CyberArts 2017

Prix Ars Electronica

STARTS PRIZE ´17

ARS ELECTRONICA

HATJE CANTZ

2017
CyberArts

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HATJE CANTZ

Hannes Leopoldseder · Christine Schöpf · Gerfried Stocker

CyberArts 2017

International Compendium

Prix Ars Electronica

Computer Animation / Film / VFX – Hybrid Art
Digital Musics & Sound Art – u19 – CREATE YOUR WORLD

STARTS Prize '17

Grand Prize of the European Commission honoring Innovation in Technology, Industry and Society stimulated by the Arts

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STARTS Prize'17
Innovation at the nexus of **S**cience, **T**echnology and the **ARTS**

The STARTS Trophy was designed by Nick Ervinck. The Belgian artist explores the boundaries between various media, fostering a cross-pollination between the digital and the physical. He applies tools and techniques from new media, in order to explore the aesthetic potential of sculpture, 3D prints, animation, installation, architecture, and design.
TAWSTAR, 2016 Photo: Peter Verplancke

STARTS PRIZE´17

Innovation at the nexus of
Science, **T**echnology and the **ARTS**

Grand Prize of the European Commission honoring Innovation in Technology, Industry and Society stimulated by the Arts

"I think that more and more we all understand that innovation in the future will be on that intersection of the arts and sciences".

Carlos Moedas, EU Commissioner for Research, Science and Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 732019.

STARTS – Science, Technology and the ARTS

The STARTS program is an initiative of the European Commission, encouraging synergies between the arts and industry to support innovation for technology and society by promoting the inclusion of artists in Horizon 2020 projects. The core of the program is a call for *coordination and support actions* to foster collaboration and dialog between artists, creative people, and technologists under the Horizon 2020 program for research and innovation. In addition a new European Union Prize—the STARTS Prize—has been developed in 2016 to promote this program and to give visibility to outstanding projects and best practice examples.

Innovation in and for Europe

It has long been an established fact that innovation is at the core of a competitive economy. Europe has historically focused its attention in engineering on R&D and standardization. Today, however, focusing only on technology is not sustainable. An increasing number of high tech companies throughout the world assert that, in addition to scientific and technological skills, the critical skills needed for innovation to happen and to be of value for society are skills such as creativity rooted in artistic practices. In this context, the expertise and practice of artists can directly drive and influence innovation in technology. They offer new perspectives, inspire new directions and act as a catalyst for a successful and socially responsible transformation of new technologies into new products and new economic, social, and business models. In recognition of this development the European Commission has launched the STARTS initiative—Innovation at the nexus of Science, Technology, and the ARTS. This year, Ars Electronica, in collaboration with BOZAR and Waag Society, issued an open call for entries for the 2nd edition of STARTS Prize.

STARTS Prize'17

Grand Prize of the European Commission honoring Innovation in Technology, Industry and Society stimulated by the Arts

The European Commission's STARTS Prize initiative is designed to spotlight people and projects that have the potential to make a sustainable positive impact on Europe's economic, technological, social, and ecological future. This competition seeks innovative projects at the nexus of science, technology and the arts, and honors the best of them with the STARTS Prize. The STARTS Prize aims to showcase and celebrate visions and achievements at the interface between innovation and creation. The winners receive the STARTS Trophy and €20,000 in prize money. Both winning projects as well as a selection of the Honorary Mentions and Nominations are showcased at the Ars Electronica Festival in Linz, the BOZAR Electronic Arts Festival in Brussels, and Waag Society in Amsterdam. Plus, projects singled out for STARTS Prize recognition are featured in exhibitions and shows that Ars Electronica, BOZAR, and Waag Society stage worldwide.

The STARTS Prize competition is staged annually in two categories:

Grand Prize – Artistic Exploration

Awarded for artistic exploration and art works where appropriation by the arts has a strong potential to influence or alter the use, deployment, or perception of technology.

Grand Prize – Innovative Collaboration

Awarded for innovative collaboration between industry or technology and the arts that opens new pathways for innovation.

In an elaborated process of open call and nominations by advisory experts, a total of 2,977 entries from 97 countries were submitted in the application period that ran from January 11th to March 13th, 2017 and 474 projects were shortlisted. Out of the total number of 2,977 entries, four groups of experts nominated 30 projects for the STARTS Prize, which were presented to the STARTS Prize jurors for final consideration. Following extensive deliberations, they decided to award *I'm Humanity* by Etsuko Yakushimaru for Artistic Exploration, and *Rock Print* by Gramazio Kohler Research, ETH Zurich, and Self-Assembly Lab, MIT, for Innovative Collaboration. Furthermore, they selected 10 projects for an Honorary Mention.

Submission and Evaluation Process

On behalf of the European Commission, Ars Electronica, in collaboration with BOZAR and Waag Society, issued an open call for entries to a competition that determined the second recipients of STARTS Prize. Considering the interdisciplinary approach, the STARTS Prize'17 was again launched with a dual approach for submissions:

Submission via Open Call

The STARTS Prize open call started on January 11th, and ended on March 13th, 2017. Submissions could be made either by artists / creative professionals or the researchers / companies involved.
The competition was open:

- to groundbreaking collaborations and projects driven by *both* technology and the arts.
- to all forms of artistic works and practices with a strong link to innovation in technology, business, and/or society.
- to all types of technological and scientific research and development that has been inspired by art or involves artists as catalysts of novel thinking.
- to artists and teams from all over the world.

Purely artistic or technologically driven projects were not the focus of this competition.
The competition was not limited to any genres such as media art, digital art etc., and not limited to Information and Communication Technologies.

Recommendations by International Advisors

To encourage a wider range of participants as well as a geographical and gender balance, 13 international advisors who are experts in the field were engaged to recommend interesting projects and artists. These recommended participants were contacted by the Ars Electronica team and asked to submit their project via the submission platform, with the same process and deadlines as for the open submissions. These international advisors served as facilitators to identify relevant works and projects during the submission process and helped to ensure a wide reach out and fast introduction of the new award.

Nominations

All submissions were evaluated by a nomination committee in the order of their arrival. The committee nominated 15 projects for prize consideration by the jury. Since the main categories of Prix Ars Electronica have a strong overlap with the criteria of the STARTS Prize, artists submitting for the Prix Ars Electronica could decide to enter their submission also for the STARTS Prize. Of these submissions a total of five projects per category were nominated for prize consideration by the three Prix Juries (Computer Animation/Film/VFX, Hybrid Art, and Digital Musics & Sound Art).
The resulting list of 30 nominations represents a comprehensive overview of the international state of the art collaborations between art and technology. Therefore all 30 projects are published in the CyberArts 2017 book.

Jury Selection

In the final round, all 30 nominations were evaluated by the STARTS Prize jury in order to select two prize-winning projects and up to ten Honorary Mentions. The jury consisted of seven experts, one representative of each Prix Ars Electronica category, and four representatives of the nomination committee. All decisions were unanimous.

STARTS PRIZE '17, a joint project by Ars Electronica, BOZAR and Waag Society.

Earth to Space: Blue Future

Joint statement of the STARTS Prize Nomination Committee (Bradly Dunn Klerks, Luis Miguel Girão, Chiaki Hayashi, Sophie Lamparter, Alexander Mankowsky) and the STARTS Prize Jury (Bradly Dunn Klerks, Chiaki Hayashi, Sophie Lamparter, Alexander Mankowsky, Rikke Frisk, Shuzo John Shiota, Victoria Vesna)

Science and technology are developing ever more quickly, expanding our world's possibilities, but also its complexity. As automation and Artificial Intelligence (AI) merge into our daily reality, opportunities and risks alike dominate stories in popular media, even among experts and specialized literature. New studies pin ever-increasing job losses to self-driving cars, the spectral algorithm threatening to replace accountants, lawyers, doctors, and artists. We feed these learning machines with information, images, and patterns, while at the same time we wonder and worry about how many decisions we want to hand over to the machines.

Smart objects, virtual assistants, and chatbots are increasingly present in our homes, bedrooms, and pockets. As digital interfaces and processes become invisible, the borders between us and the machines blur. We welcome our digital helpers and collaborators even as we are anxious about the data they record—an anxiety fueled by the small number of those who comprehend how the machines make decisions and suggestions.

We read about synthetic biology and how cures for diseases could be just five minutes away. Technologies like CRISPR hand us the power to change our genetic code, completely changing the way we think about life, our bodies, and our health. Humans might become more resilient, but will our natural environment transform even faster? We are witnessing the first undeniable effects of climate change: global warming, melting ice, dying forests, polluted oceans and cities, mountains of indissoluble plastic. Many of us around the world fear that it might be already too late to change the entire global energy production that sustains our consumption and our behaviors.

This rapidly emerging complexity and rapid change brings uncertainty for societies at large and fuels the populist political climate while leaving us with the question: are we prepared for the future we anticipate? How can we shape the future, make it ours? How can we contribute?

For all these reasons and more, we are tasked to seek visionary ideas and solutions we can trust. A total of 2,977 entries from 97 countries were submitted and 474 projects were shortlisted. For four days, we, the STARTS Prize Nomination Committee and the STARTS Prize Jury, reviewed and discussed these collaborative projects, dealing with urgent and relevant questions from creative thinkers all over the world. We reviewed proposals for experiments on human and machine collaboration and interfaces, studies of humanized automation, new ways of translating and living with nature—moving from the individual to synchronizing with each other. Many of them used new technologies to share experiences and knowledge, to empower people through their communities, and to access information and tools.

To many, it is obvious that we can no longer work in isolation—we need active and focused collaboration. Complex questions require the know-how from different fields, cultures, and perspectives. We need to collaborate and experiment in-between and beyond disciplines until new ideas emerge. Designers, artists, engineers, scientists, and industries have to work together and co-create the future we want to live in. Nobody can afford to miss the next trend or approaching change.

Forward-thinking institutions have realized this need for wide-reaching collaboration. Universities are building interdisciplinary programs. Technology companies are reaching out to students, artists, designers, and startups for inspiration and feedback. Research institutions and industries are hosting "artists-in-residence," organizing interdisciplinary workshops, and taking classes in human-centered design thinking. Grassroots organizations and online communities are creating diverse platforms, from hacker spaces to DIY community bio-labs, to share access to know-how and technologies that help us understand the world and play an active role in it.

These are good and valuable initiatives. But the stakes are high, and the right decisions are crucial. We are designing our future, and inspiration is not enough. We must collaborate and co-create from the ground up. Nobody wants to live in a future programmed only by software engineers, nor in a world imagined only by artists, or by researchers in a laboratory, or by an inscrutable algorithm.

That's why the STARTS Prize means so much. Through the two main prizes and all the Honorary Mentions, we have a tool to highlight artistic contributions and outstanding examples of mutually beneficial collaborations between artists, researchers, and technologists; projects that allow technology and research to cross over the divisive borders of their disciplines. We awarded and recognized projects that prove the importance of interdisciplinary and diverse collaboration, and offer not just inspiration but adoptable models for institutions, organizations, and individuals to follow.

We are grateful to the EU commission for following this approach, for initiating and for pledging resources and support to STARTS, and we hope that this year's, and last year's, project examples show the necessity and the potential to strengthen even more interdisciplinary initiatives. We also want to thank Ars Electronica and its partners BOZAR and Waag Society for inviting us, and for their ongoing commitment to support, communicate, and showcase the selected STARTS Prize projects in the best possible way to policy makers, industry leaders, and the general public. Ars Electronica started 38 years ago, as a pioneering institution in Europe dedicated to art, technology, and its impact on society. They have created an important interdisciplinary hub for dialogue, discourse, and collaboration; giving millions of people access to these ideas. If there were a STARTS Prize lifetime achievement award, it would definitely go to Ars Electronica.

STARTS Prize '17

In an elaborate process that includes an open call and recommendations by advisory experts, a total of 2,977 entries from 97 countries were submitted during the application period that ran from January 11th to March 13th, 2017. Out of the total number of 2,977 entries, four groups of experts nominated 30 projects for the STARTS Prize, which were presented to the STARTS Prize jurors for final consideration. Following extensive deliberations, they decided to award *I'm Humanity* by Etsuko Yakushimaru for Artistic Exploration, and *Rock Print* by Gramazio Kohler Research, ETH Zurich, and Self-Assembly Lab, MIT, for Innovative Collaboration.

STARTS Prize '17
Grand Prize – Artistic Exploration

Awarded for artistic exploration and art works where appropriation by the arts has a strong potential to influence or alter the use, deployment, or perception of technology.

I'm Humanity
Etsuko Yakushimaru

Etsuko Yakushimaru is an example of a new generation of young artists who seamlessly traverse the worlds of fine art, pop culture, performance, science, and technology. Her creative expression includes drawing, installation art, media art, poetry and recitation, including doing vocals and illustrations for a rock band formed in 2006—Soutaiseiriron (Theory of Relativity). She is also a primary member of electronic pop unit Tutu Helvetica, and collaborates with a number of highly regarded musicians.

I'm Humanity is a song by Yakushimaru with which she imagines new ways that music could be transmitted, recorded, mutated, and diffused. Here we have pop music composed with the use of the

nucleic acid sequence of Synechococcus, a type of cyanobacteria that has long existed in Ibaraki Prefecture. The artist envisions that even if humanity goes extinct in the future, the species that replace humanity will eventually decode the music in the microorganism through translation methods that go far beyond what we can even imagine.
Professor Satoshi Hanada at the Tokyo Metropolitan University opened his lab to enable the process by cultivating genetically modified microorganisms. The genetic codes (276 nucleotides) were artificially synthesized by a DNA synthesizer and inserted in a vector, designated pSyn_1. The inserted DNA fragment encoded music chords were then introduced to a genome of a host cell (cyanobacterium, Synechococcus elongatus PCC 7942) by homologous recombination. Thus the music chords in the Synechococcus genome can be infinitely reproduced along with cell division and are continually passed on from us to the post-human with occasional mutation.
Since recent developments in biotechnology, artists have been fascinated with genetic modification and we have seen multiple examples of work that utilize algae in Petri dishes or work with genetic modification in some form. Indeed, an entire field of BioArt has emerged and the jury understands that even if encoding music with a DNA sequence has been experimented with by artists such as the band OK Go working with biochemist Dr. Sri Kosuri or Charlotte Jarvis working with scientist Dr. Nick Goldman, Yakushimaru makes an important breakthrough by introducing this technique to a large pop audience. Further, she made a concerted effort to work with scientists in major institutions such as the National Institute of Technology and Evaluation (NITE) and Tokyo Metropolitan University.
Thus, the idea of working with genes as a medium is taken beyond the DIY labs and the fringes of experimental audiences into established institutions of pop culture and scientific institutions. This is a testament to the ability of a singular artist to create bridges, to cross disciplinary boundaries, and to enable new ways of perceiving the influence of scientific research on daily life. It is the hope of the jury that by bringing this idea to large audiences, the emerging field of bioart will gain more acceptance and more artists and scientists will collaborate on visionary projects that may take unusual paths and thus potentially bring groundbreaking innovations in both arts and the sciences.

STARTS Prize ’17
Grand Prize – Innovative Collaboration

Awarded for innovative collaboration between industry or technology and the arts that opens new pathways for innovation.

Rock Print
Gramazio Kohler Research, ETH Zurich
and Self-Assembly Lab, MIT

Rock Print performs a full-scale 3D “rock printing process” using self-aggregating capacities of the material itself. This visionary research project is a collaboration of Gramazio Kohler Research, ETH Zurich and the Self-Assembly Lab, MIT.
The jury was impressed with the way the collaborators utilized innovative combinations of robotics, 3D printing, and self-assembly to experiment and develop new ways of approaching architectural construction. Their technique is extremely elegant and minimal in form and concept, and it is demonstrated in situ to audiences in public spaces and in their lab. By using granular materials and string, they utilize the physical phenomenon of jamming and demonstrate on a large scale the concept of self-organization that is found in natural systems. They focus on additive digital fabrication techniques used for building non-standardized architectural components, with the aim to develop criteria for a new system of structural logic that can be applied to architecture.
Rock Print is built from low-grade granular material and constructed by robotic machines, bringing forward a new category of random packed, potentially fully reusable, poly-dispersed jammed structures that can be automatically fabricated into non-standard shapes. We witness in action full material reversibility and reusability of the aggregated materials; structurally active interlocking, differentiated structural performance that have geometric flexibility and articulation. The piece that was presented could easily be seen as a sculpture, but when we look more deeply into the process, it becomes clear that the elegant shape offers much more to the field of architecture.
The collaborative group developed this project to investigate methods and techniques for design and robotic aggregation of low-grade building material into load-bearing architectural structures that are fully recyclable and re-configurable with high geometrical flexibility and minimal material waste. One could imagine reconfigured architectural structures that are assembled when needed and taken down into the original raw state, moved around and reconfigured to whatever shape the next location would require.
Widespread adoption of robotics is promising to transform the construction industry and building techniques, and will become increasingly automated both on- and off-site. This means change and even dispensing with manual labor—which brings up many questions for the future of construction—both large-scale and small-scale. This project not only demonstrates the potential of future construction but also raises issues that are more easily addressed as we witness how functional and aesthetic qualities “inform” architecture through to the level of material.

