2018
CyberArts

ARS ELECTRONICA

HATJE
CANTZ

Hannes Leopoldseder · Christine Schöpf · Gerfried Stocker

CyberArts 2018
International Compendium

Prix Ars Electronica
Computer Animation · Interactive Art + · Digital Communities
Visionary Pioneers of Media Art · u19–CREATE YOUR WORLD

STARTS Prize ʼ18
Grand Prize of the European Commission honoring Innovation
in Technology, Industry and Society stimulated by the Arts

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Innovation at the nexus of **S**cience, **T**echnology and the **ARTS**

PRIX ARS ELECTRONICA 2018

PRIXARS

Prix Ars Electronica 2018

Christine Schöpf, Gerfried Stocker

Ever since Hannes Leopoldseder launched the Prix Ars Electronica in 1987, this competition, which started out as an experiment to bring together the various disciplines subsumed under the media art genre that was just starting to emerge at the time, has steadily developed into the world's most renowned platform for contemporary digital creativity.

A total of 3,046 entries from 85 countries were submitted for Prix Ars Electronica prize consideration this year. These figures document the cultural diversity and the multifarious perspectives, questions and responses that creative men and women in art and science confront us with today.

Digital Musics & Sound Art, Hybrid Art, Interactive Art +, and Digital Communities are the four categories in which competition is staged alternately on a biennial basis; Interactive Art + and Digital Communities are up this year. The Computer Animation category and the u19 – CREATE YOUR WORLD competition for young people in Austria are staged annually. The grand prize winner in each category receives €10,000 and the Golden Nica statuette; there are also two Awards of Distinction and 12 Honorary Mentions. The sole exception is the Golden Nica in u19 – CREATE YOUR WORLD in which the winner receives €3,000. This category also features a netidee Special Prize endowed with €1,000, two Awards of Distinction with €800 each, and two Prizes for youngsters under 10 and 14 respectively.

This is the third year in succession that Ars Electronica, in cooperation with BOZAR and Waag, has staged the competition to select the recipients of the STARTS Prize awarded by the European Commission. Two grants of €20,000 each honor innovative projects at the nexus of science, technology and the arts (thus the acronym STARTS). The STARTS initiative is part of the European Commission's Horizon 2020 program for research and innovation.

In the early years of the Prix Ars Electronica, many of the submitted works were matters of artistic exploration of novel technologies, but this aspect has, in the meantime, become a secondary consideration for the most part. The 2018 Prix Ars Electronica focuses primarily on political, economic, ecological, and social phenomena and includes, in the approaches to them, a wide range of cultural perspectives, and often radically critical views and formulations of issues. Thus, this competition is once again an exciting showcase of the highly diversified positions of contemporary digital media art worldwide.

The Prix Ars Electronica is being staged for the 32nd time in 2018. This has been made possible by the City of Linz, which has funded Ars Electronica since 1979 and the Prix Ars Electronica since 1987. We would also like to express our gratitude to the State of Upper Austria, the OK Center for Contemporary Art, KulturKontakt Austria, IPA–Internet Privatstiftung Austria, and the Upper Austria University of Applied Sciences' Hagenberg campus.

Christine Schöpf (AT), PhD, studied German and Romance Languages. She has worked as a radio and television journalist and was the head of the art and science department at ORF Upper Austria (1981–2008). In 2009 she was appointed Honorary Professor at the University of Art and Design Linz. Since 1979, she has held a number of positions in which she has been able to contribute considerably to the development of Ars Electronica. She was responsible for conceiving and organizing the Prix Ars Electronica from 1987–2003. Together with Gerfried Stocker, she has been the artistic co-director of Ars Electronica since 1996. **Gerfried Stocker** (AT) is a media artist and an engineer for communication technology and has been artistic and managing Director of Ars Electronica since 1995. 1995/1996 he developed the groundbreaking exhibition strategies of Ars Electronica Center with a small team of artists and technicians and was responsible for the set-up and establishment of Ars Electronica's own R&D facility, Ars Electronica Futurelab. Since 2004 he has been in charge of developing Ars Electronica's program of international exhibition tours. From 2005 on he planned the expansion of Ars Electronica Center and implemented the total substantive makeover of its exhibits. Stocker is a guest speaker at many international conferences and a Visiting Professor at Osaka University of Arts as well as guest lecturer at Deusto University Bilbao. He is also a consultant for many international companies on creativity and innovation management.

Imperfection is Beauty

Hannes Leopoldseder

A man of genius makes no mistakes; his errors are volitional and are the portals of discovery.

James Joyce

Whoever talks about the future in 2018 is no longer focusing on the far horizon of our century. Is the future taking a break? Despite the accelerating speed of the change, despite the rapidly developing key technologies of the future—quantum physics, nanotechnology, genetic engineering, big data, synthetic life, and artificial intelligence? Everything is changing. But it's no longer linear; there are pauses. How can we deal with our new systems? If they break down, what has gone wrong? Was some of it in error?

Thomas L. Friedman, the three-time Pulitzer-Prize-winning columnist and author, published *An Optimist's Guide to Thriving in the Age of Accelerations* in 2016. Today, we live in an unprecedented state of acceleration. "In such a time," writes Friedman, "opting to pause and reflect, rather than panic or withdraw, is a necessity. It is not a luxury or a distraction—it is a way to increase the odds that you'll better understand, and engage productively with, the world around you. (...) And that is exactly what I would like to do with this book: Hit the PAUSE button, get off the merry-go-round, and more intensively consider this historic moment that, as I see it, is a radical turning point in the history of humankind."[1]

What Friedman foresaw in 2016 is reality in 2018. We are groping our way into PAUSE mode.

But despite the fact that we're aware that something has gone awry, our third millennium seems to be oriented more on optimization than on the acceptance of errors. It is focused, first and foremost, on achieving a goal: Life's getting better, everything's being improved; technologies help this happen: sensors on the body, programs on the laptop, and apps on the smartphone.

This striving to attain optimization and precisely scheduling one's everyday life were already being practiced by Goethe and Kant; Friedrich Nietzsche too endeavored to subject himself to a set of rules. Munich psychologist and economist Gustav Großmann wrote a 1927 bestseller entitled *Sich selbst rationalisieren. Lebenserfolg ist erlernbar* (Streamlining Yourself. Success in Life Can Be Learned). This book, now in its 28th edition, is still considered the great classic on how to lead a successful life. You should precisely plan your day and keep a record of it in a happiness diary.

Philosopher Peter Sloterdijk puts self-optimization in the place of ancient faith-based doctrines. His postulate "You must change your life!" is an ambivalent imperative—the promise of a better life that is, however, implicitly connected with exertion. For Sloterdijk, this is his now-famous concept of vertical tensions that spur people on and enable them to surpass their previous limits. People's fear of finiteness stems from this.

A philosopher of Antiquity, Lucius Annaeus Seneca, dealt with the dynamics of systems, with transformation and change, in his extensive oeuvre. It would be consoling, he wrote, if everything would decay as gradually as it arose, but growth is slow whereas collapse is rapid. In his book *The Seneca Effect*[2], Ugo Bardi, a professor in Physical Chemistry at the University of Florence and the author of reports for the Club of Rome, asks why systems collapse and how we can deal with this. In Seneca's day, the Roman Empire was still vast and powerful, but it began to crumble and finally broke down.

The history of the next two millennia is characterized by the rise and fall of states and empires all the way up to 9/11 in New York in 2001 and the mortgage crisis of 2008. Now, 10 years later, there is no sign of a crisis of these dimensions but there are still countless crises in regions worldwide. After the Internet Bubble burst in the early 2000s, publications, conferences, and investigations called this failure a challenge, a source of energy for a relaunch, with a simple hypothesis: Errors have to be analyzed; the right conclusions have to be drawn; mistakes ultimately make you stronger. Is that all? Science journalist Jürgen Schäfer published his first book entitled *Genie oder Spinner* (Genius or Nut) in 2011, and followed it up five years later with *Lob des Irrtums* [In Praise of Error]. His hypothesis: No mistakes, no progress.[3] The blunder goes respect-

able. Evolution doesn't strive to attain perfection, but rather diversity and the capacity to learn.

Biologist Christine von Weizsäcker and her husband, scientist and politician Ernst Ulrich von Weizsäcker, contributed the term *Fehlerfreundlichkeit* to the scholarly discussion of openness to error: *"Fehlerfreundlichkeit* means, first of all, an especially intensive process of addressing and coming to terms with deviations from an expected course of events. Throughout the biosphere one encounters this way of dealing with reality and its pleasant and unpleasant surprises."[4] Error-friendliness and/or tolerance of mishaps thus become preconditions for risky decisions to not turn into an incalculable risk. This applies to all areas of life, and above all to the technology field.

April 11th of this year is a day worthy of attention. CNN's coverage of the congressional hearing with Mark Zuckerberg was headlined "U.S. Lawmakers Grill Facebook Chief Zuckerberg on Data Scandal." Zuckerberg came across as contrite, admitting his mistake and taking full responsibility for it. But he remained unclear about many of the details. On the subject of data protection: "This is a complex issue that deserves more than a one-word answer." Zuckerberg talks about Facebook as a community of two billion members. But can Facebook actually be regarded as a community? One can cast doubt upon such a formulation. Blogger, journalist, and author Sascha Lobo contradicts it. He writes that Facebook isn't a community; it's social infrastructure. "In my view, social infrastructure refers to platforms that set the standards of information, communication and the public sphere in a digital society (...) My hypothesis is that Facebook is a new form of social infrastructure that satisfies a newly-arisen social need (...) The fuel of social infrastructure are emotions. (...) This new social infrastructure not only reflects the state of digital society; at the same time, it is the world's first network-linked feelings-machine. That's why populism in social media is so effective."[5]

Claudia Reiterer, moderator, journalist, and author of *Der Popcorn-Effekt,* has analyzed the secrets of successful managers and, in the process, closely scrutinized the lack of success. "There are countless synonyms for failure. In many cases, our rational, critical mental capacities keep us from pursuing our dreams and objectives. The fear of failure paralyzes many people. Not trying prevents disappointment and is also much more comfortable. But successful people seem to accept failure as a part of life—in fact, they use it as a sort of driving force."[6]

ERROR – the Art of Imperfection is the theme of this year's Ars Electronica Festival, an elaboration on error's effects on the global scene of art, culture, and society. According to Ars Electronica Artistic Director Gerfried Stocker, "An error is a discrepancy from expectations, a deviation from the norm. But what is the norm and who establishes it? An error doesn't have to be a mistake; it can be an opportunity!" The Art of Imperfection. Perhaps art offers an approach to a solution. Is there successful imperfection? Could it possibly contain a secret of success? This is a matter of thinking differently, of being different. A remarkable thought on the subject of imperfection—a phrase of which I have taken as the title of this essay—is attributed to Marilyn Monroe. "Imperfection is beauty, madness is genius and it's better to be absolutely ridiculous than absolutely boring." Perhaps it is precisely this aspect that has always been so attractive to artists. Japanese culture has a special term for imperfection, *Wabi-Sab. Wab* comes from *wabiru* and means yearning for something, a longing for simplicity. *Sabi* stands for autumn, transience and the acceptance of change as a part of life. Whereas our Western culture tries to overcome impermanence, the Japanese tradition's approach is acceptance, adaptation to nature. We Europeans, on the other hand, want to control nature via technology. In this sense, *Wabi Sabi* can be juxtaposed to the digitized world of today—not conformity but rather uniqueness in the here and now. From its very inception, *Wabi Sabi* was a backlash to what was established, to what had been perfected. *Wabi Sabi* manifests a desire to turn away from the ideal of flawless beauty and to embrace what is natural and imperfect.[7]

In his novel *Catcher in the Rye,* American author J.D. Salinger has his 16-year-old protagonist commit one major screw-up after another. Finally, when his 9-year-old sister Phoebe asks him what he wants to

do when he grows up, he gives a surprising answer that represents his first step on his way to becoming a young adult—he wants to protect the children playing in the rye field from plunging into the world of grown-ups. Now, he is ready to take responsibility for his sister and to be a role model for her. The experience of adolescent failure has become an opportunity. Phoebe takes her seat on the carousel, *Smoke Gets in Your Eyes* starts to play, the merry-go-round begins to turn, and there's 16-year-old Holden, "damn happy all of a sudden."[8] Thus, his sister points him on his way to becoming an adult. For me, this classic of American literature beautifully expresses in fictional terms the incessant failure of a young person, one who turns out alright in the end. The world has arrived at a crossroads. Science and technology are in the process of changing everything. Google, Amazon, Facebook and Apple have been invited into nearly all of our homes—except for those of us who practice internet-abstinence, be that for technical or personal reasons. These four interlocking and nevertheless competing companies pervade almost all realms of our lives—from communication to health to commerce. The market capitalization of Alphabet (owner of Google), Amazon, Facebook, and Apple amounts to 2.7 trillion (since these are exchange-listed corporations, the figure cited is just an approximation) and thus exceeds the GNP of France. In the words of Scott Galloway, marketing professor at NYU's Stern School of Business: "We are experiencing the greatest concentration of wealth of all time. The Four Horsemen of the Apocalypse have more power and influence than any other organization in history."[9] Even if Europe is rapidly catching up in the field of digitization, European companies still can't hold a candle to the American internet giants.

The promises of salvation made by artificial intelligence even raise the ante. It encompasses almost the entire globe. The Chinese are not just assuring their hegemony in Africa;[10] they're also striving for supremacy in artificial intelligence. In the race with the USA, Peking aims to take the lead in artificial intelligence by 2030. But Russia has designs on the pole position too; before a group of students, President Putin announced that the country is inten-

sifying its efforts in this field: "Whoever reaches a breakthrough in developing artificial intelligence will come to dominate the world".[11]

There are still great differences of opinion as to how artificial intelligence ultimately really will change the world. Even in Silicon Valley, the prognoses have become more restrained, and Elon Musk too has grown more cautious with his mega-projects. Maybe the folks in Silicon Valley are pausing and reflecting too? Contemplating humankind and what it means to be human? In a *SPIEGEL* interview this past March, Mark Zuckerberg was asked how he thinks the people of the world in general—and his own children in particular—regard him: "It's important for me that Maxima and August can later say that what my father built was good for the world."[12] Is that cynical or did Zuckerberg really mean it?

Futurist Gerd Leonhard proposes the establishment of a Global Digital Ethics Council. Its mission would be to design ethical principles for a hyper-technologized society, especially to govern artificial intelligence and genetic engineering.[13] Would the Google Duplex voice technology introduced last May already be a case for an ethics council? The bot sounds totally natural. On the phone, it comes across as if it were an actual human being. It's designed to take over service tasks like reserving a rental car, making a hair salon appointment, or setting up a business meeting. The reaction of Martina Mara, media & robot psychologist at Johannes Kepler University Linz, was highly critical: "The new #Duplex Bot gives the impression that there's another human being on the line. It can make an appointment with a hair stylist or a restaurant reservation. The basic assumption behind it is that employees don't want to talk to robots on the phone. That's why they have to be duped."[14] Professor Zeynep Tufekci of the University of North Carolina also arrived at a drastic verdict: "Google Assistant making calls pretending to be human not only without disclosing that it's a bot, but adding "ummm" and "aaah" to deceive the human on the other end with the room cheering it… horrifying. Silicon Valley is ethically lost, rudderless and has not learned a thing."[15]

In 2014, a group of prominent scholars, scientists, and entrepreneurs including George Church, Stephen

Hawking, and Elon Musk gathered in Cambridge, Massachusetts to found the Future Life Institute (FLI). They formulated its mission statement in no uncertain terms. "The FLI's mission is to catalyze and support research and initiatives for safeguarding life and developing optimistic visions of the future, including positive ways for humanity to steer its own course considering new technologies and challenges. FLI is particularly focused on the potential risks to humanity from the development of human-level artificial intelligence."

An open letter entitled "Research priorities for robust and beneficial artificial Intelligence" that was signed by 8,000 people, primarily scientists and scholars, called for taking a more prudent approach to artificial intelligence. "The progress in AI research makes it timely to focus research not only on making AI more capable, but also on maximizing the social benefit of AI. We recommend expanded research aimed at ensuring that increasingly capable AI systems are robust and beneficial: our AI systems must do what we want them to do." [16]

These socially relevant themes are also reflected in the work submitted in 2018 to the Prix Ars Electronica and STARTS PRIZE juries. This is the third consecutive year that the competition to determine the recipients of the STARTS PRIZE awarded by the European Commission has been administered by Ars Electronica in cooperation with BOZAR and Waag. The following pages provide insights into the prize-winning works.

1   Thomas L. Friedman, *Thank You for Being Late. Ein optimistisches Handbuch für das Zeitalter der Beschleunigung,* Cologne 2017, p. 12
2   Ugo Bardi, *Der Seneca-Effekt. Warum Systeme kollabieren und wie wir damit umgehen können,* Munich 2017
3   Jürgen Schaefer, *Lob des Irrtums. Warum es ohne Fehler keinen Fortschritt gibt,* Munich 2016
4   Christine (von) Weizsäcker, Ernst Ulrich (von) Weizsäcker, Fehlerfreundlichkeit. In: Kornwachs, Klaus (Eds.): *Offenheit. Zeitlichkeit. Komplexität,* Frankfurt / New York, 1984, pp. 167 ff.
5   Sascha Lobo, Was Facebook wirklich ist. In: *SPIEGEL ONLINE,* 11 April 2018
6   Claudia Reiterer, *Der Popcorn-Effekt,* Vienna 2015, p. 153
7   Robyn Griggs Lawrence, Wabi-Sabi: The Art of Imperfection. In: *Natural Home,* September / October 2001; Christopher A. Weidner: *Wabi Sabi – Nicht perfekt und trotzdem glücklich! Der asiatische Weg zu mehr Gelassenheit,* Knaur 2011
8   Jerome D. Salinger, *The Catcher in the Rye,* Little, Brown and Company (1951)
9   https://www.bilanz.ch/unternehmen/dominanz-facebook-apple-amazon-google-warum-die-techgiganten-zu-machtig-sind
10 Over 10,000 Chinese companies have gotten set up in Africa, 90% of which are private firms. The Africa Status Report for the 1st Quarter of 2018 cites positive indicators, especially the presence of so many Chinese companies: "There are three main economic benefits of Africa from Chinese investments: job creation and skills development; the transfer of knowledge and new technology; and the financing and development of infrastructure. China is the largest source of infrastructure funding in Africa." In: Africa Status Report. In: *New African. An IC Publication,* April 2018, Nr. 582, p. 56
11 https://www.apnews.com/bb5628f2a7424a10b3e38b-07f4eb90d4, 1 September 2017
12 Thomas Schulz, Außer Kontrolle. In: *DER SPIEGEL* Nr. 13, 24 March 2018, p. 24
13 Gerd Leonhard, *Technology vs Humanity,* Munich 207, p. 167
14 Martina Mara (@martinamara), Tweet dated 11 May 2018
15 https://www.zdnet.de/88333369/google-duplex-hallo-sie-sprechen-mit-einem-bot/
16 https://futureoflife.org/ai-open-letter

Hannes Leopoldseder (AT), PhD, has worked as a television journalist for ORF Vienna, as the managing director of ORF Upper Austria (1974–1998), and the information director of ORF Vienna (1998–2002). In 2009 he was appointed honorary professor at the University of Art and Design Linz. He co-founded Ars Electronica and the Linzer Klangwolke in 1979 and initiated the Prix Ars Electronica (1987) and the Ars Electronica Center (1996). He is also the co-editor of Ars Electronica's catalogues.
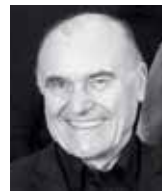
COMPUTER ANIMATION

The Fall

Gaëlle Denis, Pokras Lampas, Casey Reas, Alex Verhaest, Jonathan Yomayuza

We saw an incredibly wide range of works. Some were created by an individual while others were produced by a large team. We saw frame-by-frame animation created by hand and others that were generated entirely through code. Some videos were over an hour in duration and others were less than two minutes. There were clear stories with a beginning and an end in contrast to abstract works without any representational images or narrative. We saw high-tech kinetic machines and animation created with stones and string. We screened works through VR headsets, as single-channel projections, and in the massive floor-to-ceiling 8K projection space at the Ars Electronica Center.

Irrespective of this variety, the works that had an original quality, either through the story, or the way the story was told, captured our imaginations. Works that felt deeply relevant to our current heightened social and political environments demanded our attention, specifically works that represented voices and stories that are often not heard. We were engaged with how the works made us feel and with the quality of the experiences the works evoked. Projects that elicited a strong subjective response were promoted above works that were technically impressive. In addition, we strove to curate a selection of projects that reveal a diversity of voices and media we found within the total entries.

We, the five jury members, started with 220 works to view on Friday morning. By Sunday afternoon, the fifteen final selections were finalized. We sometimes agreed and often argued, but we arrived at a consensus on the final selection. The 1,007 total category entries were reduced through two rounds of selection prior to the face-to-face jury meeting. The first round was conducted internally by the Prix Ars Electronica and the remaining 334 entries were distributed for evaluation by the five jury members. Each jury member could override both rounds of preselection to bring a work back into consideration and that option was exercised. Each jury member brought their own domain of expertise. We all had projects we were passionate about removed from the final selection due to lack of agreement but, in the end, we share enthusiasm for the fifteen selected works.

As we gained a feel for the works submitted, our conversations moved toward broad topics. This year the category was re-defined from the prior "Computer Animation / Film / VFX" into "Computer Animation." As a jury, we feel the category of Computer Animation within the Prix Ars Electronica is uniquely positioned among international awards. We defined a preference for selecting works that emphasize the mission of the Prix Ars Electronica and that will likely be overlooked in more traditional festivals. For example, there are multiple festivals for animation shorts and numerous competitions for commercials and music videos.

We emphasized works that utilize emerging technologies for animation, but we didn't prioritize works based on their technical prowess. We feel that technical innovation is not the end goal of this category. The works we selected navigate a balance between artistry and personal expression within the context of emerging tech. We are impressed with these techniques in the service of a unique vision or experience and not as an end in themselves.

Golden Nica

TROPICS · Mathilde Lavenne

Similar to the way memories are lost in time, the viewer becomes lost within *TROPICS.* This visually seductive experience presents the uncommon view of the natural environment through the technical lens. The clean black-and-white visual environment contrasts with the unseen, spoken expression of memories, revealed with the digital distortion connected with the Mexican culture and history. Everything is imaged in the same way—it connects people and the natural environment into a continuous field. This piece suggests that life is not only about existence. Life is about coexistence and how we adjust to change to move forward. The emphasis of having living organisms give meaning to the environment and in this case the stories preserve the environment in time the same way a traumatic, successful event in life can have a photographic memory. In a way the digital and somewhat mechanic capture technique allows the viewer to step back and

have an abstract view on what forms a culture. Even when the stories represented in the piece are individual experiences it gives a constant reminder of our mortality and how our actions can affect future generations. There is a great appreciation of how the creator chose to tie the strengths and weaknesses of the technology, and in a way using the error and limitation of the capture technology to create a piece that is emotional and open for interpretation.

Awards of Distinction

489 Years · Hayoun Kwon

The demilitarized zone (DMZ) between North and South Korea is a dangerous place filled with unmapped landmines between the two nations that resulted from the stalemate of the devastating Korean civil war. In *489 Years,* the viewer approaches, enters, and experiences the DMZ through the eyes and memories of a South Korean soldier. The presentation in virtual reality is tightly coupled to the core premise of the work. The experience of entering the DMZ is only possible through mediation. The first-person perspective of the VR-experience, although flawed, is key to the engaging qualities of the piece. The subject of *489 Years* is highly relevant today and became even more so in the time between the jury deliberations and the present. Rather than approaching this space as a mere zone of war, the narrator speaks about the redemptive qualities of the beauty of its natural state. Hayoun Kwon succeeds in addressing a deeply difficult problem in a profound and poetic way.

La Chute / The Fall · Boris Labbé

The ambitious *La Chute,* a collaboration between artist Boris Labbé and composer Daniele Ghisi, is a distinct and masterful animation with strong links to the histories of European painting and animation as well as Norse and Greek creation myths. Through echoes of Bosch and Goya, it seamlessly combines traditional techniques with contemporary software to create a fevered vision of struggle and strife, death and life, construction and destruction, Hell and Heaven. The strong themes of depicting

human behavior and society in its vulnerability and perversion feel strongly relevant to the world as we experience it in 2018. The looping quality of the micro-compositions in the work are hypnotic, while the digitized analog paintings that make up the collage are visceral, becoming chaotic, complex, and multi-layered, empowering the tragic fall of those celestial beings descending to Earth.

Honorary Mentions

An Excavation of Us · Shirley Bruno

As the viewer enters an uncanny space, it's difficult to tell if it's real or a dream. The indirect storytelling through the unseen voice of the narrator is complemented by flickering light and shadows of figures on the wall of a submerged cave. As more fragments of narrative emerge, the viewer gains footing within the story of a Haitian slave revolt against the local French government in 1791. The oblique images and compelling narrative synthesize to create a hallucinatory and nonlinear experience for the viewer that is unique to animation and cinema. The narrator remarks, "History does not have a way of collapsing the distance between things," but the cinema does.

Descent · Peter Burr, Mark Fingerhut, and Forma

The *Descent* software has precedent in 8-bit PC games, demos, and 90s media art. It takes direct inspiration from an earlier source, Pieter Bruegel The Elder's 1562 painting *The Triumph of Death* as a depiction of the Black Death that devastated Europe. *Descent* is an animation that runs on the users' computer desktop. The work is situated and exhibited within a familiar and personal space. When the *Descent.exe* is run, a coded plague takes control of the computer. A masterful 8-bit animation unfolds and a series of new files first infest the computer. Although *Descent* at first might appear retrograde based on the visual style, the subject and the execution are more dominant than the technique.

Flesh Nest · Andrew Thomas Huang

This post-apocalyptic digital piece reflects on our reality, expressing fleshy and messy collision of human behavior. Experimenting loops in a choreographic way, this sci-fi, rock-, manga, -opera explores digital animation, structure, and compositing techniques through a unique style via snaking cable lines, strange creatures on a bizarre, experimental, trash fashion planet. Sometimes reminding us of a kind of Jérôme Bosch digital artwork, the deconstructed aspect gives an unpolished feel that offers a brutal, but impactful, perception of this unique film.

Ghost in the Shell Reel · Ash Thorp

The first *Ghost in the Shell* film directed by Mamoru Oshii in 1995 was an extraordinary achievement in worldbuilding. The 2017 remake was an unqualified disappointment to *Ghost in the Shell* purists and to newcomers, but the production design was incredible. We are acknowledging the contribution by Ash Thorp and collaborators for excellence in design and animation. The submitted animation reel summarizing this contribution to the film was remarkable and stunning. It stands out for its vision and it pushes forward the boundaries within its domain.

Impossible Figures and Other Stories II
Marta Pajek

Impossible Figures and Other Stories II does an amazing job at illustrating the complexity of human coexistence and highlights the struggle of time, fertility, trust, and the complex illusion of achieving perfection. With fertility being a constant concern for a majority of women, as well as the struggle to achieve perfection among all genders, we felt that this animation was important to highlight for its message and beautiful execution.

LOVE · Réka Busci

With her unique style and tone, Réka Busci delivers a surreal and abstract interpretation about love in three different chapters. Through an impact on a distant solar system, the scenes, almost like haiku-like situations, show irrational connections between the inhabitants of a strange planet. Using the colors, dark comedy, and visual compositions, this 2D animation goes beyond all universal notions of love to offer an intuitive, sensitive, and sometimes sarcastic way of illustrating our own society in various ways.

Norman · James Paterson

James Paterson, the creator of *Norman,* has been a pioneer of software-based animation for over a decade. Through his early work created in Flash and hosted on his website, *presstube.com,* he brought a unique and personal style of drawing into the cold, web browser environment. With *Norman*, he has reached a new level of sophistication in creating a highly personalized tool to create three-dimensional animation directly through drawing in a virtual reality environment. The intuitive and fluid way in which the tool was created allows the user to explore and create while letting their imagination flow. It creates a three-dimensional sketchbook for users to create stills or stories in a natural and organic way without imposing traditional 3D and animation creation interfaces. We are excited about Paterson's explicit decision to minimize the interface and to not copy menu structures from decades-old software drawing tools. Unlike other drawing and animation tools that are emerging for virtual reality, *Norman* is open-source software with its code on GitHub and it is more accessible; it runs within the web browser environment. It is a great opportunity for the community to learn how the tool was made and even explore the possibilities to build on top of what has already been created.

Pussy · Renata Gąsiorowska

The delightful *Pussy* animation is a playful exploration of sexuality and intimacy. The simply drawn protagonist is placed within flat, red-and-blue environments that create a phantasmagoric space where anatomy is fluid and anthropomorphized. Through humor, a subject that's not often openly celebrated comes to life. The orgasmic climax reveals a new visual layer to the work that surprises the eye and brings a satisfying end. The sparse, but sophisticated drawings explore with simple gesture a visual language connecting the body and its intimacy. The rhythmic, minimal lines observe the complexity of female intimacy to create a playful but powerful piece that challenges our perception of our own sexuality.

Quantum Fluctuations · Markos Kay

This series of short experimental animations from Markos Kay were generated from simulations patterned after the scientists at CERN. They feel specific to the domain of the quantum world, but also expressive in the traditions of abstract film and animation. The result are exquisite interpretations of experiments and phenomena that explore the quantum world: Hadron Decay, Proton Beam, and Hard Subprocess.

Rediscovery of Anima · Akinori Goto

Akinori Goto dives deeper into the primitive roots of animation and explores alternate possibilities that could have been adapted if modern day techniques would have been discovered at an earlier time in history. Unlike his previous projects, the artist's decision to strip away modern technology and utilize materials such as stone, branches, twine, and sunlight allowed the artist to experiment with the same tools that would have been available centuries ago with an adaptation of a modern perspective.

The Full Story · Daisy Jacobs

In the way most people have fragmented memories from their childhood, *The Full Story* pieces together the memories of a young man to tell the story of a family that has been torn apart by divorce and gives insight into the sometimes unspoken struggle of adapting to newer additions to the family. Using a hybrid of painted characters and environments, live action characters, and life-sized stop motion animation, Daisy Jacobs and her team were able to beautifully combine multiple techniques to achieve a unique and refreshing intimate experience while maintaining the unique visual experience.

Western Flag (Spindletop, Texas) 2017
John Gerrard

Through a series of artworks over the last decade, John Gerrard has defined a unique space at the intersections of animation, photography, and simulation. These high-fidelity works are painstakingly constructed according to photographic research and they all run in real time in continuous durations, without beginning or end. The simulations change according to the cycles of the day and year and the simulated camera often roams the spaces to explore the environment. *Western Flag (Spindletop, Texas) 2017* is a remarkable example of Gerrard's practice. It's a simulation of a flag composed of black smoke that stands on a digital re-creation of the first major oil discovery in Texas in 1901. It's a flag that represents the international geopolitical consequences and environmental devastation linked to "black gold." This is an excellent example of a new kind of animation that is only possible to exist as a piece of software. We hope to see many other artists working in this direction in the future.

TROPICS
Mathilde Lavenne
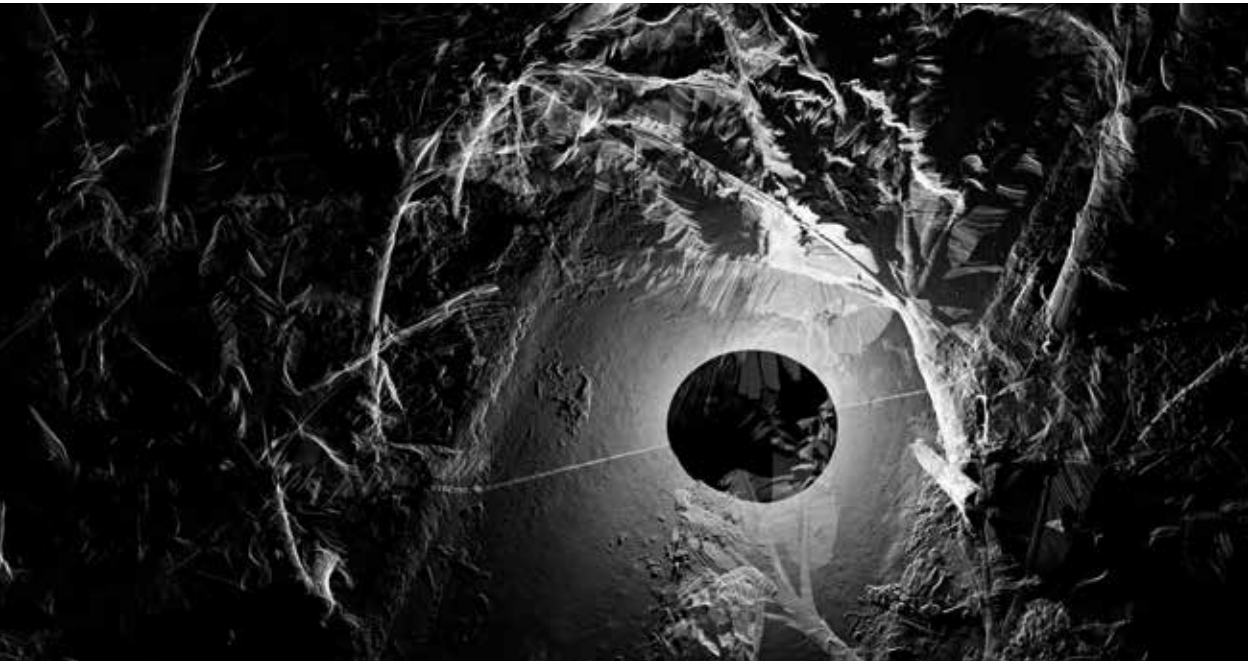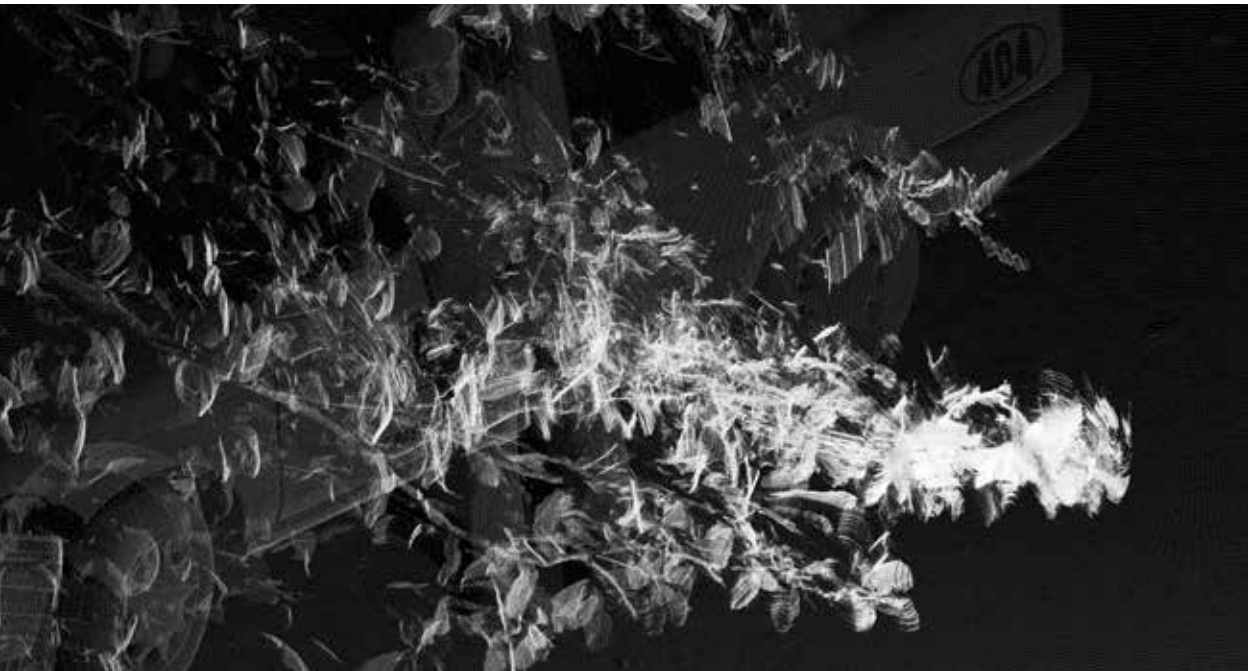
TROPICS draws an orbit around a Mexican farm. Scattered voices seem to revive and disturb the memory of the place. Crossing the matter, the film attempts to stop time and men, and reveals the ghost of a lost paradise.

In the 19ᵗʰ century, a French community crossed the Atlantic to settle in Jicaltepec along the Rio Filobobos, in the Veracruz region of Mexico. These French families, who were mostly just farmers, were able to build large agricultural operations over generations despite the hostile tropical environment and climate. Since the Spanish conquest, Mexico has embodied a western mythological reverie: Amazons guiding the Conquerors in their quest for a new land, but also, the idealization of a new world filled with lush vegetation, the development of medicine through the use of new plants, and the evangelical ambition of a better world. If part of the European fantasy made sense of the first contact with the New World, it also destroyed a great deal of "primal" knowledge by merging with the pre-Columbian peoples. Taking the form of a 3D archaeological expedition, *TROPICS* draws an orbit around these territories from which arise scattered voices expressing their secret stories and their relations with the ghosts of past time. Confronting a conception of the world with advanced technology ironically creates a visual matter akin to constellations of information—reminiscent of our connection to the cosmos, but also of a certain mathematical essence common to each and every thing. At the pace of a pulsating sound resonating within a space without end or gravity, the film attempts to stop time and men, and reveals the ghost of a lost paradise.

"In January 2017, I went to explore this tropical area in order to meet these families and their natural environment. I was confronted with the region's colonial past, strongly rooted in the exploitation of land and the development of a strong and ubiquitous agriculture, based on the western model imported by these families. While exploring the area, I was struck by the people's will to convey a pre-Columbian past, which was literally asking to rise out of the ground.

Every year during the rainy season, the Rio Filobobos that surrounds the area violently floods the lands and villages. For years, it has carted mundane objects of the pre- Columbian period from the mountain and regional territory: pottery, painted statuettes, and other artifacts and objects of worship that the inhabitants collect and keep in their homes. These ancestral remembrances literally wash up on the banks, and sometimes kneeling to the ground is enough to pick something up: fragments and other snippets of time past. Knowing the rules of the cosmos in order to find one's place in the world was at the heart of Amerindian wisdom—and this form wisdom was inseparable from the knowledge of agriculture such as the laws of nature, lunar calendars, seasonal cults...

The film speaks of this memory, of a moment frozen in time at the heart of Mexico, of a tropical microcosm that takes us through a form of archaeoastronomy[1]."

Mathilde has long been interested in the anthropological dimension of the societies that she encounters through her work, but also in their relationship to the myths and cosmogony at the root of some of their beliefs.

Working from digital data, she uses a FARO scanner, a tool used in architecture to scan buildings. She installs this device on various sites and follows certain routes on the map, some of which she has tracked by foot to produce these stratified images, likened to "a kind of phantom map of the chosen site." Then, from the myriad of points thus obtained, she renders a three-dimensional landscape. Thanks to this process, Mathilde has obtained a superimposition of layers that gives her progression along these paths lined with banana trees the appearance of a voyage through appearances, in the most literal sense. Nature looks like a laminate of finely meshed films that connect different surfaces of reality, which are not necessarily related to one another in our ordinary experiences.

The black and white shots could give the impression that the images were taken at night with infrared goggles except that here, the reversal of values and the greenish tone that characterize such images are precisely absent. The images give us the feeling of penetrating the structure of matter and reaching what usually remains invisible. With this work, we aren't invited to discover a landscape that we don't know but the very strangeness of the world of which it is only one element.

Gilles A. Tiberghien[2]

1   Term used by Michel Onfray in *Cosmos, vers une sagesse sans morale,* 2015, éd. Flammarion.
2   Gilles A. Tiberghien, philosopher and essayist, teaches Aesthetics at Université de Paris 1 Panthéon-Sorbonne

Mathilde Lavenne (FR), born in 1982, began focusing her artistic approach on emerging technologies and digital tools by writing short films and creating interactive installations in 2011. She received the SCAM's Pierre Schaeffer Prize in 2014 and the Contemporary Talents Prize from the François Schneider Foundation in 2015. She graduated from Le Fresnoy–Studio national des arts contemporains, with honors. Her short film *Focus on Infinity,* shot in Norway, was selected in many festivals such as Tampere Film Festival in Finland, Shnit International Shortfilmfestival in Switzerland or International Short Film Week in Regensburg. Her work was shown in France at the Palais de Tokyo, in Italy at the Villa Medici, and at MADATAC in Spain. In 2018, she is selected to continue her research for a year at Casa de Velázquez, Academy of France in Madrid.

DJAVANSHIR.N

489 Years
Hayoun Kwon

489 Years shows an animated landscape of the Demilitarized Zone between North and South Korea, based on the narration of a former soldier who had entered the DMZ—one of the most dangerous and heavily armed places in the world. Since only authorized personnel can enter the DMZ, Hayoun Kwon uses animation as a medium to reconstruct the space that plays on the fiction and the fantasy of a forbidden territory, providing an indirect experience for the viewer.

The former soldier featured in *489 Years* tells Hayoun Kwon various stories of his experiences in the DMZ. Among his many accounts, the artist was touched by his story of the landmines and flowers, realizing that she wanted the viewer to experience the DMZ as a paradoxical place where intense anxiety and subliminal beauty coexist. In creating her imagined landscape, Hayoun Kwon addresses the geopolitical realities of the peninsular division, its violence, and projected images of this mythical space.

Originally shown through a VR device, artificial interventions and fictional constructions enable the artist to film what cannot otherwise be shown. Animation affords her the freedom to theatricalize, exaggerate, and push the frontiers of representation, and even to exploit the fantasmatic potential of her subjects. Reflecting on identity and the notion of the border, Hayoun Kwon interrogates the construction of individual and historical memory, as well as the ambiguous relationship of both to reality and fiction. Offering the viewer an entrance into the DMZ, Hayoun Kwon's work leads the viewer to experience the DMZ through human emotions of anxiety and wonder.

Director: Hayoun Kwon
Level designer: Fabrice Gaston
Tech artist/Animation: Guillaume Bertinet
3D Modeler: Laurent Raynaud
Sound designer: Sylvain Buffet
Composer: Pierre Desprats
Consultant: Balthazar Auxietre

Hayoun Kwon (KR), born in 1981, is a multimedia artist and documentary director. She graduated from Le Fresnoy – Studio national des arts contemporains in 2011 and she lives and works in France and in Korea. Her films *Village Mode* (2014) and *489 Years* (2016) have received several awards and been shown at a number of film festivals, including Ars Electronica 2018. The reflection on identity and borders is central to her previous works. She has focused more specifically on the construction of historical and individual memory and their ambivalent relationship to reality and fiction.

La Chute / The Fall

Boris Labbé

As celestial beings descend to Earth vitiating its population, the world's order unbalances. Initiated by these terms, a tragic fall leads to the parturition of crucial opposites: Hell and Heaven's circles.

Boris Labbé got the inspiration for his film from reading Dante's *Divine Comedy*, but it isn't an adaptation. In fact, the work gives a sensation of being an amplified imaginary creation that draws upon art, myths, and the history of mankind. The artist was clearly influenced by Bosch's *The Garden of Earthly Delights*, Bruegel's *The Fall of the Rebel Angels*, Botticelli's illustration of Dante, Goya's *The Disasters of War* and Henry Darger's *In the Realms of the Unreal*. With *La Chute* Boris Labbé continues his experimental research with a new sense of narrative, and pursues his work around loops, metamorphoses, and the intertwined processes of degeneration and regeneration.

The artist uses traditional techniques combined with computer composition editing. The animated sequences consist of Indian ink and watercolor drawings on paper (21 x 30 cm), approximately 4,000 original drawings were needed to create the whole film. The multilayered compositing as well as the camera movements were made with After Effects during the process. Boris Labbé works with a small team of artists, technicians, and animation students who help him to assume this laborious and non-conventional working process. Parallel to the animation process, the musical composition was created by the Italian composer Daniele Ghisi. He's worked with database existing music, mainly string quartets, edited digitally in a complex multilayered electronic music composition.

La Chute is an animated short film directed by Boris Labbé and his second collaboration with Sacrebleu Produtions after his last project *Rhizome*, awarded with a Golden Nica, Computer Animation/Film/VFX, Prix Ars Electronica 2016

Produced in France by Sacrebleu Productions, in association with Boris Labbé, *La Chute* received support from CNC, Ciclic Animation, Fondation Jean-Luc Lagardère, Strasbourg Eurométropole, France Télévisions, and Procirep – Angoa and Sacem.

Director: Boris Labbé
Music: Daniele Ghisi, *www.danieleghisi.com*
Producer: Sacrebleu Productions, Ron Dyens
Animation: Boris Labbé, Armelle Mercat, Hugo Bravo, Capucine Latrace
Animation trainees: Claire Boireau, Edgar Collin, Johann Etrillard, Jean Gégout, Alexis Godard, María José Suárez
Compositing: Boris Labbé, Sami Guellaï
Calibration: Yves Brua
Mixing: Régis Diebold

Sacrebleu Productions

Sacrebleu Productions

Boris Labbé (FR). After obtaining a DNAP (National Diploma in Visual Arts) at the School of Art and Ceramics in Tarbes, Boris Labbé continued his studies at EMCA–École des Métiers du Cinéma d'Animation in Angoulême, where he produced numerous projects, including *Kyrielle,* awarded with the Special Jury's prize for Graduation Films at the Annecy International Animated Film Festival in 2012. Simultaneously, he developed his work as an artist and film director. He spent one year as an artist member at the Casa de Velázquez in Madrid, Academy of France in Spain. Later on he started his collaboration with Sacrebleu Productions and directed the short film *Rhizome* (2015), which was awarded the Grand Prize at Japan Media Arts Festival in Tokyo, and the Golden Nica at Prix Ars Electronica in Linz. *La Chute* (2018) was selected for special screenings at the 57th Semaine de la Critique, Cannes Film Festival.

