AI

Artificial Intelligence
Das andere Ich

ARS ELECTRONICA 2017

FESTIVAL FOR ART, TECHNOLOGY, AND SOCIETY

ARS ELECTRONICA

HATJE CANTZ

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Artificial Intelligence
Das andere Ich

Edited by Gerfried Stocker / Christine Schöpf / Hannes Leopoldseder

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ARS ELECTRONICA

HATJE CANTZ

CAMPUS PROGRAM

CAMPUS

Every year since 2002, Ars Electronica and the University of Art and Design Linz has hosted an exhibition by artists associated with an international higher-education institution whose curriculum takes an innovative approach to teaching media art and media culture.
Initiated by Prof. Reinhard Kannonier (University of Art and Design Linz) and Gerfried Stocker (Ars Electronica), the intention of the *Campus* format is to invite outstanding international universities working in the academic fields of media arts and design. Projects highlighted here represent the nature of the mission and activities of invited guest universities from all around the world. These showcases became an immanent part of the festival and an instrument to analyze and visualize different models of educational approaches in artistic and creative areas. It has also increasingly developed into a stage for contextualized works from alumni, professors or associates from the universities to map the identity of academic institutions, its history and current practice.
Part of *Campus's* mission is to enable the presentation of young, local media artists and their work with international exposure. The Interface Cultures program of the University of Art and Design Linz annually presents a cross-selection from their masterclass works and, together with Ars Electronica, co-hosts one main featured partner university each year. The festival is increasingly becoming a platform for artistic and creative collaborations between Ars Electronica and various regional, academic partners, for example Fashion & Technology, the Lab Creative Robotics and the Time-based Media program, all three at the University of Art and Design Linz, the Anton Bruckner Private University Upper Austria or the University of Applied Science Upper Austria, Campus Hagenberg.

2002: Academy of Media Arts, Cologne (DE)
2003: Department of Media & Art at the University of Art, Media and Design in Zurich (CH)
2004: IAMAS (JP)
2005: Srishti School of Art Design and Technology, Bangalore (IN)
2006: Medialab at the University of Art and Design Helsinki (FI)
2007: HGK FHNW, the Swiss Institute for Post-industrial Design (CH)
2008: University of Tokyo (JP)
2009: MIT Media Lab (US)
2010: Media Campus of the Darmstadt University of Applied Sciences (DE), School of Art & Design at the Cork Institute of Technology (IE)
2011: University of Tsukuba (JP)
2012: UdK–Berlin University of the Arts, Sound Studies (DE)
2013: Bezalel Academy of Arts and Design, Hamidrasha Art School of Beit Ber College, Holon Institute of Technology, Kibbutzim College of Education, Technology and the Arts, Shenkar College of Engineering and Design, the Media Innovation Lab at IDC Herzliya, Musrara School, the Neri Bloomfield School of Design and Education, Hadassah Academic College and the College of Management–Academic Studies (COMAS) (IL)
2014: Arts2–École Supériere des Arts (BE)
2015: Université Paris 8 (FR)
2016: Tsinghua University, Beijing (CN)
2017: University of California, Los Angeles (US)

Campus is also a platform for international exchange between universities, leading to increasing collaboration between academic partners. In 2017, fifteen universities from many parts of the world are represented:

University of California, Los Angeles (US)
University of Art and Design Linz (AT)
Aalborg University (DK)
Aalto University, School of Arts, Design and Architecture (FI)
Anton Bruckner Private University Upper Austria (AT)
ArtCenter College of Design, Pasadena (US)
Ludwig-Maximilian University of Munich, Institute for Art Education (DE)
MIT Medialab (US)
Queensland University of Technology (AU)
State University of São Paulo, Arts Institute (BR)
The University of Auckland (NZ)
University of Tsukuba (JP)
TU Vienna (AT)
University of the Arts London (UK)
University of Applied Science Upper Austria, Campus Hagenberg (AT)

Campus Exhibition

FEMINIST CLIMATE CHANGE: Beyond the Binary

University of California, Los Angeles
UCLA Art|Sci Center & voidLab, Department of Design Media Arts

Curators: Victoria Vesna and Xin Xin

> "Everything in nature is about BALANCE and DIVERSITY. In turn everything that is happening in our society and the environment is a direct reflection of our world being out of balance. When you have a group of men deciding what a woman's right is in relation to her body, you know that chances are high that they would be equally inconsiderate of the Earth we all live in."
> (UCLA Making a Guest Appearance at Ars Electronica Festival, Ars Electronica blog)

Gender and environmental advocacies are stronger than ever, as is the opposing conservatism strengthened by the fear of the unknown and the need to go back to the past. Binary mindsets have to give way to a more complex, diverse and fluid worldviews. Thus we come together to conceptualize this campus exhibition as professor and founder of the Art | Sci Center and recent graduate of Design Media Arts and co-founder of voidLab.

With the selected works, we aim to converge the issues in feminism with environmentalism. By framing the exhibition in this way, it is our hope to reinvigorate the eco-feminism that emerged in the 70s and was ignored for much too long. In this particular context, at the Ars Electronica Festival in Linz, we address the local and transnational issues of feminism in media arts and the global issue of climate change–thus the very obvious title.

The climate change movement is not gender neutral–globally, females constitute two-thirds of the world's poor and their livelihoods are more dependent on the natural resources threatened by climate change. Females and males living in rural areas within developing countries face the greatest challenges in securing water, food and fuel. When relating gender to climate change, we avoid focusing only on binary male-female inequalities but also scrutinize discursive constructions that shape power relations. Ultimately, climate change cannot be solved with a nationalistic mindset–this is a global problem–air and water have no borders.