STARTS Prize ’17
Honorary Mentions

3arabizi Keyboard
Hadeer Omar

Although this work is still at the conceptual phase, the jury was impressed by its unique message that technology could empower diversity and ethnicity. Instead of pushing the global standard, it reminds us of the importance to observe how local people interact and design services that will allow for differences in each region, country, and culture. It would benefit many to further develop these kinds of ideas that promote respect and the recognition of diversity while opening up venues for new hybrid communication systems (to emerge).

Blink: Humanising Autonomy
Adam Bernstein, Raunaq Bose,
Leslie Nooteboom, Maya Pindeus

Autonomous cars, drones, and other moving things will enter the public spaces in the next decade. While the public is informed mostly about the engineering progress, the task of integrating these things into our (human) way of cooperating with each other is rarely addressed. With *BLINK,* four students are suggesting a communication device that encourages the development of a “Language for Autonomous Vehicles.” The proposed system would communicate the intent of the vehicle while allowing pedestrians to influence its decisions. The jury wanted to further encourage this fresh approach towards intuitive interaction with autonomous, mobile machinery.

[IGNIS AER AQUA TERRA]
Yuima Nakazato

The title of this long project by fashion designer Yuima Nakazato is from the names of the elements in Latin—Fire, Air, Water, and Earth. Here we see the vision of each individual wearing their clothes as an extension of their personality and

physical attributes. The jury recognized the importance of the idea of having clothing created without being sewn but instead being formed from thousands of components or units. We see this trend in many areas of society and technological development, and to have it also reflected in individual expression is an important contribution to new ways of envisioning the fashion design industry.

Library of Ourselves
BeAnotherLab
The jury felt that BeAnotherLab team is successfully utilizing virtual reality technology as a true empathy machine—by placing you in another person's body and making you see the world through their eyes. While changing gender, age, race, or origin we potentially change somebody's perspective and view on the "others" and on themselves. These experiments, artistically driven, and in close collaboration with several universities, investigate the feeling of embodiment and empathy and are impacting research areas in perception, psychology, neuroscience, and social relations.

Mimus: Coming face-to-face with our companion species
Madeline Gannon
Autodesk has taken the lead in how industries could collaborate with artists and designers. While the latest technologies like AI and robots tend to be managed highly confidentially, the jury agrees that it is very important for tech companies to design open collaboration by hosting residential programs and learning from anti-disciplinary groups for innovation.

nonvisual-art
Lisa Buttinger
One can never know from where the next groundbreaking idea comes. What will start the next wave of artistic expression? And what else might this lead to? *nonvisual-art* was passed over to the STARTS Prize jury from the u19 category and it was immediately agreed that this project deserves an Honorary Mention. It is strong in its curious investigation while at the same time it is controlled and very open to its "handmade" expression. Not only did Lisa create enchanted images, she also invented her own new media with everyday materials. She used her knowledge of natural science and turned it into an artistic tool where new, beautiful, almost magic images appear. This project is a really good example of how artistic exploration can lead to new expressions, new innovative tools brought to us by a very young artist who has received the right support to enable her to follow and develop her artistic skills and curiosity.

Out of Exile
Nonny de la Peña, Emblematic Group
Nonny de la Peña is known by many as the 'Godmother of VR'. Committed to new ways of storytelling and immersive journalism, she experimented with virtual reality at the UCLA Creative Technology Lab long before the current hype. Her approach has inspired the first Oculus prototype, as well as many other technology companies, media outlets, and journalists. The jury agreed that she has the ability to use the power of virtual reality in a unique way to transport people inside stories and situations to create empathy and raise awareness for real world problems.

Research Institute for Arts and Technology
Research Institute for Arts and Technology
The RIAT – Research Institute for Arts and Technology based in Vienna acts as a platform for counter movement by creating space outside of academia and the established gallery system. The RIAT activists do not hesitate to tackle the most difficult and disturbing problems of our contemporary society such as creating crypto-currencies to change the course of our world. Moreover, they have initiated the *Journal for Research Cultures* to communicate their thoughts and experiences to the global community of academics and beyond. Artistic Bokeh at the Museumsquartier in Vienna and the Coded Cultures festival for fringe research and experimental arts are further activities. RIAT shows successfully how the reference to "Art" can provide an umbrella for unconventional and even revolutionary thinking.

Sentient Veil
Philip Beesley
Philip Beesley has succeeded in composing layers of cellular textiles, a multitude of LED lights, and glass vessels containing chemical photocells glimmering in color, into generic beauty. Looking at this work, one imagines the experience as being akin to walking into an ancient dreamy forest, and like such forest, it recognizes you, hissing, breathing, and groaning. The jury appreciated this work for its combination of intricate technology and strong yet elegant aesthetics; a thought-provoking installation that invites us to ponder about our most elemental state of being.

Treelab
Marcus Maeder, Roman Zweifel
The jury was impressed with the unusual pairing of a forest expert and a researcher in computer music and sound technology that is bringing the so far unheard 'sounds of trees' to the surface. By needling tiny microphones beneath the bark of trees, much is revealed about their physiological processes, and about the forest ecosystem in general. Their collaboration resulted in a joint research project on complex environmental data collection and sonification. The sound models serve as a tool to analyze patterns, understand links, and unlock new research areas for both artists and scientists alike. But through a beautiful installation it also helps the general public to experience and gain deeper insight.

STARTS Prize '17
Nominations

Aerocene Foundation
Tomás Saraceno

Algaerium Bioprinter and Algae Printing
Marin Sawa

aura calculata
Tim Otto Roth

Brian Eno's The Ship—A Generative Film
Dentsu Lab Tokyo

BLOOMS 2: Strobe Animated Sculptures
John Edmark

Corpus Nil
Marco Donnarumma

Bug's Beat
Yumi Sasaki, Dorita Takido

DuoSkin
MIT Media Lab – Living Mobile Group,
Microsoft Research – Natural Interaction Group

G3DP V2: High Fidelity Additive Manufacturing of Transparent Glass Structures across Scales
The Mediated Matter Group, MIT Media Lab

Light Barrier 3rd Edition
Kimchi and Chips / Mimi Son, Elliot Woods

Make Do and Mend
Anna Dumitriu

Microbial Design Studio: 30-day Simit Diet
Orkan Telhan, Karen Hogan, Mike Hogan

Project KOVR
Leon Baauw, Marcha Schagen

Silk
::vtol::, Dmitriy Morozov

Smog Free Project
Daan Roosegaarde and his team of experts

sonicPlanet GeoComposer/GeoPlayer
Sinan Bökesoy

Speculative, Fashionable, Wearable
Daijiro Mizuno, Kazuya Kawasaki

Ugly
Nikita Diakur

STARTS PRIZE´17 Grand Prize
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I'm Humanity

Etsuko Yakushimaru

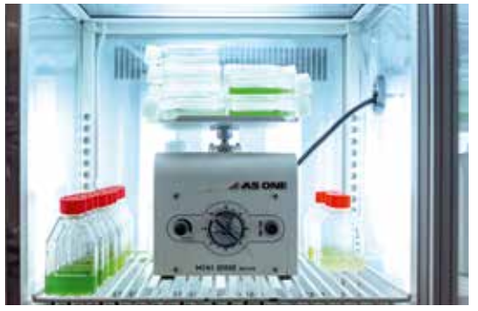
Exhibition of *I'm Humanity* genetically-modified microorganism

The project *I'm Humanity* is based on the concept of "post-humanity music" and explores how new music will be transmitted, recorded, mutated, and diffused—whether sung or played—via word of mouth, as scores, through radio, records and CDs, or cloud computing. Music travels through space and time, undergoing mutations on its way. The close connection between music and media is like that between transmission and recording, and can be thought of as genes and DNA.

As a musician, Yakushimaru has worked in a variety of genres from pop to experimental music and has created various types of artwork such as drawings, installations, pieces that make use of satellite and biometric data, a song-generating robot, original instruments, and more.

In *I'm Humanity,* Yakushimaru makes pop music with the use of the nucleic acid sequence of Synechococcus, which is a type of cyanobacteria. The musical information is converted into a genetic code, which was used to create a long DNA sequence comprising three connected nucleic acid sequences. The DNA was artificially composited and incorporated into the chromosomes of the microorganism. This genetically-modified micro-organism with music in its DNA is able to continu-ously self-replicate. So even if humanity as we know it becomes extinct, it will live on, waiting for the music within it to be decoded and played by the species that replaces humanity.

I'm Humanity
http://yakushimaruetsuko.com/archives/2602 · https://youtu.be/92Dcp9Fbdac



I'm Humanity genetically-modified microorganism

When thinking about the lifespan of recording media, for example, CDs are said to last for decades and acid-free paper is said to last for centuries. In comparison, DNA's lifespan as a recording media is five hundred thousand years—physicochemically speaking. Because the lifespan of DNA is so long, it has great potential as a recording media. On the other hand, it is not rare for nucleic acid sequences to mutate, and naturally this leads to changes in the genetic information. In that respect, in the history of "diffusion of music", in which "mutation" has also had an important role in addition to "transmission" of information, the uniqueness of the "mutation" of nucleic acid sequences was strikingly similar. In the lyrics of *I'm Humanity,* the microorganism *I'm Humanity* sings "Stop the evolution—don't stop it." Although mutation spurs evolution, it also means that a species changes. Perhaps *I'm Humanity* is caught between its own evolution and its fear that its evolving could mean the loss of nucleic acid sequences with musical information, which would make it impossible for *I'm Humanity* to sing the song anymore.

Etsuko Yakushimaru with *I'm Humanity* in culture

Etsuko Yakushimaru drew pictures on petri dishes using genetically modified microorganisms and cultured them

Etsuko Yakushimaru in the laboratory

Etsuko Yakushimaru in the laboratory

I'm Humanity digital music artwork

I'm Humanity CD artwork (CD in the UV-printed petri dish)

I'm Humanity became the first song in human history to be released in the three formats digital music distribution, CD, and genetically-modified microorganism. This song, produced with the use of biotechnology, was distributed as pop music and also made it onto the Apple Music* start page.

I'm Humanity on the Apple Music top page of September 2016

I'm Humanity
http://yakushimaruetsuko.com/archives/2602 · https://youtu.be/92Dcp9Fbdac

I'm Humanity Live performance at Yamaguchi Center for Arts and Media

Biotechnical procedures

In our DNA, which consists of four kinds of nucleotides (A, C, G and T), each amino acid is encoded into a distinct nucleotide triplet. The rules for translation are summarized in the codon table. A cipher to convert the music chords into genetic codes was created based on this codon table used in living cells. The main chord progression of *I'm Humanity* was converted into the following 276 nucleotides:

I'm Humanity: 276bp; A 22; T 101; G 57; C; 96 (GC content = 55.4%)

GGTCTTCCCCATGGTCTTCCCCATGGTCTTCCCCA
TGGTCTTCCCCATGGTCTTCCCCATGGTCTTCCCC
ATGGTCTTCCCCATGGTCTTCCCCATTCTTCTGGA
GGATCTTCTGGAGGATCTTCTTTGGGTTCTTCTGG
AGGCGGTCTTCCCCATGGTCTTCCCCATCTTCTTC
TTCTTGGTGGTGGTGGTATTCTTCTTCTCGGTGGTC
CCACTGGTCTTCCCCATGGTCTTCCCCATGGTCTT
CCCCATGGTCTTCCCCATGGTCTTCCCCAT

The genetic code was artificially synthesized by a DNA synthesizer and inserted in a vector, designated pSyn_1. The inserted DNA fragment encoded music chords was introduced to a genome of a host cell (a cyanobacterium, Synechococcus elongatus PCC 7942) by homologous recombination. The music chords in the Synechococcus genome can be infinitely reproduced along with cell division.

I'm Humanity produced and directed by Etsuko Yakushimaru

Lyrics: Tica Alpha (a.k.a Etsuko Yakushimaru)
Music: Tica Alpha (a.k.a Etsuko Yakushimaru)
Genetic codes: Etsuko Yakushimaru
Art direction & drawing & design: Etsuko Yakushimaru

Support & thanks: KENPOKU ART 2016, METI Ministry of Economy, Trade and Industry, National Institute of Technology and Evaluation (NITE), Satoshi Hanada, Tokyo Metropolitan University, FabCafe MTRL, Yamaguchi Center for Arts and Media [YCAM]

Etsuko Yakushimaru (JP) is an artist, musician, producer, lyricist, composer, arranger, and vocalist. Broadly active, from pop music to experimental music and art. Consistently independent in her wide-ranging activities, which also include drawing, installation art, media art, poetry and other literature, and recitation. Producing numerous projects and artists, including her band, Soutaiseiriron. While appearing in the music charts with many hit songs, she has also created a project that involved the use of satellite, biological data and biotechnology, a song-generating robot powered by artificial intelligence, and her own voice, an independently-developed VR system, and original electronic musical instruments. Major recent activities include exhibitions at Mari Art Museum, Toyota Municipal Museum of Art, KENPOKU ART 2016, and Yamaguchi Center for Arts and Media [YCAM]. Her *Tensei Jingle* and *Flying Tentacles* albums, both released in 2016, received praise from figures including Ryuichi Sakamoto, Jeff Mills, Fennesz, Penguin Cafe, Kiyoshi Kurosawa, and Toh EnJoe.

I'm Humanity
http://yakushimaruetsuko.com/archives/2602 · https://youtu.be/92Dcp9Fbdac

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Innovative Collaboration

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Rock Print

Gramazio Kohler Research, ETH Zurich, and Self-Assembly Lab, MIT

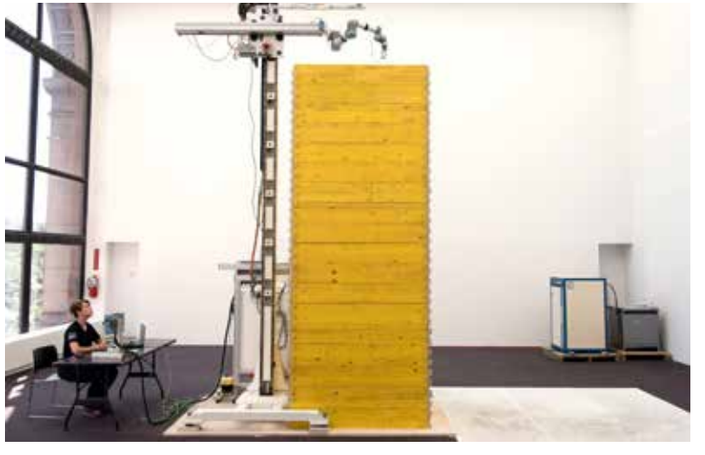
Gramazio Kohler Research

Rock Print
http://gramaziokohler.arch.ethz.ch/web/e/forschung/297.html

Rock Print is an investigation into the constructive principle of the physical phenomena of jamming, in which granular matter can change from liquid to solid and back again. *Rock Print* exploits this characteristic with a congruent construction system that: 1) is informed by a computational design and realised with robotic fabrication machinery, 2) can be constructed into highly differentiated and load-bearing structures at an architectural scale using low-grade bulk material, such as gravel, and 3) is fully reversible. The construction system works as follows. To be able to control where and how gravel jams, the density between the aggregates has to be decreased to a level that forces it to behave like a solid. This can be achieved by introducing tensile reinforcement, such as string, to confine the gravel. A robotic arm enables the precise placement of string according to a digital blueprint and as such informs the shape and performance of a specific architectural artefact. To reverse the construction, the string is pulled, leading to a chain reaction restoring the gravel and the string to their initial state.