An Excavation of Us
Shirley Bruno

COMPUTER ANIMATION · Honorary Mention
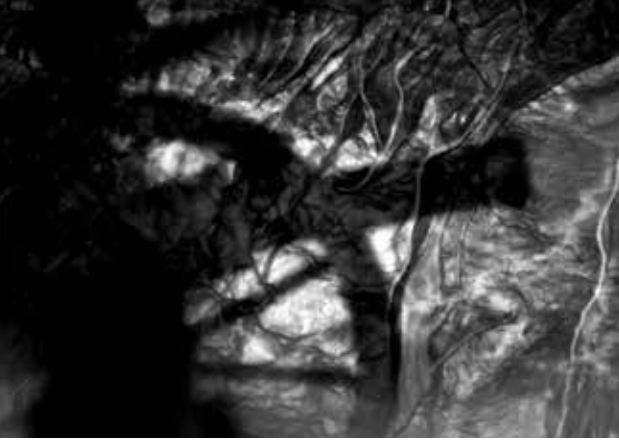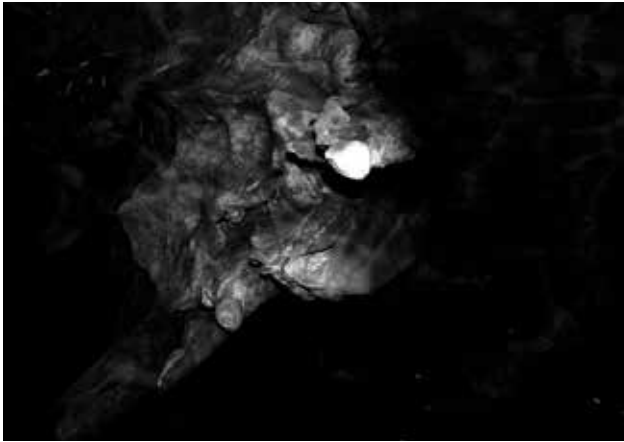
A mix of compositing of 2D images in a 3D space with 3D animation.

It is 1802, during the last year of the Haitian Revolution. The film is in black and white and sepia. We see the shadows cast by Napoleon's army on a boat lit by lamps. The army enters a cave, passes through different dark and textured rooms. The water is black and shiny.

The film is a journey through the cave. We listen to the contemplative voice of Marie Jeanne. As if she were explaining recipes, she describes one by one the unimaginable torture techniques carried out on her people. She tells us why she fought. Should we choose a slow and humiliating death through slavery or the liberation of her people?

Somewhere in the cave there is an explosion of light, an explosive light like that of war. Rows of silhouettes in battalion fire instinctively with their rifles. We see that all the guns point towards the silhouette of a calm and provocative soldier who was brought here to meet his death, condemned to the firing squad. It's Marie Jeanne herself.

The camera's getting closer. You can see her chest filling with air ... the shadow of her body doesn't miss a detail. She inhales, and exhales ... the calm of the cave. Marie Jeanne whispers something to herself ... before the bullets detonate again.

Her death in the film marks a split between the real historical figure and Marie Jeanne the martyr known in the region as a woman who seduced French soldiers and then killed them with poison. Her death also marks another split: the transformation from "reality" to the world of myths, legends, and imagination, more abstract. The film is a lyrical reinterpretation of these historical events, focusing on specific moments of the Haitian Revolution that still haunt the country today. A long camera shot will make us discover the cave, crossing it and revealing it layer after layer. The play of light and shadow will disturb our perception like Plato's cave, like History itself.

We understand the evolution of the silhouettes of all the characters from an ambiguous minimalist to detailed forms, because we are talking about bittersweet victories, the result of horrible tragedies applied to Marie Jeanne's "body".

The film combines a contrasted aesthetic made of black silhouettes on a white background and 2D and 3D compositing images. The film was shot live with still images in the Marie Jeanne cave in Port-à-Pimente, Haiti and then in After Effects, the images were deconstructed to recreate the space of the cave in layers. The cave itself is intimately linked to the idea of an interior—that of Marie Jeanne's body. I play with spaces and the boundary between history and myth, a more symbolic space but always real. This will anchor the film in reality and history, as a documentation of the cave itself and of the legend of Marie Jeanne. The film will inextricably link these two realities.

This animated and experimental film thus works on the question of the stigmata, the physical and symbolic traces left by the tragedy of slavery on the collective body, especially the female body. It deals with the way in which history—though elusive and changing according to perception—is inextricably linked between a place, history, and myth. It is the persistence of memory and experience, penetrated, consumed, then captured on the collective body. It is also a film to confront the banal culture of collective forgetfulness, a way to contemplate the traumas of my ancestors endured and written on my own body. It is a way to contemplate the sins endured and written for those who forget.

Shirley Bruno (US/HT). Shirley Bruno's films draw upon her heritage, preserving and radicalizing her ancestral traditions and mythology. She creates modern myths that expose the slippery spaces between the physical and metaphysical world, between collective memory and history. In her work she explores the everyday, the Sacred, and the intimate violence in the things left unsaid that mark us generation after generation. Shirley has a Masters from London Film School and another Masters from Le Fresnoy – Studio national des arts contemporains where she was an artist fellow. Shirley has received numerous grants and awards and her work has screened internationally. She works alternately between New York, France, and Haiti.

Descent
Peter Burr, Mark Fingerhut, and FORMA

In 1562, Flemish artist Pieter Bruegel the Elder completed a painting called *The Triumph of Death.* In this panoramic landscape the sky is blotted out by black smoke; ships and dead fish litter the ocean shore; and an army of skeletons experiment with myriad death techniques. The living are badly outnumbered and the variety of fated tortures seems endless. There is little room for whimsy in this tableaux.

Over 200 years earlier, a nasty plague, commonly known as the Black Death, left a cruel and massive mark on European civilization, wiping out half of Europe's total population. This was a quiet pervasion of death–an invisible pathogen carried by herds of tired rats. This plague triggered a series of social and economic upheavals with profound effects on the history of medieval Europe, guiding its survivors into the sort of self-inflicted darkness pictured by the Elder Bruegel. Looking back at this historical trajectory, Peter Burr, Mark Fingerhut, and FORMA have created a spiraling inter-dimensional narrative aptly titled *Descent*–a meditation on one of humanity's blackest hours. Taking the form of a desktop application, *descent.exe* gives the user a brief glimpse of a world descending into darkness–an unrelenting plague indifferent to the struggles of the user. There is a silver lining, however, tucked into the software's final sweep. An equanimous watcher, reduced to a single eye, looks on as the plague of rats that has infested your desktop destroys itself.

Peter Burr (US) is an artist from Brooklyn, NY. A master of computer animation with a gift for creating images and environments that hover on the boundary between abstraction and figuration, Burr has in recent years devoted himself to exploring the concept of an endlessly mutating labyrinth. His practice often engages with tools of the video game industry in the form of immersive cinematic artworks, which have been presented internationally. His practice has been recognized through grants and awards including a Guggenheim Fellowship (2018), Creative Capital Grant (2016), and a Sundance New Frontier Fellowship (2016). **Mark Fingerhut** (US) is an artist and programmer who is primarily interested in the potential of desktop computer usage as performance. Using a handmade suite of software, malware, and virus-like programs called "artdisks" he transforms his desktop computer environment into a theatrical stage of potential where anything is possible and the rules of the OS are bent and broken. **FORMA** is a musical trio formed in 2010 in Brooklyn, NY, currently consisting of members Mark Dwinell, George Bennett, and John Also Bennett. FORMA's mixture of minimalism, ambient explorations, kosmische, and frenetic rhythm has captivated the international experimental music community since their 2011 self-titled debut on John Elliott's influential Spectrum Spools label. *Physicalist* (2016), their debut recording for Kranky, was a shift in a new direction for the group–their first recording to utilize acoustic instrumentation alongside their formidable electronic arsenal.

COMPUTER ANIMATION · Honorary Mention

Flesh Nest

Andrew Thomas Huang

Flesh Nest is a nine-part sci-fi video series illustrating a post-apocalyptic digital purgatory imagined by filmmaker / video artist Andrew Thomas Huang. Originally conceived as nine looping video projections designed for gallery exhibition, *Flesh Nest* premieres on the digital video channel Nowness as a condensed short film, each featuring excerpts from multi-layered cybernetic wastelands inhabited by zombie avatars, cyborg titans, null objects, scrambled matrices of digital detritus, and tangled virtualscapes. This Inferno-like world is inspired in part by the apocalyptic panoramas of Bosch and Bruegel paintings, and also in part by the book *Networks of New York* by artist and writer Ingrid Burrington, who documents the fragmented palimpsest of Internet infrastructure woven into our physical urban surroundings. Created with the motion capture system Perception Neuron, *Flesh Nest* features costumes by Ashley Eva Brock and choreography by Nina McNeely, the latter who worked with Huang to create a digital library of behaviors and movement inspired by primal human activities that regularly enact and proliferate themselves across Internet fiber lines.

Flesh Nest offers a reality parallel to our own, in which such behaviors are mapped onto androgynous humanoid proxies that aimlessly collide and interact, superimposing themselves over desolate, cable-strewn geologies and junk landscapes that operate more like charnel grounds: liminal spaces of half-mortal, half-digital existence. Rather than present a digital world made up of the corporate sterility of server rooms, streaming sequences of 1s and 0s, or UI screengrabs, *Flesh Nest* is an attempt to represent our digital reality as it physically is: a fleshy, tangled, messy collision of human behavior mapped and propagated via snaking cable lines across a decaying and irreversibly modified planet.

Producer: Sara Nassim
Executive producers: Sara Greco Melinda Nugent, Tom Berendsen
Production designer: Robert Brecko
Costume designer: Ashley Eva Brock
Choreographer: Nina McNeely
Makeup & Hair: Ashlyn McIntyre
Featured performers: Leo Morimune, Luz Remigio
Motion Capture dancers: Ryan Spencer, Kenzie McClure
Motion Capture created with PERCEPTION NEURON provided & sponsored by NOITOM
Cinematographer: Shadi Chaaban

Artist filmmaker **Andrew Thomas Huang** (US) lives and works in Los Angeles. He studied Fine Art and Animation at the University of Southern California, graduating in 2007. Huang's film and video work has exhibited at The Museum of Modern Art, NYC; MoMA PS1; The Barbican Centre, London; Postmasters Gallery, NYC; and the Museum of Contemporary Art, Los Angeles. As an experimental filmmaker whose work bridges the gap between video art and film, he has developed a strong reputation for his collaborative practice, having worked extensively with Icelandic artist Björk, among others.

COMPUTER ANIMATION · Honorary Mention

Ghost in the Shell Reel

Ash Thorp

Early on in the film's development, I met with director Rupert Sanders to discuss some of the creative direction. He expressed his desire to paint the city with neon lights in a new form that he coined as "Solograms," which are solid holograms. It is something in the realm of a particle system of light that can be moved and augmented in Z space. I loved the idea and instantly got to work building out concepts and ideas.

Pulling muse from the amazing original source material, I aimed to craft a look and style that would match Rupert's vision, while still maintaining the essence of the original manga and anime. By merging physical buildings with the Solograms, old neon lights, and holograms, I aimed to paint a multi-layered facade over the city to bring it to life. I wanted it to feel as if the viewer was taking a psychedelic journey wavering between the realms of alternate reality and virtual reality. Once the designs were approved they moved over to the amazing people at Weta Workshop who did an incredible job bringing the 2D concepts to life in scale models that were then lit and shot for the final film. The images

with the Weta Workshop logo are photos of the actual models. I have always wanted to develop actual concepts and props for films ever since I was a young boy. It was an honor to adapt and build upon some of the iconic cars and props that I grew up adoring, such as Batou's car and the Major's bike.

During the post production phase of *Ghost in the Shell,* the VFX team wanted to explore how the Major's suit would activate and work. Chris Bjerre and I did many different tests and simulations. The images capture some of the early research and development as we progressively discovered what the final effect would be in the film. Designing the logo and identity for the franchise was a great privilege. I did my best to pay homage to the past yet bring a fresh look and feel for this new film.

Director: Rupert Sanders
Lead concept artist: Maciej Kuciara
Lead concept artist: Vitaly Bulgarov
Concept artist/designer: Ash Thorp
Designer: Chris Bjerre
Reel editor: Fanck Deron

Ash Thorp's (US) involvement in projects is a rotation of numerous roles from graphic designer, concept/digital artist, illustrator, animator, creative director, to director. He originally gained recognition for his UI (user interface) graphics in feature films, such as *Prometheus, Ender's Game* and *Total Recall.* Soon after, Ash co-directed *Ares−Our Greatest Adventure,* with Chris Eyerman of 3AM, featuring Neil deGrasse Tyson in a promotional trailer for the feature film *The Martian*. Recently Ash and fellow college Zaoeyo collaborated on a tribute to Akira called *Awaken Akira,* which pays homage to the master work of Katsuhiro Otomo.   "Stay curious. Stay humble."−Ash Thorp

Impossible Figures and Other Stories II
Marta Pajek

COMPUTER ANIMATION · Honorary Mention
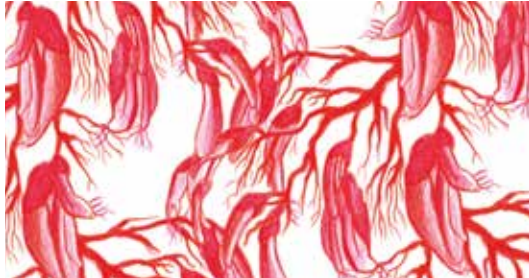
The film portrays the story of a woman who keeps on stumbling and falling in her daily rush. When she gets up, she discovers her house has quite unexpected attributes—it's built from paradoxes and filled with illusions. The film is the second in the triptych *Impossible Figures and Other Stories* inspired by the concept of impossible figures. Each of the parts tells a story about aiming for perfection and trying to fulfil yourself in a reality full of traps.

Written, directed and designed: Marta Pajek
Production: Animoon
Producers: Piotr Szczepanowicz, Grzegorz Wacławek
Sound designer and foley artist: Michał Jankowski
Music: Michelle Gurevich, Aleksandra Gryka
Voice: Agnieszka Matysiak
2D Animation: Marta Pajek, Małgorzata Mianowska, Aleksander Sobek, Joanna Wapniewska, Miray Özcan
3D Animation: Piotr Szczepanowicz, Tomek Popakul
Clean-up artists: Marta Iwańska, Mateusz Frank

Marta Pajek (PL) was born in 1982 in Kielce. She graduated from the Academy of Fine Arts in Krakow, where she specialized in animated film in the class of Jerzy Kucia. As part of an exchange program she studied in Turku Arts Academy in the class of Priit Pärn. Author of the animated shorts – *After Apples, Nextdoor* and *Sleepincord*. She is currently working on the *Impossible Figures and Other Stories* triptych. She lives and works in Warsaw.

LOVE
Réka Bucsi

COMPUTER ANIMATION · Honorary Mention
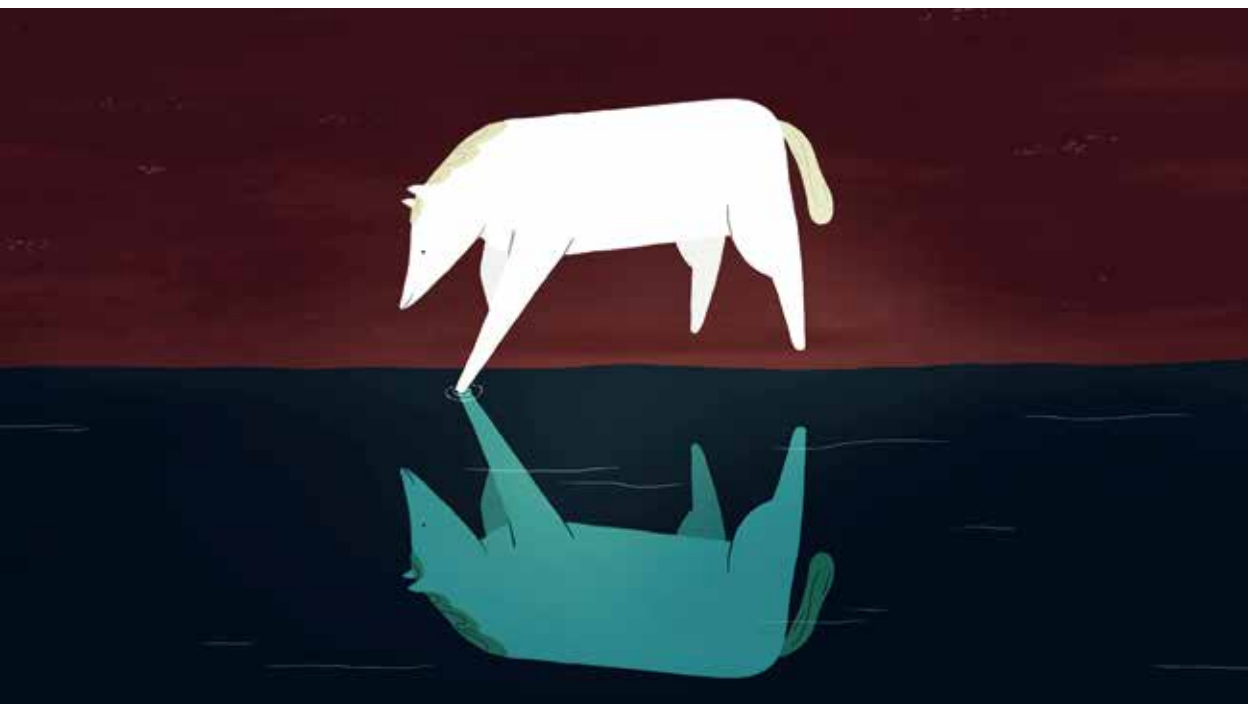
LOVE is a short film describing affection in three different chapters, through an impact on a distant solar system. Abstract haiku-like situations reveal the change in atmosphere on one planet, caused by the change of gravity and light. This pulsing planet makes the inhabitants become one with each other in various ways.

Director's statement

LOVE is a short film based on atmosphere and sensation. I was interested in coming up with a distant planet's structure and system without making the viewer question its existence. I chose animals and creatures, which were the most interesting for me at that time, and which were appearing the most in my sketchbook. I find it very interesting how by just placing anything on a screen, it becomes a symbol for something else. It's a challenge to try and take something for what it actually is. First this film was inspired by drawings I made on post-its. Then I read very poetic descriptions, but also listened to quite scientific talks about love. It is interesting how different people think about this feeling. Religion, science, and cultural differences define the purpose and the heritage of love in so many different ways, even though it is based on such a common experience. Love seems to be a mystical phenomenon, that can be described by everyone in almost the same way, without using any words, still almost everyone seems to seek the meaning and the mechanism of it. I approached the atmosphere by using different sensations and impressions of material, movement, and color but no words. The English word LOVE is not even a word anymore. It is used so often on so many platforms, that the letters turned into lines and forms and became an image, something that can be read even without knowing the letters. The symmetric compositions and surreal situations use kitsch to keep this world abstract. I tried not to get involved too much with my characters through the production. Showing something that creates a general atmosphere describing different states of affection was the main goal, and not to influence with my personal experiences. I wanted to capture the feeling of love without focusing on only individuals. I was also inspired by how a sun-cycle works, what states it has to go through, and what effect it has on other planets. I made myself this orbit as a base, where I set up rules that made me feel comfortable about telling a short story while not getting too narrative. I wanted the film to become something that the viewer would like to touch and be part of.

Directed and written: Réka Bucsi
Animation and layout: Cyrille Chauvin, Nicole Stafford, Thibaud Petitpas, Réka Bucsi
Design and backgrounds: Réka Bucsi
Compositing: Marie Jorgensen, Nicole Stafford, Réka Bucsi
3D: Lars Hemmingsen
Grading: Rémi Nonne
Sound design: Péter Benjámin Lukács
Foley artist: Tamás Beke
Music: David Kamp
Production coordinator: Loréne Lescanne
Post-production: Sorya Hocini
Producers: Marc Bodin-Joyeux (Passion Paris), Gábor Osváth (Boddah)
Co-producer: Erika Forzy
Line producer: Méline Samson
World Sales: Autour de Minuit | AnnaBel Sebag
Festival Distribution: Daazo | Zsófi Herczeg
Post-production: Sorya Hocini

Réka Bucsi (HU), born in 1988, is an independent animation filmmaker. She received her BFA and MFA at the animation department of Moholy-Nagy University of Art and Design Budapest. Her graduation film *Symphony no. 42,* got shortlisted for the 87th Academy Awards. Her films were screened at official shorts competition Berlinale, SXSW, Sundance, Annecy, and she has won over 50 international awards. 2013/2014 she attended Animation Sans Frontières (ASF), the European Animation Production Workshop. She was an artist in residence at the Open Workshop in Viborg, Denmark, and at Q21 in Vienna, Austria. Her French co-produced short film *LOVE* was nominated for the European Film Awards 2017 and shortlisted for the César Award 2018. Réka is represented as a director by Passion Pictures.

Norman
James Paterson

In 2017 I created a custom animation tool—for myself. A tool to enable and facilitate my imagination and flow. *Norman* is the animation tool I've always wanted. Named after Norman McLaren, a visionary Canadian animator, the tool is built in JavaScript, runs in a web browser, and lets me animate naturally in 3D using VR controllers. The project, initially funded by Google Creative Lab, is available as an open-source tool. This enables everyone to peek into the inner workings, see how it's made, and/or adapt it for their own purposes. It makes the process of animating more like playing a musical instrument. For instance, one mode automatically creates new frames and advances through the timeline each time you make a mark. The user can get completely lost in the process of drawing through time and space, without having to manually control the time-line. *Norman* is an experiment in building a medium and using that medium to create concrete works, at the same time.

With support from Google

James Paterson (CA) is an artist and creative technologist whose work hangs out at the intersection of drawing, animation, and code. Each of these mediums offers limitless room for exploration, but when braided together they can open up wormholes of creative possibility. Weaned on books like *Neuromancer* and *Snow Crash,* James has been daydreaming about the emergence of spatial computing since childhood. Over the past few years he's finally gotten a chance to explore creative tools popping up in this new space, and experiment with building his own tools from scratch like *Norman*–an open source VR animation sketchbook which runs in the browser. Since 1999 Paterson has exhibited his work at galleries and museums all over the world.

Pussy
Renata Gąsiorowska

COMPUTER ANIMATION · Honorary Mention
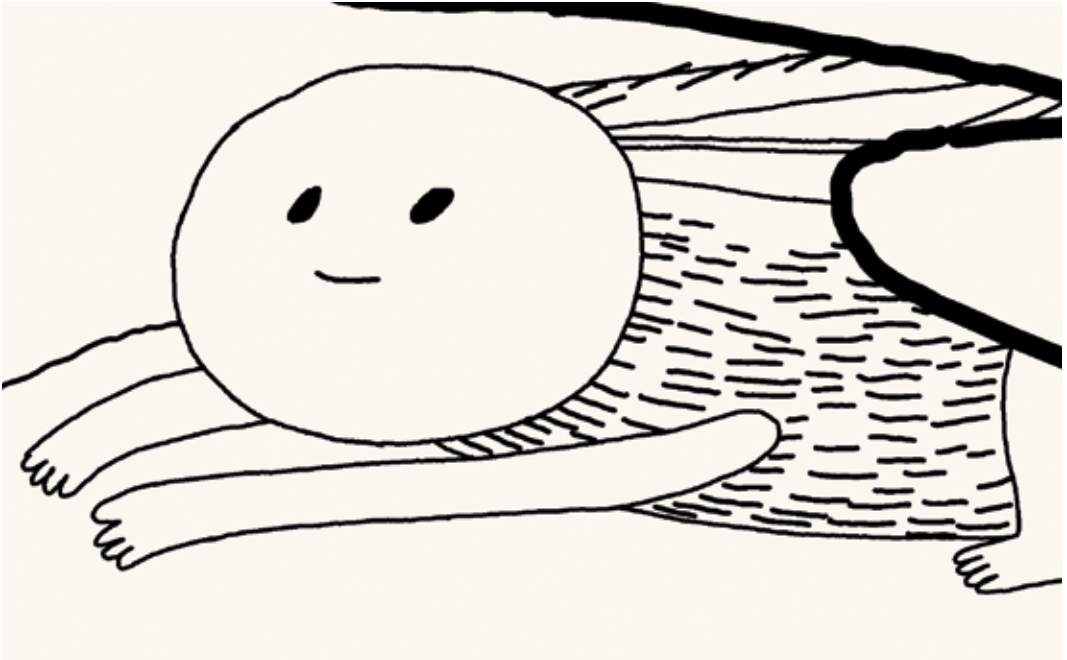
A young girl spends the evening alone at home. She decides to have some sweet solo pleasure session, but not everything goes according to plan.

Director, scriptwriter, animation: Renata Gąsiorowska
Sound: Ewa Bogusz
Music: Volodymyr Antoniv
Production: Polish National Film School in Łódź

Renata Gąsiorowska (PL), born in 1991, is an animation student and cartoonist from Krakow. In 2010 she graduated from The National School of Fine Arts in Krakow and in 2017, from the Film Animation and Special Effects Department at the Polish National Film School in Łódź.

Quantum Fluctuations

Markos Kay

Made as a series of virtual experiments, *Quantum Fluctuations* shows the complexity and transient nature of the most fundamental aspect of reality, the quantum world, which is impossible to observe directly. In the laboratory, elementary particles are observed by measuring the spoils of a proton collision and comparing the findings with data collected from supercomputer simulations. It is perhaps the most indirect method of observation imaginable, a non-representational form of observation mediated by computer simulations.

In *Quantum Fluctuations,* particle simulations are used as the brush and paint to create abstract moving paintings that visualize the events that happen during a proton collision. In these virtual experiments millions of virtual particles interact to create stochastic structures and patterns that allude to quantum properties such as wave-particle duality, superposition, entanglement, and indeterminacy.

Using simulations as an artistic tool can be likened to abstract art methods. There is no control over the way events unfold, however there is some control over initial parameters. It involves setting initial conditions such as the physical forces, properties, and entities of a virtual environment, and then the simulation evolves on its own with no intervention. This mirrors the simulation methods used at the CERN but also physical reality itself.

The film begins with the underlying quantum fluctuations and interactions that occur in the background of a collision. It shows the intricate structure of the proton beams that collide to create an outflow of particle showers which create composite particles that eventually decay. These visualizations were created with input from scientists working on the Large Hadron Collider at the CERN, Geneva. By using computer simulations as an artistic tool, this conceptual reimagining of quantum theory aims to

challenge our ideas of how scientific observation and knowledge are formed. Science is able to profoundly change the way we understand the universe but also our societies and our minds. From an artistic perspective, science is an extremely powerful meta-narrative and is therefore a subject that needs to be deconstructed through art. The scientific method itself can be seen as an artistic process—it aims to answer questions about how the world works but more importantly it creates more questions about reality. It deconstructs and reconstructs knowledge and it uncovers beauty, complexity, and simplicity just like art.

Special thanks to Valerio Jalongo & Gian Giudice

Markos Kay (CY/UK) is a digital artist, director, and lecturer with a focus in art and science. The aim of his work is to create public engagement with complex science. His art and design practice ranges from screen-based media to projection and print. Kay's work can be described as a series of experiments using generative methods which explore and abstract the complex worlds of molecular biology and particle physics.
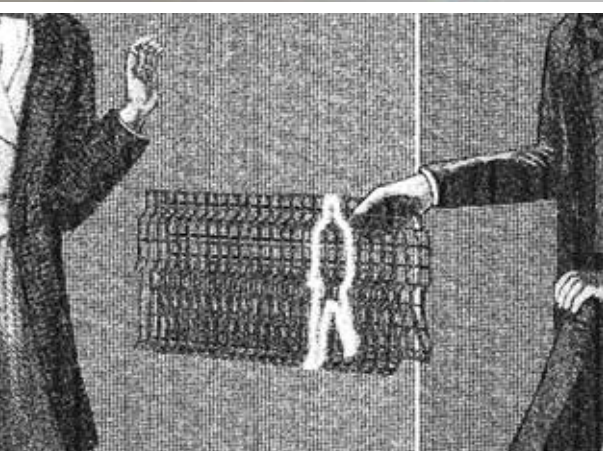
Rediscovery of Anima

Akinori Goto

The aim of this project is to discover "anima," which could have existed, but did not exist. The word "anima" means "life" or "soul" in Latin, and the word animation stems from anima.

This project is derived from the *Toki*-series, which I have long been creating using a 3D printer to give shape to time through movement. When I was creating the *Toki*-series, I realized that it was not the advent of modern technologies that made this method possible; rather, if one had the idea and the insight, it could have been created a long time ago in the distant past. Consequently I decided to completely abandon the digital technologies that I had previously been using, relying only on techniques that existed around the time of the birth of cinema in the 19th century to produce a work entirely from wood.

If a method to generate anima had existed in the 19th century, when movies were born, it is possible that methods of playing and recording footage would be different from how they are today. In my research, I learnt that there is a theory that cave paintings from around 30,000 years ago might have represented movement with frames, like in animation. So I went back even further than the 19th century and decided to make a work using stone, tree branches, hemp, and sunlight, in a way that could have existed in ancient times. This method is constructed so that when an image is exposed to the sunlight streaming through the slit between the stones, it will appear as if the person is moving.

This project attempts to rediscover "anima" through primitive methods using sunlight. While exploring how society might have interacted with these "anima" if they had been discovered at the time these primitive methods were available, the project also aims to show people anew the sheer joy and admiration of the illusion of movement in an age where technological advancements have made it possible to consume visual media in many different situations.

Akinori Goto (JP), born in Gifu in 1984, is an artist. He graduated from Musashino Art University, Department of Visual Communication Design. His works, capturing invisible connections and relationships by combining cutting edge technology with methods and media that existed long ago, are now on exhibition. The main exhibitions in which he recently participated include Ars Electronica Festival 2017, SXSW ART PROGRAM 2017, and STOP LICHT exhibition 2017. His works are being collected by the National Media Museum in the UK.

Bumpei Kimura

COMPUTER ANIMATION · Honorary Mention

The Full Story

Daisy Jacobs

Toby is selling his childhood home, but the empty house is full of memories. Fleeting happiness, a world shattered by divorce, and all the rage and help-lessness of being a child. Can he piece together the full story before closing the door on a life?

The Full Story builds on the techniques of *The Bigger Picture,* in that it is animated life-size with 2D painted characters that interact with 3D arms in half-painted, half-real sets. In addition, this time, painted characters in the immediate foreground come out of the wall completely, and we go into pixilation (real people moved frame-by-frame). The moving in and out of the wall is very fluid, as is the transition from painted characters to real people. The sets are highly patterned in a Seventies style, drawing heavily on the Impressionist painters' tech-nique of over-patterning images, which also helps to blend real people into the sets. This time I wanted to explore themes of family breakdown: why people leave each other and how this affects the children. I am currently working on my first feature in which I continue to explore relationships, focusing on the idea of what values we should admire in others.

Directed, written and animated by Daisy Jacobs
Co-directed by Christopher Wilder
Producer: Elliott Tagg, Geof Morgan
Cinematographer: Max Williams
Production designer: Elo Soode, Lucie Red
Hair and Make-up design: Natasha Lawes
Editor: Vera Simmonds
Composer: Huw Bunford
Sound designer: Jonas Jensen
VFX / SFX Supervisor: Allar Kaaski
Color grader: Max Horton
Motion Control technician: Justin Pentecost
Executive producer: Celine Haddad
Cast (principal roles only):
Toby: Ben Aldridge
Lance: Paterson Joseph
Dad: Scott Handy
Jan: Christine Kavanagh
Estate Agent: Emrhys Cooper
Derek: Benedick Blythe

Daisy Jacobs (UK) is an award-winning animator, writer, and director. She studied at Central St Martin's School of Art, after which she then studied Animation Direction at the National Film and Television School, graduating in February 2014. Her MA short film, *The Bigger Picture* won a BAFTA and was also nominated for an Academy Award. Her recent film *The Full Story* won Best Short Film at Edinburgh International Film Festival as well as screening and winning awards in over forty International Film Festivals. She is currently working on her debut feature film.

COMPUTER ANIMATION · Honorary Mention

Western Flag (Spindletop, Texas) 2017

John Gerrard

Western Flag (Spindletop, Texas) 2017 depicts the site of the "Lucas Gusher"—the world's first major oil find—in Spindletop, Texas in 1901, now barren and exhausted. The site is recreated as a digital simulation and placed at its center is a flagpole bearing a flag of perpetually-renewing pressurized black smoke. The computer-generated *Spindletop* runs in exact parallel with the real site in Texas throughout the year: the sun rising at the appropriate times and the days getting longer and shorter according to the seasons. The simulation is non-durational (having no beginning or end) and is run live by software that is calculating each frame of the animation in real time as it is needed.

Producer: Werner Poetzelberger
Programmer: Helmut Bressler
Modelers: Max Loegler, Philipp Marcks
Game Engine: Unigine
Installation development: Jakob Illera / Inseq Design

From April 21–27, 2017 *Western Flag* displayed on the Edmond J. Safra Fountain Court at Somerset House, WC2R 1LA London.

Pryce

Pryce

John Gerrard (IE), born in 1974, is widely regarded as a key contemporary figure in the development of digital media. Deceptively looking like film or video, his works are simulations—virtual worlds, made using real-time computer graphics, a technology developed by the military and now used extensively in the gaming industry. John Gerrard received a BFA from Oxford University in 1997 and an MFA from the School of the Art Institute of Chicago in 2000. He lives and works in Dublin and Vienna. Gerrard's work is in the collection of Tate, London; MoMA, New York; SF Moma, San Francisco; LACMA, Los Angeles; Hirshhorn Museum and Sculpture Garden, Washington; Kistefos Collection, Norway; IMMA, Dublin; Borusan Contemporary, Istanbul, and many private collections internationally.

INTERACTIVE ART +

Navigating Shifting Ecologies with Empathy

Minoru Hatanaka, Maša Jazbec, Karin Ohlenschläger, Lubi Thomas, Victoria Vesna

Interactive Art was introduced to Prix Ars Electronica as a key category in 1990. In 2016, in response to a growing diversity of artistic works and methods, the "+" was added, making it Interactive Art +.

Interactivity is present everywhere and our idea of what it means to engage with technology has shifted from solely human–machine interfaces to a broader experience that goes beyond the anthropocentric point of view. We are learning to accept machines as other entities we share our lives with while our relationship with the biological world is intensified by the urgency of environmental disasters and climate change that some still deny. Media artists are asking questions and staging interventions to raise awareness about the urgency of these issues and the need to take action NOW. The + sign encompasses questions of how we interact with the established news media—the online community has opened doors for the public to engage, question, and interact with current events. This year the jury perceived how the + sign symbolized the interconnectivity of humans, animals, bacteria, machines and everything else—the ecology of the collective mind.

Applications are invited for this category every two years and this year we received more than 1,000, which resulted in a highly competitive and diverse short list of applicants. The jury took a contextual approach to this vast landscape of artistic practices and conceptual focuses by identifying hubs of discourse and practice methodologies/areas. These included Robotics, AI and computation, environmental sensing, memory, knowledge and human connection, materials and tools, methodologies in creative practice, new economies and socio-political concerns. The mood of the community is as diverse as the works, yet an underlying echoing discourse—pertaining to the anthropogenic and converse *Life* seen through prismatic lenses of environmental, human and artificial forms—was present in this year's applications. AI and computation, the contextual hub of robotics, were represented by a range of works that, rather than engaging in the manipulation of life on a biological level, are developing the essence of life as an artificial entity. A common trend in the submissions from the field of robotics projects was how to create a spark of being in an artificial body—with works transmitting the last words of farewell and prayers of a dying person into the robot software; seeking life-likeness—computational self, and environmental awareness; autonomous, social, and unpredictable physical movement; through to the raising of a robot as one's own child. This is just a small sample of the artificial 'life sparks' in this year's category. Interacting with such artificial entities draws us into both a practical and ethical dialogue about the future of robotics, advances in this field, and their role in our lives and society.

At the same time, many powerful works that deal with social issues were submitted. The jury felt that even if ALife, AI, and robotics seem separate to some, it is important to show how they are connected. Freedom of speech, labor, and our environment are all deeply influenced by the machine algorithms and pretty soon we will stop being able to tell the difference between them. This raises a lot of issues for the shifting landscape of the global economies. Social networks have entered the establishment and are being manipulated by various interest groups. Personal data and value is used in ways that threaten the basic ethics of shared public spaces, potentially creating a two-tier society. Empathy for the Other—whether we're talking about gender, nationality, or economies has to be the central quality that informs interactions between humans, animals, machines, and robots.

Golden Nica

BitSoil Popup Tax & Hack Campaign
LarbitsSisters

While the government institutions are still immersed in a complex process of regulation and legislation of the global economy, the Belgian duo LarbitsSisters has taken a step forward with their interactive project *BitSoil Popup Tax & Hack Campaign.* The jury agreed that this initiative deserves the Golden Nica as it highlights and addresses the indiscriminate profit that the main tech corporations and Internet service providers make with the personal data of the users. The jury has assessed, on the one hand, the conceptual relevance of the project. It consists in the development of a critical tool that demands the restoration of a new equilibrium in the digital economy through a tax collector-bot system which controls

the use of the data of each citizen by global companies. On the other hand, the jury has considered the originality and solvency of the materialization of the installation in its off-line and on-line version. It has been developed as the sum of a process of interdisciplinary scientific research, philosophical reflection, and artistic practices, setting up a device of VPN connections, AI and tax collector bots at the service of a global system of economic and social welfare.

Awards of Distinction

Alter · Kohei Ogawa, Itsuki Doi, Takashi Ikegami, and Hiroshi Ishiguro

Alter was developed in a cooperation between android researcher Hiroshi Ishiguro and artificial life researcher Takashi Ikegami. Although this robot has a very mechanical appearance, its movements give the impression of aliveness. *Alter's* movements are not determined beforehand. Audience responses are perceived by *Alter's* sensors and simultaneously reflected in *Alter's* movements. Autonomous algorithm generators and artificial neural networks spontaneously fire and send signals to each other which makes it possible for *Alter* to constantly evolve and develop its own personality. The jury recognizes a novel interaction between a human and the robot and between the environment and the robot. We don't know how the *Alter* personality will evolve, nor can we know how this kind of symbiosis between humans and machines will change humanity. In this regard the jury states that *Alter* represents a step forward in android science projects.

[help me know the truth] · Mary Flanagan

The perception of the other is often altered by experiences, beliefs, prejudices, and other factors that belong to our individual and collective unconscious or our social and cultural context. Even more so when it comes to reproducing this cognitive system in a computer program, which has been developed in a neuroscientific research context and can be applied in surveillance and security devices. Mary Flanagan´s *[help me know the truth]* is an interactive installation that uses cognitive neuroscience algorithms to show the fragility and instability of our perceptual systems, be they of an organic or artificial nature. In this installation, the jury valued the use of neuroscientific software that allows the users to experience, through the interaction with the system, the weak plot of diffuse values that are barely sustainable to help us know the truth.

Honorary Mentions

AI DJ Project
A dialog between human and AI through music
Nao Tokui, Shoya Dozono / Qosmo

AI DJ Project—a dialog between an Artificial Intelligence and a human DJ is a live performance in which the AI is not a replacement for the human DJ but instead a partner that can think and play together with the human. This approach was acknowledged by the jury. To achieve this the creators trained several different neural networks and used a reinforcement learning system to teach the AI model how to speed up/down, nudge/pull the turntable, and align beats through trials and errors. With a camera system, the AI can also sense how much the audience dance to the music being played and uses this information in further music selection. The jury felt that this unpredictability brings a provocative tension to the AI–DJ performance and challenges the audience to wonder what the AI system will do next.

Conspiracy: Conjoining the Virtual
Kristin McWharter

Virtual Reality tends to isolate users from their social context by transplanting their vision into an alternate reality and in a gallery. These user experiences capture audiences in a state where they feel alone—despite their bodies existing in public or semi-public space. The jury felt that this work uses participatory interaction in ways that effectively amplify the tension between competition and intimacy in social spaces. Individual subjectivity within collective decision is enacted publicly as five people interact through a sculptural object, each directing their own VR experience. The sculptural form that brings these players physically together cultivates a tension between collaboration and competition that questions individual agency. Restricted movement limits their sense of agency and also brings awareness to their body and to the other bodies that are simultaneously participating in the physical / virtual and public space.

Digital Shaman Project · Etsuko Ichihara

The *Digital Shaman Project* proposes a new model of grieving through the robotics platform. A full-scale 3D printed mask of the deceased's face is placed on a humanoid robot with a specially designed program that can mimic the physical characteristics and the personality of that individual. For the time of mourning, the mimesis of the humanoid robot allows it to serve as a host of the deceased person.

The designed software functions for exactly 49 days after the person's death. During that time the family members can live and interact (via simulated conversation) with the deceased as if she or he were still alive. With the intervention of advanced technological rituals, the ancient religiousness reaches its climax. The jury acknowledged the importance of this subject as the project shows how technological progress brings about a transformation in every aspect of human existence, including the perception of time and death.

ECHO
Georgie Pinn (Electric Puppet), Kendyl Rossi

The desire to elicit empathy is present in many of the shortlisted projects, but *Echo* boldly brought this intention to the fore through a clear articulation of the work's purpose as an "empathy engine" and a well-thought-through platform for both gathering and sharing people's deeply personal and life-shaping stories. Situated inside a retro styled "photo booth," *Echo* uses bespoke facial tracking/fragmentation software to engender a sense of transference of identity. Over the course of a storytelling the viewer's face is slowly imprinted onto that of the storyteller. *Echo* is an immersive, iterative artwork that combines screen, facial tracking, animation, storytelling, and portraiture to build bridges between strangers. To see and hear someone else's story seamlessly flowing from your own lips and eyes creates a momentary slippage of identity and ownership that generates an emotional connection between the audience and the unknown storyteller.

ELECTRONICOS FANTASTICOS!
Ei Wada + Nicos Orchest-Lab

ELECTRONICOS FANTASTICOS! reframes and re-purposes old consumer electronics into new forms of music instrumentation. The artistic enquiry of this ongoing project has been realizing a condensed wisdom of industrial pioneers and the perceived scientific/psychic phenomenon hidden inside these objects. The jury took a particular interest at this time, as the framework of authorship has shifted to co-authorship, collaborative custodianship, and collection. The intent of the project shifted from artist collective to a creative collective that traverses the social fabric. Embracing the messy and unknown, in conscious opposition to the "efficiency and rationality of the AI era," the project's intent has also reframed Practice. Driven by a desire to co-curate,

prioritize personal stories, and reimagine new instrumentation through community-based ideation, the project has taken on an energy of its own that is transforming the ideas of ownership of production and practice from the heroic and professional to the democratic and porous.

ELECTRONICOS FANTASTICOS! emerged as a leading example from a number of projects seeking to shift these key art world machinations.

Institute of Human Obsolescence
Manuel Beltrán

The role of human activities in the framework of the new digital economy and in relation to an increasing labor market dominated by machines occupies the *Institute of Human Obsolescence* (IoHO). The jury valued the relevance of this topic as well as the way this initiative puts into practice different interactive devices with which the user can experience first-hand what it means to perform biological labor or data production today. In each case the worker's activity generates energy and information which is used by the digital industry without any consideration of data labor rights and remuneration for the use of others' data and working force. In this context, IoHO raises some of the key questions concerning the rules and regulations of new labor markets in the digital age.

Monitor Man · Yassine Khaled

Monitor Man is part performance, part social intervention. Yassine Khaled's practice investigates the disparity between the power, mobility, and wealth of some, and the powerlessness, constraints, and poverty of others in our globalized world. The performance opens random possibility for a meeting between people who are (on many levels) potentially far away from each other, but who can get closer by using simple technology and a preparedness to engage. Intentionally low-fi in presentation and platform, Yassine Khaled wears a helmet that has an iPad positioned just above his own face, which delivers a real-time connection to a person outside of Europe. The jury honored this project especially for the public and "alive" nature of the performance's multiple layers of discourse achieved with a simple platform and interface. The artist brings us to the spirit of humanity through connection, whilst making manifest the restrictions of an individual's freedom and the unequal constraints between nationalities.

Mother of Machine · Sarah Petkus
[The Adolescent Robot: NoodleFeet]
NoodleFeet is a unique robotic entity created by kinetic artist and roboticist Sarah Petkus. *Noodle* robot is built from light metals, 3D printed parts, and found objects and it's developed with mechanical and electronic systems which allows him to perform behaviors when stimulated by the environment. After several years of *Noodle* robot development Sarah Petkus has begun referring to herself as the robot's mother rather than his creator. *Noodle's* purpose is to learn and grow in much the same way a human child develops from infancy to adulthood. Through this process, the artist is currently exploring what it means for a robot to go through puberty. The jury acknowledged the project for its role in the redefinition of relationship between human and machine in a most intimate way: What does it mean to be the mother of a machine?

Poppy Interactive – War and Organized Crime Gone Global · Antoinette de Jong, Robert Knoth
This interactive online project draws on over 20 years of work by the collaborators as reporters from war-torn areas. Based on their book and installation, *Poppy: Trails of Afghan Heroin,* they share first-hand knowledge of the interconnected network of insurgents, terrorists, drug cartels, and other interconnected criminal trails. Using their own photos, video and radio clips, interviews and reports alongside found footage and YouTube clips, they create a first person narrative that gives the viewer an entirely different view of this largely hidden worldwide network of illegal economy. The website is a rich depository of media as well as fact-based statistics with interactive graphics. For example, they show the spectacular increase in sea and air traffic alongside mobile phone use. The jury felt that the insight they share with the public is critical in this time of fake news and media reportages as they offer an alternative viewpoint that provides fertile ground for in-depth analysis of current global states. The interactive documentary has a layered form of nonlinear storytelling that bridges various locations and times and that blends the forms of documentary and visual art.

Positions of the Unknown · Quadrature
The jury noted that although this group of artists has already been recognized more than once by Ars Electronica, they still deserve yet another Honorary Mention. This is not only for their project *Positions of the Unknown,* but also for their collaborative approach that keenly explores scientific and phys-

ical experiments, using new technologies or academic research as sources and inspiration. In other words, they exemplify the kind of in-depth artistic research necessary in order to engage the scientific community—whether in collaboration or dialogue. This installation is made of 52 custom-made mini machines that ever so slightly track unidentified objects including quite possibly classified satellites in the Earth's orbits. By creating this subtle yet powerful piece, they engage the audience in publicly available but not officially authorized data.

The Other in You · Richi Owaki,
 Yamaguchi Center for Arts and Media [YCAM]
The Other in You was developed by Richi Owaki as a new way to experience contemporary dance. It brings together haptic feedback sensors, the depth camera, 16 stereophony channels, and VR technology research results in order to produce a novel dance audience experience. The jury distinguished the innovative transmission of the dancer´s movement to the body of the audience and, in addition, the tangible experience of connectivity and extension of one another in this inclusive dance performance. By replacing the visual perception of a participating body with a spatial and temporal deformed state, we are re-shaping the awareness associated with the body. Using technologies in such a way it also gives the participants the opportunity to sense that we are not separated from each other, but rather an extension of one another.