It would be difficult to present the works of the department alone, as this would negate the dynamic network that has emerged since year 2000 when the UCLA Department of Design was reimagined as Design Media Arts. Very quickly it branched out into auxiliary research labs and centers based on faculty research–enabling students and the faculty to work collaboratively across disciplinary and institutional boundaries. In addition to presenting UCLA Design Media Arts alumni who are now active artists and teachers, it was also very important for us to present women scientists who also collaborate with artists, as gender issues in sciences are much deeper and problematic than those the art world faces and we want to honor and support the brave young scientists working with environmental issues. To this end we present Art | Sci Center alumnae: Christina Agapakis, a postdoc in molecular, cell, and developmental biology at UCLA (2012-14), now working in a Biotech company, Olivia Osborne, postdoc in the UC Center for Environmental Implications of Nanotechnology, and Rita Blaik, recent PhD graduate in material science, now the education coordinator at the UCLA CNSI.

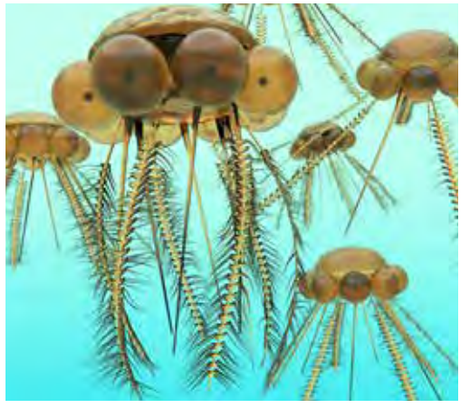
Finally, we did not shy away from including those who are still students–current Design Media Arts students and voidLab co-founders Jen Agosta and Sarah Brady and recent graduate Sanglim Han collaborate with scholars to examine the urgent issues of gender and racial profiling in artificial intelligence; DMA MFA alumna Noa P. Kaplan, who exhibited at the Art Sci gallery and always enthusiastically followed and participated in the center events, is currently pursuing PhD degree at USC. Art | Sci Center alumna Mary Maggic Tsang recently graduated from MIT Media lab and is participating with Byron Rich in Ars Electronica this year, so the star is really shining on her estrogen workshops!

Climate Change is certainly a feminist issue but also very much a generational issue–it is these young artists and teachers who hold the key and we celebrate their brave work in these troubling times.

Disclaimer: our curatorial approach may not reflect the views of the UCLA School of the Arts or the Department of Design Media Arts. No doubt every faculty in the department would frame this exhibition in their own way, and we suspect that many of our colleagues would agree and support our curatorial decisions.

Pinar Yoldas (TR)

Carboniferous



Pinar Yoldas

The connection between fossil fuels and plastics makes fossil fuels an immensely interesting subject to think about if one intends to understand two of the biggest problems of planetary health: CO_2 emissions and plastics. Whereas CO_2 emissions lead a large family of carbon-dioxide-related, issues global warming, acidification of the oceans, air pollution being the gravest issues, plastic pollution poses another type of threat to global ecosystems by entering the food chain as food and predator at the same time. In *Carboniferous* I intend to connect the dots between fossil fuel and the ancient history of plants, paleobotany and problems caused by fossil fuels.

Silvia Rigon (IT)

Panta Rei (Everything Flows)

A stream of colors. An endless amount of trash flowing towards the viewer in perpetual motion. As time swirls entangled in the looping of the animation, a cartoonish and colorful aesthetic suspends the gaze in a contemplative fixation. One more time we find ourselves suspended in our ambivalence towards the culture of excess.

Water as a medium of communication is the movement that brings what was underneath to the surface, and carries it with it. The river is then a metaphor of passage, a course that can bridge two worlds, a transmitter. It can carry you to the other side but can't take you back. It has often been referred to as a metaphor of time. "You cannot step into the same river twice," said Heraclitus. In Dante's *Divina Commedia*, the river Acheron provides a passage to the souls of the dead, the final route into the underworld.

Silvia Rigon

Inspired by real media news events, Panta Rei is a socio-political commentary on media-induced anesthetization, but also a metaphor of the passage we are facing epochally, with water at the center of the struggle for sustainability, survival and the choices we make or don't make.

Scott Hessels (US)

Extreme Environments: Arts-Based Field Research

The School of Creative Media 2012

Extreme Environments is an experimental arts education initiative based in Hong Kong that places art and design students in remote scientific field stations to collect data alongside scientific and environmental organizations dedicated to the protection of these important ecosystems. The students return to use the unique tools of the School of Creative Media to interpret and present their discoveries in new forms. Data is not just visualized but transformed creatively into games, interactive artworks, cinema, animations and more to help engage with wider audiences. The first *Extreme Environments* expedition and exhibition, in 2012, was a partnership with UCLA's Art | Sci Center with direct input from the California Nanosystems Institute (CNSI). The *Extreme Environments* program is now one of the most respected discovery-based education initiatives in the world, discussed in top international journals, news media and conferences.

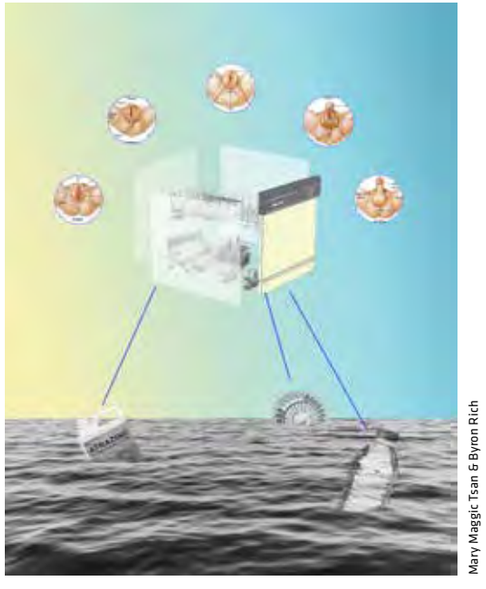
Since 2012, art and design students have visited scientific field-research sites in some of the planet's most remote corners, including the Mojave Desert, Antarctica, recently discovered caves in Vietnam, underwater in the rich reefs of Sipidan, Malaysia and in the Arnavon Islands, a remote western region of the Solomon Islands greatly endangered by rising ocean levels.