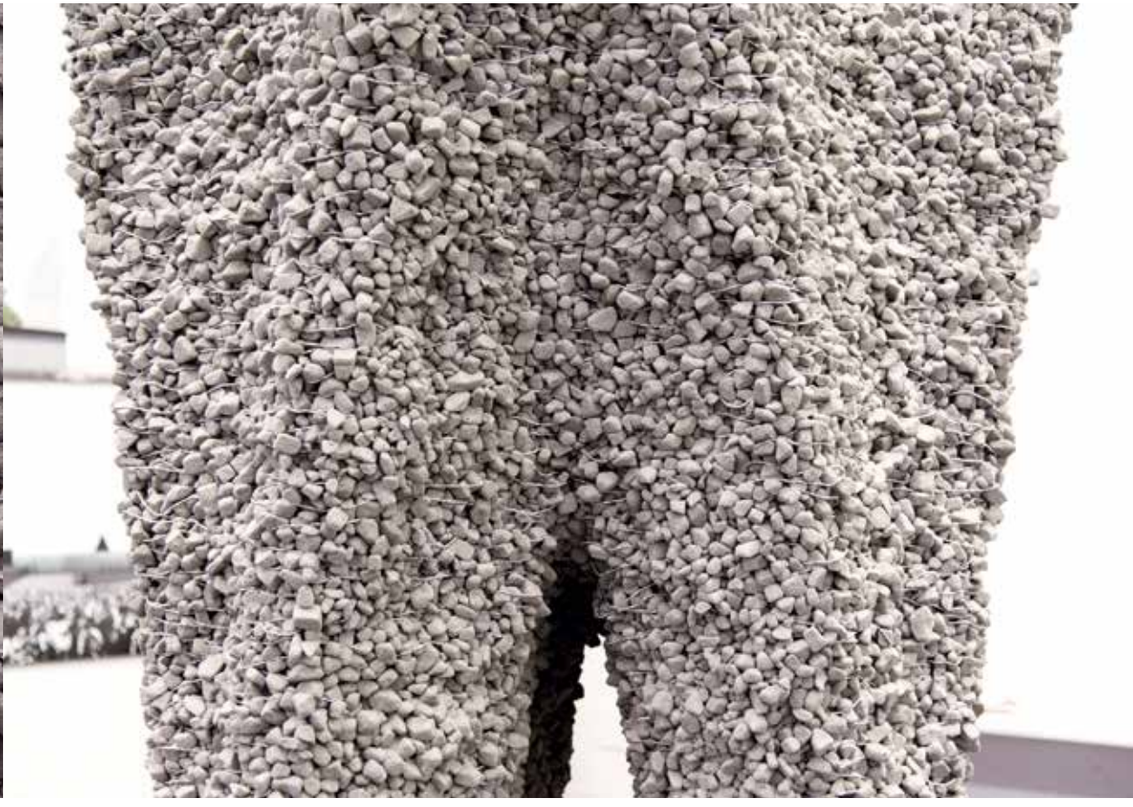
At the inaugural Chicago Architecture Biennial 2015 *Rock Print* was exhibited in an architectural context. It was designed based on the properties of the construction system. The structure stood on four slender legs that held a massive cantilevering body. The upper part accommodates a higher amount of mass than the lower, to increase the compression of the bottom part and thereby assure a stronger surface strength on the parts exposed to visitors. *Rock Print* was fabricated in situ with a lightweight robot arm, equipped with a string laying end-effector, mounted on a gantry system, and an incrementally assembled container. The container measured 1.2 x 1.5 x 4 m, adapted to the work envelop of the robotic setup to allow for full use of it. *Rock Print* was exhibited in an indoor venue and therefore had to be lightweight. Glass foam aggregates (typically used for self-insulating concrete) were therefore used instead of gravel. The string was made out of a combination of polyester fibres and recycled material from the textile industry. In total 8 m^3 of aggregates and 10 km of string were used. The fabrication process was conducted in two stages. The first consisted of fabricating the structure inside the container. The robot placed a layer of string according to the blueprint followed by a manually poured layer of aggregates (20 mm). To ensure correct packing of the aggregates, a concrete compactor was used. The procedure was repeated until the whole structure with its 200 layers was assembled. The second phase consisted of the release of the container to allow the non-reinforced aggregates to fall off. This was followed by brushing off the structure to assure that no leftover material was stuck on the surface. The material leftovers from the fabrication were left on the ground surrounding the base to create a natural barrier between the visitors and exhibition piece. *Rock Print* was designed and fabricated with a continuous string network to allow it to be pulled out at the end of the exhibition. A pulley system and an electrically driven spool were used for unwinding the 10 km string network, and after two hours *Rock Print* was restored to its original raw material: a pile of rock and a spool of string.

Rock Print shows the potential of using granular jamming for architectural purposes. These principles are applicable to a large range of granular materials which allow for use of local materials, and the fact that they can be fully returned to their original state points towards a truly sustainable construction method.



Gramazio Kohler Research

Rock Print
http://gramaziokohler.arch.ethz.ch/web/e/forschung/297.html



Gramazio Kohler Research

Collaborators: Fabio Gramazio, Matthias Kohler, Skylar Tibbits, Andreas Thoma (project lead installation), Petrus Aejmelaeus-Lindström (project lead research), Volker Helm, Sara Falcone, Jared Laucks, Lina Kara'in, Michael Lyrenmann, Carrie McKnelly, George Varnavides, Stephane de Weck, Jan Willmann

Selected experts: Hans J. Herrmann and Falk K. Wittel (Institute for Building Materials, ETH Zurich), Heinrich Jaeger and Kieran Murphy (Chicago University)
Selected consultants: Walt + Galmarini AG

Supported by ETH Zurich, ETH Zurich Foundation Grant, MIT's Department of Architecture, the MIT International Design Center, MIT (MISTI) Grant, Pro Helvetia Swiss Arts Council, swissnex, MISAPOR Beton AG

Gramazio Kohler Research, ETH Zurich (CH), Since its inception in 2005 the research group at ETH Zurich led by Matthias Kohler and Fabio Gramazio has been at the forefront of robotics and digital fabrication in architecture. With their robotic laboratories and work that ranges from prototypes to building elements, they have inspired architects and researchers alike to explore the capacities of the industrial robot as a universal tool of the digital age. **Self-Assembly Lab, MIT** (US), Skylar Tibbits is the founder and co-directs the Self-Assembly Lab with Jared Laucks, housed at MIT's International Design Center. The Self-Assembly Lab focuses on self-assembly and programmable material technologies for novel manufacturing, products and construction processes.

Rock Print
http://gramaziokohler.arch.ethz.ch/web/e/forschung/297.html

STARTS PRIZE´17

HONORARY MENTIONS

3arabizi Keyboard

Hadeer Omar

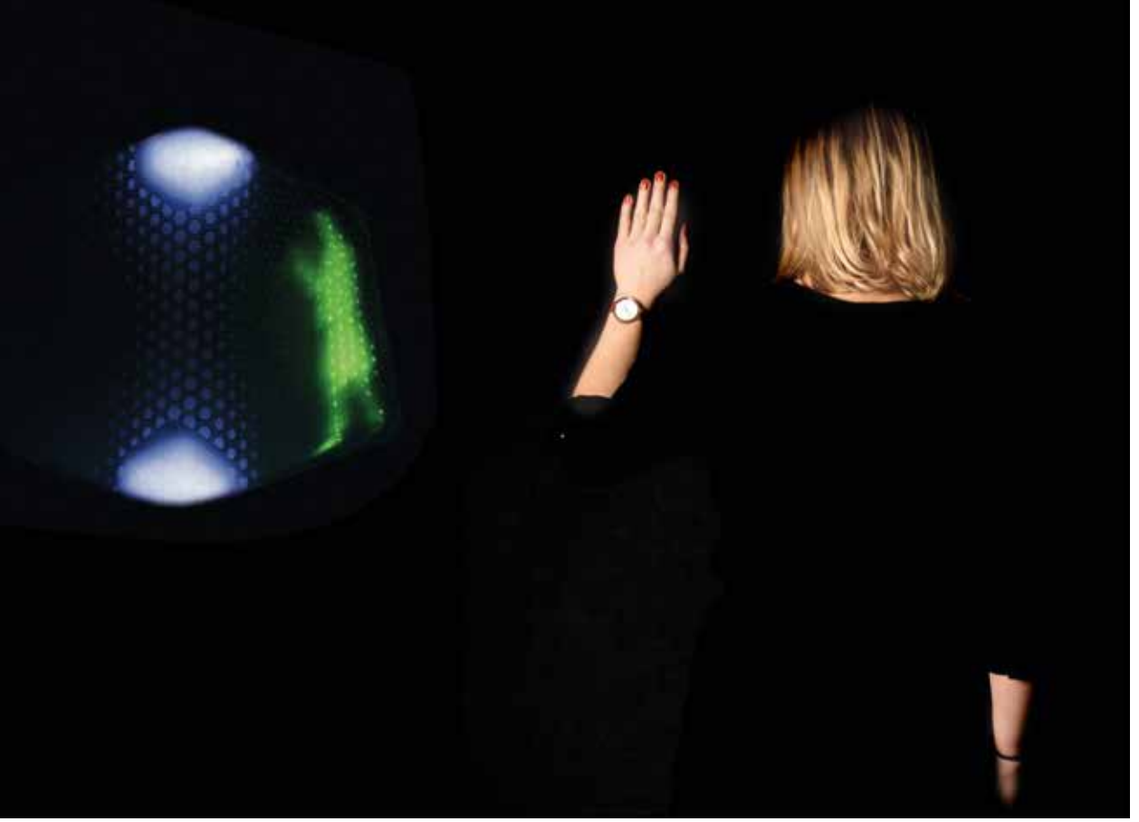
Text messaging technology in the early days was only available in the characters of the Latin alphabet. Arabs struggled to use the English keyboard in their daily texting communication. So they created their own system, which allowed them to write Arabic sentences using Latin letters. They added the numbers to the alphabets to represent phonetics that only existed in the Arabic script. For instance, “3” in *3arabizi* represents the letter “t” (Ain). The system became part of youth pop culture in the MENA region, and it is now embedded in their everyday activities. Some call it “3arabizi” others call it “FrancoArabic.”

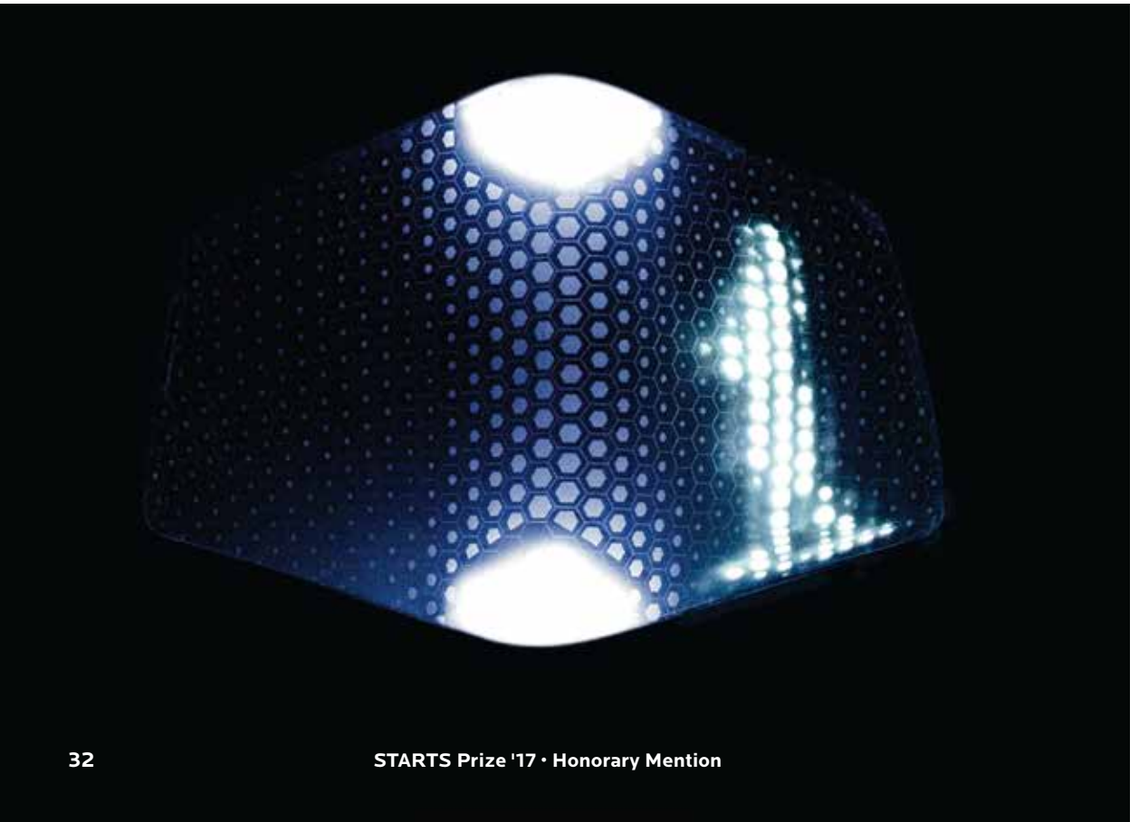
3arabizi is an Arabic chat language used for texting or writing in Arabic. The users don't speak the language, they simply use their hands and fingers to communicate in it on different platforms. In the process the designer found connections between this system and how Muslims use their hands and fingers gestures as a method to keep track of their prayers in the *Zikr* remembrance of God ceremony. They use either the tip of their finger to count the finger joints 99 times or a string of beads *Misbaha / Sibha,* which is a unique counting system. A system was designed to use this counting system, to appropriate the English keyboard to reflect the MENA context, to question globalization, and to show the significance of finding the right methods to adapt globalized systems to a specific culture.

The project is still in its conceptual phase. The concept and the research phase developed in 2014 and I started to speak at different conferences and wrote an academic paper to develop the concept and work on the technical part in 2015. As I am not a developer or an engineer, it’s taking time to go through the whole process of production.

Supported by Masters of Fine Arts Department in Virginia Commonwealth University in Qatar

Hadeer Omar (EG) is a visual communicator, independent filmmaker, and an entrepreneur with a Bachelor of Fine Arts in Graphic Design and a Master of Fine Arts in Design Studies from Virginia Commonwealth University in Qatar. Currently, she is working as a Teacher Assistant at the Art Foundation Department at VCUQatar. In 2012 Omar founded Kroki Design Studio, an online studio. Her training experience gives her the unique ability to apply design thinking–in all its forms–to visual processes. Her graphics process knowledge and experience cover commercials, social design, photography, film, digital art, and mixed media. She expresses her identity through her work and enjoys manipulating mediums to emphasize the story behind each artwork.





Blink: Humanising Autonomy

Adam Bernstein, Raunaq Bose, Leslie Nooteboom, Maya Pindeus

Autonomous vehicles create the opportunity to redefine the relationship between pedestrians and vehicles in the city of the future. While infrastructure exists to balance the power between pedestrians and vehicles, much of the current infrastructure is built around the needs of the vehicle. Besides the potential of autonomous vehicles to cause far less accidents and fatalities in the urban environment, their arrival also provides an opportunity to rebalance the power dynamics and give pedestrians an equal weighting in the conversation between pedestrians and vehicles on the road.

Blink is a two-way communications device that adds a human touch to this interaction with non-human drivers through a new language that communicates vehicle intent and promotes pedestrian influence on its decisions.