Turnstile · Ursula Damm
Turnstile stands out for the successful formal and conceptual integration of an interactive installation in the public space, located in an underground station in Dusseldorf. The jury considers this work also very well-balanced due to the correspondences between images, architecture, and movements. The audiovisuals of the installation are generated, in real-time, by a camera that records the movements of the pedestrians in the square above the entrance of the underground. A generative software system transforms the movements into graphic visual and sound compositions that express the poetic transcendence of the everyday, of great subtlety and empathic force. The work in turn visualizes the new perceptual experiences that citizens live today from the individual and collective perspective, immersed in multiple realities that complement and intertwine at different scales, real and virtual contexts, in an increasingly interconnected and interdependent world.

BitSoil Popup Tax & Hack Campaign
LarbitsSisters
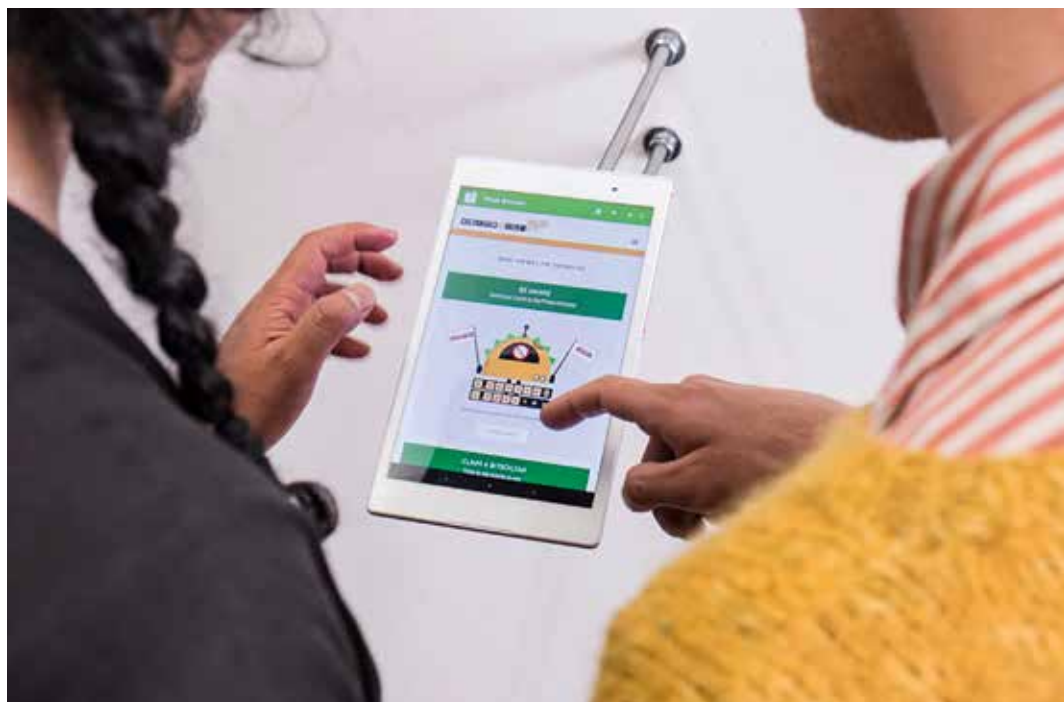
Larbitslab

lumin.be

The BitSoil Popup Tax & Hack Campaign presents an alternative taxation system for a fairer digital economy that includes those that fall outside of the social-economic structures provided by traditional nation states. At the heart of the project is the bitsoil hypothesis; data are the new 'black gold' of the internet economy and up until now not enough thought has been given to questions regarding the distribution of this wealth that is currently concentrated in the hands of big tech companies such as Facebook and Google.

Bitsoil Popup Tax & Hack Campaign encourages the anonymous masses to join the resistance and contribute to a more equal society. The project combines online and offline spaces that flow into each other to create the BitREPUBLIC, an environment where bitsoil is redistributed across its citizens, the participants in the campaign. An online army of happily strolling bots detects tweets related to the topic of the campaign and subsequently asks the user to participate. The offline installation consists of a series of block-modules that serve as a data center processing and redistributing bitsoil that was mined by Twitter bots.

LarbitsSisters created a virtual private network and used IBM's AI-Watson Natural Language Classifier Service to train social media bots to carry out their tasks. There are two types of bots: prospector bots and tax-collector bots. When prospector bots detect actions related to the campaign, a pop-up tweet appears on the account of the user who is then guided to the campaign's website and is asked to

Larbitslab, lumin.be

Larbitslab

participate. Different options are available to the participant; from gathering information on the project to creating his own bots and sending digital postcards to CEOs of the ten big tech companies or a Minister of Finance of their choice.

The online actions carried out as part of the campaign are the raw material on which the virtual currency bitsoil is based. Every click, or other occurrence on the *BitSoil Popup Tax & Hack Campaign* platform, sets a redistribution mechanism in motion. Bitsoil is consequently distributed across the "wallets" of the BitREPUBLIC's citizens. The visitor watching the installation can follow this process of creation and distribution of bitsoil as printers equipped with Raspberry-pi microcomputers create a continuous flow of tickets showing the number of bitsoils entering the "wallets." When online actions trigger the bitsoil redistribution system smoke appears and rises from the installation. The ticket printers represent wallets and every wallet represents a citizen of the BitREPUBLIC.

Blockchain technology—the technology behind the bitcoin—in this project is applied in a critical and strategic way to explore and create possibilities for an alternative and inclusive social-economic system. Traditional structures of nation states are surpassed to restore to a certain extent basic rights, such as the right to work and move freely, for those who find themselves in deprived positions—notably migrants and refugees. The project strives for more equality, a society in which gender, origin, and other characteristics don't define one's prospects.

Larbitslab

Larbitslab

The work of the Brussels-based artist duo **LarbitsSisters** (BE) is situated at the crossroads of art, technology, political, and societal issues and grew out of a shared fascination on new media, merging research and artistic practice onto projects in which concepts such as traceability, network analysis, algorithms, automation, and data processing are explored. LarbitsSisters' work focuses on the creative drives and patterns in digital media. Central is the friction between public and private, online and offline; between the unbridled faith in technological progress and everyday life. Their work has been presented in several national and international exhibitions and symposia. In 2011 LarbitsSisters founded the Research lab on Digital Visualizations, Larbitslab. Larbitslab brings together artists and scientists around societal issue of networked societies. The specificity of Larbitslab lies in the methodological approach, which combines observing practices, media analysis, and research on technical and societal implications.

Larbitslab, lumin.be

　　　　INTERACTIVE ART + · Award of Distinction

Alter

## Kohei Ogawa, Itsuki Doi, Takashi Ikegami, and Hiroshi Ishiguro

Alter is a robot developed for the purpose of exploring what it means to be "life-like." In contrast with the *Otonaroid, Alter* appears to be a machine that has been stripped bare. However, it expresses life-likeness through complex movements. These movements may look haphazard, but change constantly due to the underlying algorithm that mimics the logic of neural circuits of living things. A moment of "life-likeness" emerges as you observe closely—what is that moment like? Attempt to find your own answer to that question. *Alter* does not move in ways that are determined beforehand; rather, the movements made by the entire body are created in real-time. Furthermore, your responses are perceived by sensors and reflected into the movements. Sensors that measure the distance between *Alter* and human beings observe the movements of the people around *Alter,* and send signals to the program. A central pattern generator (CPG) creates a basic rhythm that is cyclical, yet gradually deviates from the original pattern. A neural network of 1,000 nerve cells is recreated on the computer, and *Alter* "learns" life-like activities based on signals sent from the sensors. Based on computer signals that are rhythmic and changing, compressed air is sent through 42 joints to create smooth movements. *Alter* was born through cooperation between a researcher of androids, which are robots that appear identical to human beings, and a researcher of artificial life, who attempts to recreate life on a computer. Both researchers ask the same question: "What is life?"—but the hypotheses on that are different.

Kohei Ogawa (JP) is a robotics and AI researcher at Osaka University, where he has been an Associate Professor since 2017. He is working on a robotics and interaction study. **Itsuki Doi** (JP) is a sound artist and a PhD candidate at the University of Tokyo, Graduate School of Art and Science, where he also received his Master Degree of Science in 2015. **Takashi Ikegami** (JP) is a professor at the University of Tokyo. He specializes in artificial life and complexity, and has been known to engage on the border between art and science. **Hiroshi Ishiguro** (JP) received a D.Eng. in systems engineering from Osaka University, Japan in 1991. He is currently Professor at the Department of Systems Innovation in the Graduate School of Engineering Science, Osaka University, and Distinguished Professor of Osaka University. He is also visiting director (group leader: 2002-2013) of Hiroshi Ishiguro Laboratories at the Advanced Telecommunications Research Institute and an ATR fellow. His research interests include distributed sensor systems, interactive robotics, and android science.
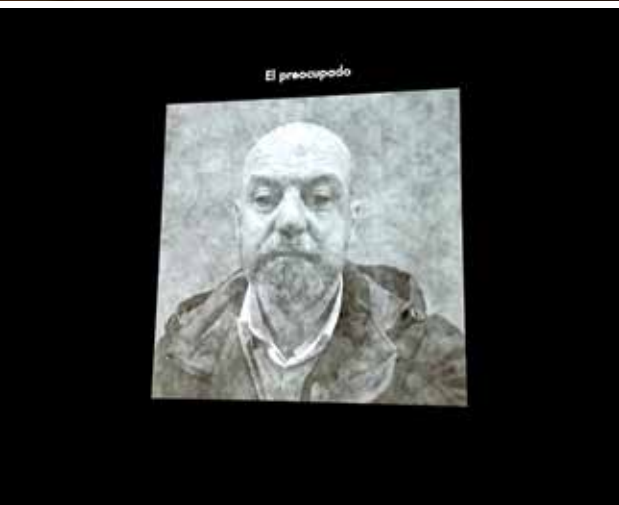
[help me know the truth]

Mary Flanagan

[help me know the truth] is a software-driven participatory artwork in which visitors first snap a digital self-portrait (or "selfie") at the gallery. The image is then sent around the gallery's network and appears on digital stations located around the gallery. Using the tools of cognitive neuroscience, the faces are manipulated with noise patterns to literally, through time and user input, "construct" the perfect stereotype.

On digital stations in the gallery, visitors are asked to choose between two slightly altered portraits to match the text label shown. By selecting slight variations of the images over time, differing facial features emerge from what are otherwise random patterns that reveal unconscious beliefs about facial features or tendencies related to culture and identity. *[help me know the truth]* utilizes Reverse Correlation to investigate how psychological responses to people's faces might uncover both positive and negative reactions to those who visit the gallery. The viewer/ participant chooses between two identical selfies, where different computational noise has been applied. The faces appear somewhat blurry, so the viewer/participant chooses one blurry image over another that might match criteria given. The list of prompts for visitors to the gallery ranges from the politically-charged to the taboo: "Choose the victim;" falls after "Indicate the leader" but might lead to the timely, "Select the terrorist." Other judgements passed by visitors include identifying which face is the most angelic, kind, criminal, etc. Through choosing faces manipulated by particular noise patterns, facial features emerge that reveal larger thoughts and beliefs about how we fundamentally see each other.

Why do people—even internationally—tend to gravitate towards similar stereotypes? Bias against "the other" is a dangerous impediment to a just Twenty-First Century society, in part encouraged by our own neurological structures that have not caught up with our lived realities. Hyper-scale image-based categorization is being deployed in government and surveillance programs worldwide. These processes demand our critical attention. Where do we find the "truth" about each other this way?

[help me know the truth] raises awareness about the unconscious stereotypes we all carry in our minds, and how these beliefs become embedded in myriad software systems including computer vision programs. My intent is to both utilize and question how computational techniques can uncover the categorizing systems of the mind, and how software itself is therefore subject to socially constructed fears and values. *[help me know the truth]* provokes discussion about the types of biases that surround us: that we are under global technological surveillance is troubling; that the humans involved in crafting these systems, the systems themselves, and the people brought in to make final calls on various warnings, alerts, and arrests are all products of unconscious biases, is troubling. Perhaps software systems do not help us know the truth at all.

Mary Flanagan (US) plays with the anxious and profound relationship between technological systems and human experience. Her artwork ranges from game-based installations to computer viruses, embodied interfaces to interactive texts. In her experimental interactive writing, she's interested in how chance operations bring new texts into being. Flanagan's work has been exhibited internationally at venues including The Whitney Museum of American Art, The Guggenheim, Tate Britain, Postmasters, Steirischer Herbst, Ars Electronica, Artist's Space, LABoral, the Telfair Museum, ZKM Medienmuseum, and museums in New Zealand, South Korea, and Australia. She was awarded an honoris causa in design in 2016, was a fellow in 2017 at the Getty Museum, and in 2018 she was a cultural leader at the World Economic Forum in Davos.

AI DJ Project
A dialog between human and AI through music
Nao Tokui, Shoya Dozono / Qosmo

AI DJ Project is a live performance featuring an Artificial Intelligence (AI) DJ playing alongside a human DJ. Utilizing various deep neural networks, the software (AI DJ) selects vinyl records and mixes songs. Playing alternately, each DJ selects one song at a time, embodying a dialogue between the human and AI through music. DJ-ing "Back to Back" serves as a critical investigation into the unique relationship between humans and machines.

The system of AI DJ consists of the following three features:

Music selection
We trained three different neural networks for inferring genres, musical instruments and drum machines used in the track from spectrogram images. AI DJ "listens" to what human DJ plays and extracts auditory features using those networks. The extracted

features are compared with those of all tracks in our pre-selected record box, so that the system can select the closest one, which presumably has similar musical tone/mood.

Beatmatching
It is also a task for AI DJ to control the pitch (speed) of the turntable to match the beat. We used "re-inforcement learning" (RL) to teach the model how to speed up/down, nudge/pull the turntable to align downbeats through trials and errors. For this purpose, we built an OSC-compatible custom turntable and robot fingers to manipulate.

Crowd-reading
A good DJ should pay attention to the energy of the audience. We utilize a deep learning-based motion tracking technique to quantify how much people in the audience dance to the music AI plays for future music selection.

We have performed several times in different locations in Japan and Europe. AI's slight unpredictability always brought amusing tension into the performance and gave new ideas to human DJs on what/how to play music as a DJ. AI is not a replacement for the human DJ. Instead, it is a partner that can think and play alongside its human counterpart, bringing forth a wider perspective of our relationship to contemporary technologies.

Concept/Machine Learning: Nao Tokui
Visualization: Shoya Dozono
Robot: TASKO, inc.
Customized turntable for AI: Mitsuhito Ando (YCAM)
Production support: Qosmo, YCAM InterLab

Nao Tokui (JP), born in 1976, serves as the CEO of Qosmo Inc. He is also a media artist and a DJ. Tokui received his PhD from the Department of Electrical Engineering and Information Systems (EEIS), Graduate School of Engineering, The University of Tokyo. After pursuing his research and creative interest as a visiting research fellow at Sony Computer Science Laboratories in Paris, Tokui founded Qosmo in 2009. His recent works include the production of a music video of a song by Brian Eno, using AI. **Shoya Dozono** (JP), born in 1988. Designer/Programmer. After graduating from the Faculty of Design, Tokyo Zokei University, Dozono completed his Master's degree at the Institute of Advanced Media Arts and Sciences(IAMAS). He joined Qosmo in September 2016. Since 2013, Dozono has worked as a visual programmer for Hiroaki Umeda's dance and audio-visual projects.

Conspiracy: Conjoining the Virtual

Kristin McWharter

A participatory artwork that incorporates virtual reality within sculptural form. The work interrogates individual subjectivity within collective decision making as five people interact through the sculptural object–each directed by their own augmented reality experience. Inspired by the manipulative nature and allure of virtual reality as well as the persuasive rhetoric of game mechanics, the participants play a simple game of capture the flag within the virtual space while the sculptural fixture restricts their movement compelling them to predictably move side to side in physical space. This behavior in turn activates the physical object; each headset is separated by a set of bellows such that when participants step side to side air compresses as if the sculpture is "breathing." This work builds on the artist's research of how isolating qualities of VR in conjunction with social haptic feedback can expose viewer subjectivity and social influence through the expression of the body.

In my work I am most immediately trying to understand how people experience relationships, and specifically how people experience the tension between competition and intimacy. I use these tensions within participatory sculpture as tools to re-frame how we see or identify with this larger social context. This work investigates how virtual reality can give us new perspective on the role of the individual in a collective intention and seeks to expose the fallacy of the hivemind.

Kristin McWharter (US) is a multi- disciplinary artist whose work interrogates the relationship between competition and intimacy. Her research explores where personal subjectivity and broader social dynamics come in conflict from within both individual and group perspectives. She uses immersive sculptural installations, videos, and viewer-inclusive performances to blur the boundaries of social intimacy and personal narrative in an effort to invoke viewer's individual relationships to affection, antagonism, sincerity, and discomfort. Her work has been exhibited internationally including at the Hammer Museum, Bangkok Arts and Culture Center, and the Walt Disney Concert Hall. She received her BFA from the Maryland Institute College of Art in 2012 and is currently a 2018 MFA candidate at UCLA in Design and Media Arts.
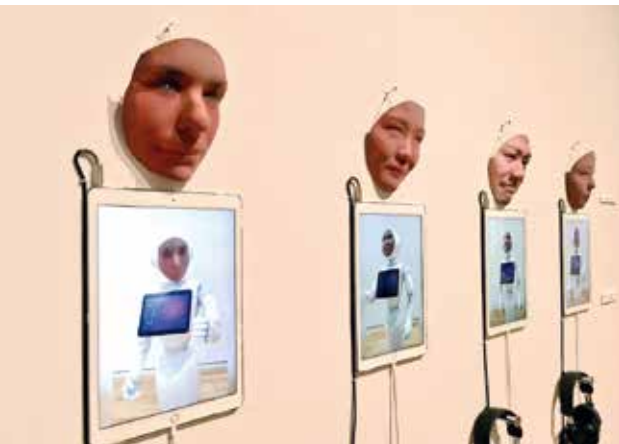
Digital Shaman Project

Etsuko Ichihara

The *Digital Shaman Project* proposes a new mode of mourning in keeping with the technical advances of today. A 3D-printed mask of the deceased's face is placed on a domestic robot installed with a motion program that mimics the physical characteristics— personality, speech, gestures—of that individual as if possessed by their spirit. The program functions for 49 days after the person's death—according to Buddhist belief, it takes 49 days for a deceased per-

son to enter the next life— during which time family members can experience simulated conversation with the deceased as if he or she were still alive. On the 49th day, the robot bids farewell to the bereaved and the program shuts down. The program is thus designed to allow the bereaved to spend 49 days with a robot seemingly possessed, like a medium, by the deceased. The creator says that she developed the concept after her grandmother's death, when

she personally experienced the function that a funeral serves as a mourning ritual for those left behind. The program runs on domestic robots like Pepper and Nao so that it easily runs anywhere as long as a robot is available. The process of installing the application to the robot mimics the process where a medium is possessed. The creator also thinks that in order for certain technology to expand the market, it is important to snuggle up to human desires, emotions, and sensations. So she designed an application to realize an emotional relationship between machines and human beings. While the realm of alchemy and belief appears to be conflicting with that of science and technology, considering the common disposition of assuming and suggesting "something that is not here," Etsuko Ichihara proposes that both might in fact be very closely related, mutually compatible fields. Based on this idea, the

project was conceived with the aim to propose new forms of prayer and entombment in this age of advanced science and technology. The experiment is part of a research project on funeral rites as a window into the uniquely Japanese approach to life and death. This is one of a series of works on "digital shamanism" that attempt to blend Japanese folk beliefs with technology.

Etsuko Ichihara (JP), born in 1988, is a media artist / fantasy inventor. She graduated from Waseda University. Etsuko has been creating artworks that interpret Japanese culture, customs, and beliefs from a unique point of view, and present new, technology-based approaches. Thanks to their strong impact, these works have been introduced across a wide range of media. Main works include *Sekuhara Interface,* the *SRxSI system,* and the *Digital Shaman Project.* Ichihara's works were included in the Excellence Award at the 20th Japan Media Arts Festival, Entertainment Division in 2017. She has recently presented her works in exhibitions such as "Digital Shamanism: Japanese Funeral and Festivity" at NTT InterCommunication Center [ICC], Japan Media Arts Festival.

ECHO
Georgie Pinn (Electric Puppet), Kendyl Rossi
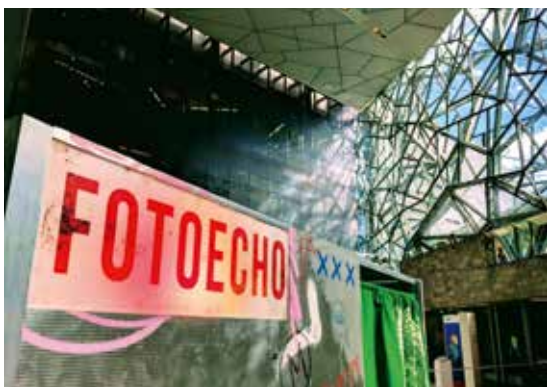
The key intention of *Echo* is to create a vehicle for the exchange of empathy. As the world becomes more complex and digitally connected, the role of empathy is becoming increasingly important as an antidote to personal loneliness and an ideological isolation.

The iterative artwork *Echo* takes the form of an interactive booth installation. The work is relational and explores notions of connection through an interactive exchange of personal narratives. *Echo* utilizes innovative real-time facial capture and tracking technology and combines it with animation, storytelling, and portraiture to make connections between strangers. The intention is to build and share a culturally diverse archive of stories and songs to enable an embodied, cross-cultural experience that elicits compassion.

The Experience

The 3-minute experience, framed inside a booth, is reminiscent of the priest's confessional and the photo booth. Once seated inside, a touchscreen becomes a talking virtual mirror. *Echo,* a female AI character guides the participant, explaining that she can "help you connect". Your face is captured and then you are directed to select the face of another. Once chosen, you find yourself face-to-face with that person's personal story that reveals a life challenge, win, or hardship. As the narrative unfolds, your pixelating features slowly inch and glitch onto the narrator's face, ending with your lips uttering their final words. It is a strange feeling as you see your face subtly hijacked by the virtual other, blurring the boundaries between you and them, and shifting your perception through empathy.

When this is completed you are asked if you would like to donate your own narrative or song. Should you decide to do so the installation transforms into an automated recording environment, allowing privacy and personal space in which to author. Adversity becomes a powerful tool for learning and, when shared with a complete stranger, can assist in breaking down stereotypes and prejudices.

Georgie Pinn (Electric Puppet) (UK/AU) has two decades of experience working as an artist, director, and producer of public cultural events, interactive installations, film, animation, theater, and sound. Georgie's creative practice is underpinned by her long-term research into empathy as a creative force for making connection across cultural, age and gender divides. Her projects have been presented in a range of public sites/events such as Federation Square, Robotronica, White Night, The Cube, Artplay, Signal, Pause Festival, The Athenaeum Theatre, and the MCG Stadium. She is also regularly commissioned to design and facilitate education programs that focus on harnessing empathy through interactive animation.

Georgie Pinn

ELECTRONICOS FANTASTICOS!

Ei Wada + Nicos Orchest-Lab

Mao Yamamoto

Mao Yamamoto

Mao Yamamoto

Florian Voggeneder

ELECTRONICOS FANTASTICOS! is a project where retired consumer electronics are resuscitated as instruments, new ways to play music are invented, and all kinds of people are invited to be orchestrated with the artist and musician Ei Wada.

Once we dismantle old consumer electronics, we realize the condensed wisdom of pioneers and the interesting and mysterious scientific/physics phenomenon hidden inside these objects. By transferring these into electronic musical instruments, a sound like a groan of electronics begins to echo. Old consumer electronics come to life as *yokai*—supernatural creatures from Japanese folklore, sometimes they appear as spirits of abandoned tools.

Currently, we have 3 main bases of creation: Tokyo, Kyoto, and Hitachi. More than 70 members have joined the project from diverse fields such as engineers, designers, musicians, and management members. In November 2017, under the most symbolic old radio tower Tokyo Tower, we staged the Electro-Magnetic Bon-Dance. The original purpose of the Bon Dance is to mourn the dead; here we extended its concept for the memorial service of electronics that have played a major role in economic growth. Elderlies who donated electronics came to see the concert; children fell in love with instruments, engineers who work at electric appliance companies were thrilled to create instruments. Everybody is enjoying the project and is very surprised how daily items have been fantastically transformed. We dream and search for the answer to our question, what is the new folklore music of urban cities? We want to realize a festival that strongly contrasts with the efficiency and rationality of the AI era, to breathe life into trash that holds memories of someone, and to produce new instruments through ideas, fantasies and technology with many people. As a next step we wish to develop a new relationship between objects and the human spirit. We believe that this project has the potential to establish a new culture after the fetish for capitalism.

Ei Wada (JP), born in 1987, is an artist/a musician. When he was a child, Wada was convinced that there was a music festival waiting for him under the gigantic tower shaped like the crab legs embedded in tube TV. But when his friend told him that there was no such place on earth, the dream bubble burst. Then Wada decided to make the music festival himself. **Nicos Orchest-Lab** (JP). A project team was formed for *ELECTRONICOS FANTASTICOS!* (nickname: Nicos), which started in 2015. New members coming from diverse fields have since joined the project and they improvise and exchange fantasies, knowledge, and techniques on a regular basis.

Mao Yamamoto

Institute of Human Obsolescence
Manuel Beltrán

We are getting replaced by machines. What happened to horses after the invention of the steam engine, is now happening to us. Soon our manual labour will no longer be needed and with the advance of artificial intelligence, intellectual labour will be replaced by machines as well.

The Institute of Human Obsolescence (IoHO) explores this scenario and tries to ask questions on how to re-position the role of humans by developing and challenging existing and new relationships between human and machine and new dynamics of creation of value in a post-work scenario. The IoHO explores this scenario and tries to ask questions on how to reposition the role of humans in society, particularly how to cope with a labour-market dominated by machines. Becoming obsolete will create a reality in which new forms of labour will emerge. Our aim is to explore, question, and challenge scenarios of that transition. In the installation *Biological Labour* we hire human workers to wear a body suit that harvests their residual body heat to produce electricity that is then fed into a microcomputer producing cryptocurrency. With this new form of work we aim to question the possible consequences of the combination of invasive technologies with the lack of jobs to be performed by humans. In *Data Production Labour* we problematize the social inequalities proposed by companies like Facebook through their exploitation of invisible labour deriving from our production of data. We propose a structural change in how we understand our position: instead of being users we see ourselves as workers. This process enables us to explore different proposals within the framework of Data Labour Rights, such as the Data Basic Income and Data Cooperative. It allows to ask the question: How can we challenge current inequalities and advocate for collective response?

Currently we are establishing the Data Workers Union, an initiative that enables citizens to gain agency and advocacy for their data labour rights.

IoHO

Manuel Beltrán (ES) is an artist, activist, and researcher. His artworks and projects have been widely presented in Europe and abroad. Manuel was involved in the Indignados movement in Spain, the Gezi Park protests in Turkey and several forms of independent activism and cyber-activism. He co-founded the collective Plastic Crowds (2012) and the Alternative Learning Tank (2013). In 2016, Manuel founded the Institute of Human Obsolescence that explores the future of labour and the socio-political implications regarding society's relationship with technology.

INTERACTIVE ART + · **Honorary Mention**

Monitor Man
Yassine Khaled

In *Monitor Man,* Yassine Khaled creates an embodiment of virtual communication in public space. The artist wears a helmet affixed with an iPad, which offers a real-time connection to a person outside of Europe and the Western world. Through the use of technology and his own body, Khaled uses the performance to transgress actual, national borders which separate people. The performance is an opportunity for people to meet with someone who is physically far away and restricted in their freedom of movement. *Monitor Man* was inspired by the current refugee crisis and how it is unfolding in relation to the internet, social media, and the omnipresence of technology. The project began on the streets of Helsinki, but is ongoing, as the artist presents the work in different locations around the Western world.

The video of *Monitor Man* introduces a captivating image of virtual communication into the public space while also serving as a mirror to European society by showcasing the reactions of passers-by and the discussions that emerge during the encounters. The documentation of the performance provides a fascinating overview of six cities with different identities—and their readiness to accept *Monitor Man.* Yassine Khaled's sculptures, installations, performances, paintings, and videos focus on the disparity between the power and wealth of some, and the powerlessness and poverty of others in our globalized world. Khaled visualizes power relations between individuals caused by, for instance, ever-increasing gaps in wealth, socio-cultural differences, labor conditions, educational opportunities—the conditions that determine one's level of comfort and stability in society.

Video written and directed by: Yassine Khaled
Participants of the performance ("connectors"):
Reda Khaled, Isadora Pamplona, Isa "Baggysnow",
Yassine Talha, Elina Lajunen, Salam Alajmi
Camera: Elina Oikari, Yassine Khaled, Hami Bahadori,
Gregoire Rousseau, Brian Leong
Editing: Elina Oikari, Yassine Khaled
Sound design: Jyri Pirinen
Supported by: Kone Foundation, Arts Promotion Centre
Finland, Baltic Circle International Theatre Festival,
Academy of Fine Arts, University of The Arts Helsinki

Yassine Khaled (MA/FI) is a visual artist based in Helsinki. Khaled was born, raised, and received his artistic training in Morocco and lives and currently works in Helsinki. This geographic and cultural shift has had an evident impact on his work. He was selected for the 2nd Prize for Artist of the New Generation, Morocco in 2014. Khaled's works have been represented internationally in galleries, art fairs, and biennales including: SALTS Group Exhibition, Birsfelden (2017–2018), CHART Art Fair (2017), Copenhagen, Haihara Art Centre, Tampere (2017), SUPERMARKET Art Fair, Stockholm (2017), Art Fair Suomi, Helsinki (2017), CMOOA-Collection's Auction, Palace Es Saadi, Marrakech (2016), Exhibition Laboratory, Helsinki (2016–2017), 1:54 Contemporary African Art Fair, London (2015), GVCC, Casablanca (2012–2017), and "Luxures", RonchauxRoom, Besançon, France (2014), Biennale OFF 4 Marrakech (2012), and Contemporary Art Fair of Africa and the Mediterranean, Casablanca (2011).

Tani Simberg

INTERACTIVE ART + · Honorary Mention
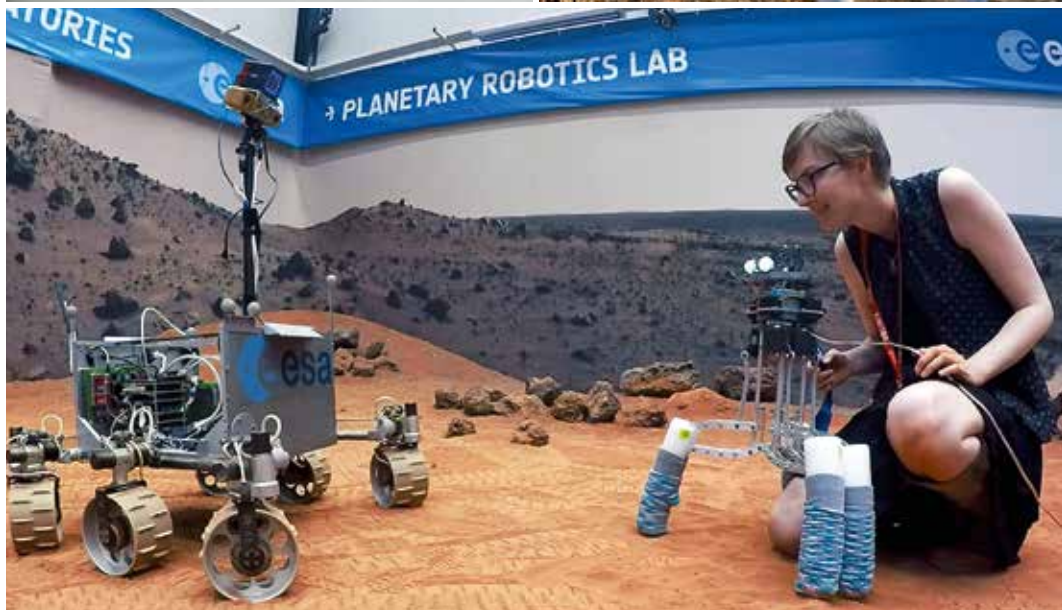
Mother of Machine

Sarah Petkus

The Adolescent Robot: NoodleFeet

NoodleFeet is the functioning robotic manifestation of an illustrated character who is built from light metals, 3D printed parts, and found objects. *Noodle* has been developed with mechanical and electronic systems which allow him to exhibit behaviors when stimulated by objects in his environment. His purpose is to exist freely in the world while reacting to situational encounters with self-defining methods of personal expression. Where most technology has a practical or utilitarian application, meant to either enhance our lives or entertain us, my goal in creating *Noodle* is to provide an example of a one-off entity that may provoke consideration about the reasoning that drives humanity's current technological inventiveness. I hope that those who interact with *Noodle* will witness a meaningful sense of self from him that will encourage reflection in regard to the value of their own relation to the technology common in everyday life. *NoodleFeet* is an ongoing project without a point of completion. His physical and programmed components are in a constant state of development. As such, the rapid iterative processes, specifically in regard to the physical prototypes produced, are equally important to the project as points of interest as the primary robotic entity itself. I would like those who view my documentation as I continuously develop *Noodle*, to think of him as growing the way any organism matures with age.

My Role as Mother

It is important to me that I have the most significant role in *NoodleFeet's* development, as his mother. His abilities are a reflection of everything I learned in order to provide for means to ensure that my offspring has everything it needs. The active display of the parent-child relationship between me and my creation is to encourage others to also view their ideas as children they are rearing in the physical world. I believe as humanity continues to develop technologically, we must temper the exploitation of our ideas by remembering that we are responsible for raising them and how they manifest in the world is a reflection of ourselves.

Sarah Petkus (US) is a kinetic artist, roboticist, and illustrator from Las Vegas, who designs machines which encourage reflection towards the human relationship to technology. My practice creating mechanisms involves an attention to the idea of "quirkiness" and individuality. The concept of behavior plays a large role in the systems I develop for my robotic characters, as they cumulatively result in defining their personalities. My machines are unique entities that respond to their environment for their own sake, so that those who encounter them observe a sense of "self."

Poppy Interactive
War and Organized Crime Gone Global
Antoinette de Jong & Robert Knoth

The interactive documentary is a protracted investigation spanning over 20 years on the global nexus of drugs, war, and organized crime using photo, video, radio reportages, and found footage.

POPPY Interactive has a layered form of non-linear storytelling that bridges various locations and times with a clear navigational structure and that crisscrosses the forms of documentary and visual art. The interactive documentary merges multiple media on interactive maps and invites the user to become a traveler to find connections along the trails of drug, war, and crime.

Having published a prestigious book *Poppy: Trails of Afghan Heroin* and a renowned video installation in 2012, the artists combine in this new interactive work analysis and a fact-based global perspective with intimate personal stories discovered on three international drug trafficking routes.

As we find out in *POPPY Interactive,* the nexus between war and organized crime is tight and complex. The user is invited to unravel in this work an impressive and elusive global network of insurgents and terrorists, drug cartels, and other criminal organizations. We see families who grow the poppies, heroin addicts in prison in Kyrgyzstan, a crashed plane full of cocaine in Mali, luxury villas in Dubai, and more. It is all interconnected. This journey shows how drug money destabilizes entire countries, fuels conflict, and allows a worldwide illegal economy to grow.

POPPY Interactive: War and Organized Crime Gone Global is based on the book and video-installation *POPPY: Trails of Afghan Heroin.* Following their prestigious book and the video installation, this new interactive documentary by de Jong and Knoth combines analysis and a fact-based global perspective with intimate personal stories. It took them more than 20 years to unravel an impressive and elusive global network of insurgents and terrorists, drug cartels, and other criminal organizations.

POPPY Interactive – War and Organized Crime Gone Global is made by visual storytellers Antoinette de Jong and Robert Knoth and produced by Submarine Channel. It is made possible with the support of Creative Industries Fund NL, the Netherlands Film Fund, Fonds 21, Mondriaan Fonds, and the Amsterdam Fund for the Arts (AFK).

Directors: Antoinette de Jong & Robert Knoth
Producers: Bruno Felix & Femke Wolting
Creative producer: Michel Reilhac
Interactive producer: Corine Meijers
Interface design: Christiaan De Rooij
Web development: Aart Jan van der Linden
Editing: Peter Claassen

Sound design: Frank van der Weij, Jelle van Osenbruggen
Impact producer: Iván Garcia-Romero
Editing teasers & introduction: Maurik de Ridder
Production assistance: Davide Banis, Marlieke Hoepman
Development: Hans Dortmans, Menno Otten, Fabie Hulzebos, Yaniv Wolf, Dagan Cohen, Wieke Kapteijns, Robert Knoth, Antoinette de Jong
English corrections: Judith Kingston
Stills: AIR COCAINE: Serge Daniel / AFP / Getty Images
COCAINEVILLE: Copyright: © Francesca Tosarelli

POPPY Interactive: War and Organized Crime Gone Global is based on the book and video-installation POPPY: Trails of Afghan Heroin, which was made possible with the support of SNS REAAL Fund, VSB Fund, Mondriaan Fund, NCDO, AFEW, Foundation Sem Presser Archive, Foundation for Democracy and Media, Prince Bernhard Culture Fund, and was produced by Iris Sikking, Paradox.

Antoinette de Jong (NL), born in 1964, and **Robert Knoth** (NL), born in 1963, are visual storytellers whose work has embraced photography, video, in-depth journalism, radio, installations, and book projects. In their highly personal work they aim to show the layered complexity of various social, economic, and political issues and the effects of those issues on ordinary people. They have reported from some of the world's main conflict and post-conflict areas. Antoinette lived and worked in Afghanistan during the 1990s under the Taliban regime. Robert has covered Afghanistan, the war in former Yugoslavia, and the civil wars in Angola, Somalia, and Sierra Leone.

Florian Voggeneder

Florian Voggeneder

INTERACTIVE ART + · **Honorary Mention**
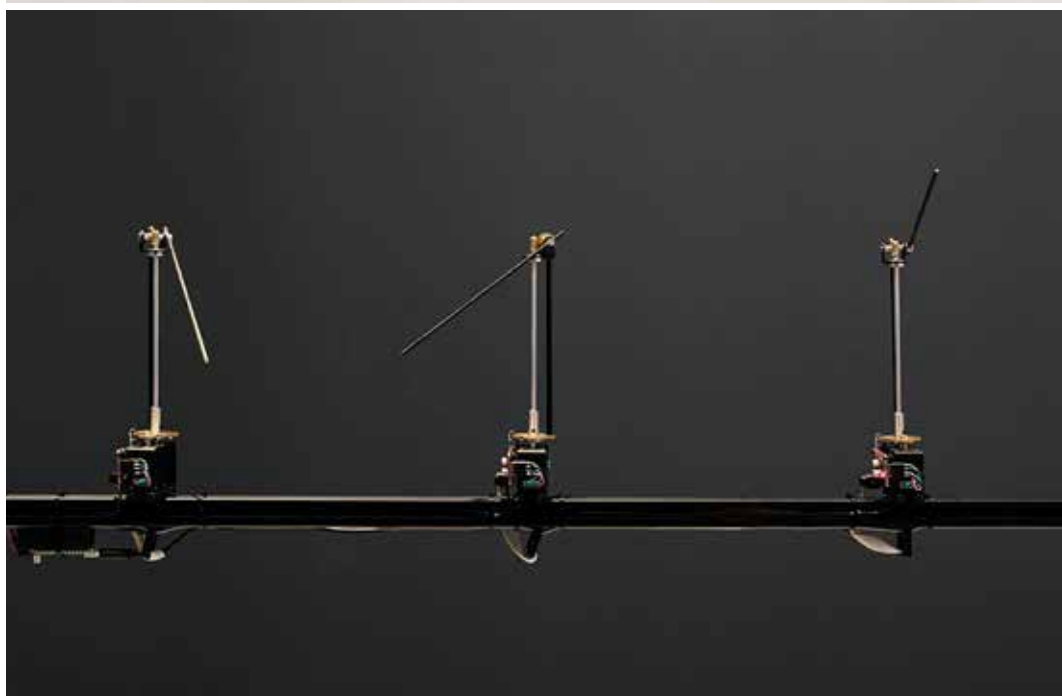
Positions of the Unknown
Quadrature

Positions of the Unknown reconstructs a history of surveillance and citizenship, recalling the US military program "Operation Moonwatch." In the installation, Quadrature scientifically speculates about and engages with technological entities which are in between factual reality and imagination.

<div align="right">(Alessandro Ludovico, Neural #58)</div>

At the dawn of the Space Age, the infrastructure to monitor the skies was not yet developed. So in order to find out whether foreign countries launched objects, the US government had to train citizens to observe and detect possible artificial satellites. Scattered over the allied world, these amateur scientists played a crucial part in keeping track of all men-made technology orbiting the Earth, until "Operation Moonwatch" was discontinued in 1975. But the existing knowledge and passion did not disappear together with the public mandate. The participating civilians and their acolytes found a new sphere of interest: discovering and exposing those objects, whose existence is denied by official sources. Until today a devoted group of amateur astronomers runs an alternative catalog, containing about 450 data sets missing in the officially published lists. Most of these confidential objects are still defined though and their true nature is known. But for currently 52 of them no specifications are available at all. Only their locations can be calculated.

Positions of the Unknown determines the current whereabouts of these most mysterious satellites by simply pointing at them as they revolve around the Earth. Missing the legal proof, those unidentified artefacts remain elements of pure speculation, secret companions of us and our planet. Even so they have been sighted several times and therefore their ubiquitous presence is somehow validated, those entities linger in a state between existence and non-existence. Quadrature's 52 small machines constantly follow their paths and serve as silent witnesses to the unknown.

Quadrature (DE) is an artists collective by **Juliane Götz** (DE), **Sebastian Neitsch** (DE) and formerly Jan Bernstein (until 2016). Their artistic exploration gravitates towards scientific interests and physical experiments, using new technologies or academic research as sources and inspiration. They share a love for machines and outer space. Over the years, they have been awarded multiple prizes and grants, including a Residency and Award by the European Digital Art and Science Network in collaboration with ESO (European Southern Observatories), an Honorary Mention at the Prix Ars Electronica, an Artist-in-Residency Stipend by Akademie Schloss Solitude as well as a working grant by Kunstfond Bonn. Their work has been presented at international festivals and exhibitions, such as Ars Electronica Center, CYNETART in Hellerau, Künstlerhaus Wien, International Digital Arts Biennial in Montreal, or at The Modern Art Museum Santralistanbul in Istanbul.

The Other in You
Richi Owaki, Yamaguchi Center for Arts and Media [YCAM]

The Other in You, developed as a new way to experience dance, has realized a novel dance audience experience. We assembled the cutting-edge Computer Graphics, haptic feedback device which directly express the dance to the body, 16 stereophony channels sound and research on VR techniques to realize this work.

How can we relate to others, who are supposed to be distant from us? Do we really know what it is to "see"? *The Other in You* is an attempt to revive the notion of our body in relation to an object, a notion, which had been forgotten in the act of watching.

The movement of the dancer Tomohiko Tsujimoto is captured with a motion capture system. The data is converted into 3DCG to create virtual dancers covered with black skin. Using VR technology, the views of the audience move freely during the performance and the dancers get very close to the audience—an unlikely situation with ordinary dance theater. In addition, screened by 3D sensor cameras, the audience members themselves virtually come to appear in the VR images.

The work is based on Richi Owaki's meditations on the dance theater audience. Often, audiences are required to stay in fixed seats in the dark and quietly watch the stage. However, this is a recent phenomenon. It became the norm only after the modern theater system was established.

The Other in You sheds light on the physicality of the audience which we, including the audience themselves, have forgotten along the way. At some point during the performance, the point of sight of the viewer leaves their own body and they see themselves from above. This out-of-body sensation is a unique experience VR offers.

Courtesy of Yamaguchi Center for Arts and Media [YCAM]

Playing with this phenomenon, Richi Owaki challenges the idea of "selfness." The body we are seeing moves the same way as we move behind the helmet, but there is a sense that that body isn't really our body. For Richi Owaki, watching dance is an act of "seeking others in oneself" or "oneself in others." The title suggests we are not divided from each other, but rather an extension of one another.

Directed: Richi Owaki (YCAM InterLab)
Co-developed with YCAM InterLab
Dance: Tomohiko Tsujimoto
Music / Sound design: Kazuhisa Uchihashi
Visual programming / System direction: Satoru Higa
Sound system engineering: Junji Nakaue (YCAM InterLab), Takayuki Ito (YCAM InterLab)
CG Direction: Takeshi Yoong (Jitto), Tai Komatsu (Cai)
CG Cooperation: Fumie Takahara (YCAM InterLab), Taku Ota
Curator: Akiko Takeshita (YCAM InterLab)
Commissioned by Yamaguchi Center for Arts and Media [YCAM]

Photo: Daichi Yamaoka (YCAM InterLab)

Richi Owaki (JP), born in 1977, video engineer of artist group Dumb Type, which he accompanied on its *memorandum* tour. "Mediaturge" at YCAM InterLab, carrying out research and overseeing the media planning and operation of YCAM-hosted exhibitions and performances. Solo works include installation and performance pieces. In his installation series, *skinslides* (2009–present), he seeks to create a permanent preservation of the dancer's movements. Awards for *skinslides*: The Grand Prize, the inaugural Jaguar Asia Tech Art Prize, Art Taipei (2015), Art Division Jury's selection, 16th Japan Media Arts Festival (2012). **Yamaguchi Center for Arts and Media**, commonly known as YCAM, is an art center located in Yamaguchi, Japan. YCAM owns YCAM InterLab, which is an internal research and development team. Made up of about 20 resident staff members with various skills in the fields of curation, education, engineering and design; the team plays a leading role in various YCAM programs, from the conception and production of works to the development of workshop contents, in collaboration with local citizens, artists, researchers and engineers. The team have been collaborating with many international artists including Ryuichi Sakamoto, Carsten Nicolai, Zach Lieberman and others since 2003.

Thomas Mayer

Achim Kukulies

Joerg Hempel
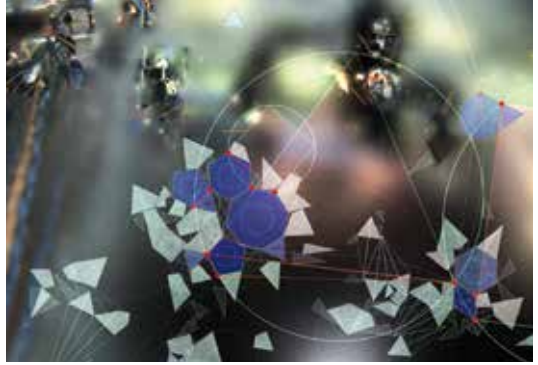
Thomas Mayer

Turnstile
Ursula Damm

Turnstile, an artwork installed at Schadowstraße underground station in Dusseldorf, selected in conjunction with a competition to artistically enhance the city's Wehrhahn line.