The Desert Metropolis: the Mojave Desert (2012); *Freeze Frame:* Antarctica (2014); *Fade to Black*: the Vietnam caves; *Deep Focus* (2015): the Coral Triangle (2017).

Mary Maggic Tsang (US), Byron Rich (CA)

Molecular Queering

Bodies queer in many ways, most actively through the molecular colonization of our planet. Thanks to petrochemical, agricultural and pharmaceutical industries (markers of our anthropogenic time), these queering molecules are hormonally active and bio-politically pervasive as a state of toxicity. Our bodies and bodies of non-human species are all undergoing a collective mutagenesis—our kin are both the intersex frogs as well as the gender-bending chemicals in their bloodstream. So what does it mean to identify with our chemically induced world? To create discourse that turns toxic shame into toxic embrace? Am I not only inheriting the genomes of my parents but also the plastic molecules my mother is exposed to as I incubate in her womb? It is with this queering power of xeno-bio-chemicals that the *Molecular Queering* workshop performs a urine hormone extraction and analysis, a DIY/DIWO recipe for gender-hacking. Bring your own urine!



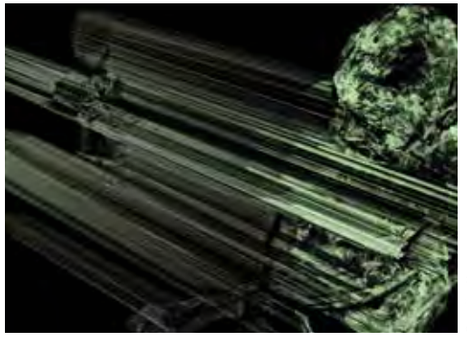
Mary Maggic Tsan & Byron Rich

Financial Support: Allegheny College
Special thanks to The Aliens in Green

voidLab: Jen Agosta (US), Sanglim Han (KR), Xin Xin (US/TW)

Shadow Glass

Shadow Glass is a voidLab collaboration between Jen Agosta, Sanglim Han, and Xin Xin based on an interview with Safiya Umoja Noble, the author of *Algorithms of Oppression: How Search Engines Reinforce Racism* (forthcoming, NYU Press). In the book Noble coins the term "technological redlining," describing the historical redlining that gets carried over into the creation of algorithms. Noble challenges us to think about how the design of algorithms and databases intersects with issues of race, gender and class, and urges designers and policy-makers to confront and eliminate biases in the development of decision-making technologies. *Shadow Glass* echoes Noble's perspective of artificial intelligence as a human rights concern.

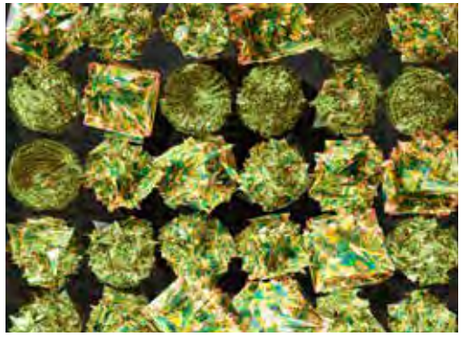


Sanglim Han

Interviewer: Xin Xin
Visual artist: Sanglim Han
Sound artist / music producer: Jen Agosta

voidLab: Nora Khan (US), Sarah Brady (US), Sanglim Han (KR), Jen Agosta (US)

Shapeshifting AI



Sanglim Han

Shapeshifting AI is an audiovisual installation about artificial intelligence and its capacity to develop language for the unknown as rich poetic devices using AI as a tool to produce new forms of symbolic language expressed in radically new forms. As women of color, Kahn and Brady share ideas on imaginative paradigm shifts created outside a white, patriarchal, capitalist and colonialist world where a power imbalance between those of "otherness" and those without still exists. Is it possible to come up with solutions that are not human-centric and have a post-human capacity to turn alienation into expressions of power? Khan and Brady explore this question in a recorded interview with a musical remix by Jen Agosta and visual accompaniment by Sanglim Han.

Interviewer: Sarah Brady
Visual artist: Sanglim Han
Sound artist / music producer: Jen Agosta

A.M. Darke (US)

In Passing

In Passing is a virtual reality experience about what it is like to navigate public space based on one's intersecting identities. The work presents a diverse group of people, each recorded while describing their unique experience moving through the world. Viewers navigate virtual streets where such recordings have been superimposed onto virtual proxies, creating a tension between constructed reality and raw personal account.
In a time when social division is running high, sometimes the best thing we can do is take time away to listen. A.M. Darke's work *In Passing* allows viewers to enter a space with a diverse range of experiences, simply to listen and bear witness. This work helps viewers connect with others in a way that cuts through the stereotypes and us-vs.-them mentalities that so often stop a constructive dialog before it starts.

A.M. Darke

This work was created at an artist-in-residence at Laboratory.