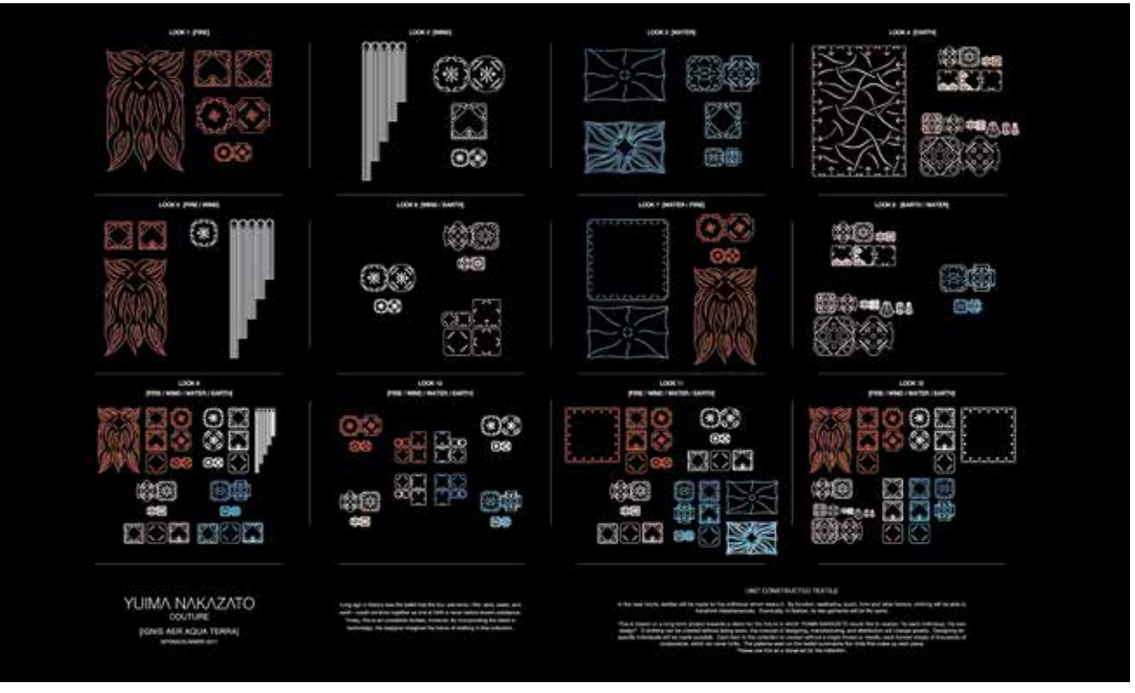
Blink involves material embedded into the four corners of the autonomous vehicle, which display the silhouettes of pedestrians around the vehicle to show that the vehicle has acknowledged their presence. If the intention of the pedestrian is unclear, *Blink* flashes their silhouette and emits a tone to ask the pedestrian what they want to do. The pedestrian can then directly communicate their intent back to the vehicle with a gesture, to which the vehicle responds by changing the color of their silhouette to either red or green (depending on gesture and speed of the vehicle) and emitting another accompanying tone to acknowledge the pedestrian's intent.

Blink currently learns and responds to the human gestures using a form of supervised machine learning, where there is a training dataset that teaches the system the meaning behind human gestures. The system developed allows for the training of hundreds of culture-specific gestures that would reflect the complexity of the road situation across different localities. By developing this new common language and standard of trust between people and autonomous vehicles, where pedestrian presence and intent is communicated and acknowledged, *Blink* can encourage a more empathetic manifestation of autonomous technology to create a safer and more pleasant urban environment for all road users.

The idea behind *Blink* comes from a cross-disciplinary team of four masters students of the Innovation Design Engineering MA/MSc Programme at the Royal College of Art and Imperial College London: **Adam Bernstein** (US) has a background in electrical engineering, with experience in the foundation of electric vehicle infrastructure. **Raunaq Bose** (UK) has a background in mechanical engineering, with experience in bringing products from the conceptual stage to market. **Leslie Nooteboom** (NL) has a background in industrial design engineering, with experience in robotics and the building of a solar-powered racecar. **Maya Pindeus** (AT) has a background in architecture, with experience in human-machine interactions.

[IGNIS AER AQUA TERRA]

Yuima Nakazato



Long ago in history was the belief that the four elements–fire, wind, water, and earth–could combine together as one to birth a never before known substance. Today, this is an unrealistic fantasy, however, by incorporating the latest in technology, the designer imagined the future of clothing in this collection.

In the near future, textiles will be made for the individual who wears it. By function, aesthetics, touch, form, and other factors, clothing will be able to transform instantaneously. Eventually, in fashion, no two garments will be the same.

This is based on a long-term project towards a vision for the future in which Yuima Nakazato would like to realize: "to each individual, his own design." If clothing can be created without being sewn, the concept of designing, manufacturing, and distribution will change greatly. Designing for specific individuals will be made possible. Each item in this collection is created without a single thread or needle, each formed simply of thousands of components, which we name "Units." The patterns depicted show the "Units" that make up each piece.

Yuima Nakazato (JP) was raised in a house that his sculptor father took over 20 years to build. His mother was a jeweler, so he spent his childhood surrounded by an environment of modern art, handmade furniture and clothing, and various forms of expression. After studying fashion design at the Royal Academy of Fine Arts Antwerp's Fashion Department, Nakazato began costume designing for both domestic and international recording artists, films, and theater. It was then that he discovered the appeal of creating custom designs for individuals and felt the desire to spread this experience to a greater audience.

Library of Ourselves

BeAnotherLab

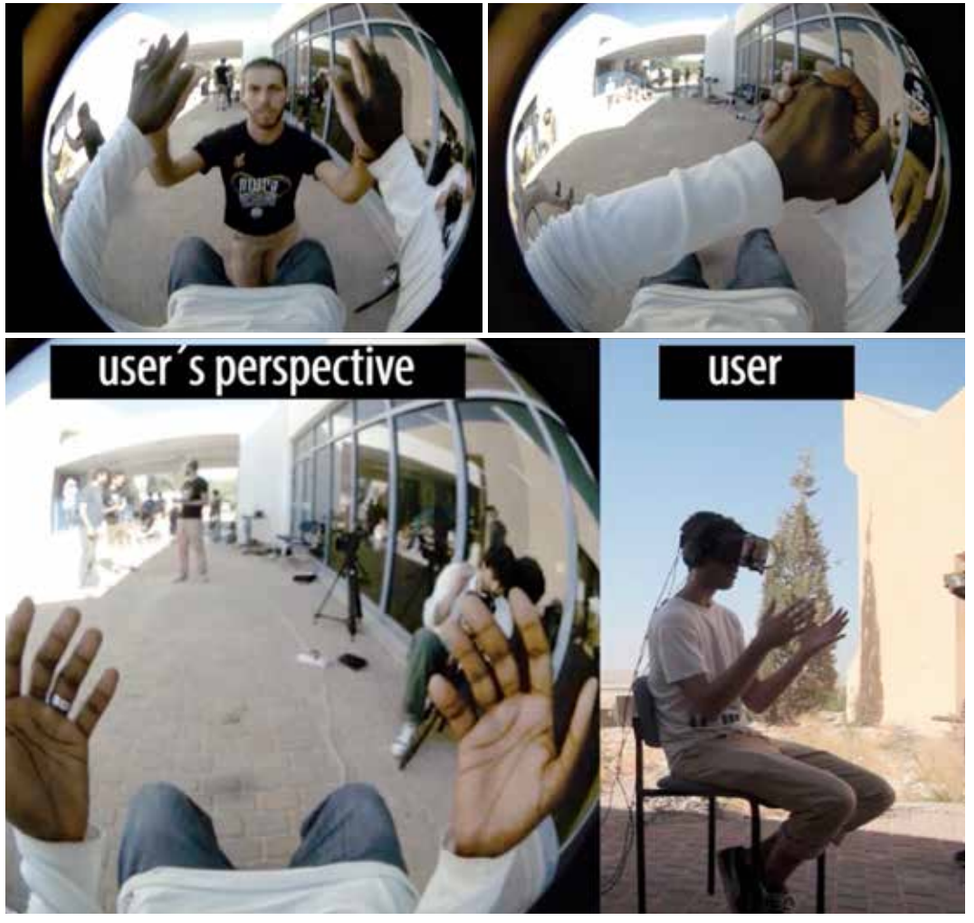
Library of Ourselves is an interdisciplinary and distributed project to create transformative encounters between communities in conflict. It was built using *The Machine To Be Another* (TMBA), a highly adaptable Creative Commons system that bridges cognitive science and virtual reality techniques to create empathic-driven experiences.

Scientific research of "embodiment" systems using VR has shown that inducing a perceptual illusion of inhabiting another person's body has great potential in reducing implicit racial bias and promoting altruism. *Library of Ourselves* combines a novel embodiment system, an immersive archive, and a distributed research toolkit to allow users to exchange perspectives, bodies, and stories. It is designed as a highly scalable and accessible tool to foster and investigate empathy between groups. Implemented in social and cultural institutions, this multipurpose tool of physical and virtual encounters works as a door to the perspective of others, designed to bridge cultures and to promote mutual understanding.

The *Library of Ourselves* functions as more than just the "system," "content," or "event;" it is a replicable structure/methodology for:

- Creating content through collaboration with local communities/grassroots organizations.
- Creating audiences in partnership with local arts/culture institutions.
- Generating new insights on the effects of this content in collaboration with international academic partners.

The overarching goal of creating measurable social change in local communities around issues of migration and marginalization is amplified by creating interconnections to allow joint work between those involved. For example audiences and grassroots organizations and audiences affected by content can engage more deeply with community organizing issues through co-designed opportunities, creating real world change.



BeAnotherLab are: **Philippe Bertrand** (FR/BR), **Christian Cherene** (UK), **Norma Deseke** (DE), **JJ Devereaux** (IE), **Daniel Gonzalez Franco** (CO), **Daanish Masood** (SA), **Marte Roel** (MX), **Arthur Tres** (FR), **Alessandra Vidotti** (IT/BR).
BeAnotherLab is an interdisciplinary multinational group dedicated to understanding, communicating, and expanding subjective experience. Their work focuses on understanding the relationship between identity and empathy from an embodied perspective. Since 2012 the group has used virtual reality and techniques derived from neuroscientific research in developing innovative applications in art, scientific research, social projects, healthcare, and education, putting a strong emphasis on the impact of their work on people's lives. Their work is based on an inclusive distributed model of action research and collaborative design methods.

Luke Hayes

Mimus

Coming face-to-face with our companion species

Madeline Gannon

Mimus is a giant industrial robot that's curious about the world around her. Unlike in traditional industrial robots, *Mimus* has no pre-planned movements–she is programmed with the autonomy to roam about her enclosure. *Mimus* has no eyes, however she uses sensors embedded in the ceiling to see everyone around her simultaneously. If she finds you interesting, *Mimus* may come over for a closer look and follow you around. But her attention span is limited–if you stay still for too long, she will get bored and seek out someone else to investigate.

Our interactive installation responds to a commonly cited social fear–robots taking over work from humans. The World Economic Forum predicts that robots will take five million jobs over the next five years. However, we believe in a more optimistic future, where robots do not replace humanity, but instead enhance and complement it. Ordinarily, robots like *Mimus* are completely segregated from humans as they do highly repetitive tasks on a production line. With *Mimus,* we illustrate how wrapping clever software around industry-standard hardware can completely reconfigure our relationship to these complex, and often dangerous, machines. Rather than viewing robots as human adversaries, we show a future where autonomous machines like *Mimus* might be companions that peacefully co-exist with us on this planet.

Industrial robots are the foundation of our robotic infrastructure, and have remained relatively unchanged over the past 50 years. With *Mimus,* we highlight an untapped potential for this old industrial technology to work with people, not against them. Our software illustrates how small, strategic changes to an automation system can take a one-ton beast-of-a-machine from spot welding car chassis in a factory, to curiously following a child around a museum like an excited puppy. We hope to show, that despite our collective anxieties about robotics, there is potential for empathy and companionship between humans and machines.

Madeline Gannon is the founder and principal researcher of ATONATON.
Development team: Madeline Gannon, Julian Sandoval, Kevyn McPhail, Ben Snell
Supported by: Autodesk, ABB Robotics, and The Studio for Creative Inquiry

Madeline Gannon (US) is a multidisciplinary designer working at the intersection of art and technology. She leads ATONATON, a research studio inventing better ways to communicate with machines. In her research, Gannon designs and implements cutting-edge tools that explore the future of digital making. Her work blends disciplinary knowledge from design, robotics, and human-computer interaction to innovate at the edges of digital creativity. Gannon is currently completing a PhD in Computational Design at Carnegie Mellon University, where she is developing techniques for digitally designing and fabricating wearables on and around the body.

nonvisual-art

Lisa Buttinger

Nonvisual-art is an image made by harnessing the physical phenomenon of light refraction in two ways. Two polarizing foils and cellophane foils arranged in multiple layers and at various angles transform what appears to be nothing into vivid colors. The 3D glasses provided for installation visitors deliver an even more extraordinary visual experience, immersing the viewer into a multi-hued fantasy world whose spectrum of colors can be modified at will. This is meant to enable viewers to experience something akin to what I did when I created this work—to rediscover childlike curiosity and enjoy playful experimentation.

Short introduction

The project is viewed through a polarizing filter. When the installation visitor then dons the 3D glasses and adjusts the filter to face straight ahead, the 3D effect made by the intense colors is strongest. Then, rotating the filter changes the colors of the image.

Project history

Even as a child, I loved to draw and I was interested in the interplay of colors. The design workshops I attended and the art history courses I took at the High School for Artistic Design in Linz were my favorite subjects, and art is now a big part of my life. But, when I was a young girl full of curiosity and the urge to question everything, I found physics tremendously fascinating too. I already had my first encounter with the refraction of light at the age of eight, when I noticed the lovely colors on the reverse side of my CDs, peeled the foil off of one, and tinkered together a pair of glasses that refracted light.

The subject of light refraction came up again in a physics class almost 10 years later, when I also first became acquainted with the phenomenon of a polarizing filter, which I would continue to experiment with on an extracurricular basis too. Then, in my final year of high school when I chose “Illusion” as the topic of my final project and diploma thesis, I continued my research, and that’s how I came up with the idea for *nonvisual-art*.

Essential to the development of my project were the many experiments I ran to familiarize myself with the material and to understand it. First of all, I had to find out which color gradations (shades) were possible, in order to then transfer them by means of photographs to the design I painstakingly prepared in Photoshop. In going about this, I used the computer’s screen both as a source of light and as a second polarizing filter. This gave me the idea to experiment with the color mixture of cellophane and color on the screen, or to design a part of the image on the computer. I also experimented with various adhesives for the cellophane until I was satisfied with the structure, with the bubbles on the surface of the image.

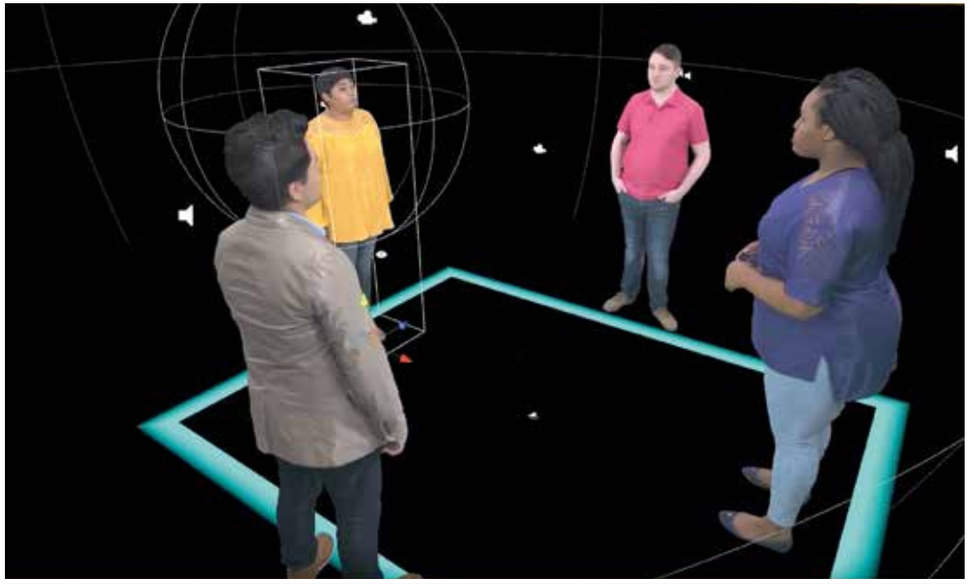
Once I had developed the design of my motif in Photoshop, I printed it out and used it as the basis for all subsequent steps. The most difficult part of the project was to bond the 1-4 layers of cellophane foil at precisely the right angle to each other and to the polarizing filter in order to achieve just the right colors. Then I drew the motif, cut it out, and bonded it to the polarizing filter, which took several attempts before I got the colors right. Finally, I attached the foil to an LED panel to illuminate it as strongly as possible.