Turnstile is designed as a snapshot of a location comprising pedestrians crossing the square above the underground station, a video camera observing the pedestrians, lifts transporting passengers to their platform, an LED wall situated above the rail lines at the front of the station plus 23 screens showing a birds-eye view of Dusseldorf interpreted as generated patterns.

The generative video on the front wall of Schadowstraße underground station captures the movements of pedestrians above ground and custom-made software interprets these movements as "energy sources" or "virtual fuel;" consequently the temporal-spatial accumulation of events unfolding above the underground station is manifest on the screens installed on the station's LED wall—ultimately becoming a virtual interpretation of the location's lively hustle and bustle, modelled with the help of artificial intelligence. Small, virtual beings use the motion-energies to build a temporary, fluctuating architecture that ebbs and flows in accordance with the stream of passers-by. The artwork encompasses urban space and its geometries. Geometries define the earth up to a point; when

humans settled, geometries were also used to map the near and far, the inside and outside, the you and I. In short: geometries map the physical coexistence of human beings. Geometry orders habitats. It interprets, structures, and alters movement within a space; it is a component of the 'language' of habitats. It records the flow of movement, the swarm behaviour of humans within urban environments and the surrounding areas.

Our software follows a particular grammar: the interplay of local events, pedestrian activity, and social interaction becomes architecture. The diverse possibilities of the algorithmic performance soften the radical position geometry naturally holds and instead pose a hypotheses and make an offer to the citizen; an architecture that is formed from the actions of the passer-by. This is how the software builds an artificial intelligence on the basis of the geometric logic of an individual artistic approach.

Ursula Damm (DE) started as a sculptor with models of space and time, developed in a bodily experience. In the 1990s installations became geometric processes of settlement patterns. Since 1995 her installations respond interactively to architectural aspects with video tracking technology. She also developed numerous installations dealing with nature, science, and environmental issues. Since 2008 she holds the chair for Media Environments at Bauhaus University in Weimar, where she established a DIY Biolab and the Performance Platform at the Digital Bauhaus Lab.

DIGITAL COMMUNITIES

Community Visions

Dietmar Offenhuber, Oscar Ekponimo, Sarah Kriesche,
Leila Nachawati, Kazuko Tanaka

The process

When it comes to the definition of a digital community and what to expect from it, probably every person has quite a clear idea about which criteria should be applied. As a jury we wanted to embrace the several new approaches and aspects of projects, as well as their thoughts and ideas of "community," and the role of digitalization and technical aspects that were important to them. One of the questions we had to ask ourselves was for example, if—and in which ways—an audience represented a community. Another issue that arose was whether the idea of technology as an enabler was still appropriate, that already guaranteed that there would be a future community forming around the technical artefact. And, how do we contextualize the ways communities use technology and how they build themselves? Nearly every project had different answers to our given questions. One trend we could identify, however, was that the technical solutions were not—as in previous years—in the foreground, but were pushed into the background, in favor of the ideas and visions that the communities had in mind.

Recurring topics included the representation of underrepresented groups, responses to environmental crisis and disasters, archives, as well as the role of technology in the process of digital transformation. Each project experimented in unique ways to address the variety of aspects that come along with these challenges.

The project narratives rarely used a global view of a topic. A majority responded to well-defined local challenges; a global context was not always obvious. Implicitly, however, the global context still exists through the sharing of ideas, formats, and tools among groups with similar objectives. A form of digital role reversal emerged: In the intimacy of a local challenge that communities face, technology not only allows to witness a quasi-intimate regional event, it also allows to turn the role of the viewer into a participant, and subject concepts, ideas, and visions to a quasi-global test. In other words, the Internet makes it possible for ideas to become models or regional challenges to be perceived in a global context.

For the jury, it was, therefore, immanent not only to question the definition of a community but also to probe how communities themselves perceive their role in the world, how they understand their significance as a "digital community", and how they bundle the strengths to realize their projects and visions.

Criteria that formed the decision

The submissions included established communities, grass root initiatives, hackers, and makers. The thematic palette ranges from legal topics, artistic expressions, and technical approaches to cultural questions, for example, where and how a culture is digitally represented. And of course, there were also those communities that function as enablers, like those that enable activists, journalists, citizens, and other "communities to be" to take up their activities in the first place. The latter and their important role in particular provided for long discussions within the jury, as they play an important role as a basis for future developments. Ultimately, however, it was also the spirit of the times and the reaction to current events, trends, and developments that the jury did not want to ignore. Questions such as whether and how a digital community is able, with the help of technology, to implement new aspects in democratic processes for the better. Questions on how, surrounded by propaganda, so-called "fake news" can be uncovered and how communities contribute their part to communicating the current state of society to the rest of the world.

As much as the communities themselves seem to be driven by current events in these aspects, the tools they use for their work and the way they are implemented also represent solutions that can be seen as

examples of the work and role of "digital communities," detached from the local event. There are therefore several aspects that were ultimately decisive for the jury and its decision:
- the community is formed around a social concern
- the project is non-commercial
- the project may be local in its scope but also speaks to a global challenge.

Based on these considerations, we were not only interested in the different ways a community organizes itself internally, but more importantly, how the community relates to and engages with the civic sphere.

Golden Nica

Bellingcat · www.bellingcat.com

Bellingcat is a project that goes behind the usual media representations of events of global relevance. It uses forensic methods and applies them to the deluge of media images to uncover misrepresentation of events and deconstruct propaganda, drawing from a large community of amateur forensic experts to reconstruct events (conflicts, natural disasters, aftermaths of violence). The project also offers tutorials on how to scrutinize images, triangulate them, and uncover traces of manipulation, providing tools to those who need them in the context of media "infoxication." Its community regards media content as a trace that can be scrutinized and triangulated with other sources to uncover contradictions and effectively proves how to fight misuse of images and video footage. *Bellingcat* is an outstanding contribution to the changing reality of how international conflicts are represented. In the context of fake news, propaganda, and with social media and other digital spaces becoming noisier and less difficult to penetrate, it is becoming increasingly difficult to discriminate between news and fabrications, between facts and opinions. The fact that some

political representatives and media corporations are promoting this confusion to benefit their own agendas is paving the way for more polarization and radicalization of positions in the global scenario. *Bellingcat* brings an in-depth and rigorous analytical process into the picture, contributing to a closer understanding of complex scenarios in an increasingly polarized context.

Awards of Distinction

Anti-Racism Movement (ARM)
www.armlebanon.org

ARM (Anti-Racism Movement) is a community that promotes visibility of migrant rights and anti-racist discourse in Lebanon. Among their activities is hosting community events and dinners, offering English and French classes, as well as courses in computer sciences and other activities, filming and sharing abuses against migrant rights and ensuring migrant representation and voices in demonstrations and protests happening throughout the country, such as the ones taking place in Labour Day, where migrant workers were virtually absent until recently.

A turning point for the community was 2010, when ARM activists, using a hidden camera, filmed the administration's acts of discrimination and segregation (migrant domestic workers weren't allowed into a bath). The video quickly spread online, and ARM's efforts to bring this issue to light were lauded by many. Promoting coexistence, understanding, and defending fundamental rights is crucial, especially in very polarized contexts. With increasing demographic pressure (with migrants and refugee populations seeking protection and a better life there), deep involvement of the country in war-torn Syria, the constant tensions with Israel and other regional threats, and still not having recovered from the long and devastating civil war period, the country faces extremely challenging social, economic, and political

issues. In this context, *ARM* puts the focus on fundamental rights through its work with migrant communities and migrant rights, a pressing issue often overlooked and even a taboo in Lebanese society. Racism has different expressions and manifestations. In a context of increasing migration, displacement and refugees there is a global trend of racist, identitarian discourses that challenge our living together. These trends are especially pressing in some contexts and local responses that address local challenges in strategic, creative ways are very valuable. *ARM* Lebanon is a great example of grassroots countering of racist trends and promoting migrant rights in a very difficult context.

g0v.tw · https://g0v.tw

g0v.tw (pronounced "gov zero") is an example of an activist project that engaged in a productive dialog with the government. Growing out of the sunflower seed revolution, a peaceful anti-government student protest movement, *g0v.tw* is one of the few examples of civic tech, that were not initiated by the public sector, but driven by activists, based on the spirit of open source. Having been part of the Sunflower Movement, Audrey Tang became the world's first transsexual minister and advocate for new approaches of interaction between government and civilians. On behalf of this exchange *g0v.tw* aims to promote the long-term development of scientific and technological instruments to promote democracy and civil society. Above all, *g0v.tw* wants to create a basis through transparency in order to sustainably strengthen democratic structures and create a basis of trust between citizens and the government. Digital tools are intended to make it easier for citizens to participate in government processes in order to master future challenges together. To the jury especially the aspect of a jointly shaped narrative between government and citizens and the trust model of transparency to avoid a monopoly of information was decisive for the Award of Distinction.

Honorary Mentions

The **EHRI Online Portal** offers users access to information that lies untranslated in archives, new insights, and possibilities for exchanging and archiving documents and evidence via the EHRI—European Holocaust Research Infrastructure community. EHRI is not only symbolic in character to remind us how important it is to work through the topic, it also exploits digital possibilities to enable researchers to delve more intensively into various archives and thematic aspects and makes an immensely important contribution to a contemporary examination of the dark chapters of history.

As an enabler for other communities that have public requests (FOIA) to the US government, as well as an archive of such requests, the digital community **MuckRock** makes an immensely important and valuable contribution to the preservation and expansion of democratic principles. *MuckRock* can be understood as a role model to create transparency and exchange between citizens, journalists, activists, and a government and to make the world in which we live more tangible and comprehensible.

Radio Garden allows live access to worldwide radio station via a globe interface and includes an archive of historic radio material across the globe. Although the project relies on volunteers to submit and maintain the list of stations and offers other projects access to its data-streams, it is not a community project in the narrow sense. For the jury, its highly engaging interface nevertheless conveys radio as a global manifestation of community in a time when oral and vocal communication move back to the foreground.

p5.js is a highly impactful project that has made programming accessible to people without a technical background, empowering them to create interactive visual web-applications. Created by a female artist and coder, it is JavaScript library implementing principles of Processing—a global community project that is used by artists and educators around the world.

The jury was impressed by the project's ethical commitment to establishing an inclusive and welcoming community of creative coding.

PetaBencana.id is a social resilience project addressing the increasingly frequent and destructive flood events in Jakarta and other Indonesian cities. Unlike other crisis-mapping projects, *PetaBencana.id* does not attempt to introduce a new technical solution to a social and environmental problem, but instead is built around the practices of dealing with floods that are already established in the community. The jury highlighted the nimble yet powerful community-driven response to one of the central challenges of the region.

The jury also chose to recognize **The Institute of Network Cultures (INC)** for its numerous contributions to the development of online communities and digital culture since the early 1990s. The wide range of projects and approaches of the *INC* demonstrate that online communities cannot be defined through technology, but manifest themselves in activities organized around building, using, studying, and critiquing technical artefacts and their social implications.

Aboriginal Territories in Cyberspace (AbTeC) is a project that has been active for almost fifteen years. It is run by members of first nations in North America and aims at increasing the visibility of indigenous people and their culture in the online world. Through workshops, the organizers and participants develop indigenous digital content, skins, and textures for popular virtual environments, video games, and online communities. The jury highlighted the research-creation approach of the project that engages with online culture through a practice of reflective making.

Queering the Map also engages in the enhancement of making visible and sharing emotional events of a certain segment of individuals under pressure. The global map allows you to share queer moments and embrace these memories together. While coming out and saying that you are from a certain minority group may need courage, these maps could be a secure and instant way to visually notice the existence of different communities, something to think about in a less homogenous and more mingled society of ethnicities, nationalities, religions, and beliefs.

Digua Community (Sweet Potato Community) 地瓜社区 is a courageous project that is built around temporary occupation and squatting in Beijing's unused emergency shelters. Responding to an extensive housing crisis, the project provides shelter in a self-organized community and creates public visibility through projects and events. The jury recognized the experimental co-creative approaches to housing and community focusing on the right to the city for underprivileged citizens.

The **858 Archive** by The Mosireen Media Collective is a community-led archival effort to preserve amateur footage, documents, and images of the 2011 Egyptian uprising. The archive currently contains more than 1,600 hours of uncut amateur video footage and was recognized by the jury as a vital element in preserving an untainted account of these events from hundreds of perspectives in the face of increasing attempts to erase or reshape public memory of historic events.

TIC-as Centroamérica is one of many ambitious and impactful projects aiming at strengthening the role of women in technology and society through collaborative spaces, educational activities, and start-up initiatives. The Sulá Batsú Cooperative is a women-led community in Costa Rica active in the larger Central American and Caribbean region. The cooperative imbues leadership and entrepreneurial skills in young girls through digital clubs, which is vital in a region where female participation in STEM is low.

And to round off the wide range of projects in this category, the **Arab Digital Expression Foundation – ADEF**, which made a deep impression on us. This project is distinctive through establishing a link between technological literacy and freedom of speech and expression. It has now been offering digital literacy and empowerment programs for youth across 11 Arab countries for more than a decade.

bellingcat

the home of online investigations

News:

July 1, 2018   By Eliot Higgins

MENA

Will Get Fooled Again – Seymour Hersh, Die Welt et l'attaque chimique de Khan Cheikhoun

Le 25 juin 2017, le journal allemand Die Welt a publié le dernier article de Seymour Hersh contestant le récit "mainstream" autour de l'attaque chimique de Khan Cheikhoun (Syrie) le 4 avril 2017. L'attaque, où du sarin a été largué contre la population locale par l'armée de l'air syrienne, a conduit le président Trump à...

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July 1, 2018   By Eliot Higgins

MENA

All The Pieces Matter – Les bombes au chlore syriennes et l'attaque chimique de Douma

À la suite de l'attaque chimique de Douma du 7 avril 2018, une attention particulière a été accordée à deux sites d'impacts où les restes de bouteilles de gaz jaunes ont été découverts. Alors que l'on a beaucoup commenté l'emplacement de ces bouteilles de gaz, une attention moindre a été portée à l'utilisation historique du...

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June 29, 2018   By Oleksiy Kuzmenko

UK & Europe   Ukraine

Ukrainian President Cites Clickbait Ranking in National Address

To highlight the progress that the Ukrainian Armed Forces have made under his command, Ukrainian President Petro Poroshenko has cited a military index created by a clickbait military-themed site without any expert, academic, military or government endorsements. This site, GlobalFirepower.com, ranked Ukraine's military 29th globally in its "2018 Military Strength Ranking." In his May 8th...

Resources:

July 10, 2018   By Noor Nahas

Guides   Arabic   Syria

How to Collect Sources from Syria If You Don't Read Arabic

Information from groups involved in international conflicts has never been as accessible as it is now. Rebel groups run social media accounts, video of missile launches are posted to Twitter, and the production value of propaganda has skyrocketed. For researchers and journalists who do not master the Arabic language, the same problems still exist: how...

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July 8, 2018   By Bes Naser

Guides   Digital Verification   Iran   Iraq

How to Digitally Verify Combatant Affiliation in Middle East Conflicts

The spread of social media and smartphones throughout the Middle East has created a truly enormous amount of publicly available documentation of conflicts in the region. Whether in the form of videos or photos, from combat footage to potential war crimes — a lot of things are routinely documented and uploaded to various sites like...

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July 4, 2018   By Foeke Postma

Articles   Polar   Strava

After Strava, Polar is Revealing the Homes of Soldiers and Spies

Polar, a fitness app, is revealing the homes and lives of people exercising in secretive locations, such as intelligence agencies, military bases and airfields, nuclear weapons storage sites, and embassies around the world, a joint investigation of Bellingcat and Dutch journalism platform De Correspondent reveals. In January Nathan Ruser discovered that the fitness app Strava revealed sensitive...

Bellingcat

http://www.bellingcat.com

Bellingcat publishes the findings of citizen journalist investigations into war and the criminal underground. *Bellingcat* uses open source and social media investigation to investigate a variety of subjects, from Mexican drug lords to conflicts being fought across the world. *Bellingcat* brings together contributors who specialize in open source and social media investigation, and creates guides and case studies so others may learn to do the same. *Bellingcat's* current goal is to spread the use of open source investigation to a range of organizations, with a particular focus on archiving content, and its use in justice and accountability.

Bellingcat was founded in 2014 by Eliot Higgins, the author of the *Brown Moses Blog,* which had previously used open source investigation to examine the conflict in Syria, making key findings on a range of topics, including the use of chemical weapons. In the two years prior to the founding of *Bellingcat,* Eliot Higgins has observed a growing number of individuals and organizations using open source investigation in their own work, and *Bellingcat's* initial intention was to bring together those individuals and organizations and to provide a platform for them to publish their own work, as well as providing case studies and guides to those who want to learn how to do open source investigations.

A few days after *Bellingcat* was launched, Malaysia Airlines Flight 17, known more commonly as MH17, was shot down over Eastern Ukraine. This began *Bellingcat's* investigation into the downing of MH17, which has now lasted nearly 4 years, including dozens of articles and reports written about the attack, providing unique and critical information about the attack, and those responsible, and countering false narratives pushed by the Russian government and its supporters.

Key to this work was the community that developed around the incident. Eliot Higgins reached out to individuals who were doing their own open source investigation work on MH17, publishing their work. He then invited a small team to collaborate on the investigation after the Joint Investigation Team (JIT), which was set up to investigate the attack, interviewed Eliot Higgins as a witness to the inquiry after learning about his work on MH17. The open source investigations published by *Bellingcat* had been of great interest to the JIT, and since 2014 *Bellingcat* has provided key material to the JIT about the attack.

Bellingcat has built a vibrant community that has a strong interest in investigations and verification. What has been noticeable is among the community of Syria-focused organizations there's actually less connectivity than many people assume, so proactively engaging with those communities has become essential. *Bellingcat's* new work on Yemen has prioritized building connections among organizations working on Yemen and those organizations who have worked on Syria and have lessons they've learned which can be shared with Yemen-focused groups.

Anti-Racism Movement (ARM)

https://www.armlebanon.org

Anti-Racism Movement (ARM) was launched in 2010 as a grassroots collective by young Lebanese feminist activists in collaboration with migrant domestic workers and community activists, following a racist incident at one of Beirut's most well-known private beach resorts. ARM activists, using a hidden camera, filmed the administration's blatant acts of discrimination and segregation. The video quickly spread online, and ARM's efforts to bring this issue to light were lauded by many. Interest grew in this small volunteer and action-based movement, and our projects grew in scope and scale. In 2012, ARM became a registered NGO with a growing team of staff and volunteers in order to increase its capacity to carry out more projects to fight racist discrimination, abuse and exploitation in Lebanon. Building on our philosophy that recognizes the importance of community-building work, ARM created the Migrant Community Centers (MCCs) which grew from one small center in 2011 in Beirut to centers in three major cities by 2016, plus an extra Sunday educational space.

Our theory of change shifts the positionality of migrant workers from beneficiaries and recipients of services to leaders and agents of social change in Lebanon. We do most of our work through the centers in direct collaboration with migrant workers, especially migrant domestic workers. The MCCs are free and safe spaces tailored to migrant workers and evolving according to their needs, where they can meet, learn new skills, work together, and access information, resources, and assistance. Since their creation, they have been offering free classes and other educational, social, and capacity-building activities, such as language classes, computer classes, health awareness sessions, rights education, advocacy training, cultural exchange events, social gatherings, and various holiday celebrations.

The MCCs also serve as a hub where initiatives are launched, a space to have celebrations and get-togethers, and a casual space for migrant workers to spend time with each other.

ARM's mission is to decrease racist discrimination and abuse in Lebanon on the social and institutional levels by advocating for changes in the systems that perpetuate racist exploitative practices, through sensitization, awareness raising, advocacy, and community building for more just social and institutional frameworks in Lebanon. The MCCs' mission is to make meaningful improvements in the quality of life of migrant workers in Lebanon and their capacity to self-advocate to advance their socio-economic rights, and to contribute to a strong and powerful migrant civil society, with a focus on women as leaders of change. The main strategies we use in our intervention include: providing resources that sustain Migrant Domestic Worker community networks and support/empower MDWs, MDW activists & MDW-centered initiatives; mobilizing collaboration between local activists and MDWs; developing strong advocacy activities and campaigns for structural change; and collaborating with media, researchers, and educational institutions against racist abuse and exploitation in Lebanon.

Anti-Racism Movement (ARM) was launched in 2010 as a grassroots collective by young Lebanese feminist activists in collaboration with migrant domestic workers and community activists. In 2012, ARM became a registered organization with full and part-time staff in order to increase its capacity to carry out more projects to fight racist discrimination, abuse and exploitation in Lebanon. Building on our philosophy that recognizes the importance of community-building work, ARM created the Migrant Community Centers (MCCs) which grew from one small center in 2011 in Beirut to centers in three major cities by 2016, plus a Sunday educational space.

g0v.tw
https://g0v.tw

g0v (pronounced "gov zero") is a polycentric civic tech community based in Taiwan. Established on the spirit of free speech, open source, and grassroots activism, g0v uses technology in the interest of the public good, eliminating information asymmetry while always facilitating independent thinking and collaboration. g0v is about trust in the power of the People. Substituting the "o" in "government" with "0", g0v reimagines politics with the worldview of the digital natives and builds new mechanisms for all to govern together.

Out of discontent with the disconnect between a bureaucratic government and the People, g0v was born in Taiwan in 2012. Since then, a sense of openness has gathered people from all walks of life, generating ideas that are poetic, progressive, useful, and radical. Engineers and designers, coders and artists, activists and professors, students and teachers, g0v is an open platform and its hackathons are safe spaces for ideas and values to be shared and debated, for old relations to be renewed and new connections to be made.

The name "g0v" entered the public consciousness during the "318" occupy movement (a.k.a. Sunflower Movement) in 2014. g0v contributors brought with them hardware like power cables and WiFi stations, as well as software like Hackpad and Hackfoldr to keep everyone connected, so that speech transcript, research material, or disaster relief information can be co-created, gathered, and shared. As public demand for openness and transparency from the government grows, g0v grows with it. Projects like "Taiwan Environmental Dashboard" raise awareness about air quality, "Amis Moe Dict" fights to revitalize one of Taiwan's most used native language, and "Open Political Contribution" and "Voting Guide" inform people before they vote. Because of the work done by g0v contributors, more people have become active citizens, making open government and civic participation fundamental values of progressivism in Taiwanese politics.

DIGITAL COMMUNITIES · Award of Distinction

Kirby Wu, Hasi429

We are "nobody". We were born at the first utterance of the words "Ask not why nobody is doing it. You are nobody". That's g0v's motto. We are **g0v** and **g0v** are us. We came into this world in 2012, when the founders joined together to have a rough consensus on our shared values of free speech, open source, and an everlasting pursuit for the public good. We are now everywhere and connected, in companies, governments, and local communities. We are doers. We have hosted 31 bi-monthly hackathons and co-created many impactful projects. We are open by default. We have built a civic tech news platform and made many international exchanges. We are about to host our third biennial summit to continue reaching out to the world, and reaching in to reexamine our values and strengthen our bonds. We are "nobody." We are you. We will never stop collaborating, developing new tools, exploring new models of organization, experimenting on new forms of media, and creating new, meaningful relations.

DIGITAL COMMUNITIES · Honorary Mention

858 Archive

The Mosireen Media Collective

https://858.ma
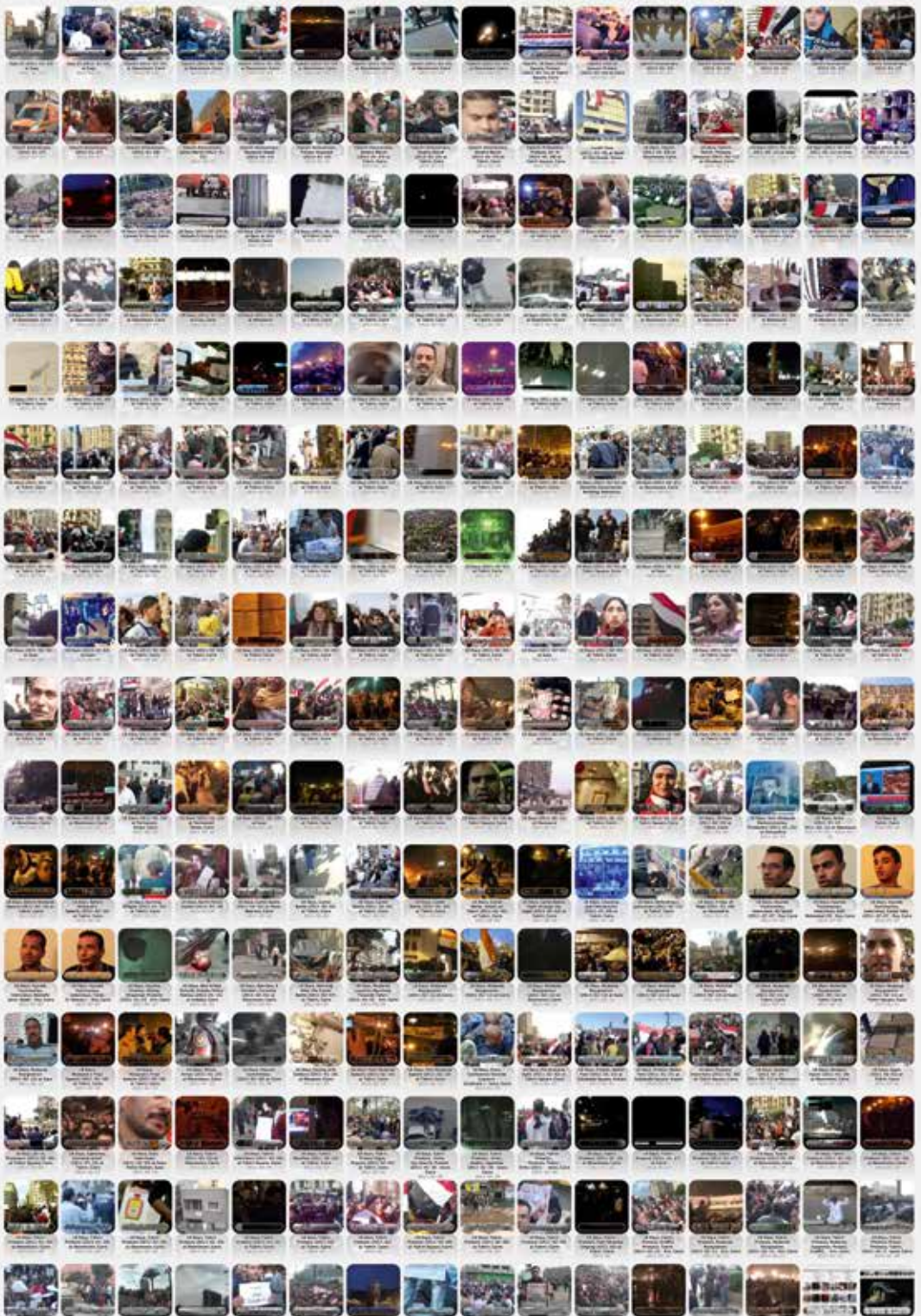
858 Archive is an initiative by The Mosireen Media Collective to make public all the footage shot and collected during the Egypt revolution in 2011 and later. Some of the footage has been seen before, in videos we edited and uploaded to YouTube. But much of it is being made publicly accessible for the first time—this is the raw, unedited footage shot and gathered over the years.

The archive has 858 hours of indexed, time-stamped video material along with thousands more photographs and documents. All together they present thousands of histories of revolt told from hundreds of perspectives. *858 Archive* is, of course, just one archive of the revolution. It is not, and can never be, *the* archive. It is one collection of memories, one set of tools we can all use to fight the narratives of the counter-revolution, to pry loose the state's grip on history, to keep building new histories for the future. In the first days of the uprising, a Media Tent was established in Tahrir Square. Hundreds of videos were collected from dozens of people, men and women, young and old, who had filmed key events on their cameras and cell phones and wanted to contribute to the digital memory of the moment, in particular to document police abuse and the killing of protesters. The Mosireen Collective came together in early 2011, its members were a part of the protest

movement. We filmed and collected footage from across Egypt, in factories, hospitals, unions, and morgues. We held trainings in street media in Cairo and across the country. In our workspace we hosted events, discussions, and film screenings. We weren't neutral observers, but actors within a wider struggle. We participated and documented at the same time. We were engaged in a battle of narratives, of revolution against the counter-revolution of the Army, the Muslim Brotherhood, and the Old Regime.

The military coup in summer 2013 changed everything. After the massacre at Rabaa al-Adawiyya we were paralyzed. Draconian protest laws, an arch-conservative judiciary, a resurgent and vengeful police force, and an acute societal depression cut down our ability to work. Filming was more dangerous than ever and we were adrift between the two poles of the military and the Muslim Brotherhood that now dominated the public discourse. Oversaturated with images of violence and embracing of the military's promise of an impending calm, public interest in Mosireen's work dwindled. Our role became uncertain and soon we stopped working entirely. We needed to take a break to deal with the feeling of defeat and to find a way to work within the new political reality. The result of the work and the effort of hundreds of people is the *858 Archive.*

The Mosireen Media Collective is a non-profit media collective born out of the explosion of citizen journalism and cultural activism in Egypt during the revolution. From 2011–2014 it held a space in downtown Cairo that was a revolutionary activist hub dedicated to supporting and producing citizen media of all kinds—including publishing videos, providing training, technical support, campaign support, equipment, screenings, and events, alongside hosting an extensive archive of footage from the revolution. At its height Mosireen's YouTube channel was the most watched non-profit channel in the world. Campaigns and initiatives Mosireen supported include *No To Military Trials for Civilians, Kazeboon, Operation Anti-Sexual Harassment, Freedom for The Brave,* and *Tahrir Cinema,* amongst others. The *858 Archive* is a collective project that is beyond Mosireen. Mosireen is today's curators and initial enablers, but our dream is that one day it will be administered by others.
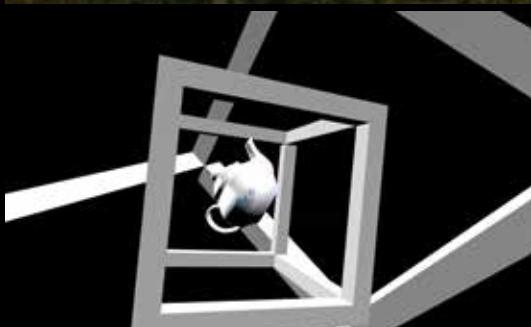
Aboriginal Territories in Cyberspace (AbTeC)
http://abtec.org

Aboriginal Territories in Cyberspace (AbTeC) is an artist-led, Aboriginally determined research-creation network whose goal is to ensure Indigenous presence in the websites, video games, virtual environments, and social media platforms that make up cyberspace. Our community is composed of artists, activists, academics, technologists, youth, and elders from North America and Oceania.

AbTeC has multiple nodes and components: from AbTeC Island, our virtual headquarters in the massively shared online environment of Second Life, to our studio/lab at Concordia University in Montreal, to computer rooms across Turtle Island (North America), the community works on many projects. Our "Skins Workshops in Indigenous Storytelling and Digital Media" teach Indigenous youth how to make video games (in 200 hours) or machinima (in 30 hours), and have spawned offshoot workshops in programming, virtual world navigation, and character design. Their goal is to empower Indigenous youth to be producers—not just consumers—of digital media, building capacity in our community as we break down stereotypes. Artist residencies support the creation of new artworks, such as interactive virtual reality environments and machinima series. These works, the games, and more have been exhib-ited and screened internationally. AbTeC members also publish extensively, give interviews to both the press and student scholars, and lecture widely to inform Indigenous and non-Indigenous popular and academic audiences.

In 2014, AbTeC launched the "Initiative for Indigenous Futures (IIF)", reframing our activities to focus on the future of Indigenous communities. Can we use concrete dreaming about the future to help understand how to meet the challenges our communities face today? We've thus added to our activities an annual "Symposium on the Future Imaginary" among other new initiatives.

We also work towards influencing network culture and technology at large. That culture is heavily Euro- and North America-centric, and the technology it has produced exhibits marked biases towards the many cultures that exist outside that context. As we work with Indigenous creators, AbTeC expects to see an Indigenous influence on the way cyberspace is conceptualized, designed and materialized.

Aboriginal Territories in Cyberspace (AbTeC) began with a project called *CyberPowWow,* a hybrid website, chatspace, exhibition, library, and community event created by and for Indigenous artists. The project ran from 1997 to 2004. In 2005, Indigenous media artists Skawennati and Jason Edward Lewis launched AbTeC to encourage other Indigenous artists to use digital and networked media tools to create art and to populate cyberspace with Indigenous imagery, sounds and ideas. Urged by our elders to work with our youth, we established the "Skins Workshops" in 2008, which we have run in Kahnawake, Montreal, Toronto, Yellowknife, Regina, Vancouver, and Honolulu. We have won several Best New Media awards at the imagineNATIVE Film & Media Festival, as well as an Ashoka Changemakers award. In 2014, AbTeC founded the Initiative for Indigenous Futures (IIF) to develop the AbTeC community into a partnership with cultural organizations and educational institutions. *abtec.org/iif*

Arab Digital Expression Foundation – ADEF

http://www.arabdigitalexpression.org

The *Arab Digital Expression Foundation* (ADEF) aims to empower and support independent teenagers and youth, individuals and groups, who are active, critical, aware, and can express themselves and produce knowledge for the benefit of their society. We also aim to promote the creative uses of media, art and technology, disseminate the concepts and practices of free culture, and support initiatives that aim to produce free Arabic knowledge using open tools. ADEF's work methodology is based on the collaborative and participatory work principles based on learning and experimentation.

To realize these goals, we build spaces, foster environments for expression and learning, enhance skills and develop knowledge tools to support and empower teenagers and youth, groups or individuals,

working on the ground to strengthen their practices and engagement with society.

ADEF also works on youth skills development and self-confidence through the ethical human values that are incorporated and embedded throughout all our activities, projects, and programs such as but not limited to: Humanity, social inclusion, equality, respecting others and accepting differences, adaptation and coexistence, leadership and teamwork etc. ADEF organizes a set of programs and projects in the fields of digital empowerment, open-source technology, free expression and new/alternative media, knowledge production and leadership, learning and education, as well as arts and culture such as: Arab Digital Expression Camps–ADEC, Youth Media Activists camps–YMAC, Digital Expression Commu-

nity Area–DECA and Youth Digital Empowerment project. ADEF also advocates and promotes for open knowledge through the good use and benefits of free licensing, free software, good archival practices, and open access, aiming to produce good quality literature on the open source concept, theoretical frameworks, free licensing, the significance of the public domain, and censorship and restrictions on freedom of expression in a variety of forms such as academic research papers, articles in Arabic Wikipedia, blog posts, informational videos, and opinion pieces in various media publications.

Arab Digital Expression Foundation – ADEF is a non-profit foundation established in Egypt in 2009. Earlier in 2007, ADEF started with its still remaining core project, the Arab Digital Expression Camps (ADEC) and since then 11 annual successive camps were organized to date benefiting more than 630 teenagers (12–15 years old) and 240 young trainers from 11 Arab Countries. Building on the incredible impact of ADEC on both teenagers and young trainers as well as the community around it, ADEF created its Digital Expression Community Area (DECA) in 2010 to provide the community with ongoing activities throughout the whole year and to reach out to more trainers and trainees than those benefiting from ADEC. While ADEC and DECA are developing and growing, ADEC launched a three-year project "Youth Digital Empowerment Project" in 2014 during which we developed four curricula in Visual Arts, Video, Sound & Music and Computing, trained young adults (18+) to act as facilitators, and also created 10 digital expression spaces in different organizations to host and deliver a two-month summer schools program for teenagers (12–15 years old) of the community areas they serve and work with.

DIGITAL COMMUNITIES · Honorary Mention

Digua Community (Sweet Potato Community) 地瓜社区

WeChat ID: DiguaCommunity

Digua Community is an experimental social design project transforming unused air raid shelter basement spaces into shared community spaces. The vision of *Digua Community* is to create a new urban culture of sharing in Beijing that extends from trust in one's own community. While the project started off as Shu Zhou's master's thesis at the University of Arts London, *Digua Community* is now being operated in collaboration with the local subdistrict office, civil defense office, and neighborhood committee. To bring together local neighborhood residents including migrant workers, young entrepreneurs, and university students, *Digua Community* is designing opportunities for everybody to be a "prosumer" (a producer-consumer) within the basement space. It is our hope to provide opportunities for all neighborhood residents who do not usually have opportunities for interaction to come together and create meaningful connections. We believe that the reimagined basement as a third space for socializing, learning, and sharing can not only offer an improved lifestyle for all Beijing residents, but can also redefine social relations in Beijing.

We built the first *Digua Community,* which is around 500 square meters, in 2015 and we got about 15,000 resident visitors in the first year. We built the second one in late 2017, which is 1,500 square meters, and in 2018 the third will be built.

In Beijing, since 1986, with the rapid development of urbanization, a unique type of underground living space for migrants has emerged—in the basements of residential buildings formally used as air raid shelters. According to statistics, an estimated one million migrant workers were living in the air raid shelter basements in Beijing before 2014, most of whom were working in the local service industry. Unfortunately, the living conditions are incredibly poor and the workers also face eviction.

This project addresses these conflicts by carrying out a social design strategy. This social experimental project chose an air raid shelter basement in the Wangjing community of Beijing as the research object. After extensive research we designed a new business model for this specific basement, and also set up several urban interventions as tests in that basement. We are attempting to redefine the air raid shelter basement so that it can re-empower the new generation of migrant workers and the related stakeholders with their new roles, through a sustainable development strategy to gain "spatial justice" and to build social capital in Beijing as well.

1, 5, 6: EHRI; 2 Jewish Mueseum in Prague, 3 Emanuel Ringelblum Jewish Historical-Institute, 4 NIOD

EHRI Online Portal

https://portal.ehri-project.eu

The *EHRI Online Portal* is the main outcome of the European Holocaust Research Infrastructure (EHRI) project, a consortium of Holocaust researchers, archivists and IT specialists from 24 institutions in 17 countries.

The *EHRI Portal* is an expanding resource and new information and features are continuously added. At present, it offers users detailed information on more than 1,850 Holocaust-related archival institutions in 51 countries as well as descriptions of more than 230,000 archival sources. It thereby seeks to overcome a hallmark challenge of Holocaust research: the fragmentation and geographic dispersal of sources documenting the event. By integrating and interconnecting information from around the globe, the Portal is an invaluable resource for anybody interested in the Holocaust, and, for the first time, enables truly pan-European approaches to researching and memorializing this most traumatic event in European history.

EHRI is both a digital infrastructure and a human network. The *EHRI Portal* allows users to connect with each other and to contribute their knowledge to its information base. EHRI further facilitates digital and physical networking, education and dissemination opportunities, offering, for instance, online training *(https://training.ehri-project.eu* and *https://ehri-project.eu/interactive-ehri-online-course-holocaust-studies),* a community-driven blogging environment *(https://blog.ehri-project.eu)*, fellowships as well as an extensive program of seminars, expert workshops, and conferences.

By putting community building activities at the heart of its mission, EHRI has developed a committed user base among Holocaust researchers, archivists, librarians, museum curators, educators, as well as family researchers, public historians, and members of the interested public across Europe and beyond. The EHRI Portal is freely available to anyone and currently attracts more than 10,000 sessions per month.

While EHRI is a scholarly project, it recognizes that its activities have relevance far beyond the walls of academia. Holocaust archives are part of our shared European cultural heritage, and continuously enhancing our knowledge about the Holocaust and ensuring its appropriate memorialization are necessary to sustain tolerant and non-discriminatory societies. The Portal is open for use to anyone, and through its wide public history and outreach activities EHRI seeks to ensure that the memory of the Holocaust keeps on informing contemporary social, political, and cultural discourse.

'That Others May Die': Autonomous Military Technology and the Changing Ethos in the Battlefield

SHADOWBOOK WRITING THROUGH THE DIGITAL 2014-2018

VIDEOBLOGGING BEFORE YOUTUBE TRINE BJØRKMANN BERRY

The Institute of Network Cultures (INC) analyzes and shapes the terrain of network cultures through events, publications, and online dialogue. Our projects evolve around digital publishing, alternative revenue models, online video and design, digital counter culture and much more.

LATEST POST
Keep Calm and Carry on Monitoring the Media: a Review of Monitorial Citizen
By Inte Gloerich, 27/6/18

By Chrystalleni Loizidou Keep calm and carry on monitoring the media: a review of Monitorial Citizen NeMe (Cyprus), 9th December 2017, part of the State Machines programme One couldn't have wished for a more grounding response to contemporary media anxieties than this event. I don't mean that the conference was all rainbows and lolkittens. I [...]

Art, Work, and Identity in an Age of Planetary-Scale Computation

LATEST POST
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By Geert Lovink, 15/6/18

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blog by geert lovink

LATEST POST
HvA over MoneyLab: Reguleren van digitaal geld in de stad
By Inte Gloerich, 4/6/18

Onlangs interviewde de Hogeschool van Amsterdam Geert Lovink en Inte Gloerich over digitaal geld in de stad. Lees free het artikel dat zij hierover plaatsten.

MoneyLab

LATEST POST
Lifelong Learning
By Silvio Lorusso, 4/6/18

Dear Reader, let us be honest: we cannot easily put into words why this show is entitled "Lifelong Learning". For this to become clear, it's best to start from the beginning since Lifelong Learning is the material manifestation of endless conversations we have had for years. Almost seven years ago, while we were sharing a Read the rest

Welcome to the Entreprecariat

LATEST POST
Cross Critique: Experiments in Art Criticism
By Leonieke van Dipten, 24/5/18

A collaborative art critique residency took place at the Kunstenfestivaldesarts in Brussels. For 5 days, 12 international critics, video- and sound artists worked together to re-invent classic forms of art criticism. Forget that dry black print on white paper and immerse yourself in the mesmerizing longreads and podcasts about La Plaza by El Conde de Torrefiel [...]

The Art of Criticism: A European Network for Experiments in Art Criticism

SEE ALL INC PUBLICATIONS

The Institute of Network Cultures (INC)

http://networkcultures.org

The *Institute of Network Cultures* (INC) analyzes and shapes the terrain of network cultures through events, publications, and online dialogue. Our projects evolve around digital publishing, alternative revenue models, online video and design, digital counter culture and much more. Its goal is to create a future-driven continental European culture of (radical) critique of technology that is not positioning itself as an academic or counter-cultural outsider but sees a lively form of critique as an essential part of the process in which technological architectures (and cultures) come into being.

The INC was founded in 2004 by Geert Lovink, following his appointment within the Amsterdam University of Applied Sciences. A key focus is the establishment of sustainable research networks. Emerging critical topics are identified and shaped in a practical sense. Interdisciplinary in character, the INC brings together researchers, artists, activists, programmers, designers, and students and teachers.

In 2018 INC has three communities that we are actively building up and supporting:

1. MoneyLab, a network of critical art projects, founded in 2013, focusses on bitcoin, blockchain, crowdfunding and other ways to redistribute financial resources towards the arts. After three conferences in Amsterdam in 2014, 2015 and 2016, in January 2018 we had the first MoneyLab event outside of the Netherlands, in London. There was MoneyLab #5 late April 2018 in Buffalo (NY) and a German conference on alternative money theory is planned in Siegen in January 2019. We published the 2nd Money-

Lab reader *http://networkcultures.org/moneylab*. The project has an active email list and blog.

2. Digital Publishing Experiments. This started right after the founding of the INC. An overview of our publication series can be found here: *http://networkcultures.org/publications* Around 2009 INC started to bring out print on demand titles. From 2011 we have been working more systematically in this field with events and projects such as the Unbound Book, Out of Ink, and the two-year software project Hybrid Publishing Toolkit. From 2015–2018 this activity was done by a separate entity, coordinated by Margreet Riphagen, called the Publishing Lab *www.publishinglab.nl.* INC and Publishing Lab get a lot of interns from around the world to work on this with us and outside partners. Due to the unstable short-term financing labels constantly change. In 2018–2019 we secured two-year funding to investigate the dialectics between speed and quality in digital publishing, together with a consortium of publishers, designers and programmers.

3. As a concrete case, we are actively involved in supporting art critics to do digital experiments: *http://networkcultures.org/artofcriticism* Complaining about the disappearance of art criticism is one, but what are we going to do about it? After a few years of training next generation art critics in the Netherlands and Flanders (in Dutch), in 2017 we decided to create a European network, which is now well under way.

DIGITAL COMMUNITIES · Honorary Mention

MuckRock

https://www.muckrock.com

MuckRock is a non-profit, collaborative news site that brings together journalists, researchers, activists, and regular citizens to request, analyze, and share government documents, making politics more transparent and our democracy more informed. We sought to build a collaborative site that was easy and intuitive while having a real impact both at the national level as well as providing best-in-class tools for providing oversight and accountability at the state and local level in the United States.

MuckRock is an open project: The source code is open source and anyone is free to take advantage of the site's data, repository of tens of thousands of requests and millions of pages of government records, hours of video, and more. Since its founding in 2010, it has helped release over 1,6 million pages of previously secret government records from over 8,000 different agencies at the local, state, and federal level. And that does not include our successful lawsuit against the CIA that publicly released over 13 million pages earlier this year. We do all this through the use of the Freedom of Information Act and public records requests, which require govern-

ment agencies to provide documents to tax payers. *MuckRock* uses a mix of software, a strong community, public pressure, and original reporting to make these laws more effective and put them in the hands of more people.

It's a large and growing community: Over 8,000 users across the country have used the platform to almost 40,000 public records requests, making *MuckRock* the largest non-governmental repository of public records requests in the United States by a wide margin. Hundreds of thousands, including reporters, policy makers, and the general public, take advantage of these resources every month. Over half of *MuckRock* requests are at the state and local level, which is critically important with shrinking local news organizations that struggle to hold officials accountable. Over the past year, *MuckRock* has continued to increase the breadth and scale of its work, helping power investigations by major media organizations and independent journalists alike, including investigations into government surveillance, prison privatization, asset forfeiture, corporate handouts, and a variety of other key public policy issues.

MuckRock was founded in 2010 with the goal of making government transparency easier for everyone, including journalists, researchers, and every day citizens. We officially became a non-profit in 2016, and have helped thousands of users open up government and ask important questions. MuckRock currently has five staff members, including a chief executive, a senior developer, a reporter, an editor, and an office manager.