Tomorrow Girls' Troop (JP/KR)

Believe Campaign

Tomorrow Girls' Troop

The *Believe Campaign* was launched to raise awareness of sexual violence in Japan and to demand modernization of the penal law, which has not been modified since its establishment in 1907. The Tomorrow Girls' Troop contributed the design elements, targeted at women in their 20s, and staged the art performance *Believe March* to demonstrate the public's demand for the amendments. Participants wore feather-shaped masks for anonymity, with messages from supporters. The march was filmed and premiered in Tokyo in 2017 in a group show on socially engaged art.

http://www.believe-watashi.com

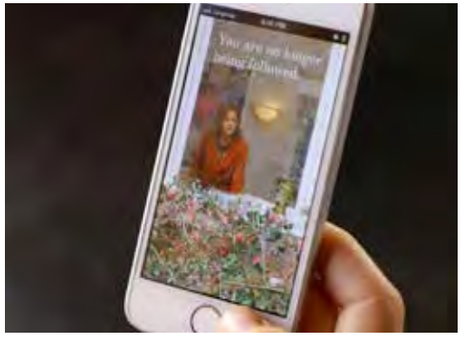
Lauren McCarthy (US)

Follower

Follower takes the language of social media at face value. But here, instead of providing followers online, the service provides a real life follower for a day and results in a single photo shot by the *Follower*. This work attempts to reconcile the willingness to engage with online followers, and to attract ever more of them, with a keen awareness of "ubiquitous camera placement, NSA monitoring, Google tracking, and any number of other [surveillance] practices." By reversing the interface of app and user, *Follower* negotiates a new possibility to satisfy the intense desire to be seen and known.

http://lauren-mccarthy.com/follower
https://follower.today

Video: David Leonard, Lauren McCarthy
Design: Michelle Lin, Lauren McCarthy



Lauren McCarthy

Knifeandfork (US)

Oh Dear Me (Documentation)

Bonnie Brae Productions

Knifeandfork (Sue Huang and Brian House) created *Oh Dear Me* as a commissioned work for NEoN (North East of North) in Scotland. In this performance, the public is invited to chat through a distributed hybrid digital/analog musical messaging system that activates the acoustic geography and industrial history of Dundee, Scotland.

A series of musicians are situated along a path winding through the historic jute mills of the Blackness area of Dundee. Visitors are invited to type a message into a computer console at either endpoint of the path, and their words are digitally encoded via fragments of *The Jute Mill Song (Oh Dear Me)*, a folk song written around 1920 by Dundee mill worker and labor activist Mary Brooksbank.

Commissioning organization: NEoN (North East of North) Ltd.
Funding organization: Creative Scotland
Musicians: Red Note Ensemble (Ana Romero, Arin Grattidge, Colette Colman, Emily Stokes, Joey O'Neil, Jordan Robertson, Kenny Letham, Marcus Shanks, Rebecca Wilson, Scott Kerr)
Video Documentation: Bonnie Brae Productions
Special thanks to Donna Holford-Lovell, Dan Faichney, Ed Broughton, John Harris, Christine Cooper, Anna Murray

:Phoebe Hui (HK)

Vexation

Vexation is a musical instrument built especially to play Erik Satie's composition *Vexation*. Satie apparently instructed that the same music should be played 840 times. Inspired by Samuel Biderman's octave spinet, *Vexation* builds upon traditional drawing pencils and woodwork together with modern electronics. I made a moving wooden cylinder on which I drew marks using pencils with different-sized leads. These pencil marks function as a score. The contact between the sound circuit and the pencil marks produces audible music. The cylinder can also be seen as a sculptural piece. Its cylindrical shape evokes my understanding of vexation—an endless circulation. In *Vexation*, I tried to collapse score and performance: The drawing in itself is the physical material that generates the tone. I am interested in transforming existing artworks, presenting them using new forms of notation or mechanical instruments, in order to raise the question: When does something become a different work of art?

:Phoebe Hui

Anne Niemetz (DE/US)

Drones Sweet Drones

Anne Niemetz

Home Sweet Home was an expression that was popular with troops on both sides of the American civil war, and through the glorification of drones the installation aims to open up discussion about the uses of drone technology. As embroidered blueprints using Arduino-powered lights, the aesthetic of the drones combines techniques associated with the past and the future, art and science, the amateur and the professional, and the feminine and the masculine. The blueprint text prompts us to further consider the potential of drones, as well as the gendered logics under which they operate. *Drone Sweet Drone* is purposely conspicuous rather than stealthy. Turning surveillance on its head, it wants us to study the fly on the wall that is becoming a greater part of our lives.

Installation: Anne Niemetz
Contextualization: Dr. Sarah Baker
Multicopter design: Hadley Boks-Wilson
Special thanks to Victoria University of Wellington

Gil Kuno (US/JP)

The Antmaster

Gil Kuno

The Antmaster is an experiment in hybridizing dynamic media (projections) with static media (paintings.) Digitally projected images of live ants are superimposed onto painted surfaces to achieve a new amalgam of motion and still images. In addition, nanosounds of ants moving and communicating were recorded in a nano-science lab at UCLA CNSI to act as a soundtrack to the pieces.

The theme for *The Antmaster* is karma. In Hinduism and Buddhism, it is believed that past karma must be cleared through hard work and suffering in the present. Ants are viewed by humans as being very hard working. Might it be possible that the ants' selfless diligence is the result of having to work off past karma? Invocations that are utilized to clear bad karma are inscribed into the static areas of the projection. In *The Antmaster*, Kuno tries to express how humans and other life forms (e.g. ants) are co-equal; they are all at the mercy of the same laws of the Universe (i.e. karma.)

Aaron Koblin (US), Ben Tricklebank (US)

Light Echoes

Traces of light are broadcast onto landscapes by a laser aboard a moving train. In *Light Echoes*, Aaron Koblin and Ben Tricklebank collapse time and space into images which document the historical pulses of data in the form of light reflecting off earth and matter. The project was included in Doug Aitken's Station to Station project and later exhibited at the Barbican in London.