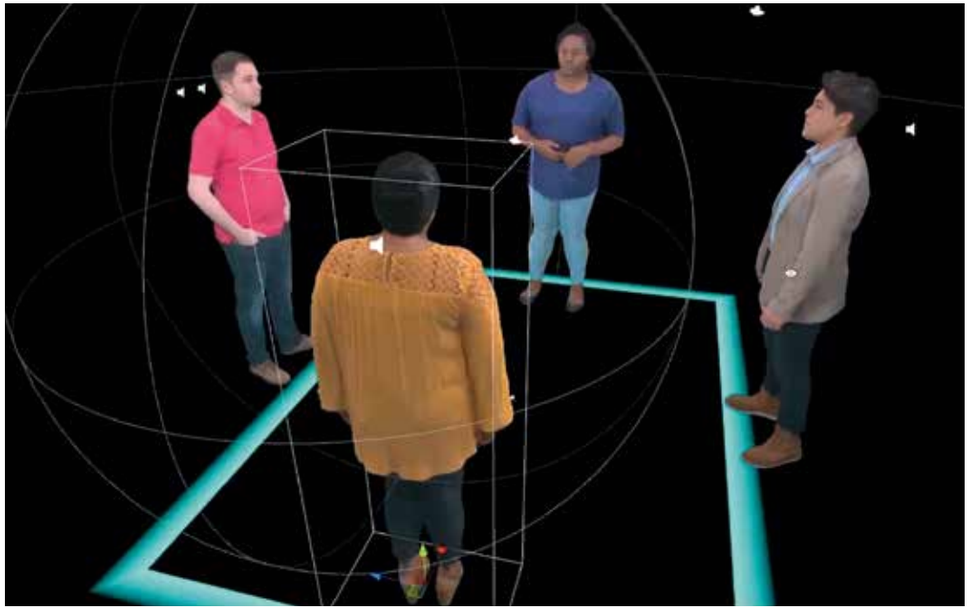
Ultimately, my interest in physics and my extracurricular research on physical phenomena brought to my attention an article about ChromaDepth 3D glasses that also work by means of light refraction and which don’t necessitate processing the image. I immediately got the idea of combining both techniques, and thus not only making it possible for installation visitors to get a glimpse into another world but also enabling them to completely immerse themselves in an otherwise invisible realm.

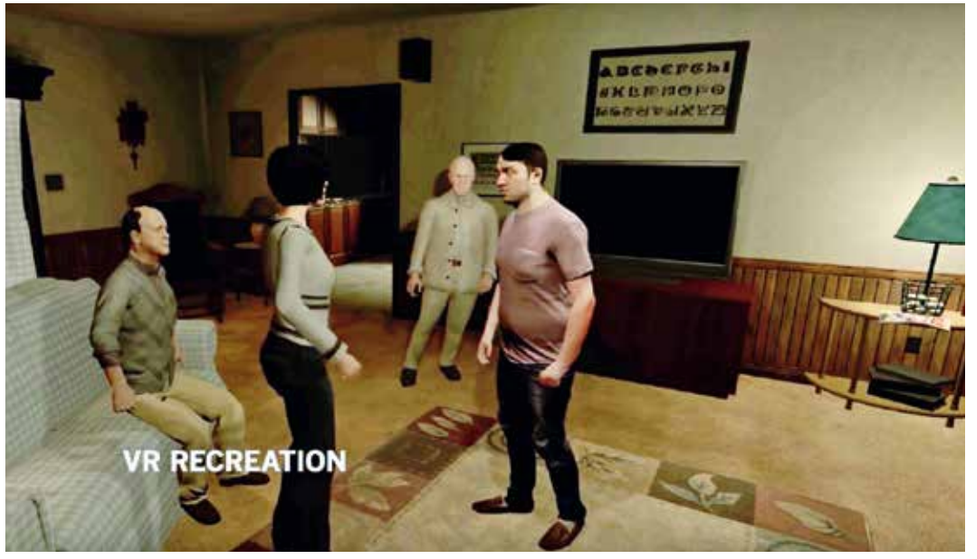
Lisa Maria Buttinger (AT) was born in 1997 in Braunau, Upper Austria. She attended Schalchen Elementary School 2004-08, Braunau Preparatory School 2008-12, and then Linz High School for Artistic Design, from which she graduated in April 2017. While at prep school, an enriched program for gifted youngsters enabled her to also attend Schloss Traunsee Academy. In 2014, in conjunction with a mandatory internship, she got four weeks of experience in the private sector at media.dot.

Out of Exile

Nonny de la Peña, Emblematic Group







When Daniel Ashley Pierce is confronted about his sexual orientation by his family in a "religious intervention", the scene becomes startlingly dramatic and violent. Using real audio combined with virtual reality to put the audience inside the story, *Out of Exile* is a powerful parable of the kind of hostility faced by so many in the LGBTQ community. With 40% of homeless youth in America identifying LGBTQ, the piece shines light on this terrible statistic and further reveals that the majority of those facing homelessness come from communities of color. In equal parts tragic and hopeful, the piece ends with resilience and courage as Daniel and three other LGBTQ youth share their triumph over despair and remind us that all young people need to be true to themselves.

Lead artist: Nonny de la Peña, Emblematic Group
Producer: Julie Young
Executive producers: Sara Ramirez, Michael Licht
VR technical director: Jonathan Yomayuza
Developer: Alex Batty
Composer: Gingger Shankar
Narrator: Sara Ramirez
Associate producers: Ivana Coleman, Eren Aksu, Cedric Gamelin
Actors: Kyle Wills, Julene Renee, Deborah Cartwright, Ed Mehler, Rudy Whitcomb, Donna Callaway

Nonny de la Peña (US), founder of **Emblematic Group** (US), uses digital reality technologies to tell important stories both fictional and news-based that create intense, empathic engagement on the part of viewers. Called "The Godmother of Virtual Reality" by *Engadget* and *The Guardian*, she was also named "One of the People Who Made the World More Creative" by *Fast Company.*

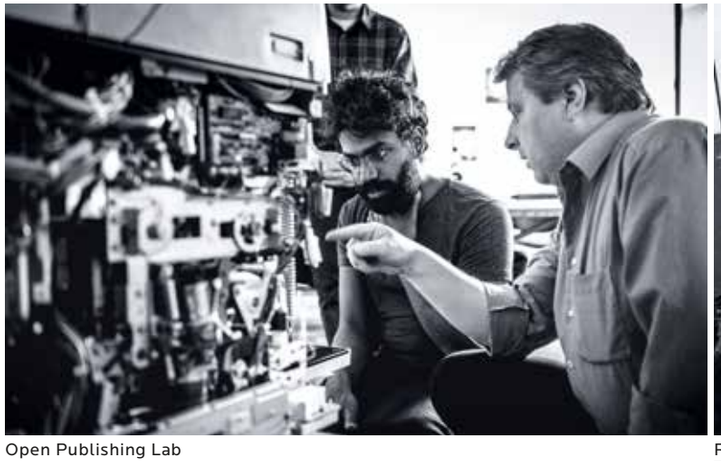
Research Institute for Arts and Technology

Research Institute for Arts and Technology

Arnaud Rivière performing at Coded Cultures

Research Institute for Arts and Technology

Artistic Bokeh, Société Réaliste & Georgios Papadopoulos, “Too much money....”



Open Publishing Lab

Research Institute for Arts and Technology

Apertus AXIOM Beta open hardware cinema camera

Production in the 21st century works with distributed authorship and identities—artists present their processes “coded” in the fragmentations of global networks. Contemporary artistic output is developed out of collective inquiries, research processes are results of distributed agency between humans, machines, and programs. There is nothing more than to leave ‘traces’, not to produce “final” products but “process artefacts.” RIAT—The Research Institute for Arts and Technology—welcomes and embraces the ephemeral nature of meatspace, as it only consists of collectively held and performed visions of desirable futures.

The blockchain (through Bitcoin) is unarguably the key invention of the 21st century. The accelerating forces of decentralization do not only change how we think about electronic cash, but also changed our perception of organizations, trust and non-human agency through the introduction of immutable and unstoppable code on the blockchain. RIAT examines the global crypto-economic condition and its effects on culture and society.

RIAT is an independent research cluster based in Vienna, Austria. RIAT investigates how technology and art relate and inform each other—the key fields being blockchain technologies, open (source) hardware, experimental publishing, and epistemic cultures. RIAT explores and actively stress-tests the role of art in the age of the network society through formats such as the Coded Cultures festival for fringe research and experimental arts, and Making Artistic Technology—a conceptual framework extending creative technology.

RIAT—the Research Institute for Arts and Technology (AT) emerged in 2015, collecting clans of experimental artists and researchers who were working critically with technology, especially those immersed in the blockchain and/or open hardware. The institute was formed from the crypto-art collective Artistic Bokeh, the artist group 5uper.net and the experimental Artistic Technology Lab that was previously situated at the University of Applied Arts in Vienna.

Research Institute for Arts and Technology
http://riat.ac.at

Sentient Veil

Philip Beesley

Sentient Veil is a jewel-like canopy containing multiple miniature sound processors interwoven with hundreds of digitally controlled lights installed within the historic galleries of the Isabella Stewart Gardner Museum. The work pursues intimacy and sensitivity through intricate miniature components and layers of diffusive, hovering material close to the scale of a human body. *Sentient Veil* is composed of digitally fabricated cellular textile lining floating over the ceiling surface of the gallery. The work is composed of finely detailed interlinking skeletal components containing distributed computational controls with soft LED lighting and whispering interactive sound functions. Movement of visitors within the space triggers choruses of whispering responses emanating from miniature custom acoustic resonators integrated within the fabric of the sculpture. Glass vessels containing chemical protocells and carrying interactive LED lighting are also integrated within the sculpture.

The work contains textile-like details that respond to iconography within a religious painting by the 15th-century Italian master Fra Angelico, located within an adjacent gallery. A direct dialogue with adjacent paintings, where the hybrid new fabric of the sculpture, carrying ambivalent, alien synthetic qualities, resonates and enriches the subtle meanings of traditional fabrics seen within the painting of nearby masters.

Hardware

Sentient Veil's structure is composed of thermally expanded and laser cut acrylic diagrid spars that provide substantial strength while at the same time retaining flexibility, suggesting that the structures are capable of handling architectural-scale forces. Tensegrity coupling is featured, employing metal rod cores that stabilize the system. This structure offers minimal material consumption. Borosilicate glass and Mylar populate the acrylic canopy, adding density.

PBAI

Embedded within this structure are distributed infrared sensors that sense external movement generated by the audience as well as its own internal actions. These sensor networks provide feedback between controls and kinetic mechanisms while generating kinetic movement in actuators. Modulation systems in the environment are controlled by Teensy boards running off of the popular open source Arduino platform. Fed by data received from sensors, these custom-designed boards in turn communicate over custom-designed cabling, while running the software that generates complex behavior in actuators. The combination of computational and physical systems creates substantial complexity and unpredictability. For example, interactions with sensors at one location influence the behaviors of actuators both locally and globally.

Software

Sentient Veil's software is structured as a modular hierarchy, consisting of a low-level layer and a high-level layer. The two layers are connected physically through USB. A low-level layer of firmware written in C++ runs on Teensy 3.2 USB-based development boards, which interface with peripheral boards connected to actuators and sensors. High-level software written in Python runs on a Raspberry Pi that provides flexibility for development, free from the limited processing power inherent to the Teensy microcontrollers. Software controls the interactive components of the installation including interactive LEDs and soundscapes.

Sentient Veil by Philip Beesley
Philip Beesley Studio: Gabriella Bevilacqua, Adam Francey, Joey Jacobson, Nicole Jazwiec, Salvador Miranda, Reza Nik, Jordan Prosser, Filip Vranes
Collaborators:
Augmented reality: Katy Borner, Andreas Bueckle
Engineering: Rob Gorbet, David Kadish, Dana Kulic,
Sound design: Alex Young
Sponsors: Social Sciences and Humanities Research Council University of Waterloo

Philip Beesley (CA) is a practising visual artist, architect, and Professor in Architecture at the University of Waterloo, Canada. Beesley's work is widely cited in contemporary art and architecture, focused in the rapidly expanding technology and culture of responsive and interactive systems. His Toronto-based practice, Philip Beesley Architect Inc., combines the disciplines of professional architecture, science, engineering, and visual art. The studio's methods incorporate industrial design, digital prototyping, instrument making, and mechatronics engineering.

Treelab

Marcus Maeder, Roman Zweifel

The goal of our artistic-scientific research project *trees: Rendering Ecophysiological Processes Audible*, was to connect sounds that occur in trees with ecophysiological processes and thus investigate and render perceptible processes in plants that are not noticeable to humans. The acoustic emissions of a tree in the Swiss Alps were recorded with special acoustic sensors, and all other non-auditory ecophysiological measurement data were sonified–that is, translated into sounds and music. The recordings and sonified measurements were implemented in a number of different media art installations under the preamble "treelab," which at the same time served as a research environment, in order to display and examine the temporal and spatial connections between plant sounds, physiological processes, and environmental conditions in an artistic-scientific observation system. Most of the sounds that occur in a plant arise due to drought stress. Thirsty plants make an inaudible noise; acoustic emissions from plants lead to conclusions on their state and on the environmental conditions. During our research project it became clear that our observation system could make another fundamental phenomenon tangible: namely, how plants in Central Europe react to ever-longer periods of heat and drought in the course of climate change. The reconstruction and staging of the life processes and environmental conditions of a tree in an artistic-technical environment has led to new forms of observation and artistic design with an innovative instrument: correlations of measured values and patterns in natural processes become aesthetic effects–abstract measurement data are reflected in images and sounds. The intention of our observation system is to create an all-encompassing experience from complex data sets, and thus to draw a holistic picture of the life processes and environmental conditions of a tree that is under pressure from changing climatic conditions.

Sonification and artistic realization: Marcus Maeder, Institute for Computer Music and Sound Technology, Zurich University of the Arts (ZHdK).
Scientific data and analysis: Roman Zweifel, Swiss Federal Institute for Forest, Snow and Landscape Research (WSL)
ICST members of staff involved: Philippe Kocher, Jonas Meyer, Thomas Peter.
Conception Immersive Lab: Jan Schacher, Daniel Bisig, Martin Neukom, Philippe Kocher (ICST).
Supported by Swiss National Science Foundation SNF, Zurich University of the Arts (ZHdK), Swiss Federal Institute for Forest, Snow and Landscape Research WSL.

Marcus Maeder (CH) is a sound artist, researcher, and composer of electronic music. Maeder studied Fine Arts in Lucerne, Switzerland, and Philosophy in Hagen, Germany, and is currently pursuing his PhD in Environmental Systems Sciences at ETH Zurich. As a researcher at the Institute for Computer Music and Sound Technology (ICST) of the Zurich University of the Arts, Maeder is working on Data Sonification, Acoustic Ecology and Bioacoustics and artistic investigations of ecological processes and phenomena that are related to climate change and environmental issues. **Roman Zweifel** (CH) studied Biology at the University of Zurich and the ETH Zurich, where he gained a doctor's degree for his ecophysiological work *The Rhythm of Trees*. He works as a senior researcher at the Swiss Federal Institute for Forest, Snow and Landscape Research WSL and runs the private company natkon.ch, selling measurement equipment and expertise for ecological research. Roman Zweifel has strong expertise in tree physiology and electronics and his career is characterised by interdisciplinary and free-spirited projects.

STARTS PRIZE´17

NOMINATIONS

Studio Tomás Saraceno

Aerocene Foundation

Tomás Saraceno

Aerocene is a multi-disciplinary project that proposes a new epoch. In the wake of the debates on the Anthropocene, the project foregrounds the artistic and scientific exploration of environmental issues, and promotes common links between social, mental, and physical ecologies. A synthesis of art, technology, and environmental awareness, *Aerocene* embodies a vision for fuel- and emissions-free traveling and living in the atmosphere.

Developed by the Aerocene Foundation, *Aerocene* manifests in the testing and development of solar sculptures that float without any need of fuel or gas, just capturing the heat of the sun and the infrared radiation of the earth's surface.

The Aerocene Foundation–initiated by artist Tomás Saraceno–is a non-profit organisation devoted to community building, scientific research, artistic experience, and education. The Foundation works with artists, thinkers, scientists, researchers, balloonists, technologists, humanitarian workers, influencers, and visionaries to increase public awareness of global resource circulation, and reactivate a common imaginary towards new symbiotic relationships with the earth.