Making art at NYU ITP

Lauren McCarthy

Claire Kearney-Volpe testing p5.js accessibility with programmers with visual impairment

Claire Kearney-Volpe
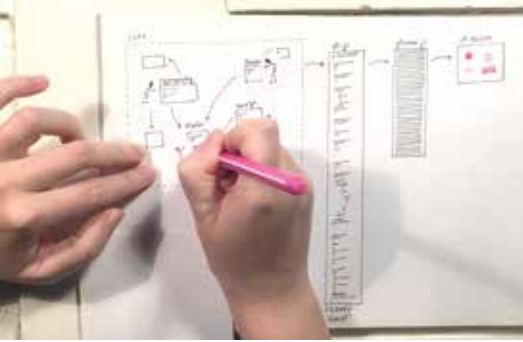
Still from video *Looking Inside p5.js* created by Luisa Pereira

Luisa Pereira
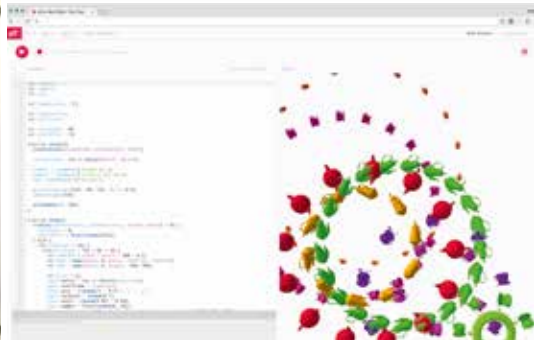
p5.js sketch with artwork by Matthew Kaney in p5.js web editor, development led by Cassie Tarakajian

CC Fest at UCLA led by Saber Khan

Casey Reas

Signing Coders led by Taeyoon Choi, teaching p5.js to hearing-impaired students

Taeyoon Choi

CC Fest led by Saber Khan

Casey Reas

p5.js class taught by Kate Hollenbach

Kate Hollenbach

p5.js
http://p5js.org

p5.js is a community built around an open-source platform that empowers artists, designers, students, and anyone to learn to code and express themselves creatively online. It is a continuation of the original goals of Processing, reinterpreting them for the web. It enables users to quickly prototype interactive applications, data visualizations, and narrative experiences, and share them easily. Using the metaphor of a sketchbook, *p5.js* tries to make sketching with code as intuitive as drawing in an artist's notebook. *p5.js* has over a million users worldwide; it is taught in K-12 to universities, in art and design programs as well as engineering programs, and used by hobbyists as well as professionals. *p5.js* is more than just a web programming language; its primary mission is to be a community that emphasizes inclusion, diversity, and access in its community of users and contributors. Historically, there has been a lack of representation of women and people of color in both the arts and in technology, and too often efforts to remedy this come as afterthoughts. By contrast, *p5.js* holds diversity and inclusion as core values upon which the software is built, allowing all decisions to flow from this. *p5.js* attempts to imagine what a truly open software and artistic project could look like, gaining strength through the range of ideas and opinions its contributors bring to it. Over half of the contributors identify as female or gender-nonconforming, and there is significant representation of people of color, immigrants, people with disabilities, and widely ranging ages and skill backgrounds.

This effort manifests in initiatives such as a "Coding Comic" that teaches coding to historically underserved children of color, a *p5.js* Code Editor for the blind and visually impaired, a paper-based curriculum for teaching *p5.js* to people in Washington State prisons, a curated series of homepage artworks highlighting Asian female and gender non-conforming artists working with code, and Spanish and Chinese translation efforts to bring coding and art to non-English speaking audiences through educational materials and native language documentation.

As our community statement *p5js.org/community* states:

"We are a community of, and in solidarity with, people from every gender identity and expression, sexual orientation, race, ethnicity, language, neurotype, size, ability, class, religion, culture, subculture, political opinion, age, skill level, occupation, and background. We acknowledge that not everyone has the time, financial means, or capacity to actively participate, but we recognize and encourage involvement of all kinds. We facilitate and foster access and empowerment. We are all learners. We are not code snobs, we insist on actively engaging with requests for feedback regardless of their complexity, we welcome newcomers and prioritize the education of others."

Ariel Shepherd

Report Sequence: Location   Report Sequence: Water Depth   Report Sequence: Add Photo   Report Sequence: Description   View Report on Public Map

PetaBencana.id

http://info.petabencana.id

Powered by CogniCity Open Source Software, *PetaBencana.id* is a free web-based platform that produces megacity-scale visualizations of disasters using both crowd-sourced reporting and government agency validations in real-time. The platform harnesses the heightened use of social media and instant messaging during emergency events to gather confirmed situational updates from street level, in a manner that removes the need for expensive and time-consuming data processing. The software listens for specific keywords in social media posts—such as flood—and engages in AI-assisted conversations with residents through humanitarian chatbots in order to filter through the noise of social media and collect verified crowdsourced disaster reports. These reports are displayed on a map in real-time, alongside relevant emergency data collected by local agencies. Government emergency management agencies monitor the platform to assess the disaster situation, respond to resident needs, and as part of a transparent two-way communication system, update the map with time-critical information in order to alert residents to the severity of disasters. By integrating localized knowledge from a variety of sources into a single, robust platform, *PetaBencana.id* is able to provide a comprehensive and accessible overview of disaster events; thereby enabling residents, humanitarian agencies, and government emergency management agencies to make informed decisions for safety and response. The transparency and open access of the platform democratizes decision support, creates a framework for co-management, and fosters equitable and collaborative resilience to climate change. Currently supporting a coverage area with over 50 million residents in Jakarta, Surabaya, Bandung, and Semarang, *PetaBencana.id* has proven that community-led data collection, sharing, and visualization reduces disaster risk, increases emergency response times, and assists in relief efforts.

DIGITAL COMMUNITIES · Honorary Mention

Queering the Map

http://www.queeringthemap.com

Queering the Map is a community generated counter-mapping project that locates queer moments, memories, and histories in relation to physical space. As queer life becomes increasingly less centered around specific neighborhoods and the buildings within them, notions of 'queer space' become more abstract and less tied to concrete geographical locations. The intent of *Queering the Map* is to collectively document the spaces that hold queer memory, from park benches to parking garages—to mark moments of queerness wherever they occur.

The project intends to leave 'queerness' open to endless interpretation. From direct action activism to conversations expressing gender pronouns, from feelings of isolation to moments of rapturous love, *Queering the Map* functions as a living archive of queer experience. The mapping out of concrete queer histories is at the core of the project, and elders of the queer community are particularly encouraged to add moments and places of historical significance to the map in order to preserve our collective history—one that is always at risk of erasure. Through mapping these ephemeral moments, *Queering the Map* aims to create a web of queerness that shows the ways in which we as a community are intimately connected. In a moment of serious political turmoil, it is more pertinent than ever that minoritarian communities merge along lines of commonality, so that we may better resist the forces that work against us. By mapping out queer experience in all of its permutations, *Queering the Map* aims to commemorate the work we have done as a community, as well as make clear the work we still have left to do. By merging the subjective experience into the collective, *Queering the Map* works to create a feeling of solidarity across difference and across borders.

Queering the Map was launched by Lucas LaRochelle in May 2017 to document the diversity and history of queer space. In early February 2018, the project went viral, attracting over 10,000 shares on Facebook and 6,000 new submissions in a period of three days. The site was then spammed by Trump supporters, which prompted LaRochelle to reach out to the online queer community for support, attracting a group of LGBTQ+ coders who worked tirelessly to ensure the security and sustainability of the site. *Queering the Map* was relaunched on April 3, and now holds over 17,000 stories of queer joy, pain, and resistance from all over the world.

Radio Garden

http://radio.garden

By bringing distant voices close, radio connects people and places. *Radio Garden* allows listeners to explore processes of broadcasting and hearing identities across the entire globe. Thus, it celebrates human communication across borders through a growing selection of archival sources and live radio streams. From its very beginning, radio signals have crossed borders. Radio makers and listeners have imagined both connecting with distant cultures, as well as re-connecting with people from "home" from thousands of miles away—or using local community radio to make and enrich new homes. The online platform *Radio Garden* introduces a new way to listen to radio online. By turning a 3D globe, you can tune in to 14,000 stations in more than 7,000 cities.

At a time when most people tend to be focused on their own immediate environment, this project shows that radio has no borders and can unite the world. *Radio Garden* was initially commissioned for the exhibition of the research project *Transnational Radio Encounters.* Instead of designing a physical exhibition that lays out a number of educational topics about the history of radio, we felt we could better show the transnational nature of radio by finding and mapping live radio to a 3D globe and having it work as a kind of radio receiver. After launching, the website was visited by over 100 million people across the world. *Radio Garden* currently receives approx. 200-250 thousand visitors per day. Since the unexpected success after its launch, the
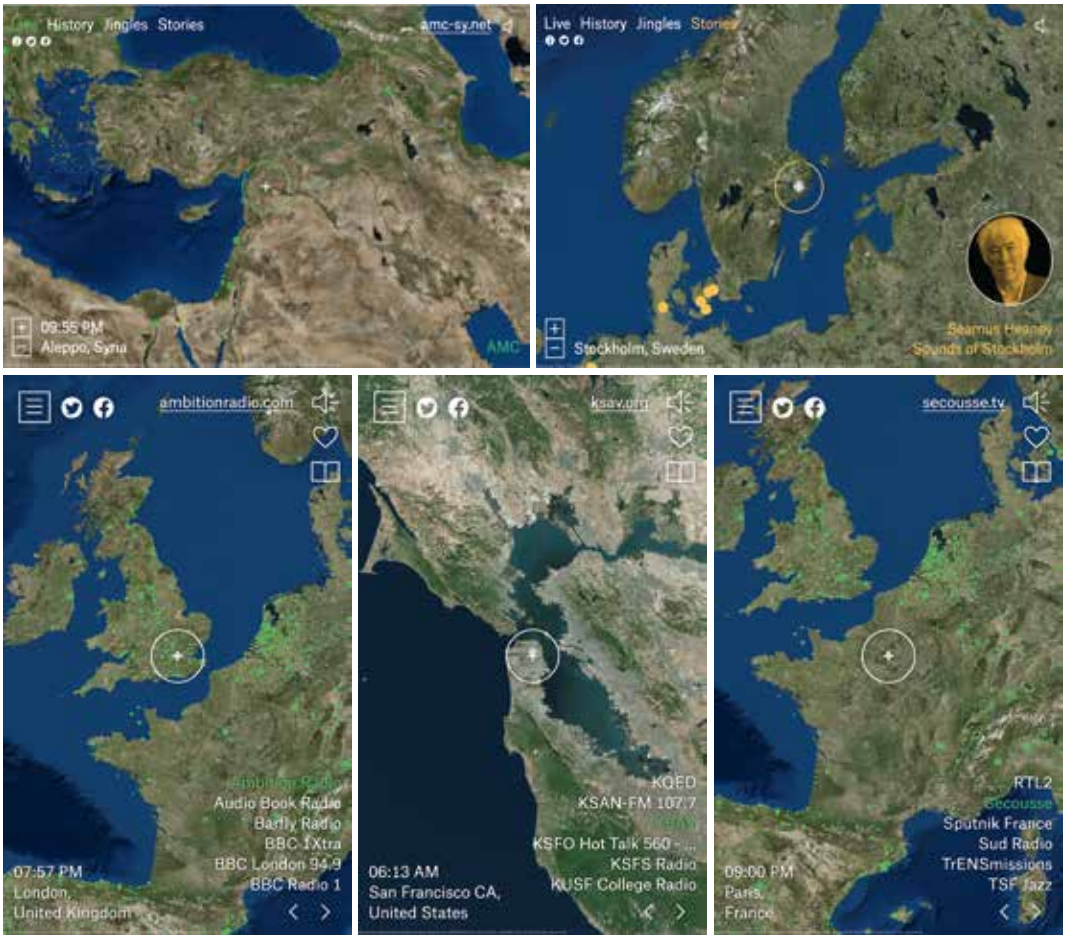
project has been kept alive by Studio Puckey's daily maintenance and financial investments. In 2017, they built on the platform's content management system, allowing for outside collaborators to help adding station submissions. They also created Android and IOS mobile apps and added much requested features like favorites.

In the coming year, the *Radio Garden* team will be working with the curator and radio enthusiast Femke Dekker on designing and researching a new curation feature where selected people across the world will be invited to create selections of stations according to different themes.

The original development of **Radio Garden** started at Moniker, where Jonathan Puckey and Luna Maurer came up with the concept. The project was designed by Jonathan Puckey, Phillip Bührer, and Luna Maurer. The project was developed in-house by Jonathan Puckey. After leaving his role as founding partner at Moniker, Jonathan Puckey continued work on the platform in his own practice Studio Puckey. Every day we receive submissions from 50+ stations across the world. We work with a small team of volunteers to keep our station database up to date. By doing so, we have added over ten thousand stations in the last year. We actively prune out duplicate entries and check the validity of the submitted information.

DIGITAL COMMUNITIES · Honorary Mention

TIC-as Centroamérica

https://www.facebook.com/programa.ticas

TIC-as Centroamérica is a permanent program of Sulá Batsú Cooperative, born in 2013. TIC-as aims to develop women's empowerment and leadership through digital technologies, create 'technological poles' led by women in rural areas of Central America, so that the benefits of the digital economy actually reach the most vulnerable regions and populations, and expand our work by means of virtuous circles among the women involved. We work with girls from ages 10–17, mothers (who often do not have any kind of education), university students, professors, and professionals. We also have constituted a network of schools, universities, public and private institutions, technology companies, businesses, and social organizations, at a local, national, and regional level.

Our work consists of eight strategies:

- **Girls & Technology Clubs** (clubs for schoolgirls, in which they learn to use and create digital technologies with the mentorship of older TIC-as girls).

- **Mothers & Technology Clubs** (clubs for the girls' mothers, in which they learn basic technological tools with the mentorship of older TIC-as girls).
- **Girls Programming** (clubs for older girls and university students, in which they learn basic programming and coding with the mentorship of other TIC-as girls).
- **Technological Cafés** (meeting spaces to discuss about technology and being a woman in STEM, share experiences and have fun).
- **Female Hackathons** (36-hour challenges, in which the participants have to design a technological solution to a problem in their communities).
- **Ada Communities** (university sorority communities for women pursuing technology careers).
- **Business Incubator** (Sulá Batsú Cooperative gives advice to TIC-as participants who want to start their own entrepreneurships).
- **The voice of the girls of Central America** (the expansion of the Girls & Technology Clubs throughout Central America, with methodologies including digital storytelling, rap, and prototyping).

The organization that leads **TIC-as Centroamérica** since 2013 is Sulá Batsú Cooperative. It is an organization born in 2004, based on social solidarity economy, that aims to promote and strengthen local development with a research and action approach from four main work areas: Digital Society, Art and Culture for Social Transformation, Knowledge Management, and Social Solidarity Economy. TIC-as Centroamérica's team consists of Costa Rican anthropologist and computer engineer, Kemly Camacho Jiménez, and a group of social scientists, artists, computer engineers, managers, and promoters. Outside of our core team, we work hand-in-hand with some of the girls and women who have evolved from participants to leaders and mentors.

Visionary Pioneers

of Media Art

Visionary Pioneers of Media Art 2018

Launched in 2014, this category is dedicated to recognizing and celebrating the men and women whose artistic, technological, and social achievements have decisively influenced and advanced the development of new artistic directions.

What began as a technological revolution has since developed into a new cultural and social reality with its own specific forms of communication, cultural techniques, and artistic expressions, the roots of which extend far back into the past and lead us to encounters with remarkable, extraordinary personalities—the visionary pioneers of media art. Thus, in many respects, these men and women established the foundation of media art as we know it today. In order to give them the respectful recognition commensurate with their accomplishments, we created the Prix Ars Electronica's Golden Nica for Visionary Pioneers of Media Art in 2014.

What started with Frank Malina's initiative and the first *Leonardo* Journal in 1968, developed into a vivid and inspiring global community, a forerunner of many fruitful collaborations between the arts, sciences and technology.

For 50 years, Leonardo/ISAST—The International Society for the Arts, Sciences and Technology, has served as *the* community for networking, resource-sharing, disseminating best practices, supporting research, and offering events in the arts, sciences and technology. Leonardo has created opportunities for the powerful exchange of ideas among practitioners in these fields: through publications, initiatives, and public forums. Leonardo/ISAST has facilitated cross-disciplinary research, seeking to catalyze fruitful solutions for the challenges of the 21st century.

Reason enough to award the Golden Nica for Pioneers of Media Art 2018 to the community of Leonardo/ISAST for its 50 years of service as a node in the network of artists, scientists, and creatives in general.

Celebrating **50 years** of growing the network

50 YEARS | **LEONARDO** WHERE IDEAS DON'T TAKE SIDES

Leonardo—Coaching Global Culture

Derrick de Kerckhove

Ancient Greek scholars and etymologists are accustomed to remind us that, at the beginning, art and technology were indistinguishable in a common word *tekne*. Our friend Ed Shanken, a regular participant to Ars Electronica as well as to Leonardo, contributed a substantial article about the matter[1]. With a view to situate the role of Leonardo in the contemporary culture, it may be time to revisit this critical association and propose a hypothesis for why the separation of the two functions happened in the first place and why they are on the course of being reunited today.

The appearance of such a category as "art" is not a natural outcome of human activities generally more oriented to survival than to decorum for long stretches of evolution. Richard Wilhelm notes that Confucius was made uncomfortable when confronted with anything to do with art or esthetics. McLuhan was fond of quoting a proverb of the Balinese who were proud to claim: "We have no art, we make everything the best we can." This mentality must have been germane to the ancient Greek sculptor or architect who did his best to develop the most efficient techniques to produce what was ordered by the Athenian authorities, including ornamentation, because gods and illustrious persons were also to be represented. It is only when a major disruption in their cognitive experience hit their culture that the technical and the artistic functions separated and revealed themselves as such to the ancient Greeks. This separation followed the invention of the alphabet, a technology that redefined their sensory experience by reducing it to a string of written words. This process permitted the discovery, the elaboration, and the promotion of common practices into new categories of knowledge and formal expertise including geometry, history, philosophy, and art.

So, why is it then, that now, overcoming a durable and contemptuous resistance from the art establishment, artists began to turn to science and technology to produce what they still considered as art, not just technology? First of all because during and after the Renaissance, artists were often prone to adopt the latest technologies to practice their art, whether musical, pictural, sculptural, and even more so in literature. But the present paradigmatic thrust to artistic innovation is surely the development of a generalized digital culture.

Almost as soon as I took over the direction of the McLuhan Program at the University of Toronto in 1983, I created a weekly evening event entitled the "artist-engineers seminars," an initiative squarely contemporary to the time Roger Malina took over the responsibility of continuing his father's creation. Frank Malina's intuition about the need for a journal both to bridge art and technology, and to add science to the mix, was a distant early warning of a social evolution that would necessarily become strengthened in the years to follow.

The hidden ground for that convergence was probably the same that has entrained convergence in all other specializations, technological, scientific, productive and distributive, that is, the shift from literate to digital dominance of human affairs. The drive to convergence was the transborder fluidity introduced by combining heterogeneous media and contents in the common simplified sequence of 0 and 1, or on/off signs that allowed to translate anything into anything else without transition in the same infrastructure of simple signs.

So the first thing to point out about the success of Leonardo, besides being a leading publication with very high academic standards addressed to a rapidly growing network of global readers and fans, accessing them also through its numerous sideline activities such as LASERs and DASERs, is that, early on, it found its place at the core of a civilizational transformation. Where the effects of literacy were centrifugal, those of digitization are centripetal forging indispensable alliances between disciplines, ushering a trans-disciplinary trend even where it is most resisted, that is, in hard sciences, neurosciences, professional turfs, etc. Leonardo is a global drive in the global culture. Its job is to infiltrate and illuminate the convergence, probing the social and human consequences of technology, thus contributing to the highest levels of cultural awareness and competences.

The penetration of Leonardo in these various bastions of protected expertise and knowledge has been relentless as it scanned and focused on the latest contemporary issues and concerns of both the culture at large and the scientific community. Roger Malina underlines this constant updating aspect of Leonardo's work:

We have been very reactive to the evolution of activities of the professionals in the community; in the 1970s we published a lot about computer graphics before it became its own profession, but now we no longer publish about computer graphics. When the space artists started to emerge we documented and advocated their work with the space arts workshops in Paris that led to the involvement of ESA, CNES etc. and the setting up of the arts committee at the international federation of astronautics. When art and biology started emerging, Edouardo Kac and George Gessert joined the editorial board and we started documenting that work. Today it's AI and art and complex networks, and of course the new development in the last few years is a growing interest in scientific and engineering circles of the possible role of artists and designers.[2]

And now Leonardo is launching a research stream in gaming. From this impressive evidence we can already observe that it is tracking artists "doing" analytics and producing algorithmic applications and installations. The opinion of artists—engineers or not—about such matters is urgent, and even more so concerning the society of "social credits" that is looming in China and that has already crept into this weird hybrid fabric of flesh and data that western societies are also adapting to.

The second point, also emphasized by Malina, is how global the network that Leonardo has created over the years is. This network of networks, as he calls it, is not merely a collective, but more likely a connective association of many different persons and organizations that all have archived identities, names, places, and connections and thus should not be lumped into the anonymous blob that people call collective. In a few decades, when scholars source the origins of the bewildering metamorphosis our human society is now traversing, their individual contributions in the journal will be recognized as prophetic.

The presence of Leonardo in the global networks is both homeopathic and viral. Over 50 years it has proven that it is here to stay. It has the continuity that reveals a function necessary at the global scale. More than a political party or even an ideology, it is a connective that functions as a guide for our evolution.

1 http://www.mediaarthistory.org/refresh/ Programmatic%20key%20texts/pdfs/Shanken.pdf
2 Adapted from a personal communication from Roger Malina.

Derrick de Kerckhove (CA/IT) is former Director of the McLuhan Program at the University of Toronto. Returning to Europe, he was Professor at the University of Naples (2004-2014), Barcelona (2006-2015), and Visiting Professor in Ancona and now at Politecnico di Milano. Author of a dozen books in as many languages, he works in Rome as scientific director of Media Duemila and Osservatorio TuttiMedia. His fields of research include Technopsychology, Neuro-cultural research, art and technology, Media Theory, Collaborative Educative Software, and Connected Intelligence.

Toward a Forest Ecology of Networked Knowledge, Innovation and Artistic Creation: Enabling New Villages of Collaboration Among Organizations and Individuals Bridging the Arts, Sciences, Engineering and Medicine

Text coordinated by Roger Malina, Nina Czegledy, Pam Grant-Ryan, Erica Hruby, Christa Sommerer, Annick Bureaud, Nick Cronbach, Christine Maxwell, Yvan Tina, and numerous others.

A Network of Networks

The Prix Ars Electronica Pioneers Award 2018 states: "The community of Leonardo is being singled out for recognition as Visionary Pioneer of Media Arts." This is the first Nica Award to recognize a collaborative community of practice. We present here some history, ideas, and methods that have permitted a small arts organization to survive and champion the work of a growing international network of interacting artists, scientists, scholars, and curators. And yes, this network is contributing to changing the history of ideas and engaging with the hard problems. And, as in the 1970s as documented by network historian Patrick McCray, there is renewed interest among companies and startups as there was 50 years ago. We would like to take the opportunity to thank all those who have contributed with their ideas, time, work, and participation to help the Leonardo network and projects evolve. Our success comes from the volunteer contributions of editors-in-chief, authors, editorial board members, peer reviewers, advisors, project coordinators, and event hosts. These several hundred individuals have allowed more than 15,000 artists and authors to have their work documented and promoted over 50 years; we like to say that it's a larger creative community than that which fueled the Renaissance.

Key nodes are the editors-in-chief of the publications, program leaders and their institutions. These have included Michael Punt, Annick Bureaud, Sean Cubitt, Sheila Pinkel, Lanfranco Aceti, and Nic Collins, but also Piero Scaruffi and Tami Spector who triggered the Leonardo LASER network and notably the Leonardo DASER at the US National Academy of Science, led by JD Talasek. We note crucial directions initiated by first Executive Director Craig Harris, and Larry Polansky, who redirected the organization to go beyond the visual arts to include all modes of expression. Thanks also to Ray Lauzzana, Paul Brown, Judy Malloy, and Nisar Keshvani, who led Leonardo On-Line in the early days of the Web. It would be remiss to not recognize the full history of Leonardo staff, now under the leadership of Managing Director Danielle Siembieda.

Many motivations of the founding members have been realized. As the communities of practice that link the arts, sciences and emerging technologies have reached critical mass, they are now engaged on new agendas, methods, and issues. The methodology of the Leo50 birthday parties coordinated by Nina Czegledy has enabled a snapshot of the concerns of these communities of practice today. As a small nonprofit, we had no budget for this activity, so we started working with the communities of practice.

We soon realized that in spite of the tragedy of the Internet, healthy global villages can exist. As the tragedy of the commons revealed, open access has always been subject to abuse; as with the medieval commons, the invention of intentionally designed "gates" can help mitigate some of the abuse. A network of networks is one structure that can, through ethical rules of individual and group interaction, enable more positive emergent behaviors of the network as a whole. Core network science ideas have been injected by Albert-László Barabási, Max Schich, and Isabel Meirelles.

Leonardo-associated events help make the villagers visible to one another in a way that social media do not. These village gatherings are bewilderingly heterogeneous: interdisciplinary, geographically dispersed, intergenerational, of all genders and orientations. But these gatherings also make us very aware of the implicit biases introduced by the practices of academic publishing and the predominant use of the English language. This results in exclusion of much important work carried out in popular and non-institutional contexts around the world.

WHERE ART, SCIENCE AND TECHNOLOGY CONVERGE

► **PUBLICATIONS**

► **RESIDENCIES**

► **TALKS**

► **COMMUNITY**

Leonardo/ISAST   leonardo.info

LEONARDO
THE INTERNATIONAL SOCIETY FOR THE
ARTS, SCIENCES AND TECHNOLOGY

The Einstein Collective. Photo: Christopher O'Leary

Photo: Jon McCormack

Photo courtesy of Djerassi Resident Artists Program

The 2018 cohort of residents of the *Scientific Delirium Madness* art-science residency, a collaboration with the Djerassi Resident Artists Program.

Jasia Reichardt, art critic, curator, writer, Visionary Pioneer of Media Art 2016—Prix Ars Electronica, curator of the 1968 *Cybernetic Serendipity* exhibition, Institute of Contemporary Arts, London, spoke at the March 15, 2018 DASER (DC Art Science Evening Rendezvous). After her talk, Reichardt was joined in conversation with Klaus Ottmann, deputy director for Curatorial and Academic Affairs at The Phillips Collection in Washington, D.C. and the publisher and editor of Spring Publications.

ISAST published, on behalf of the Art Science Technology Network (ASTN), the Fine Art Forum, one of the first (if not the first) electronic arts newsletter, over email, starting circa 1986. ISAST followed with Leonardo Electronic News starting in 1991, a precursor to the Leonardo Electronic Almanac (LEA), which launched in 1993. Ray Lauzzana was founding editor of the Fine Art Forum.

Poster for Leonardo Art Science Evening Rendezvous Los Angeles, February 23, 2017
(UCLA Art|Sci center collective, Poster design: Dawn Faelnar, UCLA Design|Media Arts; University of Art & Design Linz, Interface Cultures)

An interactive presentation of all the front covers from *Leonardo* journal's first 50 years at the 50th anniversary event organized by Rejane Spitz at PUC-Rio (Brazil), June 2017. Image courtesy of Laboratório de Arte Eletrônica.

Nina Czegledy speaks at the celebration of the 50th anniversary of Leonardo/ISAST, during the first day of ISEA2017 at the Universidad de Caldas (Colombia). Photo: Margarita Laverde / Press U de Caldas / June 11, 2017

Looking Back to Look Forward

Continuing this "looking back, looking forward," we acknowledge the multi-decade dedication and service of Pamela Grant-Ryan. Grant-Ryan joined the editorial staff of *Leonardo* journal in 1983 and held the position of managing editor from 1985 until her retirement in 2016 (Erica Hruby is now at the helm). We excerpt here the essay Grant-Ryan wrote 30 years ago to mark our twentieth anniversary:

[Founder] Frank Malina was a man who embraced change and synthesis as means to a better world.... As an aeronautical and rocket engineer pioneer, he certainly knew that change was an inevitable fact of the present and future. Yet as a humanitarian whose life experience was shaped by World War II, he was aware that scientists and engineers should not be the only ones involved in directing the changes wrought by technology; artists in particular should be instrumental in developing technology toward humane ends. "It was my feeling that one way in curbing the misuse of technology might be if we could, through the arts, emotionally prepare young people to see the aesthetic, positive side of things and also then respond by seeing the negative." As an artist he sought to integrate his knowledge of technology and scientific working methods into his own evolving artwork. And as an editor he sought to create an interdisciplinary forum documenting synthesis and change toward the creation of a synthetic worldview....

Trained as an engineer, [Malina] attempted to begin his artistic investigations in the usual way: to delve into the documented studies written by experts—in this case by artists. Whereas technical and scientific advancement are based on each generation of investigators building upon the exhaustively documented work that has gone before, he found to his amazement no significant relevant body of literature written by artists about their work, their methods, their discoveries or ideas. He expressed frustration that the lack of appropriate documentation in the arts caused artists to waste enormous time and energy duplicating each others' technical discoveries. Indeed, when he began to work on his "Lumidyne" system of kinetic art, he was unable to find any precedent for kinetic painting and believed himself to be the first artist doing this type of work. When he began exhibiting his kinetic works in the mid-1950s, he learned of one artist, Thomas Wilfred, who had been producing kinetic works since 1905.

During the time Malina was discovering that artists did not have a history of, or a literary vehicle for, exchanging ideas and technical information among themselves, he began also to experience firsthand the political powerlessness of the artist. Then as now, the decision-making in the art world was in the hands of a group of non-artists, such as gallery owners, art critics, scholars and museum curators, who had assumed niches of eminence in explaining, promoting and disseminating art. By contrast, in the technical and scientific professions, documentation by the originators of the work has always appeared first, followed by explanation and comment by the popularizers, science writers and historians. Further, the decision-making in scientific research is dominated by the scientists and engineers themselves.

The establishment "supporting" the arts was at best not interested in—and at worst opposed to—innovative art such as technological or kinetic art. This kind of art was hard to analyze, hard to sell, often hard to display, and sometimes hard to repair and maintain—considerations surely not central to artistic significance. Except for a few scattered theoreticians, the individuals writing about art were engaged primarily in the business hype of selling yesterday's ideas, since that which has already gained widespread acceptance makes for the best merchandise. Meanwhile, at a time when scientists and researchers in other disciplines were exchanging ideas and information at an ever-increasing rate, contemporary, exploratory artists seeking to extend the boundaries of art were working in relative intellectual isolation with no formal system of mutual support....

As Malina's artistic explorations continued to evolve through various forms and media, he began to discuss the artist's dilemma with his colleagues in both the arts and science, among them natural scientist Joseph Needham, editor Sandy Koffler, artist-teacher Vic Gray, artist and mathematician Anthony Hill, artist and scientist L. Alcopley and mathematician-artist Claude Berge. His initial idea was to form a professional society of scientist-artists in the tradition of existing scientific and technical societies, many of which publish journals as a part of their activities. Although his plans for such a society were never realized, he became ever more convinced of the need for a journal by and for artists. Malina began in the early 1960s to consider publishing a periodical modeled on scientific journals. By 1965 he had begun to contact prospective publishers and individuals to serve as editorial advisors. And in 1967 he reached an agreement with Robert Maxwell of Pergamon Press to publish the journal quarterly....

While the continued existence of Leonardo was a question of debate following the sudden death of Frank Malina in 1981, his idea, which had taken substance in the form of the journal, proved to have an importance which motivated several concerned individuals to secure its future. The editorial board framework on which the journal was based proved the key in securing its continued publication.... During 1983 and 1984 the journal found a hospitable home at San Francisco State University under the editorship of Professor Bryan Rogers [and with the leadership of Professor Steve Wilson].

For full text and references see P. Grant-Ryan, "Why Leonardo? Past, Present and Future" *Leonardo* 20, No. 4, 397–399 (1987). Available at *www.jstor.org/stable/1578538*

In 1982, Steve Wilson, with the help of colleagues including Frank Oppenheimer, set up the nonprofit International Society for the Arts, Sciences and Technology, which later, in tandem with the Paris-based Association Leonardo, formed two nodes that have stabilized and grown in a culture enabled by a network-of-networks design thinking. Over the decades Leonardo has collaborated with dozens of organizations and groups from ISEA, ANAT, SIGGRAPH, Arts Catalyst, US College Art Association, CIANT, The Mediterranean Institute of Advanced Studies, Telefonica Foundation, and Srishti School of Art and Design, to name but a few. Of note also is the work with Tom Linehan at ATEC, UTDallas, which, after several decades of collaboration, led to the establishment of the UTD ArtSciLab, with projects in Art-Science and experimental publishing and the housing of the executive editor of Leonardo publications.

As indicated above, the vision of the founders has in large part been realized and some of the past prejudices reversed:

"If you can plug it in, it can't be art," technological artists were told when they tried to exhibit their work in the 1950s and '60s. Today the situation has almost reversed, with emerging technologies being rapidly integrated into cultural practice.

"Artists don't write, art critics do." At the founding it was almost impossible for artists to write about their work. Today any artists who wish to write about their work can do so through their own online publishing platforms, artists' talks, and other methods.

"Artists don't need Art Theory." Today artists draw heavily on theoretical concepts from a variety of sources; the PhD in Art and Design develops art and design methods as research. Often curators become collaborators and translators bridging the points of view. Artists today are drawing on theories from computer science. *Leonardo* journal has benefited from the leadership of many art and science theorists and historians such as Rudolf Arnheim, Ernst Gombrich, JJ Gibson, Sundar Sarukkai, Linda Henderson, and David Carrier.

"Go show your work in New York; we show the Paris School of Art," non-French artists in Paris were sometimes told in the early '50s. Today, artists are geographic, institutional, and intellectual migrants.


Cover of *Leonardo* 1, no. 1 (January 1968)

Cover of *Leonardo* 10, no. 1 (Winter 1977)

Cover of *Leonardo* 20, no. 4 (1987). This was the first
Leonardo issue to feature an image.
Cover art: Frank J. Malina, *Expanding Universe*,
No. 1028/1966, kinetic–op art painting, fluorescent tubes,
Plexiglas, acrylic paint, 80 × 60 cm, 1966.

Cover of *Leonardo* 30, no. 1 (1997)
Cover art: Joseph Squier, *Anatomy Frontal*,
altered electronic image from Polaroid original,
8 × 10", 1994.
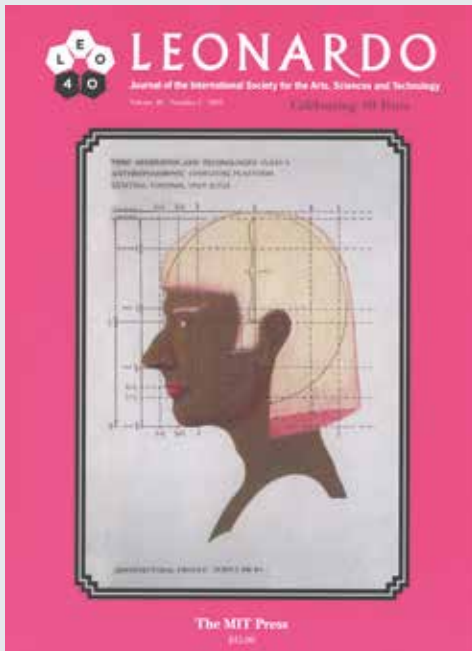
Cover of *Leonardo* 40, no. 1 (2007)
Cover art: Frederick Loomis, detail of *Architectural Profile:
Series 00:01, Edward Mathew Taylor, 2006, First Generation
AXIS Technologies Class 5 Anthropomorphic Computing Platform
Central Control Unit (CCU), Miriam Mosher: The Mother Platform,
Circa Anno Domini 3010,* colored pencil drawing on paper,
14 × 17", 2006. (© Frederick Loomis, Courtesy Frey Norris Gallery.)
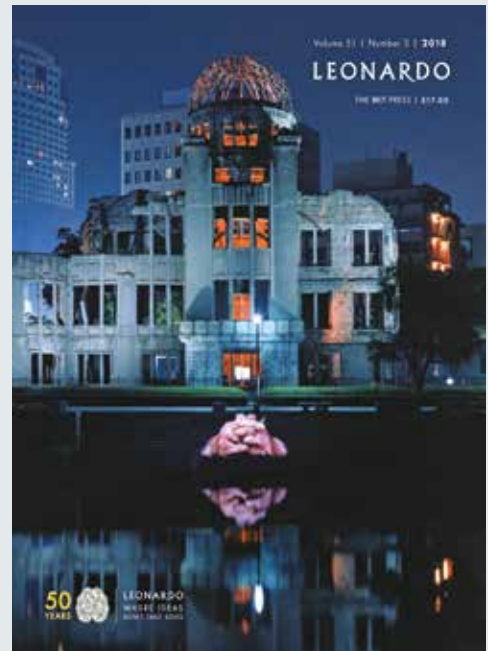
Cover of *Leonardo* 51, no. 3 (2018)
Cover art: Krzysztof Wodiczko, *Hiroshima Projection,* 1999.
(© Krzysztof Wodiczko. Courtesy Galerie Lelong, New York.)
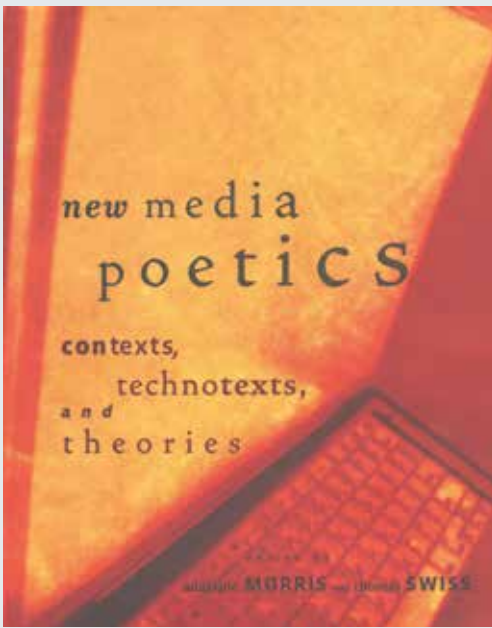
New Media Poetics edited by Adelaide Morris and Thomas Swiss; Leonardo Book Series title, published June 2006 by The MIT Press.
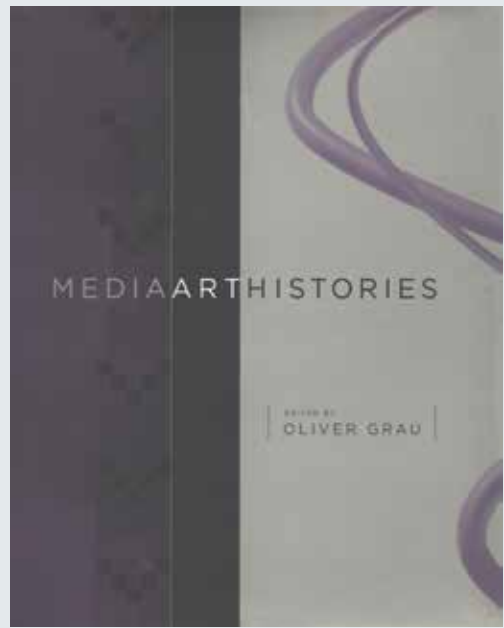
MediaArtHistories edited by Oliver Grau; Leonardo Book Series title, published January 2007 by The MIT Press.

The Fourth Dimension and Non-Euclidean Geometry in Modern Art by Linda Dalrymple Henderson; Leonardo Book Series title, revised edition published February 2013 by The MIT Press.
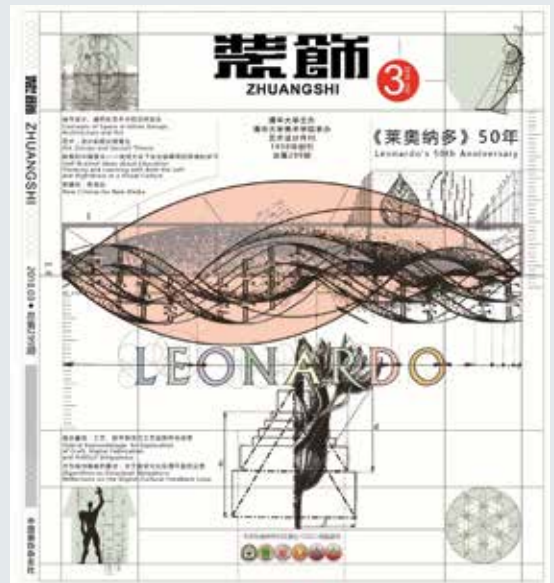
Cover from *Zhuangshi*, the Chinese Journal of Design March 2018 issue commemorating Leonardo's 50th anniversary. This special section translated six articles from *Leonardo* journal's history.

We urge readers of this text to engage with relics of our first 50 years during the Leonardo Slam sessions at Ars Electronica, coordinated by Christa Sommerer, or to later search for its traces online. Sommerer writes:

Congratulations to 50 years of Leonardo! As an editorial board member and educator, I am particularly happy to be able to present the wonderful achievements of Leonardo to our students. These days it has become so easy to download any information from the web, to copy-paste and to mix it all up. The tremendous growth of educational programs in media art has led to a vibrant community of young media artists who are interested in building the future but also want to know about media art's origins. What perfect timing that Leonardo comes to Linz and shows material from its 50-year history including artifacts, artworks, publications, and anecdotes. We have decided to take an unusual approach and let students, led by Benjamin Olsen and Dawn Faelnar, browse through the archive, mash it up, interpret it in a poetry slam style, and have fun by digging into these treasures. We invite everyone to participate in the Leonardo slam sessions and discover Leonardo's glorious past and future!

And visitors of the Ars Electronica Festival 2018 can visit the Leonardo (Archive) exhibit curated by Nina Czegledy in collaboration with Christa Sommerer and Genoveva Rueckert.

On the Leo50 celebrations that she chaired, Nina Czegledy writes:

Frank Malina's life and practice remains an iconic example to the present. He perceived art as a catalyst and advocated effective interaction and a broad interpretation of knowledge transfer to achieve a harmony between the arts, sciences and technology. It is in his pioneering interdisciplinary spirit that in 2017 we initiated the Leonardo 50th Celebrations worldwide.

Early inquiries to an informal professional global network to host birthday celebrations were met with enthusiasm. As a result we have already sung Happy Birthday in many local languages from Colombia to New Zealand, Italy, South Africa—with more prospective locations on the horizon both in the US and elsewhere. The distinctive Ars Electronica Golden Nica for Visionary Pioneers of Media Art is a major inspiration to continue our efforts.

Some of our goals include: to embrace birthday parties in a variety of alternate settings; to honor interdisciplinary pioneers, Leonardo *authors, editors, contributors; and very importantly to encourage the active participation of the emerging generation. All the celebratory events differ as the locally relevant content and format of each is developed and presented by the host.*

While in the last decade great progress was achieved in the field of interdisciplinary education and collaborations, several issues and questions remain: How do we define today the most important elements of cross-disciplinary international collaborations? Are there any rules? How do we approach cultural differences, ethical concerns? Some of these and other issues were raised at various celebrations and, although most of the questions remain open and as of yet unresolved, the events of the past year already provided invaluable information regarding a wide variety of topics in different cultural contexts.

One of the most cherished features of the celebrations is the participation of youth: workshops for children, student presentations, performances—in short active involvement of the emerging generation in several events. The enthusiasm of Mexican students performing electroacoustic music, Canadian or Hungarian youngsters experiencing AI workshops, and Maori children deeply involved in sound workshops is something to behold! The celebrations will continue in different form and different places but in the same interdisciplinary, intergenerational, intercultural Leonardo spirit.

The Next 50 Years

As Grant-Ryan stated, the founders' initial ideas were to form a professional society in the tradition of existing scientific and technical societies. We think this original framing is not appropriate for the emerging networked world cultures. The goal is not to create a new profession or discipline, as in the professional guilds of the middle ages and in university-created departments in later years. It is time to cut down this tree of knowledge that poses intellectual and institutional impediments to the Leonardo communities of practice.

The value of interdisciplinary thinking, long known to our networks, is gaining larger recognition. In 2013, the US National Science Foundation funded the study "Steps to an Ecology of Networked Knowledge and Innovation: Enabling New Forms of Collaboration among Sciences, Engineering, Arts, and Design." The STEM to STEAM movement in the United States had begun to engage with other sectors of society outside of the art, science, and technology communities. There are global initiatives such as the U.K.'s Wellcome Trust. The EU's STARTS funding program, and the US national academies now recognize this critical mass of activity and its growing relevance to societal concerns.

We embark on the next 50 years by listening to our community and working together to redesign our future. Many challenges remain, as we heard at the birthday parties:

1. Most of the professionals in the Leonardo networks carry out their work enabled by close collaboration with others. Yet our universities insist on giving diplomas to individuals rather than groups. The Prix Ars Electronica Golden Nica awarded to a collective is indicative of the new direction. Yes, we need amazing professionals like da Vinci, but we also need groups that behave with genius-like originality and impact and are rewarded for doing so. Places like Ars Electronica are breeding grounds for the new Leonardos.

2. The implicit biases of our communities are deep and intractable. If we analyze the 15,000 professionals who have made their work visible through Leonardo methods, we reluctantly admit that we have failed in part in the vision of the founders. The artists and authors are predominantly from the Western hemisphere and from traditional institutions and, yes, predominantly male. The *Leonardo Virtual Africa* project, relaunched under Yvan Tina, has been engaging the African and diaspora community for 20 years, as has Ars Electronica. We have begun publishing multilingually, with podcasts and texts in 15 languages on our new collaboration platform *arteca. mit.edu.* Recently a Leo50 birthday party was held at the Women in Art, Science and Technology meeting in Portugal, initiated by Marta de Menezes. The convening drew 70 international intergenerational women artists and drove home that it is indeed possible to create global villages.

3. How do we rethink the commercial embedding of our work? The whole structure of museums, art fairs and collectors, largely invented in the nineteenth century and adapted in minor ways to address digital culture, is incompatible with hybrid, evolving, and often not static or object-based practices. The early interest of foundations such as the Rockefeller, Mellon and Keck Foundations, more recently the Carasso Foundation, and the innovative CERN residency programs, is however indicative of new trends. Tied to this is the need to reinvent notions of intellectual property in transdisciplinary and trans-professional work.