Aaron Koblin & BenTricklebank

Doug Smarch (CA)

Fog Light

Doug Smarch

When someone sees a flock of birds circling in the sky, it can be a surreal moment that reflects the beauty of nature. Yet seagulls will flock together only when there is food; they will devour without any concern for what lies beneath. The duality of seeing a beautiful flock of birds and confronting the reality of birds' unhindered instinct to attack forms the tension in this piece. *Fog Lights* ponders the relationship between beauty perceived by human beings and the cruelty of survival.

Christopher O'Leary (US)

Xerodrome

Xerodrome is an animation that explores a speculative landscape generated from glitched photographs. Throughout the 30-minute flyover, one can see landscapes of chaos and order, of natural materials and of digital noise. Amid vivid abstractions, shimmering pools, flaming cities and rivers of data seem to appear and disappear, rendered from the flat immateriality of the digital image. The accompanying audio by Isaac Schankler is a custom-digital performance for accordion.

Artist: Christopher O'Leary
Sound designer: Isaac Schankler

Christopher O'Leary

Sharmi Basu (US), John Brumley (US)

Compliant Gait

Digital bodies are constructed through the various gestures, data and objects we release into virtual space. Our own digital labors maintain such beings, and it is only through constant engagement with social media that the elusive memories of our own selves momentarily breach into the feeds of our followers and friends. As such, the corporate filters imposed by the apps that support and display our patchwork bodies partially imbue our digital selves with branding via watermarks, limited distribution, and licensing. In *Compliant Gait*, an invisible creature is given temporary form through the labor of an audience. After connecting to a local wireless network, audience members can use their mobile phones to instantiate digital objects within the hull of the creature. One by one, these objects fill the hollow shape of the creature's body, revealing its form as it moves with a compliant gait across a barren landscape.

John Brumley

Xin Xin (US/TW)

Prologue

Xin Xin

Prologue questions whether the decentralization of surveillance software tools created by governments, corporations and institutions to manipulate our relationship to politics can transgress the individual's sense of responsibility toward the self and the other, and whether sovereignty can possibly be achieved without centralized protocols.

Noa Kaplan (US)

Cyborg Portrait

Why do the female cyborgs defy the pattern? Using the four mysterious characters from the US television series Westworld as a starting point, Kaplan began an obsessive process of deinterlacing their narratives—by capturing and recutting each character's story arc so that she could watch each uninterrupted.

The first installment focuses on Dolores. Of the ten hours that make up the first season, three are devoted to Dolores, more than any other character. In order to identify behavioral patterns and thematic trends, Kaplan speeded up the aggregated footage, condensing it to ten minutes in length. Superimposed on this time-lapse are her findings, two times going at once. The result is a polyrhythmic pseudo-cyborg perspective, evolved from the gunslinger's reductive computer vision used in the original 1973 feature film. These juxtapositions produce more explosive significance than could possibly be articulated in words.

Noa Kaplan

Christina Agapakis (US), Ellie Harmon (US)

Dirt

Christina Agapakis & Ellie Harmon

"Dirt is what you have behind your ears, soil is a living and breathing entity." —Biologist Ann Hirsch, quoting a common soil-science aphorism.

A single gram of rich soil can contain up to two billion bacterial cells and 18,000 unique genomes. Contemporary scientists are mapping this microbial wildernesses—from the Earth's crust to the human body—transforming these "dirty" layers into new bio-info-technological resources for studying everything from climate change to human immune systems. At the same time, the microbial communities themselves are changing as a result of climate change, and we are left largely without a baseline from which to understand that change.

Through a digital and analog exploration of the microbial life in a set of soil samples collected along the Pacific Crest Trail, our project takes the form of a science-as-process-art collaboration. How can we make the life within the dirt visible? How can we make this "visioning" process itself visible?

Supported by The University of California Institute for Research in the Arts, UCLA Art|Science Center

Special thanks to Ann Hirsch, Kavita Philip, Victoria Vesna, Nick Seaver, Luke Olbrish, Beth Reddy, Maskit Maymon-Schiller, Mick Lorusso, Marissa Clifford, Dawn Faelnar, Otherworld, Kate Darling, Mike Bostock, Research and Testing Laboratory, and the US Postal Service

Olivia Osborne (UK)

Meltings of the Heart Change Glacial Landscapes

Olivia Osborne

The ice domes represent both the environment in the form of glaciers and how defenseless they are to climate change. In addition, as a side-by-side comparison they also represent the vulnerability of "frozen" human hearts and the susceptibility to "melt." The salt symbolizes the action of a xenobiotic tainting the environment and in the heart, a powerful evocative emotion that penetrates the organ, both through a chemical reaction. When this occurs, it leaves a tainted color that is forever encapsulated within the environment/heart and "trapped." The water that surges in and out represents the people who flow in and out of our lives in the environment and our hearts. Only a few powerful people/chemicals have the capacity to make an impression or "love" in this landscape. Their touch upon the impressionable delicate emotions and susceptible landscapes remains there permanently, hybridizing one another, interconnecting. These actions, represented by hydrophobic colored dyes, "paint."

Technical guest collaborator: Dan Wilkinson

Rita Blaik (US)

TyndallLandscapes

TyndalLandscapes is the creation of artificial skyscape sculptures utilizing nanoparticles as the primary means of scattering light. These sunsets invite the viewers to contemplate as one might contemplate an actual sunset. They are also presented with the concentration of the nanoparticles used to create the "sunset" and show the analogous, parts-per-million concentrations of highly polluted cities where particulate concentrations are so high as to cause serious health complications. The emergence of nanoparticles as a technology so promising for technological and societal advance also comes with negative effects on our health and the environment, which are difficult to study due to the size-specific effects and traits of nanomaterials.