Aerocene is an open-source, multi-disciplinary project developing new technologies and solutions for aerosolar travel and living, with support from multiple partners and collaborators around the world. The *Aerocene* project's primary partners are the Center for Art, Science & Technology (CAST) at the Massachusetts Institute of Technology (MIT), CNES (French National Space Agency), CCK Argentina, Public Lab, Imperial College London, The Natural History Museum (London), The Royal College of Art, The Goethe Institute, Radioamateur, Freifunk, and IAK architecture-related Art Institute at Technische Universität Braunschweig.

Alfred Weidinger

Tomás Saraceno's (AR) oeuvre can be seen as ongoing research, informed by the worlds of art, architecture, natural sciences, astrophysics, and engineering. His floating sculptures, community projects, and interactive installations propose and explore new, sustainable ways of inhabiting and sensing the environment. In 2015, Saraceno achieved the world record for the first certified solar manned flight. He was the first person to scan and reconstruct spiders' complex weaved habitats, and holds the only three-dimensional spider web collection in existence. Saraceno lectures in institutions worldwide. He lives and works in and beyond the planet Earth.

Algaerium Bioprinter and Algae Printing

Marin Sawa

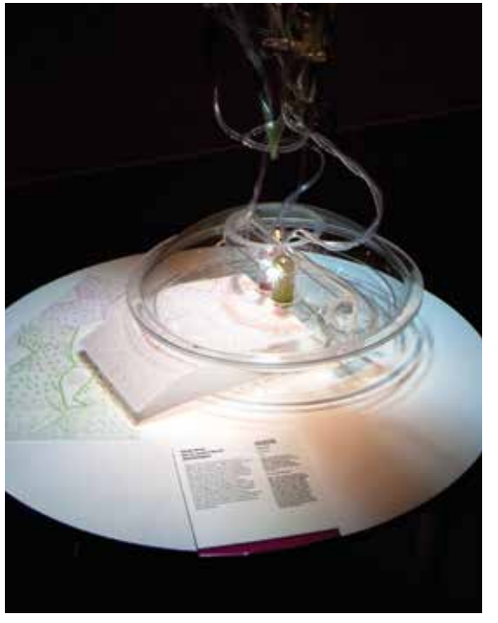
Modern algal biotechnology is largely motivated by technocracy in response to food and energy crises. This biotechnological work seeks the utilization of microalgae not for technocratic ends but for a reconstruction of social practice at an "ecosophical" intersection, as advocated by Félix Guattari (1989/2000) by weaving the three domains of the natural environment (photosynthesis of microalgae), social relations (digital printing), and mind (creative process of making).

My laboratory-based collaboration with biochemists developed *Algae Printing,* which applies inkjet printing technology to seed algae on paper to grow and harness their air purification, health food, and bioelectricity applications in one compact creative system—a new concept of designing with living microbes.

Algaerium Bioprinter is an installation contextualizing the *Algae Printing* technology and points towards bioindustry—an emerging development within the field of biodesign from "intellectual consumption" to "utilitarian consumption."

Marin Sawa in collaboration with Imperial College London

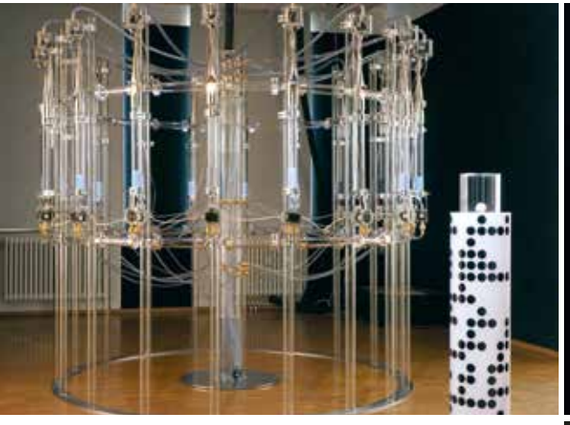
Jet&James

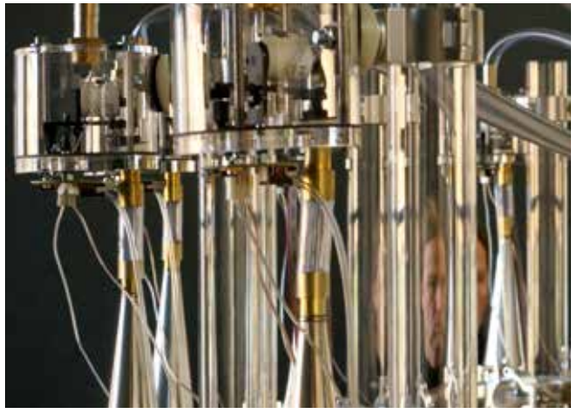


Marin Sawa (JP/UK) is a London-based Japanese designer/researcher practicing experimental design at the intersection with biotechnology. She has recently successfully completed her PhD research at CSM-UAL, which was done in collaboration with Imperial College London where she is a Visiting Researcher. She has the AA Intermediate Examination from the AA School of Architecture, an MA in design from CSM, and has work experience with various architects and designers studios, including Kengo Kuma and Associates, Tokyo and the London-based Loop.pH. Her research works have been internationally exhibited and she has published particularly in the area of biodesign.

aura calculata

Tim Otto Roth





The kinetic sculpture *aura calculata* weaves a continuously changing microtonal sound carpet by the variation of the water levels in 18 transparent acrylic glass pipes. The triangular growth pattern of a Pacific sea mussel exhibited on a separate column refers to the driving principle behind the sculpture: The tones are created without any directing control instance, but simply by the musical adaption of the self-organization principle of cellular automata. Each pipe has its own electronics that detect whether its neighbors are playing or not. Similar to a football stadium wave, the circularly arranged pipes decide by a simple local rule, how they react to their own and their neighbors' activity.

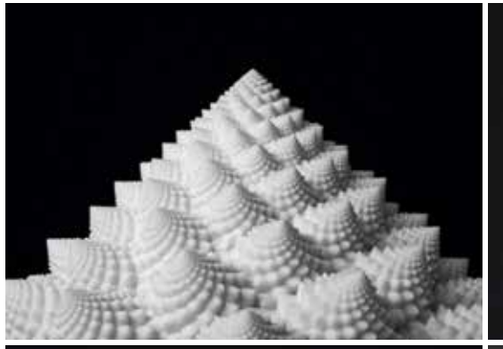
When a pipe turns active it opens the air valve. The played pitch depends on the regulation of the water flow and the water column rises or falls depending on how active a pipe was during the last steps. This changes the pitch of the played tone over the range of more than an octave, but it also radically changes its timbre.

Tim Otto Roth (DE), born 1974 in Oppenau/Black Forest, is a conceptual artist and composer known for his large installations in public space–often realized in collaboration with leading scientific institutions around the world. The question about space is the golden thread running through his oeuvre, which is expressed by the projective translation of objects into shadows by the medium of light, his fascination with the nocturnal firmament, or the creation of sound environments using space as a synthesizer. Most of Roth's works can be considered as a plea for a "physics of art," as they demonstrate the physical dimension of phenomena that also affects the body.

STARTS Prize '17 • Nomination • aura calculata
http://www.pixelsex.org/aura/

BLOOMS 2: Strobe Animated Sculptures

John Edmark



Blooms are 3D printed sculptures designed to animate when spun under a strobe light. Unlike a 3D zoetrope, which animates a sequence of small changes to objects, a bloom animates as a single self-contained sculpture. The bloom's animation effect is achieved by progressive rotations of the golden ratio, phi Φ, the same ratio that nature employs to generate the spiral patterns we see in pinecones and sunflowers. The rotational speed and strobe rate of the bloom are synchronized so that one flash occurs every time the bloom turns 137.5° (the angular version of phi). Each bloom's particular form and behavior is determined by a unique parametric seed I call a phi-nome (/fi nöm/). If you count the number of spirals on any of these blooms you will find that they are always Fibonacci numbers. For this video, rather than using a strobe, the camera was set to a very short shutter speed in order to freeze individual frames of the spinning sculpture.

Video: John Edmark
Creative consultant: Terrence Tessaro McArdle
Filming: Charlie Nordstrom
Music: Bryan Barcinas
Supported by AutoDesk Artists-in-Residence Program

John Edmark (US) is a lecturer in the Design Program at Stanford University. He is the inventor of the *Helicone*, an interactive kinetic toy, and *Blooms*, a new type of sculpture that animates when spun under a strobe light. He has designed interactive exhibits for museums including the Exploratorium, the San Jose Museum of Art, the Phaeno Science Center, and the Swiss Science Center Technorama. His other interests include hyper-stereo photography, stop-motion animation, natural pattern formation, and Tuvan throat singing.

STARTS Prize '17 • Nomination • BLOOMS 2: Strobe Animated Sculptures
http://www.johnedmark.com/

Brian Eno's The Ship—A Generative Film

Dentsu Lab Tokyo

This is a music video project for *The Ship,* a 21 min 20 sec long musical score composed and performed by Brian Eno. Considering how Eno constantly questions the approach and process of creating music, instead of developing a conventional music video, the project utilized artificial intelligence to create a generative music film that questions whether AI can achieve human-like creativity. Taking Eno's long time interest in generative art as a starting point, the project collected a colossal number of photographs that represent memorable moments from human history and created an AI program that "memorized" these images of the 20th century and then juxtaposed them with feeds that it receives from current news. By "recollecting" these images, the output movie differentiates itself constantly based on the continuous input of our day-to-day world. The film therefore represents a structured and systematic vision of associations that a human would otherwise never be able to see.

Creative director / creative technologist: Kaoru Sugano (Dentsu Lab Tokyo)
Creative technologist: Togo Kida (Dentsu Lab Tokyo)
Art Director: Yuri Ueishi (Dentsu)
Machine learning / technical direction: Nao Tokui (Qosmo, inc.)
Programming / technical direction: Satoru Higa (backspacetokyo)
Producer: Hikaru Ikeuchi, Kohei Ai, Akiyo Ogawa, Jun Kato (Dentsu Lab Tokyo)
Server side: Hajime Sasaki, Koji Otsuka, Shunsuke Shiino (Mount Position inc.)
Motion designer: Baku Hashimoto
Front engineer: Junya Kojima (Superstition, inc.)

Dentsu Lab Tokyo (JP) is a creative team, unlike the conventional advertising agencies, specializing in combining research, ideation, and development to deliver creative outputs that utilize technology. Since its launch in 2015, Dentsu Lab Tokyo has engaged in various R&D activities. Not limited to that, they have also collaborated with world-class corporate clients, and with affiliated artists and technologists, such as Björk, and Brian Eno. The strenuous approach has enabled the Dentsu Lab Tokyo to go far beyond the orthodox regarded by the industry, and even further broadening the horizon.

Bug's Beat

Yumi Sasaki, Dorita Takido

Humans cannot normally hear the sound of a bug's footsteps. But *Bug's Beat* transmits the amplified sound of a bug's footsteps directly to the human auditory system through directional speakers. And by vibrating the listening chair via vibration speakers every time the bug takes a step, this device allows the observer to perceive sound as a bodily sensation.
Humans visually perceive a small bug, but hear the loud sound of its footsteps and feel this sound as a vibration. There is a discrepancy between the visual information about the size of the bug and the auditory and physical perception of the noise it makes. This disorientates the observers, who may feel as if they have shrunk or as if the little bug has become gigantic.

Translation: Miki Hayashi

Thanks to:
Shiro Yamamoto and Takeshi Inarimori
Yoshio Yamasaki, Professor Emeritus, Acoustic Laboratory Waseda University
Tarô Adati, Professor, Department of International Agricultural Development, Tokyo University of Agriculture
Kenji Suda, The Musashino Natural History Society
Support received from the Project to Support the Nurturing of Media Arts Creators, 2015

Takehiro Goto

Dorita Takido (JP) is an artist, designer, director, and musician based in Tokyo. Her basic creation policy is to create new experiences by combining different senses, such as the visual and taste perception and auditory and visual perception, on an acoustical base. She produces works by paralleling technology and design. **Yumi Sasaki** (JP), born in Tokyo, works as a staff member of The Science Museum in Tokyo. She is constantly thinking about how to enjoy playing and learning with kids.

Corpus Nil

Marco Donnarumma

Marco Donnarumma performing *Corpus Nil*. Still from live performance. Courtesy of Onuk and ZKM Center for Art and Media, Karlsruhe, 2016.

Corpus Nil is a performance exploring hybrid forms of identity and musicianship through an intense and ritualistic interaction between an artificially intelligent musical instrument, a human body, and sound.

A naked player performs a tense choreography which gradually morphs his body. Two types of wearable biosensors transmit data from his body to a software. Chip microphones capture sounds from muscles and internal organs (mechanomyogram or MMG) and electrodes capture muscle voltages (electromyogram or EMG).

The instrument re-synthesizes sounds produced within the performer's body (between 1-40 Hz) by orchestrating a feedback network of twenty digital oscillators. Concurrently, the instrument learns the nuances of the performer's movement (muscular tension, gesture abruptness, rate of relaxation) and chooses how to vary the musical output.

The player cannot control the instrument, but only learn how to affect it and be affected by it. The piece discards conventional performer-instrument relationships–founded on the performer's full control of the instrument–in favor of an unstable corporeal engagement between the two.

Author, research, concept, music, choreography, light design, performance, programming: Marco Donnarumma
Additional programming and research: Baptiste Caramiaux
Stage production: Margherita Pevere
Camera for video documentation: Alessandro Altavilla
Photography: Onuk and ZKM
Audio recording mastering: Dadub Studio
Supported by: EAVI, Goldsmiths, University of London
European Research Council – Research funding

Marco Donnarumma (IT/DE) is an artist and scholar who lives and works in Berlin. A unique presence across contemporary performance and media art, Marco Donnarumma distinguishes himself by his use of emerging technology to deliver artworks that are at once intimate and powerful, oneiric and uncompromising, sensual and confrontational. Working with biotechnology, biophysical sensing, as well as artificial intelligence and neurorobotics, Donnarumma expresses the chimerical nature of the body with a new and unsettling intensity. He is renowned for his focus on sound, whose physicality and depth he exploits to create experiences of instability, awe, shock, and entrainment.

STARTS Prize '17 • Nomination • Corpus Nil
http://marcodonnarumma.com/works/corpus-nil/

DuoSkin

MIT Media Lab–Living Mobile Group, Microsoft Research–Natural Interaction Group

DuoSkin is a fabrication process that enables anyone to create customized functional devices that can be attached directly on their skin. Using gold metal leaf, a material that is cheap, skin-friendly, and robust for everyday wear, we demonstrate three types of on-skin interfaces: sensing touch input, displaying output, and wireless communication. *DuoSkin* draws from the aesthetics found in metallic jewelry-like temporary tattoos to create on-skin devices which resemble jewelry. *DuoSkin* devices enable users to control their mobile devices, display information, and store information on their skin while serving as a statement of personal style. We believe that in the future, on-skin electronics will no longer be black-boxed and mystified; instead, they will converge towards the user friendliness, extensibility, and aesthetics of body decorations, forming a *DuoSkin* integrated to the extent that it has seemingly disappeared.

MIT Media Lab in collaboration with Microsoft Research
MIT Media Lab: Cindy Hsin-Liu Kao, Andres Calvo, Chris Schmandt
Microsoft Research: Asta Roseway, Christian Holz, Paul Johns

Jimmy Day

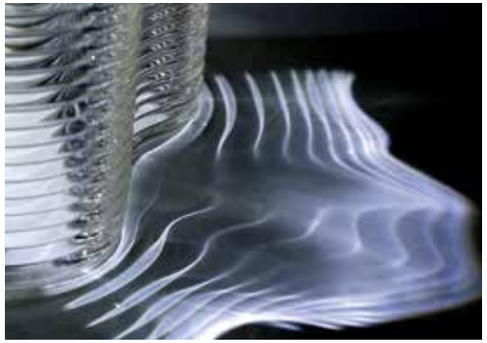
The **MIT Media Lab** is an interdisciplinary research laboratory at MIT devoted to projects at the convergence of technology, multimedia, sciences, art and design. **Microsoft Research** is the research division of Microsoft. It focuses on advancing state-of-the-art computing and solves difficult world problems through technological innovation in collaboration with academic, government, and industry researchers. *DuoSkin* is a collaboration between MIT Media Lab and Microsoft Reseach. The lead researchers, respectively from MIT and Microsoft, are Cindy Hsin-Liu Kao (TW) and Asta Roseway (US).