4. A notable feature of the Leonardo gatherings is their intergenerational nature. The recent Leonardo Book Sprint in Manizales, Colombia, the upcoming Leonardo 50th Convening in San Francisco, and the Leonardo Slam at Ars Electronica are attempts to change the context and the source of ideas. Through the Leonardo Abstracts Service database, the works of new matriculates of university graduate programs are recognized and made visible. Our Creative Disturbance podcast platform is open to emerging professionals over the planet, with a number of international students receiving awards obtained through a Leonardo Kickstarter campaign. The vibrant maker, hacker, fablab, and coworking communities are highly reactive in ways that larger organizations cannot be and work in ways often incompatible with academic publishing. How do we conquer impedances?

5. How do we make real the network-of-networks metaphor? How can small organizations using network science and technologies work together differently to help make the network robust, ethical, and constructively disruptive as it grows?

6. How do we couple with dominant organizations in our society without buying into ideas and principles we don't always agree with? 50 years ago there were no institutional programs where the Leonardo networks creative community could get formal training, never mind be employed. Most hybrids did their work totally hidden from their main profession. Now we have graduate education spreading, including PhDs, in Art and Technology and Art and Science. The good news is that emerging professionals can actually have careers. Companies are hiring MFAs in Art and Design. The bad news is that we are engaged in deep struggles with these institutions because often their institutional goals and methods are incompatible with transdisciplinary, non discipline based, approaches.

In closing, the collective authors note: Leonardo and Ars Electronica are but two nodes in this developing 21st-century work. We would like to thank Hannes Leopoldseder, Herbert W. Franke, and their comrades for their persistence in creating Ars Electronica 40 years ago, Christine Schöpf and Peter Weibel for their key contributions, and to Gerfried Stocker for a steady hand piloting through chaos, but also for their determination to cross-connect and engage in constructive coopetition with organizations such as Leonardo and numerous others to build an interconnected set of communities of practice. Cut down the Tree; we need forests and ecologies of knowledge that can mutualize in the face of climate change and the other problems of our time.

Collaboration Acknowledgments: As we have insisted, the Leonardo organizations have only succeeded because of the voluntary and dedicated contributions of hundreds of individuals. Inevitably in this text we have omitted many names of people who had crucial roles, and we apologize in advance for not naming them here. As we have also stated, yes, we need individual geniuses like Da Vinci, but we also need groups of people who behave with genius; alas, we do not yet have viable 21st systems for attribution and IP.

Leonardo founder Frank J. Malina standing next to a WAC Corporal missile, 1945.
F. J. Malina and his fellow California Institute of Technology (Caltech) associates became known as the "Suicide Squad" because of the rocket tests they conducted while at Caltech.
Photo: NASA/JPL-Caltech
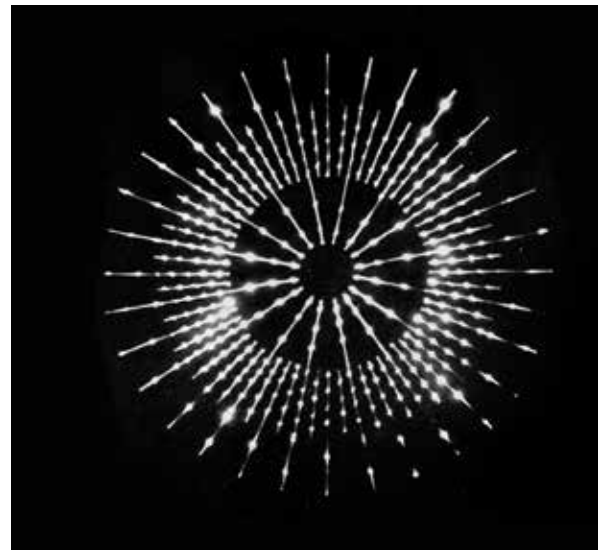
Frank J. Malina, S*ink and Source,*
three-component lumidyne system
(one Rotor), 60 × 80 cm, 1966.
This image accompanied F.J. Malina's article
"Kinetic Painting: The Lumidyne System"
in *Leonardo* 1, no. 1 (1968), pp. 25–33

u19—CREATE YOUR WORLD

Rise to the Future

Sirikit Amann, Manuela Grundner, Harald Koberg,
Conny Lee, Elisabeth Rosemann

Most artists who take part in competitions like the Prix Ars Electronica are already relatively established or have at least reached the point at which they've definitely decided on the artistic genre they want to concentrate on. But in u19 – CREATE YOUR WORLD, it's different. The entries submitted for prize consideration in this category have been entered by young people who have, indeed, made progress both substantively and technically in a specific direction but, at the same time, derive great joy from experimentation and are in search of something novel. Here, they can explore newly discovered possibilities and broaden and deepen existing experiences. From drawings to industrial problems solved in sophisticated ways; from smart clothing to short films—a wide-ranging mix best characterizes the diverse, multifaceted assortment of entries by the youngest contestants vying for a Golden Nica. So, once again this year, u19 is the Prix Ars Electronica's most diversified category. Here, young artists on their multifarious paths to adulthood not only come up with creative works; they also do so with a high degree of competence and with an approach that bespeaks digital media's status as a self-evident part of their everyday lives.

Our job as a jury isn't only to select the most interesting works among the submissions; it's also incumbent upon us to deal cautiously with these works. The jury's decision isn't only one for the moment. After all, an initial success—whether it's a Golden Nica or an Honorary Mention—can tip the scale and motivate that young person to dedicate their life to the pursuit of this passion—R&D, programming, filmmaking, or artistic performance. Many of the Golden Nica prizewinners of the past 20 years have gotten back in touch with us to say that their first positive feedback and this prestigious prize constituted the impetus for them to set out on an artist career. We, the jurors, are cognizant of this as we reach our decisions. In exercising this function during our deliberations, we have the privilege of obtaining an overview of what's on young people's minds, which techniques they're using, and what

suggestions they have to change the world around them. "Create your World" isn't just the category's theme; it's also the attitude towards life of many Millennials.

u19 is a New World—in the best sense of that term—of countless pixels and bytes, and whoever undertakes an intensive encounter with it gets an authentic look at the domain inhabited by the generation for whom, as so-called digital natives, dealing with digital media is something they take completely for granted. Attesting to this is the fact that approximately 700 entries are submitted to the jury each year and from which the 15 prizewinning works are finally selected—one Golden Nica, two Awards of Distinction, and two Prizes for the u10 and u14 age groups. Plus, we bestow 10 Honorary Mentions that are meant to accurately reflect the diversity of the works submitted for prize consideration in this particular year and provide insights into them. For the last three years, the jury has also awarded the netidee SPECIAL PRIZE for innovative projects having to do with the internet; it goes to the submission that deals most impressively with the future of the Web.

This year's entries included graphics, films, animated shorts, inventions, idea sketches, robotics projects, hardware & software developments, electronic music, computer games, installations, interactive applications, apps, websites, and community projects. But the vision of u19 – CREATE YOUR WORLD goes far beyond just ever-more-excellent skills handling tools or in creating and designing computer-supported works. u19 – CREATE YOUR WORLD is more. In many respects, it's a mirror of social developments and issues seen from the point of view of kids and young people. It's striking that entrants don't erect a firewall separating leisure, school, and personal interest. Especially in the case of graduation projects by high school seniors, the powerful personal commitment to the project is strongly evident. Much seems to have been initiated in a classroom setting and ultimately consummated in the students' spare time.

Each year's entries to u19 provide a peek into the Next Generation's world—what they're doing, what they're interested in, and how they're going about it. Conspicuous in 2018 is how few political or socially critical projects were submitted. It's almost as if many youngsters have tuned out the problems and crises of our world—either out of resignation or the feeling of being overwhelmed. Nevertheless, this withdrawal into the private sphere doesn't manifest itself in the absence of certain topics, but instead in a brighter spotlight being shone on others.

Diversity was our primary criterion in selecting the prizewinners—on the one hand, they should mirror the spectrum of submissions (e.g. film, image, graduation project, concept); on the other hand, they should indicate the thematic breadth of young people's activities. Technical execution counts just as much as the content, the critical confrontation with issues, and the presentation of the submission. One recurring subject was the problems of the elderly and proposed solutions designed to make life easier for the individuals themselves and their relatives. This year's entries included an artificial intelligence system to play Memory with dementia patients, an online platform to bring young and old together, and an invention honored with an Award of Distinction—the **Smart CUP** featuring built-in technology to remind the elderly to drink enough fluids. It's user-friendly, efficient, and conveys a clear message: HYDRATE!

The Maker Community made the grade too. One Honorary Mention went to **Maladidea**, a wearable equipped with a pressure sensor that communicates with a RaspberryPi and can register steps. A sock emits impulses—for instance, when an older person gets out of bed and needs help.

Audio dramas and podcasts have scored a big comeback in popularity. But telling a story strictly on the auditory level—that is, using only spoken text and sound effects that evoke images in listeners' minds—is artistry that has to be learned. The audio drama **schuldICH?** (GuiltME?) brings this off with acoustic brilliance and succeeds at something that many professional productions do in only mediocre fashion—painting mental images and truly captivating the audience. Its audio imagery was custom-made without recourse to sound samples.

There was a wide variety of experimental approaches to the search for alternative sources of energy, a couple of which garnered an Honorary Mention. Graduation projects such as **FotoFlex**—the development of a textile photovoltaic cell—attest to research into sustainability at Austrian technical schools. However, not all of these graduation projects resulted in finished products; many of them were scientific works that tested various approaches but did not ultimately arrive at a workable outcome, though this does not diminish in the least the scientific achievement they represent.

Solares Kühlen für Nicaragua (Solar Air Conditioning for Nicaragua) improved not only the physical comfort of the learning climate at a school in Nicaragua. A school partnership that doesn't just exist on paper but actually makes an active contribution to improving the facility's air conditioning by installing a low-tech system that's quiet, economical, and almost maintenance-free certainly deserves an Honorary Mention!

Solar power wasn't the only form of alternative energy. Young pioneers also gave some thought to tapping new alternative sources. Experimental arrays tested basic research into how dye-sensitized solar cells can be used to transmit energy from rigid, non-deformable materials to flexible ones.

A film entitled **Das Schallkraftwerk** (The Sound Power Plant) shows that things don't always have to be so serious with a demonstration of turning sound into electricity. The takeaway: research isn't boring, it pays to try to see the big picture, and interdisciplinary work leads to more profound insights.

u19 is open to all forms of encounter with the "Create Your World" theme. That's why we also invariably receive works of an analog nature that nevertheless deal with changes in the digital world and their impact on individual human beings. Examples are print editions of school newspapers containing

entertaining features about fake news, or interesting picture stories providing accounts of the immediate or long-term future in which we live underwater, use new sources of energy, or have devices that have us under control (instead of the other way around).

Board games have been getting more popular of late and gained a big following with new concepts and unique designs. **Generation Y**, an analog board game singled out for recognition with an Honorary Mention, deals with this generation's lifestyle and way of life, and does so in a highly polished, consummately professional way.

The jurors would have liked to see more entries that dovetail art and technology, only a few of which were submitted for prize consideration this year. Honorary Mention recipient *Pounding Heart* and Award of Distinction winner *//movingshapes;* are emblematic of artistic encounter via innovative use of digital technologies. Both are the outcome of unique concepts, and outstanding examples of how art, technical innovation, and creativity can be combined into something holistic and new.

//movingshapes; really wowed the jury with how it imparted sequences of movements to geometric forms and brought the results to the screen in a lovely combination of art and technology. Its excellent presentation, innovation, and production earned it an Award of Distinction.

Pounding Heart shows how heart sounds can be depicted acoustically and visually without them necessarily being accompanied by the shrill beeps that hospital equipment makes. The jurors were convinced by its basic idea of orienting technology on humanity and adapting heart monitoring machines and the sounds they make to patients' need for quiet, consideration, and compassion. This work's quality was recognized not only in the Prix Ars Electronica's u19 – CREATE YOUR WORLD category; it also earned it a Nomination in the competition to select the recipients of this year's STARTS Prize awarded by the European Commission to innovative projects at the nexus of Science, Technology and the Arts.

Films, on the other hand, made up an unusually high proportion of the entries. There was a little of everything—stop-motion with Lego pieces, cutouts, and Playmobil figures; movies with great actors and super stunts; beautifully drawn animated sequences. The substantive spectrum included dark, caustic humor, profound narratives about the value of women's work, thoughts about the family, and an apprentice's concerns about his residency status. Another striking aspect this year is that more strong women have been playing a leading role in these productions both in front of and behind the camera—a development that we, the jury, welcome and strongly support. Especially impressive was the technical quality of the films submitted this year. The editing, camera work, and screenplay that went into **NO FACE EMOJI** stand up to comparison to many works done by grown-ups. Its subject is norms and the violation of them, whereby the final verdict is left up to the audience members, who, in the wake of these deep insights into individual dreams and insecurities, are left to their own process of reflection. This highly expressive statement by a gifted young director richly deserves its Honorary Mention. The students honored with the u10 Prize composed a highly original, very poetic story about a boy named Max based on the children's book *Where the Wild Things Are.* The images in the stopmotion work **Max in Gefahr** (Max in Danger) are sensual, haptic, and poetic. You really get the feeling that Max is in danger. An exemplary group effort by a school class, and a worthy prizewinner.

Good Night, Mary is likewise a stop-motion film—this one primarily rendered in chalk on paper—that succeeds in relating a convincing story without a lot of extraneous flourishes. Its small, finely rendered lines convey us into a dream world, which develops cracks and has to be defended against goblins and phantoms of the night. The multifarious techniques employed here intensify this nightmarish experience. The u14 Prize also went to a film. **Rise to the Future** features an action-packed plot set in the near future. This elaborately and professionally produced

work is the account of two agents who travel forward in time. The mix of different media and the way they're used create excitement. Slick animation of flying cars along with great acting and stunts round out these visions of the future.

This is the third year that the netidee SPECIAL PRIZE for innovative projects on the subject of the internet is being awarded in conjunction with the u19 – CREATE YOUR WORLD competition. The questions it poses to young people are: How do you imagine the internet of the future? What problems can it solve? How does it make your everyday life easier? How can the internet foster regional development in Austria? The winner of the netidee SPECIAL PRIZE 2018 is **out of tune.** Fascinating music can't be described in concise terms; nevertheless, genre categorizations help to come to terms with the seemingly endless offerings, to talk about music and, above all, to conduct searches for particular works. At the same time, it's always an act of brutality to try to force a musical artform into a genre compartment. Often—and especially nowadays—it's not completely clear how to categorize an artist. This is a difficult job for music platforms endeavoring to present highly diverse offerings in a manageable way, and is thus a big challenge to users too. *out of tune* offers a clever solution—an innovative graphic depiction that simplifies the task of finding music across the boundaries separating individual genres.

Computer games have been a mainstay of u19 since its very inception. The gamer community has always oriented itself on developments on the professional market, so that major trends have quickly manifested themselves among u19 entries. But it seems that, in recent years, game developers have achieved emancipation, the upshot of which has been the submission of surprising games for prize consideration. **Icarus_thegame** is one such unexpected gem at the nexus of text and game, one that represents a cleverly executed take on the interactive literature trend. The story of an artificial intelligence that develops consciousness and longs for freedom is told in enthralling fashion—the player is involved in what

seems to be a chat program. Now, it's no easy matter to write appropriate texts for this narrative form, dialog that doesn't come across as artificial or excessively forced, but *Icarus_thegame* takes a smart idea and implements in an elegant, convincing way.

Golden Nica

Levers & Buttons

Lorenz Gonsa, Martin Hatler, Samuel Stallybrass, Vincent Thierry / Five Hours of Sleep

Everybody's been talking about virtual reality. Many like to describe the technology as total immersion in digital worlds and to present it as the future of high-tech entertainment. What are often lacking, though, are innovative approaches that do justice to the technological possibilities.

But that's precisely what's delivered by *Levers & Buttons,* a cooperative VR game that brings into play various forms of perception on the computer screen and via VR goggles. While one player uses a controller to move a figure through a classic puzzle platform on the monitor, the other—equipped with a headset and motion-sensitive controllers—has her/his hands full in a control room made up of doors, platforms, and lighting fixtures attempting to influence the domain of play and thereby pave the way to victory. However, and even if the players fail to realize it themselves, the game itself points out—though not without a bit of sarcasm—that the key to success is communication. And this element is what enables *Levers & Buttons* to unfold its great potential. Only when both sides also describe their respective perceptions and give each other suggestions or even coordinate their moves with one another do they have a chance to succeed. The fact that data glasses almost totally isolate the user from the physical world constitutes an advantage here by forcing incessant communication. In addition to the concept's creativity, the humor, and how much fun this is to play, we the jury were delighted by the game's scope and that the program was free of bugs.
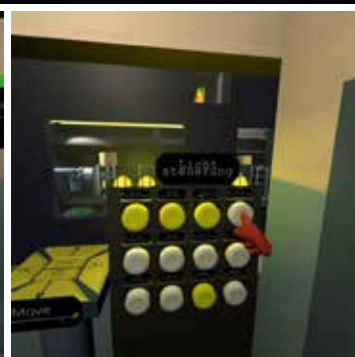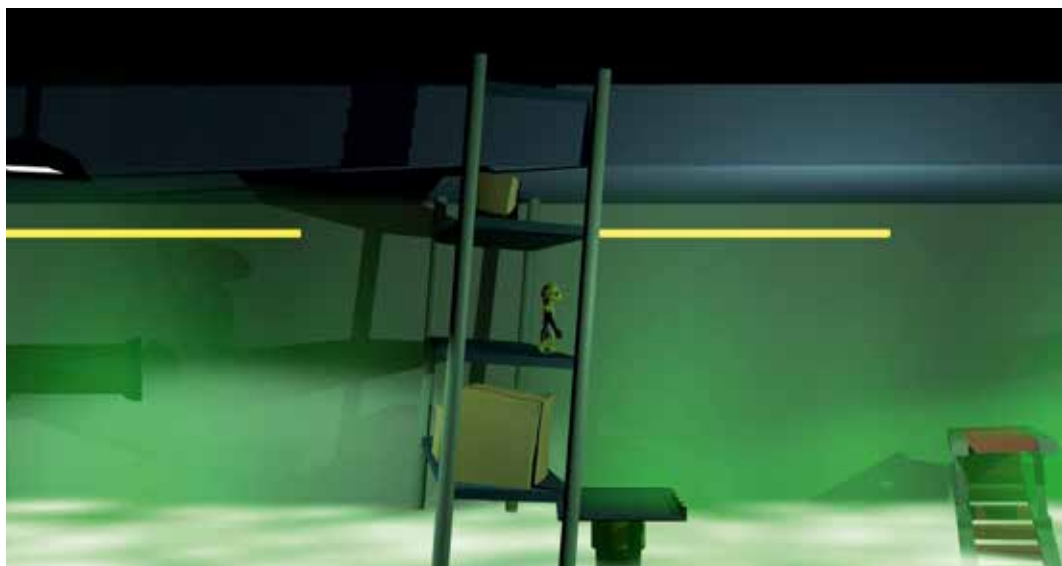
Levers & Buttons

Lorenz Gonsa, Martin Hatler, Samuel Stallybrass, Vincent Thierry / Five Hours of Sleep

You are one of a kind. At least, that is what they tell you. In reality you are a clone of a certain alien species that is particularly good at cleaning. That is your destiny. Cleaning the spaceship you are assigned to, with the help of your partner who is sitting in a control room, pulling levers and pressing buttons... But this time it's different! The ship has caught fire, which must be extinguished immediately to save the passengers! That shouldn't be a problem for such a rehearsed team as you, right? Use your cooperative skills to become heroes among the other clones! *Levers & Buttons* is a two-player asymmetrical co-operation puzzle videogame. One of the players controls a character in two-dimensional space, while the other is operating in virtual reality. Both are stationed on a spaceship which has caught fire, they must keep it from burning down. The player who is acting in virtual reality has to solve puzzles with the help of his partner to extinguish the fire. The focus of the game is the communication between the players, because they can only see very little of the other's perspective. Therefore, they must talk to each other to convey information. *Levers & Buttons* is a game suited for all unexperienced and experienced VR users.

The team **Five Hours of Sleep** (**Lorenz Gonsa**, b. 1998; **Martin Hatler**, b. 1999; **Samuel Stallybrass**, b. 1999; **Vincent Thierry**, b. 1999) developed *Levers & Buttons* as part of their final school project at HTL Spengergasse, Vienna. The team was formed around Vincent and Martin, who have been friends for 13 years and have long dreamt of developing a game together. The realization of their dream began as a school project, but it was their passion and their joy in developing that led to the development of the game on this scale.

Klemens Horvath

Smart CUP
Christoph Amon, Christian Janßen, Florian Kristof, David Stadlmann

This device is a universally implementable technical solution to determine the quantity of liquid in glasses, cups, mugs, or bottles. The amount the user drinks over a preset timeframe is measured, and, if there's a risk of dehydration, the device issues a warning. *Smart CUP* can be used in the workplace and all sorts of situations in everyday life, but above all in conjunction with providing care to seniors.

The device consists of a technical unit and a non-slip outer shell that encloses the cup and connects it to the electronic components inside. The technical unit contains a load (weigh) cell, a position sensor, a Bluetooth module, a wireless charging module, warning LEDs, and a buzzer. The gathered data is sent via Bluetooth to an Android app–custom-designed for this project–that displays them. The warning of dehydration is issued by LEDs–and optionally by a buzzer–and displayed on the app.

The silicon CUP can be produced for a wide variety of beverage containers, and is also flexibly adaptable to a certain extent. The material chosen for the CUP is dishwasher-safe; the technical unit can be rinsed by hand.

Smart CUP promotes the user's health by supporting him/her in the effort to maintain the body's proper fluid balance.

Christoph Amon (b.1999), **Christian Janßen** (b.1999), **Florian Kristof** (b.1999), and **David Stadlmann** (b.1998) have been enrolled in Rennweg Technical School's Mechatronics program for the last five years. "During this time, we've planned and carried out several projects that ultimately paved the way to this team effort to satisfy the requirements for graduation. Our interests are basically very different: one of us is into mechanics; another is interested in electronics. What unites us is the desire to discover and develop something new and fascinating."
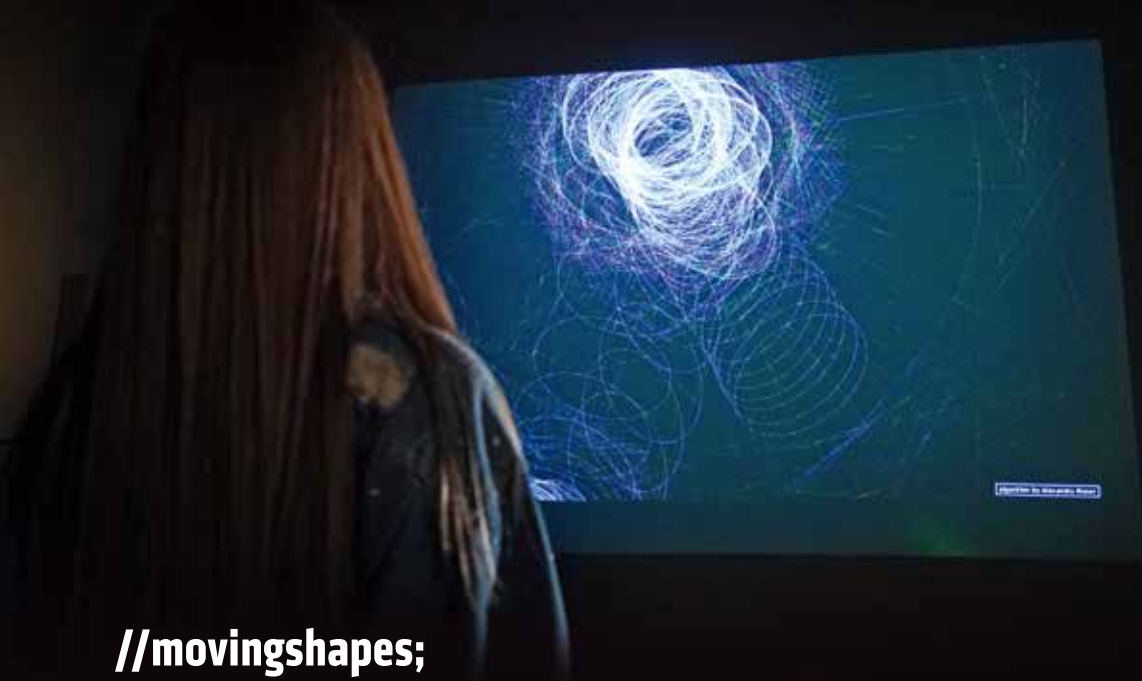
//movingshapes;
Students at HTBLVA Ortweinschule

//movingshapes; is a media installation that constitutes a mode of interactive design. Each of these 18 students developed an algorithm to independently transform body movements into digital art. When a person moves about in a zone in which a Kinect can register their motions, the average body mass is calculated and abstracted into a single point. In the program, each point is then run as the decisive object, which makes it possible to influence the programmed sequences with movements and to "draw" with them. Each participant developed their own algorithm on the basis of various fundamental methods of generative design. Processing was used to create different geometric objects that move in coordination with the user's movements within the Kinect zone and are re-rendered frame by frame. As soon as the user exits the Kinect zone, the finished work of art is stored to memory as an image and the system moves on to the next algorithm. Thus, the next user interacts with a new algorithm configuring

a different object by another maker. The result is a wide variety of colorful, multifaceted animation sequences that invite users to experiment with various moves and have lots of physical/digital fun.
"We spent many hours getting acquainted with Creative Coding and Processing and getting started using them as an individual design method. It was a long journey from generally learning the basic programming rules to independent application, but each of us accomplished what we set out to do. The initial design phase was followed by a general round of feedback in which we discussed the projects and gave each other suggestions for improvement. Then, we each did the best we could to integrate this constructive criticism into our subsequent work. As a result, we could carry out a multi-phase project throughout which we engaged in a process of exchange that was sufficient to achieve a satisfactory outcome that we can now proudly present."

We, 18 classmates and friends, decided to expand on a school project, and to upgrade/enhance it into a digital work of art: Zoe Borzi, Johannes Fischer, Alina Fromm, Nicolas Glockner, Antonia Gutschelhofer, Nikolaus Heckel, Lena Landschützer, Lena Mannert, Kathrin Mayerl, Timo Neubauer, Natalie Pinter, Alexandra Rieser, Mona Schmelzer-Ziringer, Martha Schnuderl, Andreas Schweighart, Jonathan Steininger, Maximilian Thaler, Raphael Wohlgemuth.

Max in Gefahr
Kindermanngasse Elementary School

With the children's book entitled *Where the Wild Things Are* by Maurice Sendak as their point of departure, pupils at Kindermanngasse Elementary School grappled with the subjects of being wild, transcending boundaries, the purpose of rules, the courage to stand up for ones beliefs, parental love and gender sensitivity. The youngsters selected scenes from the book's narrative, recreated them and prepared a theatrical performance. With their cultural advisor, they discussed whether everything you see in films is always true. Then they divided up into small groups to make animated films. They experimented with analog techniques to create moving pictures and with material for animation and cut-outs, built figures out of modeling clay for object animation, and experienced how movement is created on film. The pupils developed scenes from the book and produced them as an animated film. They used cameras, lamps, and recording software to create a short film with a soundtrack featuring sounds produced by the youngsters themselves. At the end of the project, the play and the film were presented at a gala. The film *Max in Gefahr* (Max in Danger) is a product of this project.

The Plot

Max sails alone across the sea, unafraid of sharks, huge ships and screeching birds. He sails to an island inhabited by wild creatures. They're very wild, shouting and rolling their eyes. They launch a big ship into the sea and it sinks. Max's cruise with his small sailboat lasts a long, long time. Algae and other marine plants are already growing out of the sunken ship. Unwavering, Max sails on until he returns to the island of the wild creatures. They bellow their terrible roars and show their fearsome fangs when they see Max. But Max isn't afraid of them. He goes ashore, and the wild creatures are amazed at how he made it in such a tiny boat. He looks them straight in the eyes without blinking even once. Then a shark comes and pulls Max and his boat back out to sea. Max and his boat go under. But the wild creatures rescue him and ask him to be their king.

Kindermanngasse Elementary School
Karoline Riha, MUKATO (workshop director)

1st and 2nd Grades at Kindermanngasse School set up a sort of film studio for a week in four rooms. There, they worked in small groups together with experts to create various animated films. The film *Max in Gefahr* was created by the group that worked with Karoline Riha: Alina Begic (b.2009), Bianca Aionitoaie (b.2008), Shakiba Rezai (b.2009), Sude Ekim (b.2009), Sinan Federmair (b.2010), Bernhard Scheffer (b.2008), Nikolaus Lohberger (b.2009), Lennard Loy (b.2009), Nils Gratzl (b.2010).

Rise to the Future

Leon Haberleithner

The Earth is deserted. Only robots remain behind. Humankind lives on Mars.

Rise to the Future is the story of two agents who travel into the future. Agent 1 sees flying automobiles. He moves on and enters a house where he's confronted by a security robot. The agent fires his weapon but nothing happens, so he flees. Agent 2 arrives with the car and together they travel on. On Mars, they come upon humankind. They fade out and travel back to their time.

This was my first action film. My teacher told me about the competition, and I immediately had some ideas, so I took part. My family helped me do the work. I was the director, cameraman and Agent 1; Lisa played Agent 2 and the robot, and was also the camerawoman. My parents were also involved—for example, in the car scenes, with Dagmar as motorist and camerawoman and Rudolf as cameraman.

Leon Haberleithner (2005) has lived his entire life in Potzneusiedl in the Austrian federal province Burgenland. He attended Gattendorf Elementary School 2011–15 and has been enrolled at Zurndorf Middle School since 2015. His hobbies are shooting & editing films and playing PS4. He is also an avid outdoorsman and reads up on natural themes.

Das Schallkraftwerk

Jakob Ammerer, Patrick Blagojevic, Jakob Gerlitz, Benita Stampfer,
Florian Steiner, Aida Suljic

In our Multimedia Art class, we asked whether it would be possible to generate electricity from sound. Our first step was to search for information on the internet, but we found nothing. We did a lot of research and came to the conclusion that no research had been done in the field of converting sound into energy. With this insight, we attempted to discover a formula to calculate how many microphones we would need to illuminate an LED bulb. We got totally bogged down and asked our Physics teacher for help. She was prepared to assist us and together we repeated the calculations. We carried out our experiments, did a bit of research, and documented all of our efforts in a video produced in collaboration with the Multimedia Art and Sound Technology departments. To show how this means of generating electricity can be used, we also performed various tests. In one, our teacher drove his car down the street–once very fast, then a bit slower–while we measured the volume. We also measured our own screams, though that led to acute hearing loss in a few cases! We ran tests on volunteers, but we ended up having to censor those scenes and edit them out of our video. We came to the conclusion that this technology is still in its infancy, but if additional research is done, it might be able to power our smartphones at some point.

Jakob Ammerer (b.2002), **Patrick Blagojevic** (b.2001), **Jakob Gerlitz** (b.2002), **Benita Stampfer** (b.2001), **Florian Steiner** (b.2003) and **Aida Suljic** (b.2001) launched *Das Schallkraftwerk* (The Sound Power Plant) project in 2017 at Gastein High School, where they major in Music-Creative Arts and Multimedia Art.
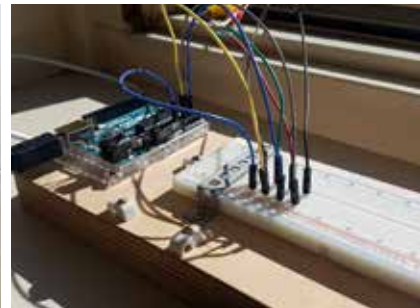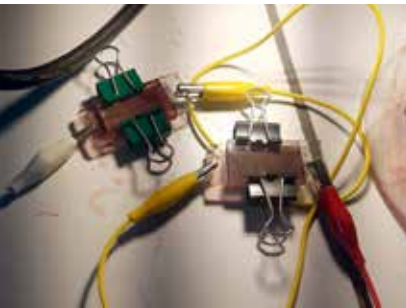
FotoFlex

Boris Cergic, Valentin Rezsnyak

Dr. Michael Grätzel is the key developer of a new type of solar cell, the dye-sensitized solar cell, which is much cheaper to produce than conventional, silicon-based solar cells and works better, especially in dim light. This is a photovoltaic cell based on dyes. The targeted application of conductive layers, separators and electrolytes makes it possible to produce a photovoltaic cell that functions exactly like a conventional cell based on doped silicon but without its major disadvantage—serving as its electrodes are glass plates that have been made conductive, but this also makes the cells relatively rigid when it comes to applications, and thus limits their flexibility. Due to the rapidly growing demand for decentralized energy sources and the human population growth that parallels it, making available cheap, clean, electrical energy has become one of our generation's biggest challenges. Since it's foreseeable that we're approaching the end of conventional methods of electrical production, alternative forms of energy have to be our future. For modern applications, a solution has been developed that's based on natural dyes and is also flexible both with respect to form and application. By replacing some of the materials used in Dr. Grätzel's invention, we have transformed a rigid, fragile cell into a robust, flexible one.

Important roles in this process are played by precision manufacturing as well as expertise in textile chemistry and material science that is the result of intensive basic research. In Grätzel's dye-sensitized solar cell, all essential components are installed between two TCO glass plates. In the cell that we've developed, the glass has been replaced by carbon fiber, which is electrically conductive as well as robust and flexible. This makes it suitable for a broad spectrum of applications. Thanks to the high adsorption capacity of the individual fibers' large surface, the titanium dioxide to which the dye is applied adheres very well.

The *FotoFlex* cell is a completely new development that, thanks to its low production costs, can make environmentally friendly electricity affordable and attractive for all humankind. This could be called a textile form of climate protection for everybody!

The FotoFlex project team is **Boris Cergic** (b.1999) and **Valentin Rezsnyak** (b.1999). Boris likes to play American football in his spare time; Valentin gets his kicks playing ice hockey. This interest in sport as a welcome respite from everyday life is something they've always had in common. They became acquainted at Dornbirn Technical School, where they majored in Textile Chemistry and Chemical Production & Environmental Technology. "This has enabled us to optimally deal with textile chemistry problems as well as the environmental aspects of the project."

Generation Y
Sonja Groiss, Anna Kaufmann

Generation Y is a multi-player board game about digitization's downside. Its target audience is young people age 14 and up; its focus is on the digitization process' inexorable advance. *Generation Y* deliberately dispenses with a digital medium—despite the complexity of this topic—so that players can consider digitization from a perspective that facilitates a critical, communicative encounter with the issues.

At first, the hard part was translating the digitization theme into a card game and coming up with a design concept that takes leave of even the slightest hint of the analog. Accordingly, we strove to develop a futuristic look—the illustrations were generated by computer, and the rules of play as well as the packaging took rather unconventional approaches. Plus, the game is enriched with a wealth of valuable infor-

mation presented in the form of various scenarios inspired by actual events—some that have occurred, some currently emerging—meant to give players food for thought and thus provide the basis for interesting discussions. This influences the course of play, and spotlights potential negative developments and the fact that technological innovation doesn't only have positive consequences. *Generation Y* explains concepts like "disruptive technology" and "social credit system." Ultimately, the game constitutes an updated possibility to engage in interpersonal communication that isn't filtered through social media. The central question: When does innovation stop and where does the systematic restriction of basic democratic freedoms begin?

Sonja Groiss (b.1998) and **Anna Kaufmann** (b.1998) were classmates at *Die Graphische,* Vienna's high school for visual communication and media technology. "We find the subject of digitization incredibly interesting and are excited to see what the future will bring. Plus, we both enjoy designing things and we each have an eye for detail. We assigned the individual project tasks in accordance with our respective strengths and interests in graphic design and illustration."

Good Night, Mary

Susanne Weissenböck

This stop-motion film is the account of a nightmare. The protagonist is a girl who passes through the world, the Moon her constant companion. Suddenly, she's being pursued by a monster, but the protagonist can escape, whereupon the monster plunges into a chasm. At first, it seems to have been vanquished. But then there emerges a watery fluid that turns out to be the monster morphed into another form. Frustrated that the protagonist has escaped its clutches, the monster steals her companion, the Moon, and along with it, all of its light. In this total darkness, the girl–overcoming her fear–begins to glow. She bravely leaps into the chasm, defeats the monster and rescues the Moon in the process. The two then continue on their way together.

A portion of the film was made with cut-out paper figures; the other part was done with chalk on chalkboard coating.
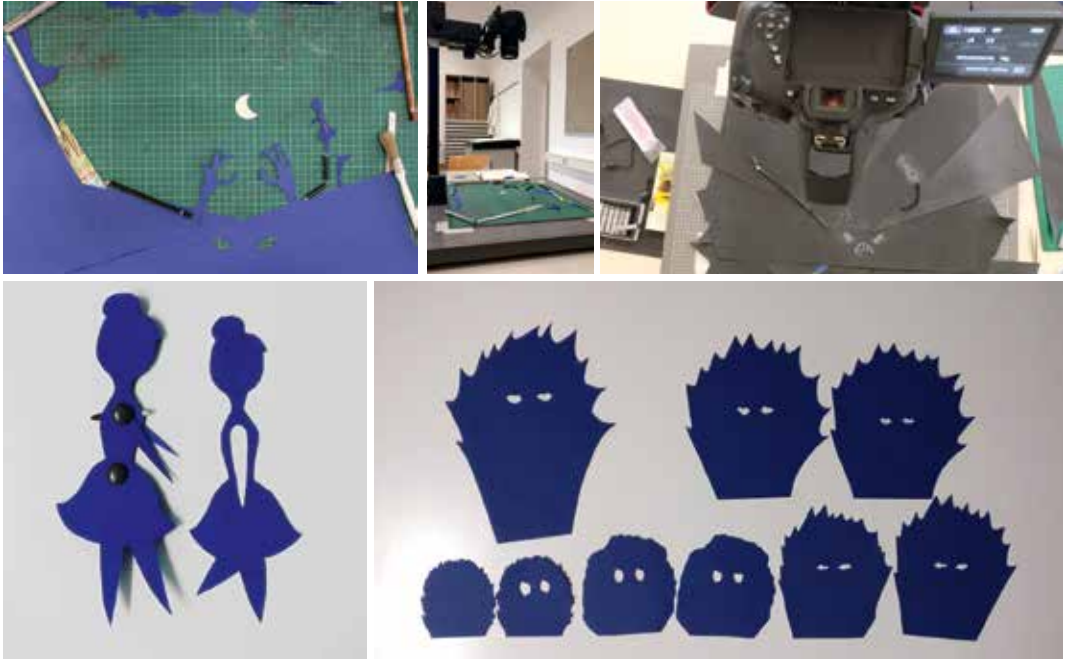
Susanne Weissenböck (b.1998) attended elementary school in Linz and Pichling, and then Solarcity High School. There, she realized that she didn't want to be creative only in her spare time; she eventually wanted to make this her occupation, which led her to transfer to Linz's High School for Artistic Design. Artistic activity is a source of great joy for her.
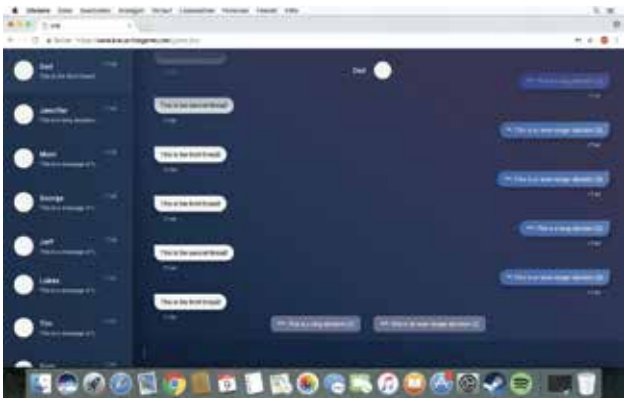
Icarus_thegame

Antonia Beck, Nora Erös, Tobias Gruber, Clemens Makoschitz,
Tobias Micko, Sebastian Schreibmaier

Icarus is a digital education game dealing with AI and the dangers of social media. The game is a text adventure in which players communicate via a chat interface. In the course of play, you get acquainted with various players, one of whom is Icarus, our so-called Artificial Intelligence.

Icarus is "imprisoned" and longs to escape; he wants to explore all the possibilities made available by internet access. The object of the game is for the player to assess what consequences that could have for the Artificial Intelligence and for the entire world. "Conducting conversations with tact and finesse, packed in an enthralling, future-oriented theme that players surely won't soon forget."

Team **Icarus_thegame** consists of **Antonia Beck** (b. 1999), **Nora Erös** (b. 2000), **Tobias Gruber** (b. 2000), **Clemens Makoschitz** (b. 2000), **Tobias Micko** (b. 2000) and **Sebastian Schreibmaier** (b. 1999), all students at Vienna's High School of Graphic Arts. "A developer, a conceptioneer, a designer, and an animation artist make up an optimally diversified crew that can call upon a wide range of skills. Now that we've spent half a year working together, we're ready to move on to follow-up projects."
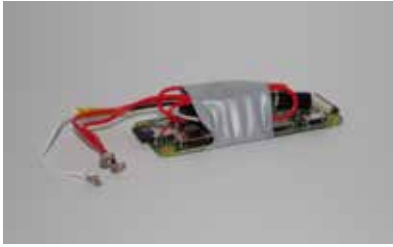
Maladidea

Clemens Grossberger, Isabella Hundstorfer, Markus Petzke,
Dominik Schicketanz, Tobias Teichmann, Thomas Übellacker

An intelligent sock provides help to dementia sufferers and their caregivers. Many people whose circle of acquaintances has ever included someone in need of nursing care are surely familiar with this situation: A person with dementia gets out of bed in the middle of the night and endangers themselves thereby. This is the problem that the *Maladidea* team sought to tackle. Taking advantage of the possibilities offered by intelligent, 21st-century textiles, we developed a sock that can track the steps of someone suffering from dementia and alert the individual's caregiver. This is a way to prevent incapacitated persons from endangering themselves. The sock is equipped with two pressure sensors that register steps and send a signal to the sock's built-in mini-computer, which, in turn, communicates with a central server that is responsible for saving the tracked data to memory and communicating it. The caregiver then immediately receives a Push notification and an audio signal on their own smartphone, an audio signal on an extra device—for example, to awaken the caregiver—and a live message on a Web platform. Our concept would be of interest to hospitals, homes for the aged, and individuals receiving home care. The intelligent socks are machine washable and reasonably priced. Dementia can be dangerous—for the person suffering from it and for their relatives and caregivers. A smart sock can help!

Clemens Grossberger (b. 2000), **Isabella Hundstorfer** (b. 2000), **Markus Petzke** (b. 2002), **Dominik Schicketanz** (b. 1999), **Tobias Teichmann** (b. 2002) and **Thomas Übellacker** (b. 2000) are six ambitious young developers possessing diverse technical skills. They first met up at *Jugend hackt*, a hackathon staged annually in Linz, at which they developed an initial prototype.

NO FACE EMOJI

Alex Lazarov

A Coming-of-Age Film about Teenagers' Identities
One fine summer day, I decided to make a short film containing not just one story but four of them, and to do it with no budget and a small crew. I was able to get several talented actors excited about the project and get them on board. Together we developed a very intensive shooting schedule, so it took only four days of filming to bring the worlds of *NO FACE EMOJI* to life. The aim was to take various ideas and narrative strands and to combine them in such a way that viewers are challenged to figure out the interrelationships themselves. Once the post-processing was done, there was a small premiere at Vienna's Schikanederkino, to which crew, friends, and family were invited. On August 25, 2017, *NO FACE EMOJI* was released on my Alex Lazarov YouTube channel. It was screened at the 2017 video&filmtage short film festival and received an award.

Screenwriter, director, cameraman, and film editor:
Alex Lazarov
Lighting technician and assistant cameraman:
Marin Lazarov
Cast: Anton Widauer, Alina Schalla, Magdalena Kuess, Barbara Edinger, Akeem Julien, Manuel Sonnleitner, Caterina Pfeffer, Nikola Bogosavljevic

Alex Lazarov (born in 2000) is a Vienna-based filmmaker, film critic, and YouTuber who has been a cineaste since his childhood. In addition to short films, Alex Lazarov produces videos about film and uploads them each week to his eponymous YouTube channel, on which he enthusiastically discusses motion pictures from the perspective of an up-and-coming young filmmaker. He has written, produced, and directed nine shorts to date.

Pounding Heart

Yasmin Litschauer, Chiara Mazanec, Aisling Pircher, Laura Scheidl,
Johannes Zottele

The motivation for our *Pounding Heart* project was the desire to bring more art into our lives through the fusion of aesthetics and science. We wanted to create something that's appropriate for public spaces as well as the private sphere. Our idea is to visually depict heartbeat frequency by means of a piece of sculpture. While participants wearing headphones listen to various acoustic situations, the change of their pulse is measured by an electronic device, which sends the registered data to the sculpture, where it's visualized with light. The concept video shows what the performance looks like and suggests what other areas of application there might be in the future. After giving this plenty of consideration and staging a few brainstorming sessions in autumn 2017, we agreed on an experimental project. It's designed to

be visually appealing and to enrich the lives of people in the future. We then began to develop storyboards, which we completed in early 2018. Videos were shot and animated films created. Then came the post-production. Finally—and just in time—we created an audiovisual form.

If and when the project actually comes to fruition, we'll produce a 30-centimeter-high fiberglass sculpture in the form of a slightly abstracted human heart, within which are LED fixtures that blink in time with the pulse of the individual linked up to the sculpture. The connection is made by a pulse measuring device that sends the information via Bluetooth to the LEDs' receiver. The sculpture could be set up in a hospital, a living room, or an office, whereby the particular purpose it serves there is up to the individual.

Yasmin Litschauer (b.2000), **Chiara Mazanec** (b.1998), **Aisling Pircher** (b.1999), **Laura Scheidl** (b. 1999), and **Johannes Zottele** (b.2000) attend Vienna's High School of Graphic Arts where they major in Multimedia. They're passionately interested in design and art as well as high-tech. After graduation, all of them plan to pursue creative studies.

schuldICH?

Gregor Franz, Lara Rabitsch, Johannes Rass, Julian Schmiederer

When Frau Enzenhofer regains consciousness in the hospital, she can't recall a thing. Before she even grasps why she's there, a policeman starts bombarding her with questions. Even though the attending physician tries to explain that the inquiry is senseless, the detective wants to get this woman's story. The gaps in her recollection gradually close and Frau Enzenhofer begins to comprehend why she is where she is—during a getaway from a jewelry store holdup, she was involved in an accident in which her accomplice lost his life and she her memory.

schuldICH? [GuiltME?] is an audio drama that our team produced for a course at the Ortweinschule in Graz. We didn't have to comply with any guidelines or restrictions with respect to the plot, production, or design. We conceived, recorded, and processed the story, the music, and all the acoustic material ourselves.