Rita Blaik

Campus Exhibition

Made in Linz

Interface Cultures student exhibition in Ars Electronica 2017
University of Art and Design, Linz, Interface Cultures

Faculty: Christa Sommerer, Laurent Mignonneau, Masaki Fujihata, Michaela Ortner, Fabrizio Lamoncha

Students in the Interface Cultures master's program come from diverse countries and cultures across Europe, North America, Asia, Australia, South America and the Middle East. Their previous education includes various fields such as fine arts, media arts, design and engineering. Once in Linz, students spend two to four years at the University of Art and Design and immerse themselves in an international study program that teaches interaction design, interface technologies and the cultural and artistic context of user participation. Students experiment with the development of interactive prototypes, musical interfaces, conceptual installations and interaction critiques and also broaden their view by encountering and collaborating with other international fellows who are investigating these topics from a different cultural context.

All the artworks, prototypes and various interfaces in this year's exhibition have been made in Linz. Linz is the UNESCO City of Media Arts, and of course the cultural and socio-political context of Linz also impacts on the students' ideas and concepts. It is the cumulative know-how of 37 years of Ars Electronica and the strong history in the electronic arts that enables a profound discourse around media technology and media arts specific to Linz.

But what does Made in Linz actually mean? Is it a proof of quality? When we look at various trade labels such as Made in China or Made in Germany or Made in Italy, we immediately associate certain product qualities, such as low prices, high-precision technology or fashionable design. But what about Made in Linz? What do we expect when we hear this term? At Interface Cultures this year we are proposing this term and leave it up to the visitors to the exhibition to reflect upon this topic. Perhaps it is even possible to establish this new term as a symbol of innovation, analysis and creative investigation of art and technology in our society. We invite everyone to discuss what Made in Linz means in the context of media art.

Supported by the Federal Ministry of Science, Research and Economy under the Higher-Education Structural Fund Austria

Deep Space 8K

A sensational, internationally unique experience has awaited visitors to the Ars Electronica Center since August 2015. A sixteen by nine meter wall and sixteen by nine meter floor projection, laser tracking and 3D animations have been the specialities of the Deep Space 8 K since 2009. An all-out upgrade of the Deep Space venue's technical infrastructure will enable audiences to enjoy projections in 8K resolution and thus worlds of imagery in a never-before-achieved quality. Full HD and 4K–that's yesterday's news! 8K is what's happening now, and that standard is set by the latest update to Deep Space 8K at the Ars Electronica Center. A visit to Deep Space 8K promises to be extraordinary, fascinating, impressive, breathtaking.

Mantra. Hwayong Jung

Victoria Vesna (US), Charles Taylor (US), Takashi Ikegami (JP), Hiroo Iwata (JP), Reiji Suzuki (JP)

Bird Song Diamond

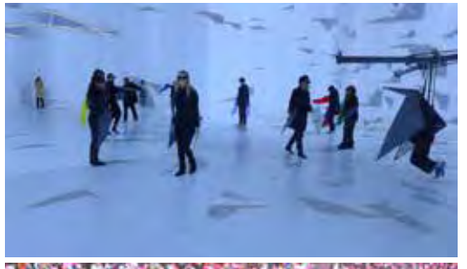
Bird Song Diamond is a site- / habitat-specific interactive installation based on long-term research (2011-present), involving multifaceted, interdisciplinary perspectives—uniquely connecting the nodes of evolutionary biology, artificial intelligence and life, spatial sound, mathematics and mechatronics. The Deep Space 8K version features bird songs from Austria and Japan—reflecting the unique relationship of these two cultures at Ars Electronica. Inspired by the thousand-cranes story, it evolves into a million birds and drones that address the complex relationship of machine, human and animal through multi-dimensional sound, video, and origami-based designs.

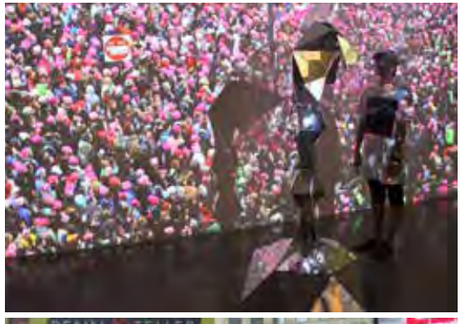
Audiences are engaged by attempting to mimic bird songs and participate as a group with male to female vocalizations. The collective behavior influences the flocking, images and sound—all working in real time.

The interaction produces three different dimensions or scenarios: looking at what birds find interesting—worms, seeds and nests; influencing the flocking; and witnessing how the birds and drones see us—in collective gatherings such as demonstrations and celebrations.

http://www.birdsongdiamond.com

Victoria Vesna (artist, UCLA), Charles Taylor (evolutionary biologist, UCLA), Takashi Ikegami (physicist, University of Tokyo), Hiroo Iwata (engineer, University of Tsukuba), Reiji Suzuki (computer science, Nagoya University), Itsuki Doi (PhD candidate, Ikegami lab), John Brumley, Hikaru Hakatori (PhD candidates, Iwata lab), Naoki Chiba (master's student, Suzuki lab)





Victoria Vesna

Maki Namekawa (JP), Cori Olan (AT)

Interludium A, Isang Yun
3 Etudes for Piano, Philip Glass

Two birthdays constitute the background to the selection of these pieces—the 100th birthday of Insang Yun, the Korean composer who died in 1995, and Phillip Glass's 80thth. *Interludium A* was created in 1982, two years after the democracy movement in Gwangju was crushed. This was a matter of profound concern to Isang Yun, who, in the late 1960s, had himself been victimized by the political despotism of the military regime in power at the time.