STARTS Prize '17 • Nomination • DuoSkin
http://duoskin.media.mit.edu

G3DP V2

High Fidelity Additive Manufacturing of Transparent Glass Structures across Scales

The Mediated Matter Group, MIT Media Lab

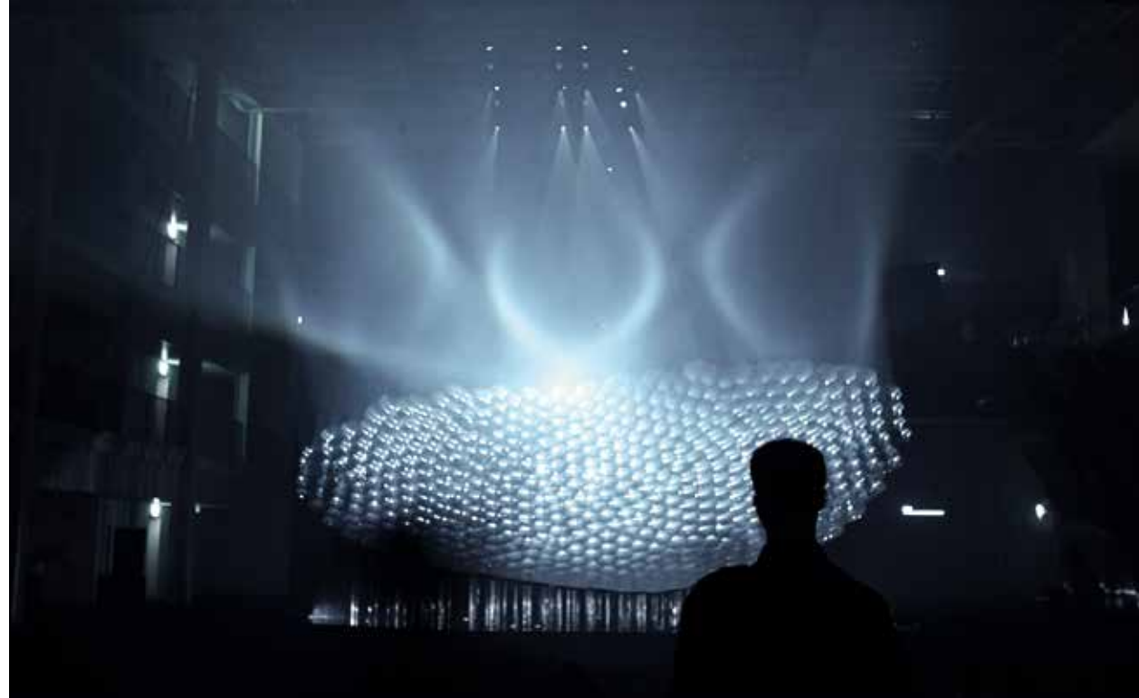


This research presents a high fidelity, large-scale, additive manufacturing technology for optically transparent glass combined with demonstrations of novelty—fully transparent glass structures at architectural scale. The Mediated Matter Group began developing a series of novel additive manufacturing technologies for molten glass in 2014. The latest enabling technology introduces a fundamental restructuring of the platform's architecture and process control informed by the material properties and behaviors of silicate glass. The platform provides a digitally integrated thermal control system across the entire glass forming processes, combined with a novel 4-axis motion control system enabling a high fidelity manufacturing process capable of producing glass structures with tunable, yet predictable, mechanical and optical properties. The material fundamentally drives how the machine is used, and the machine can change how the glass is formed and used.

To evaluate the full capability of this technology, a series of three-meter tall glass structures were designed, engineered, and constructed. Harnessing its optical transparency in conjunction with the variable cross sections along the full length of each structure, an interactive lighting system was designed and integrated, producing large scale "interactive paintings" of kaleidoscopic caustics. These large-scale novel glass structures were exhibited at the Milan Design Week in April 2017.

The Mediated Matter Group, MIT Media Lab
Director: Neri Oxman
Project lead: Chikara Inamura
Project team: Michael Stern, Daniel Lizardo, Tal Achituv, Tomer Weller, Owen Trueblood, Nassia Inglessis, Girogia Franchin, James Weaver, and Peter Houk
Previous team: John Klein, Markus Kayser, and Shreya Dave
Project associates: Andrew Magdanz, Susan Shapiro, David J. Benyosef, Mary Ann Babula, Forrest Whitcher, Robert Phillips, and Neils LaWhite
Project collaborators: Pentagram, Simpson Gumpertz & Heger, and Almost Perfect Glass

The Mediated Matter Group (US) focuses on Nature-inspired Design and Design-inspired Nature. We conduct research at the intersection of computational design, digital fabrication, materials science, and synthetic biology and apply that knowledge to design across scales from the micro scale to the building scale. We create biologically inspired, informed, and engineered design fabrication tools and technologies and structures, aiming to enhance the relation between natural and man-made environments. Our research field, entitled Material Ecology, integrates computational form-finding strategies with biologically inspired fabrication. Neri Oxman, architect, designer, and associate professor at the MIT Media Lab, heads the Mediated Matter Group.



Light Barrier 3rd Edition

Mimi Son, Elliot Woods / Kimchi and Chips

The Light Barrier series of artworks create a semi-material mode of existence, materializing objects from light. The name refers to the light barrier in relativistic physics, which delineates between that which is material and that which is light. *Light Barrier 3rd Edition* is a new installment in this series of works, expressing the confusion and nonconformities at the boundaries between materials and non-materials, reality and illusion, and existence and absence, whilst crafting a surreal vision which twists the human instinct of time and space. It is a direct approach to the artists' theme of "drawing in the air."

In this edition, 8 architectural video projectors are split into 630 sub-projectors using a structure of concave mirrors designed by artificial nature. Each mirror is uniquely shaped and collaborates together to make a single image in the air. By accurately calibrating hundreds of projectors, light beams can be merged in the haze to draw in the air. The third edition of *Light Barrier* was commissioned by the Asia Culture Center in Gwangju.

Artists: Kimchi and Chips (Mimi Son, Elliot Woods),
Engineering: Chung Youngjae, Studio Sungshin
Sound design: Pi Junghoon
In collaboration with Arts & Creative Technology Center,
Commissioned by Asia Culture Center

Mimi Son (KR) was born and works in Seoul. In her childhood she was fascinated by her father's painting and music that led her into experimenting with materials and drawing. An obsession with geometry and Buddhist philosophy inspires her to articulate space and time from alternative perspectives. These continuous experiments aims to depict an intersection of material and immaterial, real and virtual, presence and absence. **Elliot Woods** (UK) is a digital media artist from Manchester. He tests possible futures between humans and visual design technologies (e.g. cameras, projectors, computation). Towards this goal, Elliot co-founded Kimchi and Chips, an experimental art studio based in Seoul with Mimi Son. He applies his academic studies in physics to produce sense-able phenomena from abstract systems.

Make Do and Mend

Anna Dumitriu

Make Do and Mend references the 75th anniversary of the first use of penicillin in a human patient in 1941 and takes the form of an altered wartime woman's suit marked with the British Board of Trade's utility logo CC41, which stands for "Controlled Commodity 1941." The holes and stains in the suit have been patched with silk stained with pink colonies of E. coli bacteria, grown on dye-containing agar. The genomes of these bacteria have been edited using a technique called CRISPR, to remove an ampicillin antibiotic resistance gene and scarlessly patch the break using homologous recombination with a fragment of DNA encoding the WWII slogan *Make Do and Mend.* Ampicillin is part of the penicillin group of antibiotics, so with this artistic genomic edit, Dumitriu and Goldberg have used today's technology to return the organism to its pre-antibiotic era state, reflecting on how we might in future control and protect such biotechnological advances.

Created in collaboration with MRG-Grammar and supported by the FEAT project via the European Union's Horizon 2020 Research and Innovation programme under grant agreement No 686527 (H2020-FETOPEN- 2015-CSA).

Anna Dumitriu (UK), is a British artist whose work fuses craft, sculpture, and Bio Art to explore our relationship to the microbial world, medicine, and technology. She is affiliated to the Modernising Medical Microbiology Project at the University of Oxford (UK), the Department of Computer Science at The University of Hertfordshire (UK), Brighton and Sussex Medical School (UK), and Waag Society (NL). She is the artist partner on the EU Horizon 2020 funded FET support action FEAT: Future Emerging Art and Technology, and is working with MRG-Grammar to explore gene regulation.

STARTS Prize '17 • Nomination • Make Do and Mend
http://annadumitriu.tumblr.com/FEAT

Microbial Design Studio: 30-day Simit Diet

Orkan Telhan, Karen Hogan, Mike Hogan

Microbial Design Studio is an automated and networked biolab that is designed to perform transgenic experiments, which interrogate ethnical, cultural, and political issues in life sciences. In this submission, the platform is introduced with the 30-day Simit Diet. *Microbial Design Studio* is used to generate a special diet using traditional Turkish simits (savory goods similar to bagels) to make a commentary on the desires of controlling the appearance, form, and aesthetics of the human body. The platform is used to mix different strains of wild yeast that are sourced from different people and places in Istanbul with transgenic organisms that are capable of producing vitamins, flavors, and smells. The microbially augmented diet offered a novel simit design based on existing microbiome research and proposed simits that can "potentially" mitigate depression, improve mentally sharpness, or increase fertility. Custom software drives different components of the automated biolab. Multiple biolabs can also be connected to coordinate distributed research and development.

Support received from University of Pennsylvania (US)

Biorealize consists of **Orkan Telhan** (US/TR), **Karen Hogan** (US), and **Mike Hogan** (US). Founders bring together backgrounds from arts, design, computation, and biology. Orkan Telhan, PhD, is Assistant Professor of Fine Arts–Emerging Design Practices at University of Pennsylvania. Karen Hogan, PhD, is the teaching laboratory coordinator at the Department of Biology, University of Pennsylvania. Mike Hogan is an entrepreneur with experience in several fields, including embedded development, Process Analytical Technology and Knowledge Workbenches. In addition to working towards developing and commercializing biotechnologies, the group runs educational activities and workshops that engage with the biological art and design community in Philadelphia, USA.

STARTS Prize '17 • Nomination • Microbial Design Studio: 30-day Simit Diet
http:// www.biorealize.com

Project KOVR

Leon Baauw, Marcha Schagen

We humans are creating an enormous invisible network on top of our existing biosphere–the infosphere. The infosphere consists of networks and radio waves. It's our new, ever-expanding environment that is growing at a staggering rate. Yet we roam around unprotected with privacy-sensitive data, which might easily be tracked and misused by virtually anyone. We are not in control of our own privacy anymore. And privacy is what makes us human.
Clothing has always been a means to protect ourselves against the threats of the biosphere, and *Project KOVR* protects the individual from the infosphere. By testing and combining different layers of metalliferous fabrics, Dutch designers Schagen and Baauw found an effective solution to protect the individual and his/her everyday tech-devices from radio waves and radiation. The black pockets allow the wearer to still be reachable with their device of choice. *Project KOVR* is a wearable countermovement designed for people who want to regain control.

Telefication Zevenaar, the Netherlands

Suzanne Waijers

Roza Schous

Suzanne Waijers

Started in 2016, *Project KOVR* (pronounced cover) is an ongoing project of Dutch designers **Marcha Schagen** (NL) and **Leon Baauw** (NL). The name originates from Esperanto, created to be an easy to-learn, universal language that puts aside political and cultural differences and enhances communication transparency. The project is a result of a unique complementary and multidisciplinary collaboration between two designers embodying different fields of work. Whereas Utrecht-based Schagen (1991) creates fashion, wearable objects, and performances, Baauw (1991), works as a (graphic) designer, researcher, and educator from Rotterdam. Their shared vision and interest in contemporary and future social affairs led to what is now known as *Project KOVR*.

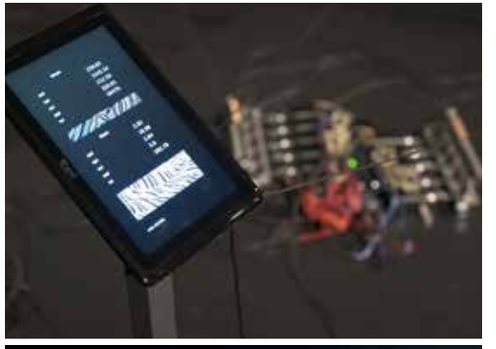
Silk

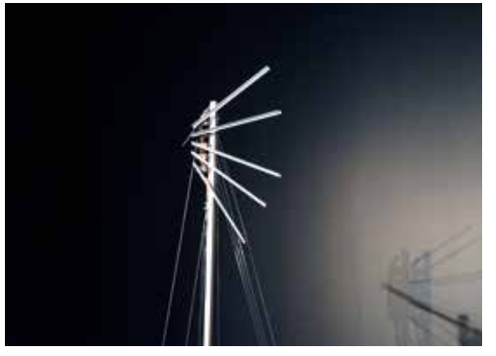
::vtol:: Dmitry Morozov

The installation tracks the real time changes in the market activities related to cryptocurrencies Bitcoin and Litecoin. The constantly changing currency rate of Bitcoin against major world currencies is influencing the strain of strings in installation and the way the picks are hitting them. The robotic system of the artwork is directed by a computer algorithm–influenced by dynamic changes of data, the installation sounds like a complex sound instrument.

Each stand sprouts 5 diagonal strings which correspond to 5 currencies (US dollar, yuan, euro, Canadian dollar, and Russian ruble). These strings are pulled on special automatic tuners moved by stepper motors directed by a computer algorithm. This piece explores how new technologies and progress in such areas of knowledge as cryptography, mathematics, and computer science influence the financial system, inevitably changing the social structure of society.

The project is co-commissioned by Laboratoria Art&Science Space and Lykke AG





::vtol:: is the alias of Moscow-based media artist **Dmitry Morozov** (RU). He focuses on technological art–robotics, sound art, and science art. He is the laureate of the Sergei Kuryokhin Prize (St.Petersburg, 2013) and Prix Cube (France, 2014). Dmitry received Honorable Mentions at the VIDA 16.0 (Spain, 2014) and Prix Ars Electronica (Austria, 2015).

Smog Free Project

Daan Roosegaarde and his team of experts

DerrickWang

StudioRoosegaarde

The *Smog Free Project* offers a journey through innovation, as an experience of a clean future and a local solution for parks and public spaces. It consists of the largest outdoor vacuum cleaner in the world, the *Smog Free Tower,* and *Smog Free Jewellery,* made from its captured smog.
The 7-meter-high *Smog Free Tower,* opened last fall in Beijing, is the largest air purifier in the world which creates a local solution for citizens in parks to experience clean air for free. It cleans 30,000 m^3 per hour via patented ozone-free ion technology and uses a small amount of green electricity. It efficiently captures and collects up to 75% of PM2.5 and PM10 airborne smog particles and releases clean air around the tower with a 360-degree coverage creating an almost circular zone of clean air in its surrounding.

The *Smog Free Jewellery* is a tangible souvenir of the *Smog Free Project.* The *Smog Free Ring* and *Smog Free Cufflinks* are made from compressed smog particles collected from the *Smog Free Tower.* By sharing a *Smog Free Ring,* you donate 1,000 m^3 of clean air.
The *Smog Free Project* is a part of Roosegaarde's larger oeuvre *Landscapes of the Future,* which connects people, technology, and space to improve the quality of daily life in urban environments.

The *Smog Free Project* was made possible with the kind support of the China Central Government, Embassy of the Kingdom of the Netherlands in China, Win World, City of Rotterdam, Stichling Doen and Port of Rotterdam. The *Smog Free Project* is developed by Daan Roosegaarde in collaboration with the engineers and designers of Studio Roosegaarde, ENS Technology, and early advisor Ursem (till 2013).