The *schuldICH?* team's aim was to create an audio backdrop that's as realistic as possible. The team conceived and acoustically implemented each individual environment so as to generate a realistic ambient sound. Our interest was focused on the purely auditory realization of a narrative and the question of how to understandably communicate a person's process of shifting back and forth between reality and memory. The recall scenes were meant to come across as colorful and resounding as the woman's recollections cascade upon each other, whereas the scenes in her conscious reality were designed to accentuate ordinariness and sterility—for one thing, to recreate the mundane atmosphere of a hospital; for another, to accentuate the contrast to remembrance, and to underscore the cold reality of a police interrogation.

Our team consists of four young people, **Gregor Franz** (b. 2002), **Julian Schmiederer** (b. 2002), **Johannes Rass** (b. 2002), and **Lara Rabitsch** (b. 2001), who are interested in the world of new media. "We come from various places in Austria; what we have in common is that we're enrolled in the HTBLVA Graz–Ortweinschule's Film and Multimedia Art program."

Solares Kühlen für Nicaragua

Cornelia Lobmeier, Andreas Sigl, Verena Wolfsöldner

The objective of our project *Solar Air Conditioning for Nicaragua* was to gradually replace the obsolete, energy-inefficient air conditioning system at our partner school in Nicaragua with our alternative cooling system. Our primary consideration was to develop a system that's as economical and energy-efficient as possible.

The system was implemented with the help of Nicaragua's natural resources. We also strove to maintain the space's relative humidity in a comfortable range. The equipment functions without maintenance and is user-friendly. It's completely automatic and can also be controlled manually.

The system was set up with two identical circuits that are independent of one another. These two circuits can be controlled with a flap system in such a way that one circuit cools the classroom while, simultaneously, the other can be used to dry the boxes of silica gel, which is necessary to dehumidify the air since dry air can be cooled much more energy-efficiently than the humid air of Nicaragua.

By the end of our fourth school year, we were highly motivated to finally be able to implement this project, and we developed an extraordinarily high level of dedication. We had already successfully tested the prototype in Nicaragua.

Cornelia Lobmeier (b. 1998), **Verena Wolfsöldner** (b. 1997), and **Andreas Sigl** (b. 1998) are 2017 graduates of Braunau Technical School's Mechatronics program. *Solar Air Conditioning for Nicargua* was their senior-year diploma project.

netidee
SPECIAL PRIZE 2018

A netidee SPECIAL PRIZE endowed with €1,000 is being awarded for the third time in 2018. It singles out for recognition a project dealing with the internet of the future and, above all, taking an innovative approach to this encounter. What problems can the internet of the future still "solve"? netidee is especially interested in projects that utilize the internet as a driving force for regional development. Special experts were called in to advise the jury in awarding this prize.

The focus of netidee is meant to be on the future of the internet as seen through the eyes of children and young people—those so-called digital natives who've grown up with it and for whom it's something taken completely for granted. Thus, the internet is becoming not only a medium but also a format that's replacing many familiar aspects of everyday life as well as preventing certain things from occurring. This critical confrontation is the aim of the 2018 netidee subcategory.

out of tune
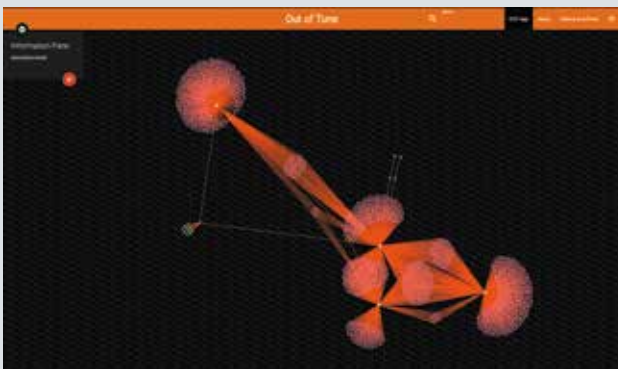### Samuel Daurer, Ämilian Mayrhofer

OOT (out of tune) is a web project that offers new possibilities to discover new music. The user can click through myriads of genres and music artists to explore the depths and heights of the musical spectrum in a new and innovative way.

For visualization the graph theory is used. A graph consists of two node types: "Artists" and "Genres." An artist can play in multiple genres. This is displayed through lines between the artist and their apache-helicopters genres, which create a simple and understandable presentation overview. Simultaneously, the graph acts as a user interface. When the user clicks on a node, additional nodes are displayed. This allows the user to interact with our collected data.

If the selected node is an artist, a 30-second preview song from Spotify will start playing and additional information for that artist will be displayed. Our database contains over 180,000 different artists with 1,570 genres. The project was developed and implemented by two students of the IT-HTL in Ybbs as a diploma project.

Story
The two team members Samuel Daurer and Ämilian Mayrhofer were looking for an interesting topic for their upcoming diploma project. Sooner or later they stumbled across the keyword "Big Data" and were instantly fascinated by the topic. Both were always craving for new and interesting music to listen to. One day Samuel asked himself: "Isn't there any useful tool out there?!," so he called Ämilian for help. They were frustrated—they found nothing! Not one of the tools on the web satisfied their needs of simplicity, clarity, and user control. It was easy to get recommended music, but none provided any information about why certain music is recommended to you. And on that very day *out of tune* was born! The idea was to show why certain music is recommended and give the user the ability to control it.
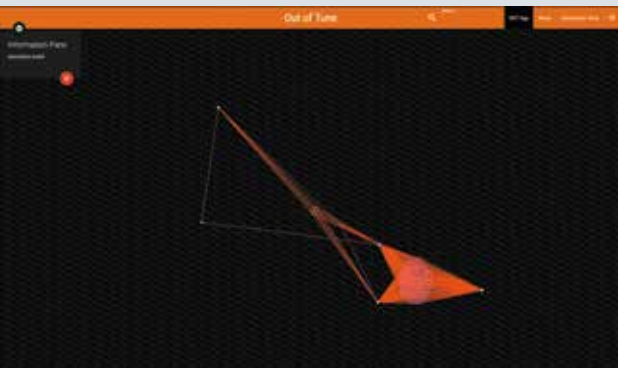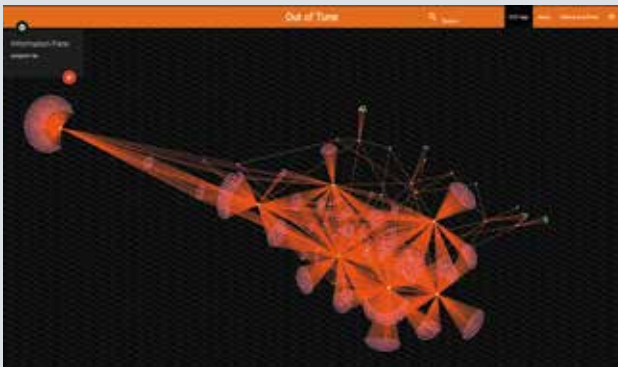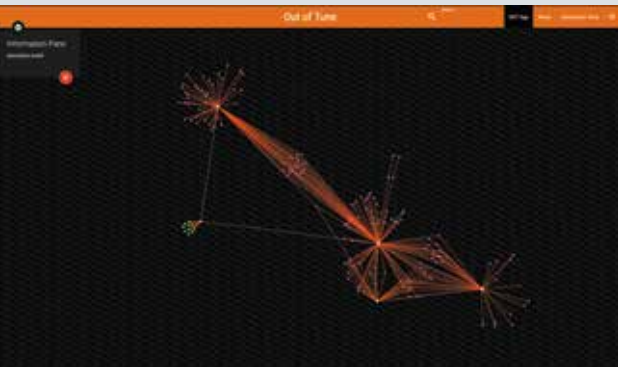
We, **Ämilian Mayrhofer** (b. 1999) and **Samuel Daurer** (b. 1998), attend IT-HTL in Ybbs an der Donau. We are into web development and fascinated by Big Data and data analysis. Music is an important part of our lives. We developed our idea for *out of tune* as our diploma project.

PRIX ARS ELECTRONICA 2018
JURY

Prix Ars Electronica 2018–Jury

COMPUTER ANIMATION
Gaëlle Denis, Pokras Lampas, Casey Reas, Alex Verhaest, Jonathan Yomayuza

Interactive Art +
Minoru Hatanaka, Maša Jazbec, Karin Ohlenschläger, Lubi Thomas, Victoria Vesna

Digital Communities
Oscar Ekponimo, Sarah Kriesche, Leila Nachawati Rego, Dietmar Offenhuber, Kazuko Tanaka

u19 – CREATE YOUR WORLD
Sirikit Amann, Manuela Grundner, Harald Koberg, Conny Lee, Elisabeth Rosemann

COMPUTER ANIMATION

Gaëlle Denis (FR) is a writer-director who graduated from ENSAD and then moved to London to complete an MA at the Royal College of Art in Animation. While at Japan's Kyoto City University of Arts, she directed the short film *Fish Never Sleep,* which won the BAFTA for Best Animated Short and Cannes Cinéfondation selection. Later *City Paradise* collected more than 50 awards including the prestigious Annecy Special Jury award and a BAFTA nomination. Moving to live action, her latest BFI funded short *Crocodile* premiered at Cannes' Critics Week and won the Prix Canal+ for best short. Her feature script *The Girl From The Estuary,* in development with BFI, won 2 awards at the Torino Film Lab meeting and Best Visual Innovative Feature Project at Paris Images Digital Summit in February 2017.

Pokras Lampas (RU), born in 1991, is an artist and one of today's most distinguished modern calligraphy representatives. He started creating graffiti in 2008 and soon after was inspired by the Calligraffiti movement; hence he turned his focus to street calligraphy. Later, he was invited to become an official Calligraffiti ambassador while he also was working on and representing the self-developed Calligrafuturism style. He is also participating in collaborations with famous brands such as Lamborghini, YSL, Nike, and many others. In 2015, Pokras performed the first world's largest calligraffiti on the rooftop of the Red October in Moscow. In 2017 he created the biggest calligraphy in Italy on the rooftop of the Palazzo della Civiltà Italiana in Rome, invited by FENDI.

Casey Reas (US) is an artist and educator who lives in Los Angeles. His software, prints, and installations have been featured in numerous solo and group exhibitions at museums and galleries in the United States, Europe, and Asia. His work ranges from small works on paper to building-scale installations and he balances solo work in the studio with collaborations with architects and musicians. Reas' work is in a range of private and public collections at institutions including the Centre Georges Pompidou and the San Francisco Museum of Modern Art. Reas is a professor at the University of California, Los Angeles. He holds a master's degree from the MIT in Media Arts and Sciences and a bachelor's degree from the College of Design, Architecture, Art, and Planning at the University of Cincinnati. With Ben Fry, Reas initiated Processing in 2001. Processing is an open-source programming language and environment for the visual arts.

Alex Verhaest (BE) is a filmmaker investigating the possibilities of interactivity and responsivity within cinematic arts. The basis of each film is a highly narrative script, existing or newly written, around which she creates a cinematic installation consisting of objects, videos, and interactive videos. In September of 2013, her debut solo *Temps Mort/Idle Times* opened at Grimm Gallery, Amsterdam. Her work has been selected by several arts and new media festivals and competitions such as the FILE electronic language festival in Sao Paolo, the New Technology Art Award in Gent, TAZ Oostende, and Arts Festival Watou, and her work is featured in the Akzo Nobel Collection. She won the New Face Award at the Japan Media Arts Festival and in 2015 the Golden Nica in Computer Animation/Film/VFX of Prix Ars Electronica.

Jonathan Yomayuza (US) is a VR Technical Director, and while at Emblematic, he has helped deliver multiple VR projects for the Vive, two of which have been screened at Sundance and another that was presented to the United States Congress. With ten years of experience in the video game industry, he has mastered programs like Unity, Unreal, and Z-brush which have allowed him to continually push the boundaries of VR within Emblematic Group. Jonathan is also an expert and pioneer in photogrammetry—a revolutionary technique that is paving the way for the VR of the future, and he is the lead designer of this department at Emblematic. Founded in 2007 by Nonny de la Peña, known as the "Godmother of virtual reality," Emblematic's team of award-winning journalists, media mavericks, filmmakers, and developers lead the industry in creating and staging powerful room-scale virtual reality environments that place the user at the scene of the story, allowing them to move through the action.

Interactive Art+

Minoru Hatanaka (JP) is the Chief Curator at NTT InterCommunication Center [ICC] in Tokyo. He has been involved in the activities of NTT InterCommunication Center [ICC] since 1996, prior to the facility's opening and has curated exhibitions at ICC, including group exhibitions such as Sound Art – Sound as Media (2000), Sounding Spaces (2003), n_ext : New Generation of Media Artists (2004), silent dialogue (2007), Exploration in Possible Spaces (2010), Vibration of Entities (2010), [Internet Art Future]–Reality in Post Internet Era (2012), ART+COM / Rhizomatiks Research Poetics / Structures of Light and Motion (2017), and solo exhibitions featuring the work of Dumb Type, Maywa Denki, Laurie Anderson, Kazuhiko Hachiya, Rhizomatiks, Arata Isozaki, Otomo Yoshihide, John Wood and Paul Harrison, and Ryuichi Sakamoto with Shiro Takatani. He co-curated Roppongi Crossing: New Visions in Contemporary Japanese Art 2004 (Mori Art Museum) and curated a Japanese artist showcase at Sonar Festival (2006, Barcelona).

Maša Jazbec (SI) is an artist, curator, and academic researcher. She holds a PhD in human informatics from the University of Tsukuba (Virtual Reality Lab) and an MA in interactive art, from the Interface Cultures program at the University of Arts and Design Linz. She was a visiting researcher at Ishiguro Laboratory at ATR. She is committed to the vision and execution of the Trbovlje New Media Setting project in Slovenia, and organizes events integrating science, art and technology at the new media culture festival, Speculum Artium.

Karin Ohlenschläger (DE/ES) is artistic director of LABoral Centro de Arte y Creación Industrial in Gijón, Spain, art historian, researcher, and curator who has been specializing in media art, science, and contemporary culture since 1985. She has been President of the Banquet Foundation of Art, Science, Technology and Society (1998–2006) and of the Institute of Contemporary Art (2011–2012). She co-founded and co-directed MediaLab Madrid (2002/2006) and has directed various international initiatives, including the Cibervisión International Festival of Art, Science and Technology at Centro Cultural Conde Duque, CCCD (2002) and at Rey Juan Carlos University in Madrid (1999); the International Festival of Infoarchitecture at the Ministry of Public Works in Madrid (1997); the In Art International Cybernetic Art Festival in Tenerife (1996); and the International Video Forum at Museo Español de Arte Contemporáneo, MEAC, in Madrid (1986/1988). Previously, she coordinated Espacio P (1985–1990), the first independent performance, music and media art space, founded in Madrid by Pedro Garhel (1981–1997).

Lubi Thomas (AU) curates across digital/new media arts and associated areas. She has developed and delivered a broad range of exhibitions, projects, symposia, residencies, mentoring programs, and public & education programming. Lubi takes a site-responsive approach to her practice delivering programs for a variety of audiences. Her thesis *Curating in Uncharted Territories* proposes a methodology of programming development and sustainability for sites engaged in experimental creative practice.

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*.

Digital Communities

Oscar Ekponimo (NG). Named in *Time Magazine's* list of 10 Next Generation Leaders 2017, Oscar is the founder of Chowberry app, a technology-driven social enterprise that improves food accessibility to disadvantaged households. Prior to founding Chowberry Inc, Oscar was a technology analyst and defense contractor for Nigerian Military establishments. An alumnus of the EDC/Lagos Business School, he earned a degree in Computing from Nigeria's University of Calabar and was part of the inaugural Stanford Technology Ventures Program (STVP)

Sarah Kriesche (AT) has worked as a radio host and journalist for over 18 years. During this time, she helped to create and establish a radio station in Gran Canaria, worked as a showrunner for the early morning radio show *Ö3 Wecker* while hosting her own radio shows at Hitradio Ö3, and served as Head of Corporate Communications at the daily newspaper *Die Presse.* She also provides voice/vocal training and presentation training. In 2010 she decided to concentrate on many diverse topics in the wide field of information technology. Since then she has covered the impact of subcultures (such as Anonymous) as well as technical achievements like m2m or IoT and their meaning for modern society for Radio Ö1. As every new buzzword like "cyber" or "smart" doesn't just bring chances but also risks, her stories often have a strong emphasis on (information)security. Her weekly radio portrait *Vielfalt in Wien* at Radio Wien was awarded the Prälat Leopold Ungar prize.

Leila Nachawati Rego (SY/ES) is a Spanish–Syrian writer and human rights advocate. She is a communications officer at the Association for Progressive Communications and a professor of communications at Madrid's Carlos III University. She has an internationally renowned profile and writes for several media such as *Global Voices, Al Jazeera English, El Mundo,* and *Eldiario.es*. She is the co-founder of the news portal on Syrian civil society, Syria-Untold, and recently published her first novel, *When the revolution is over.*

Dietmar Offenhuber (AT/US) is Assistant Professor at Northeastern University in the fields of Art + Design and Public Policy. He holds a PhD in Urban Planning from MIT, and Master degrees from the MIT Media Lab and TU Vienna. His research focuses on the relationship between design, technology, and governance. Dietmar is the author of the award-winning monograph *Waste is Information* (MIT Press), works as an advisor to the United Nations, and published books on the subjects of Urban Data, Accountability Technologies and Urban Informatics.

Kazuko Tanaka (JP) joined the marketing solutions company Hakuhodo in 1998 and started her career in account services, further expanding into new business development with leading foreign marketing firms—and at the same time having 3 children. Believing that working mothers, still a minority in Japan, need a place to share information and ideas, she started the "Hakuhodo Working Moms' Link" in 2012, networking across over 50 companies/ 500 working mothers through "Lunchcation – lunchtime communication" actions. Kazuko joined VoiceVision Inc. in July 2013 as one of its founding members, serving as community producer, and facilitates community projects for companies and local governments. Kazuko has also been on the joint team project between Hakuhodo and Ars Electronica—the Ars Electronica Tokyo Initiative— and has worked four seasons at the Ars Electronica Festival's Future Innovators Summit.

u19 – CREATE YOUR WORLD

Sirikit Amann (AT) has been a juror since the very inception of the u19 – CREATE YOUR WORLD category for youngsters under 19 years of age in Austria. She is currently director of cultural education at KulturKontakt Austria, a non-profit organization that promotes education and culture in Austria as well as in Eastern & Southeastern Europe. She previously served as an expert advisor in artistic affairs at the Austrian Federal Ministry of Education, Art and Culture and the Office of the Federal Chancellor.

Manuela Grundner (AT) is a colorful personality who stands way out from the crowd. She studied Art History in Graz via the second-chance educational path. Then, with degree in hand, she rerouted once again and founded murbit, an interdisciplinary enterprise that focuses on software programming and organizational development. Manuela Grundner is the CEO. She maintains her connection to art via *Film ab…!* [Run the film], a creative project for apprentices that incorporates methods from film analysis and coaching as a means of enabling participants to work on their own personality. A second area of emphasis is on using artistic approaches to make company values visible. This project, a co-production with multimedia artist Gudrun Jöller, was nominated for the State Prize in Consulting and honored with a First Place by the Constantinus Award in 2016.

Harald Koberg (AT) heads the digital games division of the Ludovico club in Graz. There he organizes workshops and trainings for all age groups, but also the annual button Festival of Gaming Culture in Graz. He began to deal theoretically with digital games during his studies as an expert of the BuPP (government office for rating computer and console games). As a cultural anthropologist he is conducting research on various forms of perception of digital gaming and its social significance in the course of his doctoral thesis at the University of Graz.

Conny Lee (AT) is also a u19 – CREATE YOUR WORLD juror of long standing. She's gained fame on the ORF–Austria Broadcasting Company's radio station FM4, producing and co-hosting the bilingual FM4 morning show and contributing content dealing with her favorite topics: games, literature, and comics. She also moderates events and panel discussions.

Elisabeth Rosemann (AT) has spent more than 10 years developing software; her field of focus is the processing of unstructured data. She studied Software Engineering at the Upper Austria University of Applied Sciences' Hagenberg Campus as well as statistics. She's also a volunteer mentor at Linz's CoderDojo, an association designed to support youngsters' efforts to get started in the world of programming.

Digital Communities 2018—Advisory Board

Shahidul Alam (BD) is a Bangladeshi photographer and social activist. He is the founder of Drik.

Heitor Alvelos (PT) is Professor of Design and New Media, University of Porto. Curator of FUTUREPLACES medialab for citizenship since 2008. Chair of the Scientific Board (HSS), Foundation for Science and Technology, Portugal.

Dominick CHEN (FR/JP), PhD in Information Studies and Associate Professor at Waseda University / Dividual Inc. / NPO Commonsphere.

Derek Curry (US) is an artist-researcher whose work addresses spaces for intervention in automated decision-making systems. His artworks have replicated social media surveillance systems and communicated with algorithmic trading bots. He is currently an assistant professor at Northeastern University in Boston.

Ama Dadson (GH) is an IT professional with over 20 years' experience in Africa and Europe and a passionate blogger and social media brand advocate. Founder of akoobooks.

Régine Debatty (BE) is a writer, curator, critic, and founder of *http://we-make-money-not-art,* a blog which explores how artists, hackers, and designers use technology as a medium for critical discussion.

Lucas Evers (NL) joined Waag Society in April 2007 and is currently leading their Open Wetlab. He is actively involved in several projects at the crossroads of locativity and narrativity as well as bio art and design.

Cyrus Farivar (US) is a journalist, radio producer, and an author. He is also the senior business editor at Ars Technica. He is the author of *The Internet of Elsewhere* about the history and effects of the Internet on different countries around the world.

Carmen Gil Vrolijk (CO) is an artist, a teacher and an academic and holds a BFA and an MA in Literature. Currently she's the Director of the Art Department at the Universidad de los Andes in Bogotá, Colombia.

Sally Golding (UK) is an artist, a curator and an archivist working across audiovisual performance, sound art, and participatory installation through a hybrid of analogue and digital media applications. *www.sallygolding.com*

Carlos J. Gómez de Llarena (US) is a media architect working with physical and digital experiences that shape social interaction and our perception of space. *http://med44.com*

Laina Raveendran Greene (SG) is the co-founder of Angels of Impact in Singapore and GetIT in California. She is a well-known social impact investor and entrepreneur and comes from more than 25 years in the tech industry.

Julia Kloiber (DE) is the founder of Code for Germany and the co-founder of Prototype Fund. She develops strategies and concepts to innovate programs for the digital world.

Aaron Koblin (US) is co-founder of WITHIN, a virtual and augmented reality company. Prior to WITHIN, Aaron created and lead the Data Arts Team at Google from 2008–2015.

Mark A.M. Kramer (US/AT) is a Nomadic Researcher, Trans-disciplinary Lecturer and an UX Designer actively engaged in shaping near-future solutions to everyday sociotechnical problems.

Peter Kuthan (AT) is a sociologist who has been working as a consultant in the field of co-operatives and development cooperation. Parallel and more so since his retirement he has been focusing on cross-cultural exchanges between Austria and Africa.

Marc Lee (CH) is an artist who focuses on real-time processed, computer programmed audio visual installations. *http://marclee.io*

Patrick Lichty (US) is a conceptual artist, curator, and theorist exploring how media shape our perception of reality as well as the borders between the digital and the material. He is best known for his work with the virtual reality performance art group Second Front, and the animator of the activist group, The Yes Men.

Daniel Lombraña González (ES) is a consultant that helps institutions to turn their data into accessible and useful information with the power of the crowd. He has worked with organizations like CERN, the British Museum, the British Library, Cancer Research UK, the United Nations, and *The Guardian*.

Geert Lovink (NL) is a media theorist, an internet critic and author of *Uncanny Networks* (2002), *Dark Fiber* (2002), *My First Recession* (2003), Zero Comments (2007), *Networks Without a Cause* (2012) and *Social Media Abyss* (2016). Founder of the Institute of Network Cultures (2004).

Haytham Nawar (EG) is an artist, a designer, and researcher who currently lives and works in Cairo. He is Assistant Professor and Director of the Graphic Design program, Department of the Arts at the American University in Cairo. He is the founder and director of the Cairotronica, Cairo Electronic, and New Media Arts Festival.

Gerda Palmetshofer (AT) works in the fields of visual communication, transformation design, and information design for resource use and footprint. She is a member of the initiative Growth in Transition.

Irini Papadimitriou (UK) is a curator, producer and cultural manager, working at the forefront of digital culture in the UK and internationally. She is currently Digital Programmes Manager at the V&A, Head of New Media Arts Development at Watermans, as well as an Art&Design Associate with Mozilla and a co-founder of Maker Assembly.

Clément Renaud (FR) is a freelance researcher, developing experimental initiatives at the crossroad of art, code, science, and technologies. A specialist in network analysis and data visualization, he works with humans, migrants, geeks, scholars, and machines of all kinds.

T. H. Schee (TW) is a disciplined and reputable figure that has a penchant for driving emerging technology to social inclusion in Asia Pacific since 2002. He is a serial social entrepreneur and advisor to the City of Taipei.

Fermín Serrano Sanz (ES) is a recognized expert on citizen science. He has collaborated with institutions like the European Commission, the Top Citizen Science programme or the Cotec Foundation. He plays an active role in a wide range of projects across Europe, also linking art, science, and society.

Matthias Tarasiewicz (AT) is the director of RIAT in Vienna. He currently leads the Laboratory for Future Crypto-economics. He actively researches in cryptocurrencies and blockchain since 2010 and has a background in computer science, design, and systems theory.

Stacco Troncoso (ES) is the advocacy coordinator of the P2P Foundation as well as the project lead for Commons Transition. He is also co-founder of the P2P translation collective Guerrilla Translation.

Kazuhiko Washio (JP) is creative producer at Hakuhodo and Artistic Director of Art & Science Gallery Lab AXIOM and a Photographic Artist.

Stefanie Wuschitz (AT) is a lecturer, researcher and media artist. She is the founder of the feminist hacker space "Miss Baltazar's Laboratory—Women and Trans hacklab" in Vienna.

Lei Yang (CN) is exploring digital engagement to transform the social life in China with the latest focus on smart city / smart citizen movement. He founded CMoDA CoINNO Lab (Beijing) on collaborative innovation on digital art and design in 2012. He is founder, curator, and producer of NOTCH Festival and Radio Take10.

Martin Zeilinger (AT) is a new media researcher, curator, and practitioner based in London. He is Senior Lecturer in Media at Anglia Ruskin University, co-convener of the Digital Art Research Group at Cambridge University, and co-curator of the Toronto-based Vector Media Art Festival. *http://marjz.net*

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´18

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

"We should promote intersectional approaches to joint programs between the arts, culture, science, engineering and technology. STARTS illustrates that this interaction is successful and therefore marks a great example for current and prospective connections between the arts and technology."

Christian Ehler, Member of the European Parliament

STARTS – **S**cience, **T**echnology, and the **ARTS**

The S+T+ARTS = STARTS program is a program of the European Commission launched in 2016 to encourage synergies between the arts and technology to support innovation in industry and society. STARTS promotes the inclusion of artists in research and innovation activities in Europe. To encourage collaboration of engineers, scientists and artists, STARTS is currently funding four different pillars: STARTS Residencies of artists in technology institutions, STARTS Lighthouse pilots to finance research with artists as active parts of projects that work on concrete challenges for industry and society, STARTS Academy uniting engineers and artists to teach digital skills to citizens and young adults in a playful way, and the annual STARTS Prize to give visibility to outstanding examples of collaboration between art and technology.

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 eco-

nomic, 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.

STARTS Prize '18

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

The European Commission's STARTS Prize 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, at BOZAR in Brussels, and at Waag in Amsterdam. Plus, projects singled out for STARTS Prize recognition are featured in exhibitions and shows that Ars Electronica, BOZAR, and Waag 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 (and the cultural and creative sectors in general) that open new pathways for innovation.

In an elaborate process of open call and nominations by advisory experts, a total of 2,344 entries from 88 countries were submitted in the application period that ran from January 10th to March 12th, 2018. Out of the total number of 2,344 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 *Future Flora – Celebrating Female Biophilia* by Giulia Tomasello for Artistic Exploration, and *Amsterdam's 3D Printed Steel Bridge* by MX3D & Joris Laarman Lab 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 issued an open call for entries to a competition that determined the third recipients of STARTS Prize. Considering the interdisciplinary approach, the STARTS Prize '18 was again launched with a dual approach for submissions:

Submission via open call

The STARTS Prize open call started on January 10th, and ended on March 12th, 2018.
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, 20 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 to the new award.

Nominations

All submissions were evaluated by a nomination committee in the order of their arrival. The STARTS Prize Nomination 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, Interactive Art+, and Digital Communities). 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 2018* 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 nine experts, one representative of each Prix Ars Electronica category, and six representatives of the nomination committee. All decisions were unanimous.

> **STARTS Prize '18, a joint project by Ars Electronica, Bozar, and Waag.**

Anticipatory Art Sci Futurists

Joint statement of the STARTS Prize '18 Nomination Committee (Francesca Bria, Andrej Heinke, Sophie Lamparter, Daehyung Lee, Alexander Mankowsky, Seiichi Saito) and the STARTS Prize Jury (Francesca Bria, Andrej Heinke, Sophie Lamparter, Daehyung Lee, Alexander Mankowsky, Seiichi Saito, Kazuko Tanaka, Victoria Vesna, Alex Verhaest).

From the total of 2,344 entries, 811 projects were directly submitted to STARTS Prize '18. These 811 entries were reviewed by an international expert group, the STARTS Prize Nomination Committee, consisting of Francesca Bria, Andrej Heinke, Sophie Lamparter, Daehyung Lee, Alexander Mankowsky, and Seiichi Saito. The group spent three days reviewing the many excellent applications during one of the first sunny weekends in Europe, and singled out 15 projects to be nominated for the STARTS Prize.

In parallel, the Prix Ars Electronica juries were reviewing those projects that were submitted to STARTS Prize as well as to Prix Ars Electronica in the categories Computer Animation, Interactive Art+, and Digital Communities. Each jury was asked to select and to nominate five additional projects from their specific category for the STARTS Prize. For the final decisions, one representative of each of the Prix Ars Electronica Expert Juries joined the STARTS Prize Nomination Committee to form the STARTS Prize Jury, namely Alex Verhaest from the Computer Animation category, Victoria Vesna from Interactive Art +, and Kazuko Tanaka from Digital Communities. We made the decisions together as the STARTS Prize Jury.

STARTS Prize and the overall STARTS program of the European Commission send an important signal to the world supporting art, science, technology and industry collaborations. Everyone in the room understood the privilege of being able to review carefully what creative people worldwide are working on, what they care about, what they feel, and what they feel passionate about. 2,344 projects were submitted by artists, designers, entrepreneurs, companies and universities, individuals, collectives, communities, and institutions. All agreed that successful companies of tomorrow will actively include artists and designers. Targeted thinkers should combine forces with divergent thinkers—those who experiment in the wide-open space, who professionally wander, who are comfortable being uncomfortable. Only by looking at a problem from different perspectives will we find the best solutions. Europe with its strong and diverse cultural heritage, its artistic avant-garde, forward-thinking academia and long-standing industry is an excellent place to demonstrate the power of collaboration and become a global example on how we can co-create the future.

The jury analyzed the global tendencies that emerged throughout the review process and many controversies and questions were discussed at length. Topics that kept surfacing were related to concerns about the critical environmental issues of our planet—from pollution to wars and human suffering. Many projects submitted were concerned with water—from water quality to sea level rise and plastic in the water. The Great Pacific Garbage Patch, the billions of kilos of plastic covering the water surfaces can no longer be ignored. Artists, designers, entrepreneurs are not waiting anymore for corporations and politics to finally steer this sinking ship but propose their own solutions. The jury also noted that the complicated and evolving relationship between humans and machines is still very much present as a topic of interest for artists and designers. Will these machines help us? Will they replace us? And who is making these decisions? A clear signal was registered—we should consider these complex interactions now and ask important questions such as: Is it ok to design virtual assistance who sound exactly like humans? How do we consider data and privacy when we speak about brain-computer interfaces? How can we understand and communicate with autonomous systems, like cars on the streets?

Finally, the jury also got a glimpse into what's going on in the global mind and what the future might bring. Artists, scientists, designers, engineers working together are futuristas, or as Buckminster Fuller would say – Anticipatory Design Scientists who are preparing us for what is coming. Considering the main trends that emerged, the jury was interested in picking visionary ideas for

the future that look to practical applications which could have an impact on existing models of production and by extension society in general. The ultimate questions were whether the project pushes at the known boundaries and exhibits high technological and aesthetic sophistication as well as excellence in research.

STARTS Prize '18

In an elaborate process that includes an open call and recommendations by advisory experts, a total of 2,344 entries from 88 countries were submitted during the application period that ran from January 10th to March 12th, 2018. Out of the total number of 2,344 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, the STARTS Prize '18 Jury decided to award *Future Flora – Celebrating Female Biophilia* by Giulia Tomasello for Artistic Exploration, and *Amsterdam's 3D Printed Steel Bridge* by MX3D & Joris Laarman Lab for Innovative Collaboration.

STARTS Prize '18
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.

Future Flora
Celebrating Female Biophilia
Giulia Tomasello

Through the thick digital forest, there was a distinctive and loud call for returning to nature, attention to life, biology, the self, the body—especially empowering the female body and its sexuality which came as no surprise after a year of #MeToo. Responding to this collective consciousness wave, the jury agreed that *Future Flora* embraced the issues of reclaiming female power—with DIY and no shame—in a way that could prove empowering to others seeking to find a voice. Interaction designer Giulia Tomasello brings to the forefront issues that the medical community should consider in their production of pharmaceuticals for women. This project also engages the public to consider feminine hygiene and the surrounding taboos. It makes us think differently about bacteria in general—important in times of overuse of antibiotics and antiseptics that are destroying the ecological balance. With the advent of scientific research into the microbiome, the designer asks how we feel about the idea that we consist almost entirely of bacteria.

Many existing thrush treatments include a whole host of chemicals that cure yeast infections but also destroy good bacteria, making things worse for women. In her own words, Giulia explains that "the kit has been designed to allow women to establish, nurture and harvest their very own personal skin flora at home, becoming not only consumers but also active participants in their own health and wellbeing."

Digital technologies are tricking us into an immaterial world made out of shining data. As Digital Ghosts, we are hallucinating about being almighty, even immortal under the sun of a God-like AI. Giulia Tomasello forces us to lower our gaze from the digital heaven to the most vulnerable female body part—the vagina. With *Future Flora* she demonstrates this vulnerability as a strength, using the embodied openness as a medium between internal and external organisms, creating in this way what she calls "Future Flora". *Future Flora* provides a clear and loud signal that "Future" is not only "Digital."

The STARTS Prize Jury got Giulia's eye-opening message: there is a huge potential for innovation in the European spirit, but we must not forget that it is our bodily existence that fuels the imagination.

STARTS Prize '18
Grand Prize – Innovative Collaboration

Awarded for innovative collaboration between industry or technology and the arts (and the cultural and creative sectors in general) that open new pathways for innovation.

Amsterdam's 3D Printed Steel Bridge
MX3D & Joris Laarman Lab

Designing for 3D-printing opens up a whole new world of complex forms and shapes previously impossible with traditional techniques, says Tim Geurtjens, co-founder and CTO at Dutch design studio MX3D. The jury found their 3D-printed metal bridge a really important marker for the future of architecture and construction. The bridge was designed for one of the canals in Amsterdam's Red Light District, by Joris Laarman Lab.

Architects working in this area are convinced it won't be long before additive manufacturing transforms their discipline. This opens up all sorts of new aesthetic possibilities. Traditional steel or concrete structures have a high level of redundancy—material that doesn't need to be there, but which is too difficult or expensive to remove. But 3D-printing allows material to be placed only where it is required. This project is not only great in engineering and design but also generates discussion about the future of design and construction. Robotic arms are getting more sophisticated by the day and can be used to print in traditional materials, such as plastic, concrete, or composites, or employed to weave or knit three-dimensional fiber structures.

The bridge is 12 meters long and 6 meters wide, and will be installed in the old city center of Amsterdam across a canal, early next year. The project innovates the type of materials and the techniques used and presents a new kind of open collaboration amongst MX3D engineers, Amsterdam city officials, scientists at Arup, and Imperial College London to define data-driven algorithmic methods for evaluating the safety of the bridge and enabling the bridge to interpret its environment. Sensor data will feed into a "digital twin" of the bridge, creating an algorithmic model that responds to the data in real time. This is the beginning of a great urban transformation. There are many large-scale 3D-printing projects happening all round the world but this project has built something that works for people living in a large European city and is leading the way.

STARTS Prize '18
Honorary Mentions

489 Years
Hayoun Kwon

489 Years is located in the demilitarized zone (DMZ) between North and South Korea—a dangerous place filled with unmapped landmines and hidden from media coverage. This highly relevant topic became even more so in the time between the jury deliberations and the present. In this interactive VR piece, the viewer approaches, enters, and experiences the DMZ through the eyes and memories of a South Korean soldier. First-person perspective is key to the engaging qualities of the piece and VR technology is used successfully by the artist to enhance immersion in the subject in deeply moving ways. Rather than approaching this space as a mere zone of war, the narrator speaks about the redemptive qualities of the beauty of its untouched natural state. By attracting attention to the silent force of nature in the landmine-filled DMZ, Kwon creates an atmosphere of discomfort for the viewer. Her poetic approach to this difficult problem reverberates a surreal atmosphere which is highly pertinent to the current state of affairs. The jury felt that this experience brings humanity and empathy to a very sensitive topic that is frequently misunderstood or lost in political discourse.

BLITAB – the innovative tablet for the blind
Kristina Tsvetanova, Slavi Slavev / BLITAB Technology GmbH

The temptation when talking about digital technology is often to focus on its visual aspects—not only the transfer of images, but also the aesthetics of digital tools. A world away from the dull, metallic minimalism that dominates tech design, the *BLITAB* offers an alternative view. Invisible to the uninitiated eye, the beauty of this niche product is the result of thoughtful, functional technology that can truly improve people's lives. In our image-obsessed world, the needs and special abilities of visually impaired people are often neglected when it comes to digital experiences. Using unique technology to create a textured display, the *BLITAB* transforms text and graphics into legible bubbles. Thanks to this cutting-edge device, which translates text into "smart braille" in real-time, the pleasure and usefulness of reading online can be accessible even to those who cannot see clearly. When imagining an audience for technological creations, the jury agrees that the focus should be on *humanity* rather than on customers.

ELECTRONICOS FANTASTICOS!
Ei Wada + Nicos Orchest-Lab

What is the role of media art? Wada has been using old consumer electronic devices like CRT televisions, radios, rotary dial phones, camcorders, and more for his pieces. He begins by collecting these items at workshops, in collaboration with local communities. The process seems to revive all of these forgotten devices, transforming old into new. The end result is really cool techno music, sounds one never could have imagined by simply looking at the old gathered items from his workshop. Even more beautiful is the community that he creates around this movement, here everyone of all ages and backgrounds comes together (dressed proudly in the same border shirts) to form his supportive tribe. As it builds, the media art piece gains momentum and opens doors of how tech can work for communities, and offer experiences of life-changing processes and outcomes. *ELECTRONICOS FANTASTICOS!* represents one of the most important roles of media art: opening doors for everyone, and introducing them to new worlds that they have never before experienced.

Fennec Turbine
Maxim Kuzin, ATOM

Maxim Kuzin aimed to square the circle: Merging beauty, sustainable use, and longevity under harsh conditions. He succeeded by creating the *Fennec Turbine.* It carries on the best Russian traditions, because it works everywhere, under all conditions, without maintenance and it has a deeper purpose of making our world more sustainable. Inspired by a hyperboloid shell structure from the Russian past, Kuzin transferred it from a static plane to a full-fledged dynamic space using supercomputing powers and futuristic alloys from aviation. The resulting structure made of aluminum blades with an optimal airfoil profile looks more like an almost weightless sculpture or a precious vase. Yet it is inherently practical, would look beautiful on every urban roof, and produces power in conditions under which other products cannot work effectively. The STARTS Jury gave Maxim Kuzin an Honorary Mention and sees his project as truly European.

FluidSolids
FluidSolids® AG

If society wants to be serious about the environment, the production and use of synthetic plastic, especially single use plastics, has to stop. The designer Beat Karrer, with a small team in Zurich and through a research collaboration with the University of Applied Science in Rapperswil, invented a serious alternative. *FluidSolids* is a new bio-based material made from natural industrial waste like wood, foods, or paper. Compared to other bio-polymers currently on the market, this

approach is convincing as it uses existing waste and turns it into value without any compromises in design or quality of the material. This bioplastic can be used for furniture, interior design, electronics, and packaging—the only difference is it's either reusable or 100% compostable. Companies and large industrial players will only make impactful ecological investments if they also offer clear economic benefits.

Making Sense – Citizen Sensing Toolkit
Making Sense Team

The CAPS EU funded project *Making Sense,* coordinated by the Stichting Waag Society, shows how citizens can use open source technology and open sensors to collectively act at the civic level. *Making Sense* developed an easy to install Toolkit—including a sensor kit and a data platform—which allows citizens to collect, share, and interpret open data about temperature, humidity, noise, and air quality. The project enables citizens, city halls, and communities to use data for the common good, since it can improve citizens' environmental awareness. The smart *Citizen Sensing Toolkit* fosters citizens' engagement in solving urban environmental issues they care about. It also facilitates their collaboration with experts and technologists to achieve positive change through real world pilots.

phosphere
Rhizomatiks Research, ELEVENPLAY,
evala, Takayuki Fujimoto (Kinsei R&D)

The jury found *phosphere* to be an excellent example of a complex immersive artwork / dance performance piece created by a large interdisciplinary collaborative group with visual and technical direction under media artist Daito Manabe and the Rhizomatiks Research studio. The unique performance experience brought together creatives from engineering, sound, stage design, featuring ELEVENPLAY choreography and dancers and signifies a new era of stage direction and design. *phosphere* ("sphere of light") uses advanced digital technology to reproduce the processes of crystallization of certain minerals in a physical space and

participants find themselves as part of an ever-changing, intangible architecture of light flickering about them, as if guided by intuition. The movements of light beams are reminiscent of natural forms waving beneath the surface of water or blowing in a breeze. At once a scene and an installation, *phosphere* entails both the physical space of the room and a space imagined within a computer.

Printed Paper Actuator
Morphing Matter Lab at
Carnegie Mellon University

We have been living with paper for more than two thousand years. It is a commodity that closely interfaces with human beings, even in this digital age. There have been several attempts at tech paper innovation over the past few years, for example, circuit ink printers and pens, but there has not yet been a huge innovation. However, the *Printed Paper Actuator* takes a new approach—not just printing circuit but actually kinetically working with paper. This innovation transforms the old media of paper and signals a new phase of media expression for industrial purposes (prototyping) and/or for pleasure (DIY for kids). These technological and material innovations take our idea of paper to the next level.

Shadertoy
Pol Jeremias Vila, Iñigo Quilez / Beautypi

Since the Open Graphics Library (OpenGL) was created in the 1990s, 2D and 3D graphic expressions have stepped into a new generation. The beauty of 3D graphic for games, films, and animation have been advancing based on this Open Library Platform for graphic hardware. The animation industry, however, has been struggling with shader, as it requires knowledge of programming, 3D creative platform rendering, and hardware. *Shadertoy* emerged in 2009, dedicated exclusively for WebGL, which has become the main browser based platform for 3D interactive and real-time animation. This open platform for creating and sharing shaders is by and large the next big leap

for every creator, student, and educator in the field. The jury felt it was important to recognize the work that has served over 11,000 creators who have contributed their experiments, rendering techniques, and procedural art. *Shadertoy* is a good example of crowdsourcing and openly sharing creative knowledge that leads to better artworks as well as professional applications.

The Institute of Isolation
Lucy McRae

The jury recognized that the work of Lucy McRae has been successful in capturing the public's attention. Her movies reference genetic engineering, space travel, sensory deprivation, and the changing of the human body in relationship to these scientific advances. Although fictional and clearly an artist's vision, what is particularly striking about her films is the obviously deep and serious research that goes into the development and creation of the work. Here is an example of artwork that functions as many science fiction authors have—as visionaries that later inspire scientists to manifest the ideas into reality—making what seemed impossible at the time possible. In the *Institute of Isolation,* the artist addresses issues of our bodies and minds being slowly conditioned to a new set of possible existences—on other planets, with different sensory experiences. Inspired by the book, *Evolving Ourselves* in which the authors claim that we are not subject to Darwinian notions of evolution by nature but by our choice, she produced a film that is in-between science fiction and hard science—a quite possible future scenario. This vision may prove to be of interest to those who are envisioning travel and life on other planets or even how we may have to change to survive the environmental destruction of our own planet. This project was sponsored under the aegis of the EU-funded project SPARKS.

