Ausstellung in San Francisco: Bundesrat Didier Burkhalter.

Der kalifornische Gastauftritt der Schau wurde von der Kulturstiftung Pro Helvetia in Zusammenarbeit mit dem Wissenschaftskonsulat swissnex ermöglicht.

#### Werke über Klangräume

Zu sehen sind Werke der Teams Daniel Bisig/Jan Schacher/Martin Neukom, Yves Netzhammer/Bernd Schurer, Jeroen Strijbos/Rob van Rijwsijk sowie Jason Kahn, Felix Profos und lokalen Kunstschaffenden.

«Milieux sonores» besteht aus Klangräumen, unter anderem des gefeierten Schweizer Computerkünstlers Yves Netzhhammer. Er hat zusammen mit Bernd Schurer «Mutmassliche Windlasten» entworfen, eine Installation aus einem Tisch, offenen Schubladen und klingenden Säulen, die den Inhalt der Schubladen vertonen.

#### Hand anlegen - auf Touchscreens

In den «Vier Nebenräumen» von Felix Profos und Silvan Gretener lässt sich mittels zwei Trackballs durch Geräuschlandschaften navigieren. Hand anlegen - diesmal auf Touchscreens - lässt sich auch in «Flow Space» von Daniel Bisig, Martin Neukom und Jan Schacher vom Institut für Computermusik und Soundtechnologie an der Zürcher Hochschule der Künste.

Die Ausstellung gastiert noch bis zum 19. November in der Gray Foundation for the Arts (GAFFTA) in San Francisco.



A nervous of the and a-visual installation. Drefit: Maries Maeder (https://hlag.zhdk.els/manes.maeden/zoss/es/log/trees-genne-ayles/atra/)

The project is a collaboration between the Institute for Computer Maxic and Sound Technology and Swiss Federal Institute for Forest, Snow and Landscape Esterach, and it is as much art sascience. A surround-sound installation of tree recordings was exhibited at swisener San. Francisco la 2002 (http://blog.shdk.ds/ossrossmander/). If you dowed your eyes standing in that thicket of microphones, you'd be transported into an auditory firest-though not tanessarily a familiar one. Instead of custling leaves or enapping twigs, you'd hear maps, clicks,

We don't have a whole forest, but here are the auditory envisions of a foots pine-Dimp://blog.ib.dk.dk/marcosmander/film/1001/11/scountle\_embelons\_plotssylv.mps).

Trees may not leap or fly, but they're dynamic in their own quiet way. It's remarkable, if you think shout it, that most of the wood's mass comes from carbon atoms a plant polled out of the sir—out of thin, siri These reconfings give voice to usually silent processes, reminding us of the orbite dynamics of trees. [Marous Marder Burg//Mog.abdk.ch/marousmaeder/acceptioenvision-detection/E

Lead (mage gradit: Marcus Marder

(Mitp://blog.skdk.ch/marecemawder/8643/66/31/comparing wewors/) 

Previow or auditor to place solution (Devoches-en-Preside)

MARCUS MAEDER - ANNEX (3"CD by Domizil) Earlier today I was not at home, but in a friends house waiting for something. The weather was hot, and I lay down on his couch. In my bag was 'Annex' by Marcus Maeder, and I decided to play it. Around the house there was a lot of activity of people constructing a new house on one side (or perhaps putting an annex to it?) and on the other side motorized objects doing gardening work. Maeder's music wasn't very loud on, but it merged wonderful with the sounds coming from outside, even with all the windows closed. I fell asleep. Later on, now, I am at home again, listening again to 'Annex' in a more quiet surrounding of early evening (windows open). I am to understand that this work is an extension (for that is what an 'annex' is, in an architectural sense) of 'Subsegmental' (see Vital Weekly 702). I am not sure if Maeder draws from the same sounds as on 'Subsegmental', but he uses 'very short sound segments reproduced at such low speed as to stretch out and form vast soundscapes' - I couldn't have this any better myself. The four pieces (sixteen minutes in total) emerge on the near silence, especially 'Plateau' is very quiet, much alike the eleven pieces on 'Subsegmental'. Perhaps without many differences between this one and that one, but its simply beautiful stuff, Maybe its too early to play this music and I should wait until full darkness has set in, but its tranquility is simply great as it is. (FdW) Address: http://www.domizil.ch

ncural

2° activism art biotech book bookshop CD cd+ cd-rom code copyright dvd floppy disk hacking hacktivism interac ychogeography radio religion robot science software sound sound art surveillance theatre tv video videogame v circuit bending deep drone electro electronic dance electronica ethnic experimental field recording field recordin

## Marcus Maeder - Die Wunschmaschinen

Since the mid-nineties, the experiments of Marcus Maeder permeated the Kombirama of Zurich with a certain concentual freshness, which was both seminal and intuitive. It was at this time - for the first time - that the term "digital culture" found its application. They were the same years in which Bernd Schurer founded Domizil Music, which now, after more than a decade, is home to this esting project inspired by the Anti-Oedipus by Gilles Deleuze and Felix attari. Based on this essay, filled with premonitions on the schizophrenic process at the heart of capitalism, Maeder sketched an oblique radio play, skillfully extricated from

distinctive musical elements and "actorial" narratives (where the characters take the form of Artaud, Freud, Ivan Chtcheglov and Guy Débord). A very brilliant cast - it seems - but difficult to keep together As if this were not enough there are also musical tributes added, ranging from Kraftwerk to Velvet Underground, from Nick Cave to Richard Wagner. A greater lack of constraint seems to add something to the sonorizations here, thanks to an eccentric synthetic "cabaret", confined in a pathological consume of drum machines and hypnotic choruses that take shape in cyber-existential "ballads." Aurelio Cianciotta

Posted at 10:08 AM - Nov 18/2009 email this | + facebook | + twitter | TrackBacks (0)

Robert Hampson - Vectors | Main | Gintas K - Lovely Banalities »