Artist and innovator **Daan Roosegaarde** (NL) is a creative thinker and maker of social designs which explore the relation between people, technology, and space. Roosegaarde has been driven by nature's gifts such as light-emitting fireflies and jellyfishes since an early age. His fascination for nature and technology is reflected in his iconic designs such as *Smart Highway* (roads which charge from sunlight and glow at night), *Waterlicht* (a virtual flood) and *Smog Free Project* (the largest outdoor air purifier in the world which makes jewelry from smog).

sonicPlanet GeoComposer/GeoPlayer

Sinan Bökesoy

GeoComposer is a location-based 3D soundscape composition platform, an iOS app. Recordings can be placed as sound objects at GPS locations on the map and parameters can be assigned to define their behavior in a virtual 3D soundscape. You can walk on a physical environment and the position, angle/distance to the sound objects interacts in realtime to render the 3D soundscape through relevant parameters.
An installation example created with the *GeoComposer* is with the processed ship horn sounds distributed on the Bosphorus, around a path which the daily transport ferries track everyday. The listener perceives them inside a virtual 3D soundscape, which is altering the sonic reality of the Bosphorus–see sonicplanet vimeo resources. Further examples composed by other artists are available on the *GeoPlayer.* The apps embed as well the Google Street View to present the 3D soundscape along with the Street View visuals, likewise delivering an audio/visual augmented reality.

Sinan Bökesoy conceived, designed, and programmed the *GeoComposer* and *GeoPlayer* apps.

Sinan Bökesoy (TR) is an artist, composer, and software developer, who has continued his education, academic activities, and international career for many years in Paris, France. He received his PhD from University of Paris under the direction of H. Vaggione, and his music compositions on micro sound synthesis, performances with robotic instruments and softwares he developed, such as the Cosmosf, are well known. He is the founder of sonicPlanet™ and sonicLAB™, developing products on advanced sound synthesis and sonic augmented reality applications supported continuously with artistic activities.

Speculative, Fashionable, Wearable

Daijiro Mizuno, Kazuya Kawasaki

The work aims to speculate on sartorial appearances of the future through blending fashion design and wearable technology.
Urban Play: What if street-hacktivist fashion could redefine the way people play in the urban landscape? Today, street fashion, e.g. for skateboarders, is mixed with location-based augmented reality games to change the way we experience the urban landscape. We speculated about the future where fashion could redefine the way people play in the urban landscapes as a mixed reality.
Computer-Obaachan: What if mass-customizable fashion could adapt to the changing needs of the elderly? Today, we live in a rapidly aging society where every need is one-off and changing. We speculated on the future of garments that could support the changing needs of the elderly beyond physical appearance.
Information Corset: What if self-changing fashion could control our body shape to manipulate the perception of beauty? Historically, women in the Western world manipulated their body shape using garments such as corsets, crinolines, and bustles. Today, we live in a society governed by information technology. We speculated on the post-human bodies that are completely designed through informatization.

Project members: Daijiro Mizuno, Kazuya Kawasaki, Tomo Kihara, Keisuke Shimakage, Natsumi Wada, Marika Nakada, Tomoya Ohta, Kenta Tanaka, Ryosuke Ogata, Shoko Tamura, Kazumi Kanagawa
Film crew: Naoto Kobayashi, Kenjiro Matsuoka, Ryota Fujinaka, Sohei Suwa, Kizuki Satoi
Hair & makeup: Traffic

The project is supported by Project Jacquard at Google Advanced Technology and Projects (ATAP)

Daijiro Mizuno (JP), born in Tokyo in 1979, completed an MA and a PhD in Fashion Design at Royal College of Art. Daijiro's research projects speculate about how design can make a positive impact on our society. Daijiro is currently working as an Associate Professor at Keio University Faculty of Environment and Information Studies while working as a freelance design researcher. Daijiro also works as a co-editor in chief of fashion design critique periodical, *Vanitas*. **Kazuya Kawasaki** (JP), born in 1991, is a fashion designer who is trying to create a new era of "speculative fashion." He designs fashion works that speculate about an alternative fashion industry in order to explore the possibility of fusion between fashion design and emerging technology such as biotechnology and wearable technology. Kazuya's works have been presented at National Museum of Scotland (Edinburgh, 2017), Hong Kong Design Institute (2016, Hong Kong), Design Indaba (2016, Cape Town), and AXIS gallery (Tokyo, 2015). He is working as a textile researcher at Poiesis Labs founded by Shiho Fukuhara.

Ugly

Nikita Diakur

Inspired by the story *Ugly the Cat* found on a website featuring wisdom quotes and sad stories, *Ugly* is a broken simulated short film about a Native American chief and an ugly cat trying to find peace in an evil neighborhood.
Animation in *Ugly* is a combination of puppeteering and dynamic computer simulation and varies between physically accurate and broken. The *Ugly* characters are ragdolls built from connected dynamic body parts, which can collide with the environment. Like a marionette, the character is connected via simulated strings to animated controllers.
Animating like this feels like real-life filmmaking– the animator sets the direction and the simulated characters interpret the action similarly to real actors.
The process relies on experimentation and the results are unpredictable and prone to errors, which is difficult to deal with when trying to animate a specific movement. At the same time, the loss of control is liberating and the outcome is spontaneous and always unique.

Direction: Nikita Diakur
Recording, mix, sound: Nicolas Martigne, David Kamp
Music: Enrica Sciandrone, Cédric Dekowski, Felix Reifenberg

Nikita Diakur (RU/DE) is a Russian-born filmmaker based in Mainz, Germany. He studied Animation Direction at the Royal College of Art in London, where he produced *Fly on the Window* that went on to screen at a number of international film festivals including Zagreb, Annecy, and Edinburgh. Nikita Diakur is now making short films influenced by prominent internet stories and animated via the experimental process of computer simulation.

STARTS PRIZE´17 Jury

STARTS PRIZE´17 Jury

Shuzo John Shiota, Bradly Dunn Klerks, Chiaki Hayashi, Victoria Vesna, Sophie Lamparter, Rikke Frisk, Alexander Mankowsky

Rikke Frisk (DK) is the founder and co-director of the community-focused culture production company Indgreb, which is based in Copenhagen. Indgreb specializes in projects within participant-driven art and innovation events. Within their portfolio is the creation of the international innovation and art competition festival, Afsnit I. Rikke's latest initiative is Talk Town—a debate festival on gender, equality, and feminism of which she is co-initiator and festival director, a position she is familiar with from her time as manager and co-creator of Strøm—the leading festival for electronic music in Scandinavia, which she ran for several years. Later on Rikke was head of the secretariat for the Copenhagen hosting of WOMEX—the world's biggest world music fair and festival. Among several obligations she is a member of the board of Denmark's leading venues for contemporary, experimental jazz and world music: Copenhagen Jazzhouse and Global. With a background in architecture and communication she is an experienced creative leader, with renowned relational abilities to unfold people's skills and ideas.

Victoria Vesna (US), PhD, is an Artist and 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, nano-scientists, 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.*

Bradly Dunn Klerks (NL/BE) graduated as a 3D visualizing artist designer from the ArtEZ Institute of the Arts, Arnhem. Currently positioned as General Director of Iris van Herpen. The Couture Fashion label is well known for her innovative experiments with materials, techniques, and technologies. He uses the interdisciplinary research and collaborations with a number of artists from various industries to create stunning work. He is responsible for all the IvH Couture shows, exhibitions, and international media. His knowledge of the industry and long-term relationship with several artists place him in a cross section between the business and the creative field that respects his vision and opinion that "the creative maker" is the center where it all starts

Chiaki Hayashi (JP) is the co-founder and currently the Representative Director of Loftwork Inc., which annually produces over 600 projects. She manages the operation of the company's creative platform Loftwork.com, which has 25,000 creators registered, FabCafe—a cafe with digital fabrication tools, and a material-centered co-working office MTRL. She is currently the Japan Liaison to the Director at the MIT Media Lab and has recently founded the company Hidakuma, which aims to promote and rebuild nature and local creativity.

Sophie Lamparter (CH) is an Associate Director at swissnex San Francisco, Switzerland's innovation outpost. By building networks in science, technology, art, and innovation, she has spearheaded interdisciplinary programs at the edges of art-technology and art-science. She is passionate about finding new talent with a creative approach to technology and helping them scale ideas. She believes in the power of dialogue to foster relationships between creatives, industry, research, and governments. She has organized and curated exhibitions and programs in media, digital and data arts, interaction and game design, robotics, VR, AR, architecture, and urbanism. Sophie's most recent initiative is DART 17, a creative incubator for interactive projects.

Alexander Mankowsky (DE), born in Berlin 1957, studied Social Science, Philosophy and Psychology at the Freie Universität Berlin. In 1989 he started working in the research institute of Daimler in Berlin. The multidisciplinary approach in the institute integrated a wide array of disciplines, from social sciences to artificial intelligence. His current working topics are Futures Studies, focused on the ever-changing culture of mobility, the interdependency of social and technological innovation, and other aspects of envisioning paths into the future.

Shuzo John Shiota (JP) graduated from Sophia University, majoring in International Legal Studies. After joining Nippon Steel Corporation in 1991, Shuzo then jumped industries to participate in the launch of Dream Pictures Studio in 1997. He moved to Polygon Pictures two years later and in 2003 assumed the position of President and CEO. The company has since enjoyed exponential growth as the premier digital animation studio in Asia, winning many accolades including multiple Emmy Awards. In 2008, he was selected as one of the "25 Toon Titans of Asia" by popular industry publication *Animation Magazine.* Shuzo has also juried on many major Japanese and international film festivals, including Prix Ars Electronica, SIGGRAPH, Annecy, and Digicon6. He has given talks worldwide, including TEDxKyoto in 2015. In his spare time, Shuzo engages in his life-long passion as a vocalist in a classic rock band.

STARTS PRIZE '17 Nomination Committee

Luis Miguel Girão (PT), founder of Artshare, is a transdisciplinary artist and researcher. As a researcher he is generating support for EU and Transatlantic policy-making in the field of the interface of art, science and technology. He is developing applications of technology as tools for artistic expression focusing on electromagnetism. Luis Miguel Girão is a member of the Planetary Collegium and of the Centre for Sociology and Music Studies at the Faculty of Social Sciences and Humanities of the New University of Lisbon. In 2007, he was awarded the Bolsa Ernesto de Sousa prize. He was coordinator of ICT ART CONNECT 2013 and of the European Commission's ICT ART CONNECT study program.

Chiaki Hayashi (JP) is the co-founder and is currently the Representative Director of Loftwork Inc. Loftwork annually produces over 600 projects. She manages the operation of the company's creative platform Loftwork.com, which has 25,000 creators registered, FabCafe—a cafe with digital fabrication tools, and a material-centered co-working office, MTRL. She is currently Japan Liaison to the Director at the MIT Media Lab. She recently founded the digital creative café Hidakuma, which aims to rebuild nature and local creativity.

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STARTS PRIZE´17 International Advisors

Jussi Ängeslevä (FI) is a designer, an artist, and an educator. With a home base at the Berlin University of the Arts and the Royal College of Arts, but lecturing around the planet, he is working with digital materiality and interaction design. In parallel to the academic work, he is the Vice Creative Director of ART+COM Studios. His design ethos is leveraging hardware, software, and physical and graphic design in the search for elegance in highly specific solutions, where the meaning of a work is inseparable from the medium communicating it.

Ken Arnold (UK/US) has worked in various museums and public projects in Europe and USA. In 2007 he set up and ran the Wellcome Collection: a new venue exploring links between medicine, life, and art. Last year over 750.000 visitors enjoyed it. He now does international projects Wellcome; and also spends half his time as Director at the Medical Museion and Professor at the University of Copenhagen. He writes and lectures on museums and intersections between arts and sciences.

Sue Gollifer (UK) is the Executive Director of ISEA International Headquarters. She is an artist, academic, and researcher at the University of Brighton, UK. She is on a number of National and International Committees, including the Computer Arts Society and ACM SIGGRAPH Digital Arts Community, and she is Chair of the ACM SIGGRAPH "The Life Time Achievement in Digital Arts Award." She has been a curator of a number of International Digital Art Exhibitions, including SIGGRAPH Asia 2016 and Macau "Mediated Aesthetics."

Drew Hemment (UK) is an artist, curator, and academic researcher. He is Founder and Creative Director of FutureEverything and a Dundee Fellow, Reader at Duncan of Jordanstone College of Art and Design, University of Dundee. His work in digital culture and innovation has been covered by the *New York Times,* the BBC, and NBC, and recognized by awards from the arts, technology, and business sectors including Lever Prize 2010 (Winner) and Prix Ars Electronica 2008 (Honorary Mention).

Susanne Jaschko (DE) is an independent curator exploring the intersection of contemporary art, technology and science. She is the founder of the prozessagenten network and was Head of Presentation and of the Artist in Residence Programme at the Netherlands Media Art Institute and curator and deputy director of the transmediale festival for art and digital culture. She has taught at academic institutions in Germany and abroad, and is currently at Berlin University of the Arts.

Silvia Lindtner (AT) is an assistant professor at the University of Michigan in the School of Information, with a courtesy appointment in the Penny W. Stamps School of Art and Design. Lindtner's research and teaching interests include critical studies of innovation and entrepreneurship, DIY (do it yourself) making and hacking, science and technology studies in China, and urban and infrastructure studies.

Simona Maschi (IT/DK) is a cofounder and director of the Copenhagen Institute of Interaction Design. Leading the overall organization at CIID, she heads a team that encompasses a world-renowned education, a cutting edge research group, an award-winning consultancy, and a very ambitious incubator platform. Simona is an expert in service design, scenario design, and design methods, and is passionate about using design to create real positive impact in people's lives.

Professor Carlo Ratti (IT), an architect and engineer by training, teaches at MIT, where he directs the Senseable City Lab. He is also a founding partner of the international design and innovation office Carlo Ratti Associati. His work has been exhibited in several venues worldwide, including the Venice Biennale, New York's MoMA, London's Science Museum, and Barcelona's Design Museum. He was curator for the Future Food District at Expo Milano 2015, and is currently serving as co-chair of the World Economic Forum Global Future Council on the Future of Cities and Urbanization.

Mika Satomi (JP/AT)is a designer and an artist exploring the field of eTextiles, Interaction Design, and Physical Computing. For five semesters, she has been a guest professor at the Weissensee Art Academy Berlin. She has worked as a researcher at the Swedish School of Textiles and at the Distance Lab, Scotland, in the field of practice based design research. She holds a BA in graphic design from Tokyo Zokei University, and an MA in media creation from IAMAS, Japan. Since 2006 Mika has collaborated with Hannah Perner-Wilson, forming the collective KOBAKANT, creating artistic projects in the field of eTextiles and Wearable Technology Art. She is a coauthor of the e-Textile online database "How To Get What You Want."

Lynn Scarff (IE) is the Director of Science Gallery Dublin. She has over twelve years' experience in developing and leading public engagement projects in science, arts, and education fields. Lynn comes from a background of work in the environmental and not-for-profit sectors and has developed a series of programs, exhibitions, events, books, TV, and radio for these areas. Beginning her role in Science Gallery as the Education and Outreach Manager, Lynn has been involved since its inception. She is passionate about science and arts and the potential of spaces like Science Gallery to be facilitators of transformation in people's lives.

Bastian Schäfer (DE), born in 1980, is a maverick, kitesurfer, TED speaker, father of a boy and a girl, and an automotive engineer. After working at Volkswagen Design, he entered Airbus in 2006 in different projects for A340, A350, and A380. In 2009 he joined the project team that created the award winning Airbus Concept Cabin with its bionic structure. Bastian is the project leader of the Bionic Partition project where he is focusing on generative design combined with 3D printing technology.

Fermín Serrano Sanz (ES) is recognized as an expert in citizen science with experience in numerous research projects that include linkages with public engagement, creativity, arts, and open technologies. He works in the Ibercivis Foundation in Spain and he collaborates with entities such as the European Commission, the OeAD, Cotec, Sónar+D or the European Digital Art and Science Network where he curated the *Reverberadas* exhibition. Fermín is also a participant of the Future Innovators Summit.

Karen Verschooren (BE) is a contemporary art curator based in Belgium. She currently works as Head of Exhibitions for STUK Arts Centre, Leuven (BE), where she is responsible for the exhibitions program including ARTEFACT: a themed exhibition and festival on contemporary visual arts, current events, and societal challenges. From October 2008 – March 2015, she worked as a curator/project coordinator for Z33, House for Contemporary Art, Hasselt (BE).

Ars Electronica 2017

Festival für Kunst, Technologie und Gesellschaft
Festival for Art, Technology, and Society

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Ars Electronica Linz GmbH & Co KG

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Sonic Saturday: Volkmar Klien, Se-Lien Chuang, Andreas Weixler, Elisabeth Zimmermann
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Music Monday: Werner Jauk
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Prix Ars Electronica 2017

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