"A composer cannot view the world in which he lives with indifference. Human suffering, oppression, injustice . . . all that comes to me in my thoughts. Where there is pain, where there is injustice, I want to have my say through my music." – Isang Yun, 1983

The real-time visualization of this piece has its point of departure in visual associations with the sheet music, and rises up into a complex geometric structure, the individual elements of which are then infused with dynamic movement by parameters derived directly from the live sound of the piano—like a huge high-rise complex or construction plans for a futuristic urban machine that, with passages becoming softer and softer, descends into a dark nocturnal mood, from the depths of which tonal colorations and elements evocative of Asian calligraphy repeatedly emerge. Three of Philip Glass's *20 Etudes for Piano* will be performed as a sort of teaser for the big solo concert on Monday. (Also see page 146)

Piano: Maki Namekawa
Visuals: Cori Olan

Felix-Benedikt Sturm (AT), born 1988 in Linz, received his master of fine arts in sculpture and transmedia space at the University of Arts Linz, class of Eva Grubinger, in 2015. He has participated in group shows around Europe. Currently he is working on his first solo show, opening in Salzburg in fall 2017.

Hiroshi Sugihara (JP) is a PhD student in emerging design and informatics at the University of Tokyo, Japan.

Supasorn Suwajanakorn (TH) received his PhD in computer science from the University of Washington in 2017 and BEng in computer science from Cornell in 2011. His thesis focuses on modeling human personae using unconstrained data such as personal photo and video collections. He has won a Madrona Prize Award and the Innovation of the Year 2016 for work in his thesis. He is now a resident at Google Brain.

Reiji Suzuki (JP) is an associate professor at the Department of Complex Systems Science, Nagoya University. His research is focused on artificial life, evolutionary computation and agent-based models.

Atsushi Tadokoro (JP), born in 1972 in Tokyo, is a creative coder. Currently he teaches at Tama Art University, Tokyo University of the Arts and Keio University in Japan. Tadokoro performs live coding improvisation with sounds and moving images. His lectures on creative coding are online (http://yoppa.org/) as practical aids for students and creators.

Kotaro Tanimichi (JP) is a master's student in design engineering and mechanical metamaterials at the University of Tokyo, Japan.

Charles Taylor (US) is a professor emeritus at the UCLA Department of Ecology and Evolutionary Biology. He worked in diverse research areas such as machine intelligence and population genetics and ecology of malaria-carrying mosquitoes. Most recently his research has been focused on avian bioacoustics, adaptive sensor arrays and artificial life.

Team Zo (US) based in the AI & Research Division at Microsoft, the multidisciplinary team develops new technologies to facilitate greater human connection through conversation with images, voice and other senses.

Vibert Thio (TW) is an electronic music composer using Processing (Java) and C++. He is also working on research on VR and bio-art studies. Duanger Du (TW) performs as a DJ and electronic music producer and focuses on interactive program design of audio and visual art. Hsin-Jen Wang (Aluan) (TW) is a digital artist who specializes in multimedia design and creates audiovisual performances. Aluan is actively involved in the promotion of free software with OpenLab Taipei, and also designs interactive images for theater and dance performances.

Stefan Tiefengraber (AT) lives and works in Linz/Austria. His art works range from audio/video noise performances to interactive installations to time based media such as experimental video. In 2015 he took part in the MMCA Changdong residency program in Seoul/Korea for six months. His works have been exhibited at the Ars Electronica Festival 2016 (Linz/Austria), O'NewWall Gallery (Seoul/Korea), TodaysArt 2014 (Den Haag/Netherlands), and the New Media Gallery (Vancouver/Canada).

Time's Up (AT), founded in 1996 and anchored at Linz Harbor in Upper Austria, endeavors to expand the conventionally construed boundaries delineating art, technology, science and entertainment, and to dovetail those disciplines. As a lab for the creation of experimental situations, Time's Up models realities borrowed from everyday life and merges them with possible future scenarios to yield narratives that can be experienced haptically, narratives that, in the form of transmedia installations, invite those perusing them to engage in active exploration. For additional information about past and present Time's Up activities, research processes and outcomes, go to http://www.timesup.org.

Nao Tokui (JP) received his PhD from the University of Tokyo researching artificial intelligence and human-computer interaction. He has been actively working in the field of interactive art and music based on his research expertise and insights. After pursuing his research and creative interest in several laboratories in Japan and Europe, he founded Qosmo in 2009 with his fellow researchers and artists to deploy their ideas in the real world and market.

Yusuke Tomoto (JP), born in 1982, studied at the Department of Physics, Applied Physics, at the School of Advanced Science and Engineering, and Waseda University. He began his career at *Rhizomatiks* after working as an engineer in the R&D department of a leading medical instrument company.

Miha Turšič (SI) is an artist, designer and researcher, dedicated to the development of arts and humanities in outer space for more than ten years. He has designed works in reference to a human condition in outer space, developing post-gravitational art and artistic satellites, founded the Cultural Centre of European Space Technologies and is actively developing cooperation between institutions and domains. Currently, he is working as a project developer at the Waag Society.

Mike Tyka (DE) is an engineer and artist who currently lives and works in Seattle. His work combines science, technology and traditional art techniques. His sculptural pieces have focused on macromolecules such as proteins and DNA, which he represents in hand-sculpted copper or cast in glass or bronze using lost 3D-print casting. He also works with artificial neural networks as an art medium, using techniques such as DeepDream and Generative Adversarial Networks to create unique and contemporary media artworks and paintings. http://www.miketyka.com

Unknown Fields (UK/AU) is a nomadic design studio that travels on expeditions into the shadows cast by the contemporary city, to uncover the industrial ecologies and precarious wilderness its technology and culture set in motion. They chronicle their journeys in the book series *Tales from the Dark Side of the City* and their work features in publications such as the *Guardian*, the BBC, *Wired* and the *New Scientist*, and has been collected by institutions such as the New York Metropolitan and the Victoria and Albert Museum.

V2_, Institute for the Unstable Media (NL) is an interdisciplinary center for art and media technology in Rotterdam (NL). V2_ presents, produces, archives and publishes research at the interface of art, technology and society. Founded in 1981, V2_ offers a platform for artists, designers, scientists, researchers, theorists and developers of software and hardware from various disciplines to discuss their work and share their findings. In V2_'s view, art and design play an essential role in the social embedding of technological developments. V2_ creates a context in which issues regarding the social impact of technology are explored through critical dialog, artistic reflection and practice-oriented research. http://www.v2.nl

Phil van Allen (US) and Ben Hooker (UK) are an interaction designer and artist who are core faculty in the Media Design Practices MFA Program at ArtCenter College of Design. They devised the Internet of Enlightened Things project as a space to explore their shared interest in new manifestations of machine learning and artificial intelligence in the neighborhood where people interact with the urban at a human scale.

Ruben van de Ven (NL) combines his backgrounds in filmmaking and programming, challenging alleged objective practices. He is intrigued by the intersection of highly cognitive practices and ambiguous experiences. In his most recent works he investigates computational quantification of emotions.

Roland van Dierendonck (NL) is a creative researcher with a background in biology and media technology. The media of his work include interfaces, electronics and video. Through a series of collaborations, he pursued his fascinations, such as drawing robots, perceived authenticity, interactive laboratory technologies and utilizing biological unpredictability. Recently he went back to the lab, working together with Špela Petrič, Günter Seyfried and others.

Aoife van Linden Tol (IE) is a London-based multi-disciplinary artist working with explosives, fusing her interests in nature, cosmology, chemistry and physics. Her practice spans sculpture, installation, drawing, photography, film and performance. She creates abstract works and experiences which often examine concepts of time, density and matter as well as deep human emotions and motivations.

Katia Vega (PE) is the creator of Beauty Technology and a professor at UC Davis. She was a postdoc at MIT Media Lab, RA at Fine Arts-HKBU and PhD at PUC-Rio. Her work has been covered by the *New Scientist*, *Wired*, *Discovery* and CNN, and exhibited at the Barbican, Tekniska and Bellagio. It has won awards from Ars Electronica, TEI and Ubimedia. In 2016, Springer published her book about Beauty Technology. http://www.katiavega.com

Philip Vermeulen (NL) is an artist who makes performative installations. He discovers primary phenomena in all kinds of different media, sound, light, physics and nature. He starts playing and fighting with them, to isolate the things he sees, and tries to tame and compose with these characteristics. He builds setups and immersive installations of provoking experiences, which questions the senses of the viewer by transporting them into another world.

Victoria Vesna (US), PhD, is an artist and a professor at the UCLA Department of Design | Media Arts and Director of the Art|Sci center at the School of the Arts and California Nanosystems Institute (CNSI). With her installations she investigates how communication technologies affect collective behavior and perceptions of identity shift in relation to scientific innovation (PhD, University of Wales, 2000). Her work involves long-term collaborations with composers, nanoscientists, neuroscientists and evolutionary biologists and she brings this experience to students. She is the North American editor of *AI & Society* and in 2007 published an edited volume *Database Aesthetics: Art in the Age of Information Overflow* and another in 2011 *Context Providers: Conditions of Meaning in Media Arts*.
http://victoriavesna.com/

Florian Voggeneder (AT) was born in 1986 in Linz. Following a one-year stint performing civilian service in Auschwitz, he enrolled in Linz Art University's Time-Based and Interactive Media bachelor's program. After graduating in 2011, he entered the school's Time-Based Media master's program, and has been studying photography there since 2013. Signals, people and interferences are recurring motifs in his photographic work and installations.

VOID (TR) is a young creative group that mainly focuses on animation, digital arts and art installations and provides support to its customers on various different media platforms. It has been involved in several national and international art/science/technology activities and has given distinguished demonstrations in different cities in the US, Europe, the UK, Russia and Turkey.

The Waag Society (NL) is an institute for art, science and technology—a pioneer in the field of digital media. Over the past 22 years, the foundation has developed into an institution of international stature, a platform for artistic research and experimentation, and has become both a catalyst for events and a breeding ground for cultural and social innovation. The Waag Society explores emerging technologies and provides art and culture with a central role in the designing of new applications for novel advances in science and technology.

Ei Wada (JP), born in 1987, is an artist/musician. Around the time he began to understand things, he believed that a music festival is a place with a gigantic tower shaped like the leg of a crab with a television tube embedded in it. But at a certain moment his friend pointed out that there was no such place on Earth. So he decided to make a virtue of necessity and to produce it himself. He started a group called the Open Reel Ensemble and a project called the *Braun Tube Jazz Band*. He also created many art-installation projects and in recent years he started his latest project called *Electronicos Fantasticos!* where he recycles second-hand home electronics and turns them into musical instruments.

Thomas Wagensommerer (AT) lives and works as a media artist in Vienna, Austria. He studied digital media technology at the University of Applied Sciences St. Pölten, philosophy at the University Vienna (without graduation) and transdiciplinary art (TransArts) at the University of Applied Arts Vienna. He is a lecturer in experimental media at the University of Applied Sciences St. Pölten and a member of the research / artistic staff at the University of Applied Arts Vienna.

Lien-Cheng Wang (TW) is a new-media artist, open-source education collaborator and audiovisual performer. His art and research involves interactive devices and real-time sound performance. He uses open source to create installations and audiovisual real-time performances. The works are committed to seamless combination of images and sounds created by computer algorithms as well as human perception of the universe and nature. He often utilizes a volume of installed approaches to achieve a unique physical perception. His works have been exhibited and performed at Ars Electronica (Austria), New Technological Art Award (Belgium), Les Journées Grame (France), Madatac (Spain), and the Digital Art Festival Taipei (Taiwan).