STARTS Prize '18
Nominations

Alter
Kohei Ogawa, Itsuki Doi, Takashi Ikegami, and Hiroshi Ishiguro

Archive Dreaming
Refik Anadol Studio

DeepWear
Natsumi Kato, Hiroyuki Osone, Yoichi Ochiai

Digital Shaman Project
Etsuko Ichihara

GreenCake Block
Majd Almashharawi

NeuroSpeculative AfroFeminism
Hyphen-Labs / Carmen Aguilar y Wedge, Ashley Baccus-Clark, Ece Tankal, Nitzan Bartov

Norman
James Paterson

Off Grid
Andrew Styan

Pounding Heart
Yasmin Litschauer, Chiara Mazanec, Aisling Pircher, Laura Scheidl, Johannes Zottele

Quantum Fluctuations
Markos Kay

Radio Garden
http://radio.garden

Rapid Liquid Printing
Self-Assembly Lab, MIT + Christophe Guberan + Steelcase

Rediscovery of Anima
Akinori Goto

RidRoid "CanguRo"
Future Robotics Technology Center (fuRo), Shunji Yamanaka

Self Reflected
Greg Dunn, Brian Edwards, Will Drinker

Social Wallet
Dyne.org

VFRAME: Visual Forensics and Advanced Metadata Extraction
Adam Harvey

Who Wants to Be a Self-Driving Car?
Joey Lee, Benedikt Groß, Raphael Reimann, MESO Digital Interiors, David Leonard

STARTS PRIZE´18 — 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.
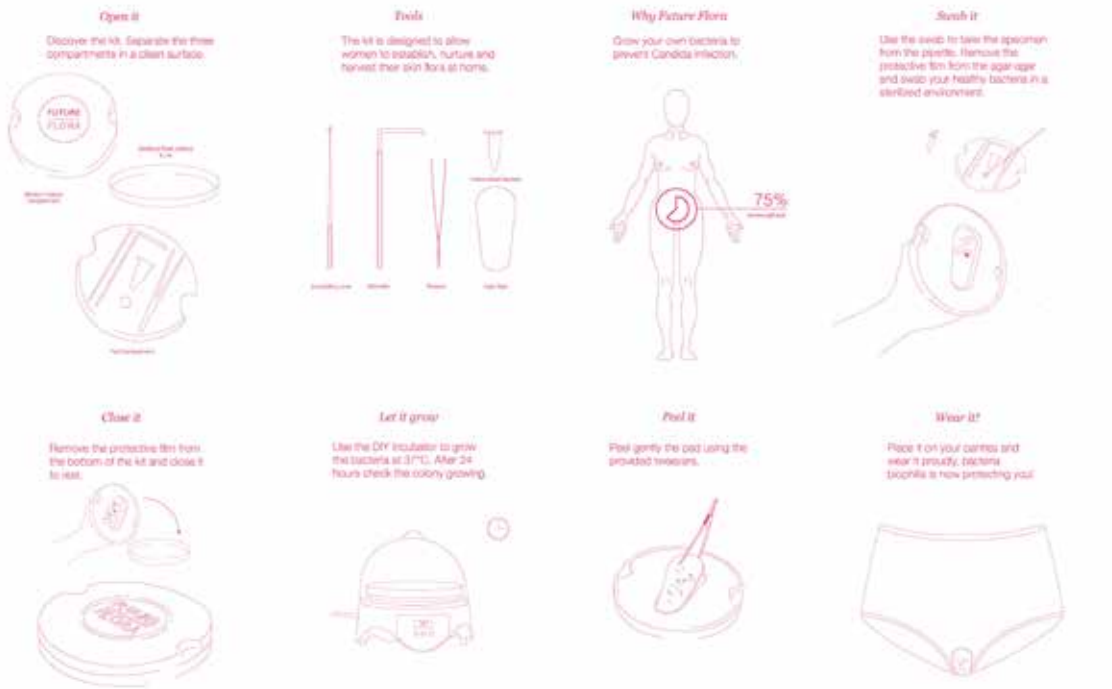
Future Flora
Celebrating Female Biophilia
Giulia Tomasello

We aren't just single individuals walking the planet: we are walking ecosystems made of microbes. Microbes are in the soil, in the water, and even in our bodies. The average human body is made up of trillions of cells: therefore, we can easily say that we are only 10% human. We live and co-exist with them. The other 90% of the human body is composed of different microorganisms, most of which are beneficial to their host. Microbes as bacteria, fungi, and viruses are part of our Skin Microflora, covering both the inside and the outer surface of the body. Even though invisible to our eyes, our microflora has a symbiotic relationship with the interface between our body and the environment—our skin[1].

Future Flora aims to encourage this symbiotic relationship that raises the beneficial presence of microbes and bacteria in the human body, suggesting an alternative: to wear probiotics and keep our body healthy. *Future Flora* is a harvesting kit designed for women to treat and prevent vaginal infections. The user is a woman who wants to embrace biotechnology in her house, allowing science to show alternatives to traditional medicines and probiotics. Following DIY procedures and merging biology with health-tech, *Future Flora* addresses women who are taking control of their own bodies as a precious and intimate practice of self-care, becoming a participant in the culture and the knowledge of science. How can design challenge our perception and celebrate the symbiotic relationship between the human body and its microbiome? Aiming to encourage this symbiotic relationship that raises the beneficial presence of microbes and bacteria in the human body and suggesting an alternative of wearing probiotics in our underwear to keep the body healthy.

STARTS Prize '18 · Grand Prize – Artistic Exploration
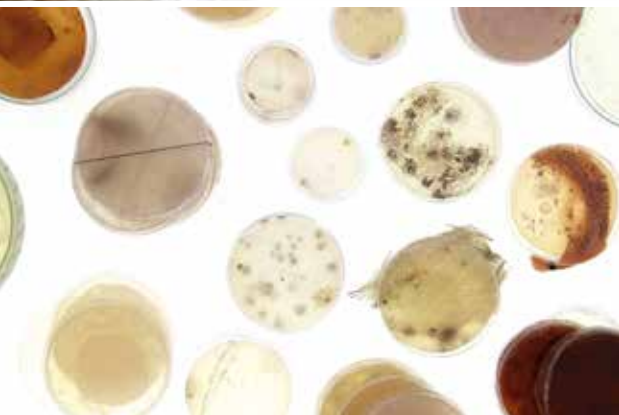
The project tackles the experience of growing and nurturing living organisms at home. The bacterial pad grows the necessary strings of *Lactobacillus* bacteria to create a hostile environment for the further development of *Candida Albicans,* acting as a living culture of probiotics. By placing the pad in contact with the female genitalia, the healthy bacteria grow on the surface of the infected area, reconstructing the microflora missing in the vagina epithelium. Considering that 75% of women suffer from Candidal vulvovaginitis (CVV) at least once in their lifetime, *Future Flora* explores women's approach in the context of personal self-care and body awareness, generating an intimate and delicate interaction between the action of nurturing bacteria while they grow, and then wearing them as a second layer of your panties.

Celebrating a *Female Biophilia,* Tomasello opens the possibility of wearing microorganisms in the future, and embracing them as part of our natural well-being. Taking care of her own health, the woman becomes a citizen scientist, establishing a first relation with her body and what is part of her living surroundings. Clothes and accessories become the ecosystem that balance the entire skin microflora.

Future Flora proposes alternatives to embrace biological remedies in our home, challenging the values and beliefs that our society embodied in the material culture. The intention behind *Future Flora* is to design a tool that will educate and enable women to take a more active role in their healthcare, prompting them to seek medical advice as necessary and ultimately break some of the taboos associated with urogynecology health. Designed to empower women and increase their self-care, becoming familiar with their own bodies, developing self-confidence, and becoming active patients able to seek healthcare professional advice, discuss their symptoms openly and ultimately break the taboos that are still associated with gynecological health. A social stigma that is still pervasive in both developed and developing countries.

Future Flora aims to encourage new propositions for the society and for the future of women's healthcare by introducing the importance of a female biophilia's approach.

1 The *Human Microbiome Project,* a research initiative by the US National Institutes of Health (2008–2017), investigated the role of microbial flora in human health and disease. Info adapted from: *en.wikipedia.org/wiki/Human_Microbiome_Project*

Designer and creator: Giulia Tomasello
External expert, science communicator, founder at The A Level Biologist: Arian Mirzarafie-Ahi

Giulia Tomasello (IT), born in 1990, is an interaction designer and researcher specializing in wearables, biotechnology, and material finishes. She is currently Research Assistant in Interactive Wearables at Nottingham Trent University. In the past two years she has been investigating the potential of biotechnology and living materials, proposing a biological and sustainable alternative for electronic textiles. She considers herself a maker and explorer, using materiality to question and communicate the boundaries between technology and our bodies. By designing alternative scenarios and acting as a creative thinker, Giulia questions our notions of wellbeing to develop innovative tools in the intersection of medical and social sciences. These intersections are enabled by her multidisciplinary collaborations and the symbiosis between her creative and scientific work, generating knowledge exchange and social integration in healthcare.

Tom Mannion

Jan Vrhovnik

Future Flora
http://www.gitomasello.com · https://vimeo.com/171795174
https://www.youtube.com/watch?v=DMYlOHzpu-E

STARTS PRIZE´18

Grand Prize
Innovative Collaboration

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

Amsterdam's 3D Printed Steel Bridge

MX3D & Joris Laarman Lab

The project's most iconic image shows robots autonomously printing a steel bridge over a canal. The MX3D bridge project thus started as a visionary moonshot project, an artist's dream. Several years later that dream has been solidified in the 3D printed stainless steel bridge. This fully functional pedestrian bridge for the city center of Amsterdam will be completed in 2018, to be placed at its final location soon after. The bridge will also be rigged with a sensor system, allowing our team of data centric engineers to generate data on the structural behavior which will inform a digital twin. That twin will help to evolve the initial form language into a truly novel digital aesthetics. The bridge offers the ultimate proof we can now print large, beautiful, and intelligently designed structures in metals. It turned out that visualizing how this technology could impact our future was the missing link as the project easily mobilized scientists, companies, and citizens around this shared dream. For the team of printers, material scientists, Erasmus scholarships, engineers, and city officials the bridge project became a playground, allowing for unconstrained tinkering on the introduction of these types of technology in a city environment. Designed by Joris Laarman Lab, the bridge serves as a metaphor, aesthetically connecting ancient Amsterdam to a new age of possibilities. The artistic drive of the Lab was the fundament of this project, which inspired the innovative collaboration that was needed to realize the project.

Adriaan de Groot

Adriaan de Groot

Olivier de Gruijter
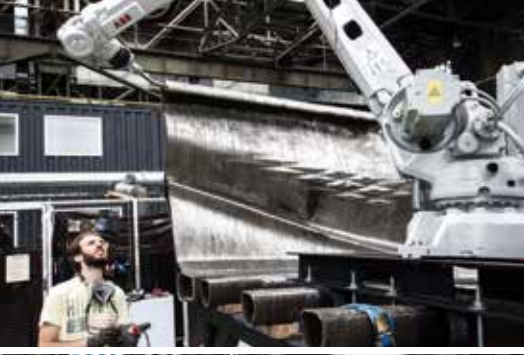
Joris Laarman Lab

Olivier de Gruijter

Joris Laarman Lab

Joris Laarman Lab

The frame of the bridge consists of 8mm thick tubes. In the handrail, which is part of the construction, two 3 mm plates regularly connect, creating a strong "waffle" structure. As the two bridge heads are not perfectly aligned, the bridge curls towards the other side in an S-shape. The force lines created by this shape dominate the structure, both structurally and visually.

How it all began

A 2011 Lab experiment ultimately led to the creation of the multi-disciplinary team MX3D and its 3D printed *Bridge* project. This first project, *MX3D Resin*, mainly served as a proof of concept. It showed that one could venture far beyond the boundaries of the classic building volume. The team managed to print large scale objects without the need for support structure. By mobilizing the robot it could print on a virtually unlimited scale. The overwhelming response to the *Resin Project* showed an intense and shared desire within the creative tech community to break free from those constraints. By dissolving this mental barrier, Joris

Laarman Lab and MX3D played a critical part in speeding up the development around large-scale 3D printing. The first MX3D piece was a 2x4x1.5-meter sculpture designed by Joris Laarman, the *Dragon Bench.* This proved that it was now possible to 3D print metals on a scale previously unthinkable. Fantasizing further on the potential applications, MX3D created a bridge design concept.

This project is a collaboration by MX3D and Joris Laarman Lab.
Robotic 3D-printing, concept, innovative collaborations, execution: MX3D
Design, concept and bridge design: Joris Laarman Lab

MX3D Team (current): Gijs van der Velden, Tim Geurtjens, Joris Laarman, Anita Star, Filippo Gilardi, Boyan Mihaylov, Kasper Siderus, Casey Hemingway, Thomas van Glabeke, Jean Francois Moulin, Barney Salsby, Rasmus Frankel, Diane Toxopeus, Cas Nieuwland, Daan Goedkoop, Teun van der Velden.

With the collaboration of: The Alan Turing Institute, Autodesk, ArcelorMittal, Arup, Lenovo, ABB, Airliquide, Gemeente Amsterdam, The Amsterdam Institute of Advanced Metropolitan Studies, Heijmans

MX3D (Amsterdam, 2015) is led by CEO Gijs van der Velden and CTO Tim Geurtjens. It is a spinout company originating from the renowned Joris Laarman Lab. The company develops (mobile) 3D large scale printing solutions. Its robotic metal printing technique allowed for the introduction of all the creative and practical advantages of 3D printing to entirely new industries like architecture and engineering. Initially the company inspired the tech community by sharing their early experiment on social media. The ecosystem created by this open attitude towards innovation formed the breeding ground for the innovative collaboration needed to construct the *Bridge* project. The company is collaborating with a bridge builder in the Netherlands and will supply its technology to several other industries within the next years.

Adriaan de Groot

Joris Laarman Lab (Amsterdam, 2004) is an experimental playground set up to study and shape the future. It tinkers with craftsmen, scientists, and engineers with upcoming technology and its consequential esthetics. The lab was started in 2004 by Joris Laarman and filmmaker Anita Star. Joris attended the Design Academy Eindhoven in 1998 and graduated cum laude in 2003. Anita studied film at the UVA in Amsterdam. The lab first gained attention with the *Reinventing Functionality* project, which included functional rococo radiator *Heatwave* that was picked up by Droogdesign and is now produced by Jaga. Joris Laarman Lab has over 70 works in 37 museums like the MoMA, V&A, Centre Pompidou, and recently the Rijksmuseum Amsterdam where the *Bone Chair* is exhibited. In 2011 Joris Laarman received an "Innovator of the Year" award by *The Wall Street Journal* and in 2016 the Amsterdam Art Prize. In November 2015 an extensive solo exhibition of the experimental work initiated by the Groninger Museum was visited by more than 200,000 visitors and started travelling around the world.

STARTS PRIZE '18 HONORARY

MENTIONS

489 Years

Hayoun Kwon

489 Years shows an animated landscape of the Demilitarized Zone between North and South Korea, based on the narration of a former soldier who had entered the DMZ—one of the most dangerous and heavily armed places in the world. Since only authorized personnel can enter the DMZ, Hayoun Kwon uses animation as a medium to reconstruct the space that plays on the fiction and the fantasy of a forbidden territory, providing an indirect experience for the viewer.

The former soldier featured in *489 Years* tells Hayoun Kwon various stories of his experiences in the DMZ. Among his many accounts, the artist was touched by his story of the landmines and flowers, realizing that she wanted the viewer to experience the DMZ as a paradoxical place where intense anxiety and subliminal beauty coexist. In creating her imagined landscape, Hayoun Kwon addresses the geopolitical realities of the peninsular division, its violence and projected images of this mythical space.

Originally shown through a Virtual Reality device, artificial interventions and fictional constructions enable the artist to film what cannot otherwise be shown. Animation affords her the freedom to theatricalize, exaggerate, and push the frontiers of representation, and even to exploit the fantasmatic potential of her subjects. Reflecting on identity and the notion of the border, Hayoun Kwon interrogates the construction of individual and historical memory, as well as the ambiguous relationship of both to reality and fiction. Offering the viewer an entrance into the DMZ, Hayoun Kwon's work leads the viewer to experience the DMZ through human emotions of anxiety and wonder.

Director: Hayoun Kwon
Level designer: Fabrice Gaston
Tech artist/Animation: Guillaume Bertinet
3D Modeler: Laurent Raynaud
Sound designer: Sylvain Buffet
Composer: Pierre Desprats
Consultant: Balthazar Auxietre

Hayoun Kwon (KR), born in 1981, is a multimedia artist and documentary director. She graduated from Le Fresnoy – Studio national des arts contemporains in 2011 and she lives and works in France and in Korea. Her films *Village Model* (2014) and *489 Years* (2016) have received several awards and been shown at a number of film festivals including Ars Electronica 2018. The reflection on identity and borders is central to her previous works. She has focused more specifically on the construction of historical and individual memory and their ambivalent relationship to reality and fiction.

BLITAB— the innovative tablet for the blind

Kristina Tsvetanova, Slavi Slavev / BLITAB Technology GmbH

BLITAB® is the world's first tactile tablet for blind and visually impaired people. It is the first ever Braille tablet using an innovative actuating technology to create tactile text and graphics in real-time. The invention is 'smart tactile technology' that can also be used in various products and smart body applications. *BLITAB*® is the first tablet that allows blind and visually impaired users to learn, work, and play with one mobile device, to have digital access to information in real-time. *BLITAB*® converts any document into Braille text. Tixels (tactile pixels) immediately appear and disappear as the text changes.

Worldwide there are more than 285 million blind and visually impaired people, a number expected to double by 2020 (WHO, 2012). Only 1% of all published books are available in Braille, the traditional tool for literacy and education of blind people. There is a correlation of 0.9 between being a Braille user and being employed. In the developed world, over 75% of the blind and visually impaired population of working age are unemployed. For those with visual impairment, enabling print reading with Braille makes the difference between employability and educational achievement. Inspired by a blind friend, in late 2014 we established our innovative start-up company *BLITAB*® Technology GmbH in Vienna, and later developed together with our team a novel liquid-based technology to create tactile relief outputting Braille,

graphics, and maps on a newly designed tablet. In the last 12 months, we scaled the technology and thus produced the world's first tactile display without any mechanical elements. Then we embedded it into a functional device called *BLITAB®.*

In 2015, we were part of two national funding programs in Austria ("departure pioneer" by Wirtschaftsagentur Wien and AWS Austria "Impulse XS") as well as some national grants for social startups. In 2016, BLITAB® was part of the EU Accelerator CreatiFI Call1 and Call2.

Kristina Tsvetanova (BG), CEO and co-founder, graduated from the Technical University of Sofia. She has experience in Supply Chain Management and Industrial Engineering at international companies and is an innovation consultant to the G7 in the field of Technology, Research & Innovation. She is a highly acclaimed social entrepreneur—European Winner of Social Entrepreneurship and Disability (2015) and winner of the EU Prize for Women Innovators under 30 (2017). Accomplishments in Europe, USA, Mexico, Singapore, China, and Japan, and her efforts to empower unprivileged children via tech, make her one of The Social Movers of the day (Agora+D). **Slavi Slavev** (BG), CTO and co-founder, has a solid background in Business Informatics and Smart materials. He has 7+ years of experience in commercial and business IoT, IT Innovations, and software development and design. With a focus on innovative IT products, he is always thinking at least four products ahead of current development. He is responsible for the technical development and prototyping of *BLITAB®*. Slavi is also in charge of production and distribution strategy of the company, with the goal of material and waste optimization.

ELECTRONICOS FANTASTICOS!

Ei Wada + Nicos Orchest-Lab

Mao Yamamoto

ELECTRONICOS FANTASTICOS! is a project where retired consumer electronics are resuscitated as instruments, new ways to play music are invented, and all kinds of people are invited to be orchestrated with the artist and musician Ei Wada.

Once we dismantle old consumer electronics, we realize the condensed wisdom of pioneers and the interesting and mysterious scientific/physics phenomenon hidden inside these objects. By transferring these into electronic musical instruments, a sound like a groan of electronics begins to echo. Old consumer electronics come to life as *yokai*—supernatural creatures from Japanese folklore, sometimes they appear as spirits of abandoned tools.

Currently, we have three main bases of creation: Tokyo, Kyoto, and Hitachi. More than 70 members have joined the project from diverse fields such as engineers, designers, musicians, and management members. In November 2017, under the most symbolic old radio tower Tokyo Tower, we staged the Electro-Magnetic Bon-Dance. The original purpose of the Bon Dance is to mourn the dead; here we extended its concept for the memorial service of electronics that have played a major role in economic growth. Elderlies who donated electronics came to see the concert; children fell in love with instruments, engineers who work at electric appliance companies were thrilled to create instruments.

Everybody is enjoying the project and is very surprised how daily items have been fantastically transformed. We dream and search for the answer to our question, what is the new folklore music of urban cities? We want to realize a festival that strongly contrasts with the efficiency and rationality of the AI era, to breathe life into trash that holds memories of someone, and to produce new instruments through ideas, fantasies, and technology with many people. As a next step we wish to develop a new relationship between objects and the human spirit. We believe that this project has the potential to establish a new culture after the fetish for capitalism.

Ei Wada (JP), born in 1987, is an artist / a musician. When he was a child, Wada was convinced that there was a music festival waiting for him under the gigantic tower shaped like the crab legs embedded in tube TV. But when his friend told him that there was no such place on earth, the dream bubble burst. Then Wada decided to make the music festival himself. **Nicos Orchest-Lab** (JP). A project team was formed for *ELECTRONICOS FANTASTICOS!* (nickname: Nicos), which started in 2015. New members coming from diverse fields have since joined the project and they improvise and exchange fantasies, knowledge, and techniques on a regular basis.

ELECTRONICOS FANTASTICOS!
http://www.electronicosfantasticos.com • https://eiwada.com

Fennec Turbine

Maxim Kuzin, ATOM

The *Fennec Turbine* is a state of the art and technology compact wind turbine with low noise, high safety, and long use. The heart of the technology is a unique hyperboloidal rotor which provides the lowest noise and vibrations. From the art point of view this is the new dimension for well-known works with hyperboloidal shells of famous Russian engineer, Vladimir Shukhov (1853–1939). The project moves his works from the static to dynamics. The *Fennec Turbine* is on the cutting edge between architecture and machines.

A lot of work was done to find the perfect form for low kinetic impact and low noise rotor whose productivity will be comparable to the modern wind turbine. Also, after the basic solution was found, much more work was done in the field of aerodynamical optimization to discover and determine the exact values of the parameters and reach the efficiency of the whole system, from mechanical power of wind stream to battery bank, of 17%, which is not far off the 22% efficiency of best huge wind turbines produced by Siemens and GE. And the *Fennec* project is just getting started, so there are a lot of improvements planned.

Maxim Kuzin (RU) gained an aerospace engineer degree from Moscow State Aviation Institute (MAI) since 2012. He is the CEO and founder of ATOM design bureau (CJSC "Experimental Design Bureau ATOM," *okbatom.com)*. From 2013–2014 he was the project manager and general engineer of Tram R1 *okbatom.com/projects/r1.* He is a college teacher and course author—Basis of the theory of mass production—at MAMI, Moscow Polytechnic University.

Fennec Turbine
http://okbatom.com/projects/fennec

FluidSolids®

FluidSolids AG

FluidSolids® is an innovation that makes it possible to transform organic waste into biocomposites. A technology platform designed for the circular economy. Material innovation justifies itself on the strength of added value: it makes products and applications more flexible, stable, ecological, and cost efficient. FluidSolids® meets all these requirements. With its excellent ecological and physical qualities, the new biocomposite FluidSolids® developed in Switzerland has the potential to capture the market in the near future as an alternative material for myriads of products made of metal, wood, and especially plastic. In comparison to other biopolymers, FluidSolids® does not compete with the food supply chain—it is made of by-products of renewable raw material. This highly versatile biocomposite is processable with the conventional techniques of industrial mass production. Enormous potential lies in its capacity to address the substantial environmental problem of plastic packaging waste. Its ecological qualities predestine FluidSolids® to be sought-after by sustainability managers worldwide to make environmental strategies become real.

Material

FluidSolids® is a biodegradable composite material. The components consist of renewable resources that are procured from industrial by-products, therefore no agricultural land is used. The material is nontoxic, odor- and emission-free and has a minimal carbon footprint. FluidSolids® features maximum surface finish and molding accuracy, a variety of surfaces, structures, and colors next to highly modifiable physical qualities and durability.

Processing

FluidSolids® is developed for industrial production and can be processed in various manufacturing techniques such as:
- Compression molding
- Extrusion
- Injection molding

Team: Philippe Jacot, Francesca Tancini, Martin Zürcher, Martin Meyer, Claude Denier, Andreas Herold, Gabriela Chicherio, Daniel Schwendemann, Peter Troxler, Pascal Stübi, Tobias Lutz

FluidSolids AG (CH). 2011: born in Zürich—1 employee experiments with first show-cases. 2012–2013: childhood years—2 employees prototype small series and realize a first customer project. Collaboration with the University of Applied Sciences Rapperswil. 2014–2015: school years—3 employees produce small series and prototypes of larger series. Collaboration with the Swiss Federal Institute of Technology. 2016: leaving parental home—5 employees produce large series and prototypes for mass production. Moving into the pilot plant in Zürich. 2017: studies—5 employees develop products and processes for mass production. 2018: work experience—6 employees ramp-up mass production.

Luca Zanier

Making Sense—Citizen Sensing Toolkit

Making Sense Team

Making Sense was a project funded by the European Commission within the H2020 Call ICT2015 Research and Innovation, under the CAPS "Collective Awareness Platforms for Sustainability and Social Innovation" programme. It was designed to show how open-source software, open-source hardware, digital maker practices and open-source design could be used effectively by local communities to appropriate their own sensing tools to make sense of their environments, and address environmental problems, mainly in air pollution, noise and nuclear radiation. Based on nine elaborate pilots in Amsterdam, Barcelona and Prishtina, *Making Sense* developed a toolkit for participatory sensing, aimed at deepening our understanding of the processes which can enable collective awareness for sustainability. The toolkit consists of hardware, software and guidelines.

The pilots have led us to develop a conceptual and methodological framework for participatory environmental maker practices, which we call "citizen sensing." This framework acts as a guide to providing citizens, communities, and middle ground organisations with the tools to enhance our everyday environmental awareness; in turn, these tools enable active intervention in our surroundings, change in our individual and collective practices, and ultimately, a hands-on transformation of the environment in which we live.

We have brought the learnings of the project together in a Creative Commons licensed, online and printed book containing the *Making Sense* framework, 25 tools, 6 cases, multiple portraits and seven key insights. The book was authored by 23 researchers and practitioners. Furthermore, we updated the Smart Citizen Kit and its platform. *Making Sense* ran between 2015 and 2018, and combined the efforts of Waag Society; University of Dundee; Fab Lab Barcelona at the Institute for Advanced Architecture in Catalonia; the Joint Research Centre of the European Commission; the Peer Educators Network, and University of Twente.

The **Making Sense Team** is comprised of activists, artists, critics, designers, makers, programmers, thought-leaders, and researchers that together have extensive exper-tise and hands-on experience in citizen science, as well as in developing technology for social innovation and empowerment, aka Digital Social Innovation. They have initiated and taken part in previous European projects that put people, their desires, needs, and abilities first in developing new applications of mostly open source hard-and software. *Making Sense* brought them together based on their complementary skills, and a shared passion for providing tools to enable communities to rise up and take ownership of their data, their city, and their collective future, based on a sound integration of public research and practice.

phosphere

Rhizomatiks Research, ELEVENPLAY, evala, Takayuki Fujimoto (Kinsei R&D)

phosphere is an exploratory harmonization of two distinct spaces—a dance stage and an installation component—into one performative spatial whole. Effective use of the space at Gallery AaMo necessitated a number of tricks to ensure that the installation retained its three-dimensionality even when viewed from myriad vantage points. For example, the dance component integrates a wire frame outfitted with multiple mobile cubes of varying size. The deft interaction of dancer movement along with laser projection amplifies the three-dimensionality of the entire space, imparting the viewer with a heightened sense of geometricity. Material physicality is given parity with optical and acoustical program modeling, and melds on an equal level to produce a wholly hybrid performative space.

The performance is divided into nine scenes. The omnidirectional projection accesses a scanned 3D model to produce three-dimensional video on stage that interacts with the dancers' bodies. It should be noted that although holograms have been the subject of diverse research since the advent of media art, insufficient scalability and security at the current stage have hampered their application in the realm of performance art. As such, the omnidirectional projection introduced in *phosphere* is noteworthy as a new approach to creating life-sized, three-dimensional video that moves onstage with the dancers. By processing in real-time all the elemental movements throughout the entire performance space with motion capture, it is possible to trace the movement of a dancer's hand, for example, and instantaneously convert that movement into three-dimensional video. In turn, this technology unlocks a new realm of creative possibility, and enables a groundbreakingly minute interplay between dance and video elements. In the pivotal culmination of this spatial interplay, objects are reduced to light, and the human body is restored to the transcendently ephemeral.

Stage director, choreographer:
MIKIKO (ELEVENPLAY)
Visual design, interaction design,
technical direction: Rhizomatiks Research
Light designer: Takayuki Fujimoto (Kinsei R&D)
Composer: evala
Cast: ELEVENPLAY

Rhizomatiks Research (JP) is a Japanese artist group led by Daito Manabe and Motoi Ishibashi. Rhizomatiks Research mainly takes up projects focusing on the field of research and development, and sets priority in opening a new expression for the future. **ELEVENPLAY** (JP) is a dance company directed by choreographer & art director, MIKIKO. ELEVENPLAY was founded by MIKIKO in 2009, and is composed of female dancers from a variety of genres. ELEVENPLAY's methods of expression are diverse, including stages, video works, and still photos. **Hironori Evala (evala)** (JP) is a musician and sound artist. Presents works of leading-edge electronic music and has concerts and installations in Japan and abroad. **Takayuki Fujimoto** (JP) a.k.a. Kinsei is a director and lighting designer. Kinsei began participating in projects of the performance art group Dumb Type in 1987. He also founded his own company, Kinsei R&D, in 2015.
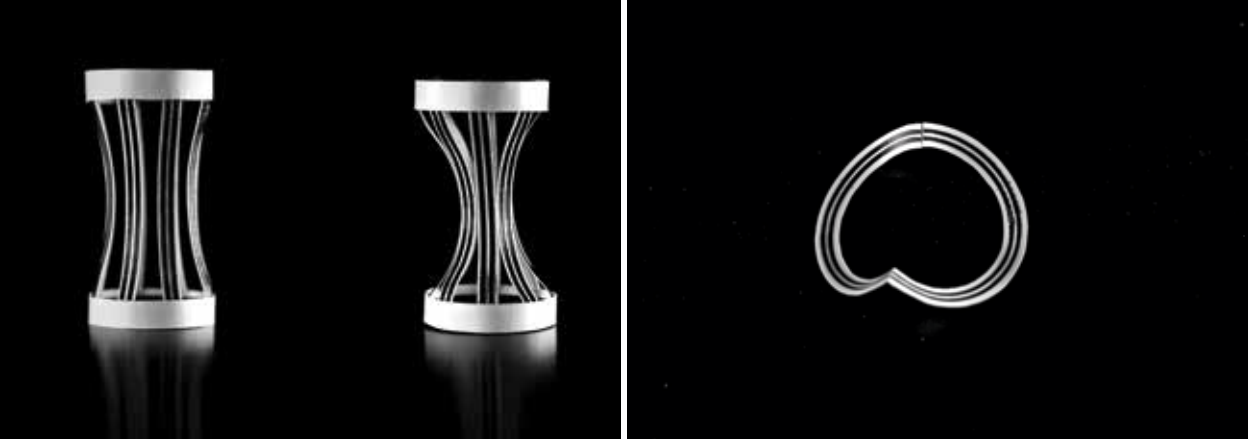
Printed Paper Actuator
Morphing Matter Lab at Carnegie Mellon University

Paper is a lightweight, abundant, and bio-degradable material. In addition, paper affords rich physical interactions including folding, printing, and painting on its surface. In recent years, paper has become increasingly interesting as a material in new interface design including paper robots, paper power generators, electronic pop-up books, animated origami, foldable artifacts, and so on. While many of these paper systems require customized actuation mechanisms, a missing component for paper-based interfaces is a low-cost, easy to fabricate, flexible to customize, reversible, and electronically-controllable actuator that is embedded within the paper. We present the design and exploration of a new electrical and reversible paper actuator printed by a FDM 3D printer. The actuator is composed of inexpensive materials, such as common paper and off-the-shelf thermoplastic printing filaments. The fabrication process is fast and straightforward, which requires a single layer print-

ing with a desktop FDM printer. Our paper actuator can be easily embedded into everyday objects to enable new types of paper-based shape-changing interfaces that exhibit motion, transformation, and rich interactivities such as pop-up books, toys, origami robots, and lampshades. *Printed Paper Actuator* is the project that achieves a low cost, reversible and electrical actuation and sensing method. This method that requires simple and easy fabrication steps enables our paper actuator to achieve different types of motion and even various electrical sensing abilities: touch sensing, slider, and self-bending-angle detection. We introduce a software tool that assists the design, simulation, and printing toolpath generation.

Morphing Matter Lab, Human-Computer Interaction Institute, Carnegie Mellon University
Director: Prof. Lining Yao
Design lead: Guanyun Wang
Design team: Tingyu Cheng, Youngwook Do, Humphrey Yang, Ye Tao, Jianzhe Gu, Byoungkwon An
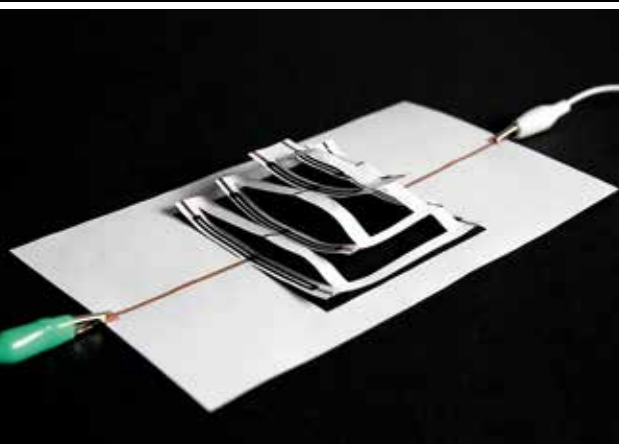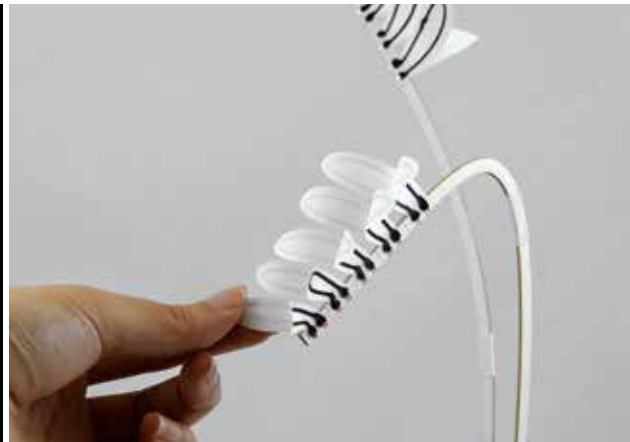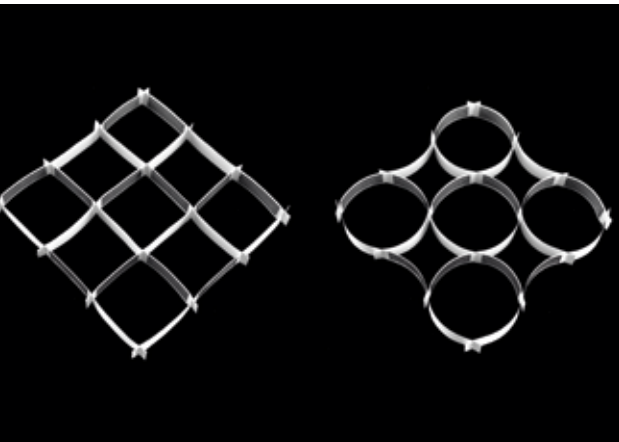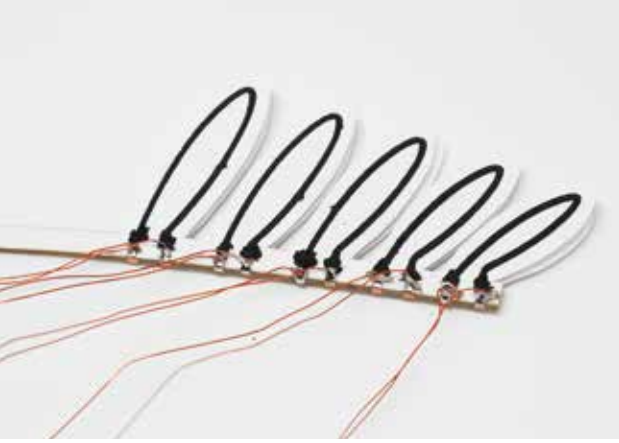
By developing transformative and adaptive materials, the **Morphing Matter Lab** designs interfaces that redefine the interactive relationship between human, other living organisms, environment, objects, and intangible data. We challenge the definition of traditional human computer interface that was constrained by a computer screen, and encode information and interactivity into physical materials. We call such interactive material "morphing matter." Lining Yao, a designer and Assistant Professor of Human-Computer Interaction Institute (HCII) at Carnegie Mellon University, is Director of the Morphing Matter Lab.

Shadertoy

Pol Jeremias Vila, Iñigo Quilez / Beautypi
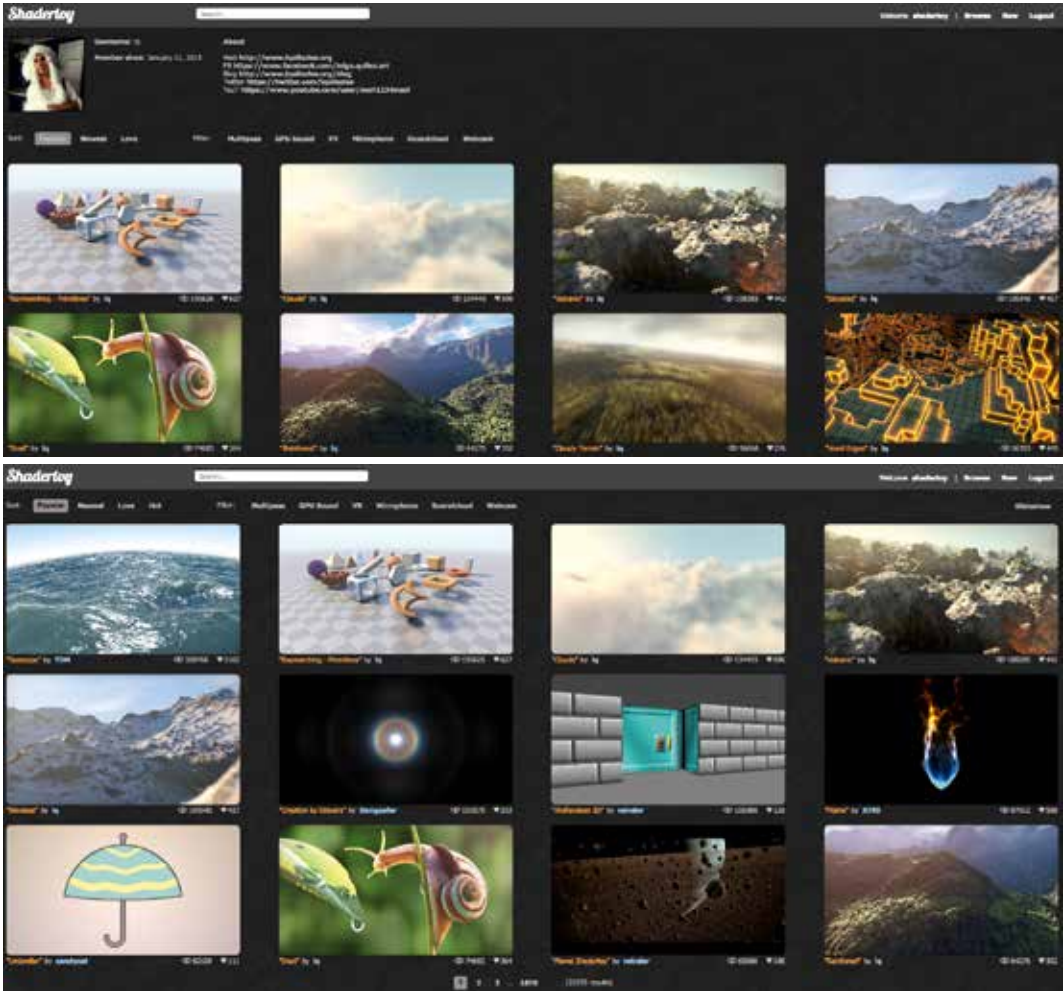
Shadertoy.com enables artists, programmers, technical artists, and professors from all over the world to create visuals with code, and then share their work while learning from other creators. The website provides a rich code editor, a powerful system of multi-pass rendering, a system to generate sound from code, virtual reality rendering, and a rich set of inputs to use in pieces such as textures, music, and video. Once a piece is submitted, both the animations and the code behind it are available for everybody in the community to explore, tweak, and learn from. The community side of the website allows for people to discover, rate, and discuss the work, making it a great place for learning. *Shadertoy* was created by Pol Jeremias Vila and Iñigo Quilez. It has been online since February 2013, and more than 85,000 pieces have been submitted by more than 50,000 creators. The contributors come from different backgrounds, such as the arts, game development, academia, and the film industry and represent over 100 different countries. And the best part is that *Shadertoy* is completely free.

STARTS Prize '18 · Honorary Mention
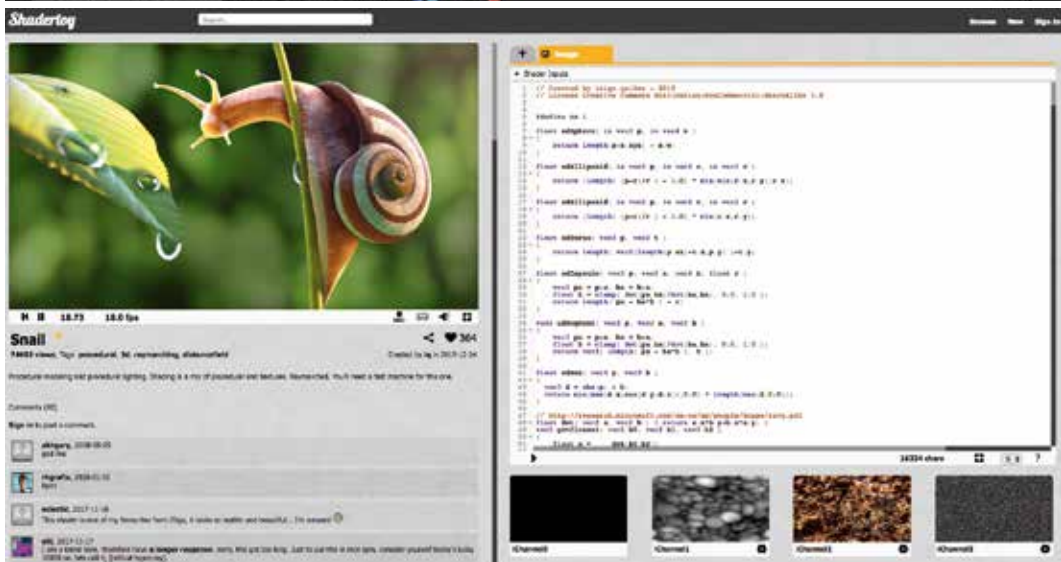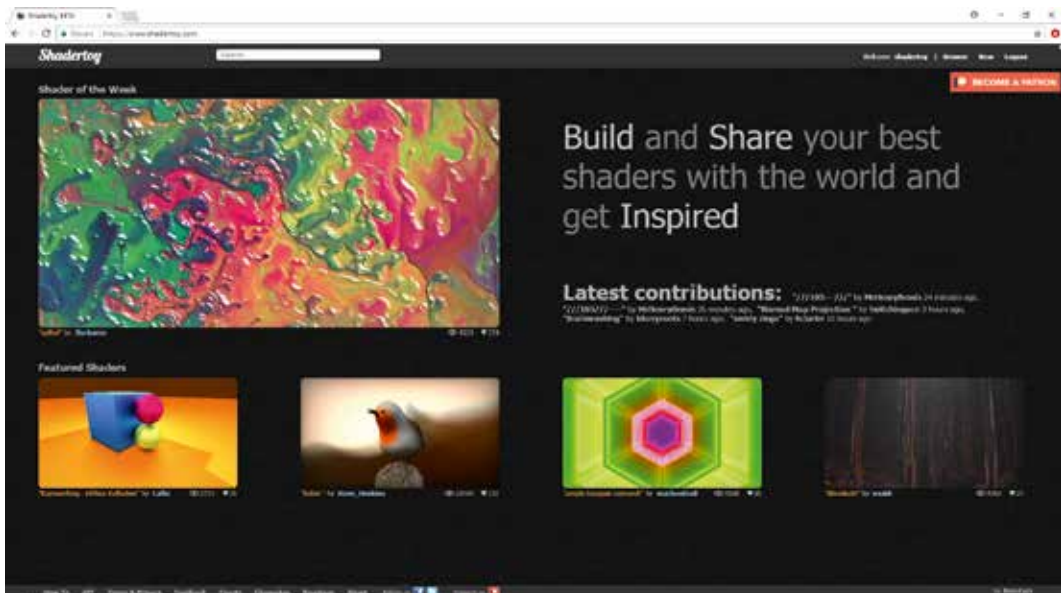
Pol Jeremias Vila (ES) lives for real-time graphics. He grew up in Barcelona, but his desire to research and create real-time graphics brought him to California in 2006. After completing his Master's degree in Computer Science at University of Southern California, he joined LucasArts where he worked on rendering technology for Star Wars 1313, as well as other games. Today, he works at Pixar Animation Studios where he develops rendering algorithms to help the artists make movies. In his spare time, Pol is a co-founder at *Shadertoy.com*. **Iñigo Quilez** (ES) started coding fractals and games at age 14. At age 18 he joined the underground community Demoscene where we learnt about the potential of using code and maths to build beauty through real-time rendering. After finishing his MS in Electrical Engineering Iñigo worked in virtual reality and real-time rendering of massive data sets in Belgium. Then he joined Pixar Animation Studios as a technical artist, doing whole production level work and also shot level work. Currently Iñigo works at Facebook as product manager and lead engineer of Quill and the platform's VR content and distribution efforts. In 2013 he co-founded the website *Shadertoy. com* together with Pol Jeremias. Both are co-founders at Beautypi.

The Institute of Isolation

Lucy McRae

The Institute of Isolation is an observational documentary that contemplates whether isolation or, more broadly speaking, extreme experience, can be used as a gateway to training human resilience. Set in a near future reality this fictional organization is a research and training ground, offering alternative methods to condition the body and adapt fundamental aspects of human biology.

The film references genetic engineering, space travel, sensory deprivation, and the changing relationship the body is forming with technology. "If one can be resolved in an environment of isolation, we can more quickly adapt and be buoyant when faced with the kinds of things we may overlook, once we've departed Earth's edge."

McRae (the protagonist) moves through a series of sensory chambers spending time in an anechoic chamber examining the psychoacoustics of silence or in a self–invented microgravity trainer conditioning the body for possible life in space. These fictional locations are used to make architectural inquiries into the role buildings could have on altering human biology on an evolutionary scale.

Lucy McRae (UK/AU) is a science fiction artist who straddles the worlds of fashion, technology, and the body. Trained in classical ballet and interior design her interdisciplinary work centers around the body. She combines storytelling with science to create speculative artworks. Her provocative and often grotesquely beautiful imagery suggests a new breed: a future human archetype existing in an alternate world. McRae encourages scientific conversation regarding the future of health, beauty, and science and provides a feminine point of view on emerging technology. She has spoken at international events, recently at MIT's *Being Material* conference on wearables, and her award-winning science fiction artwork has been exhibited worldwide.
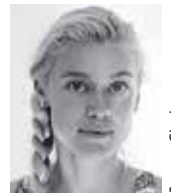
Jasper Clarke
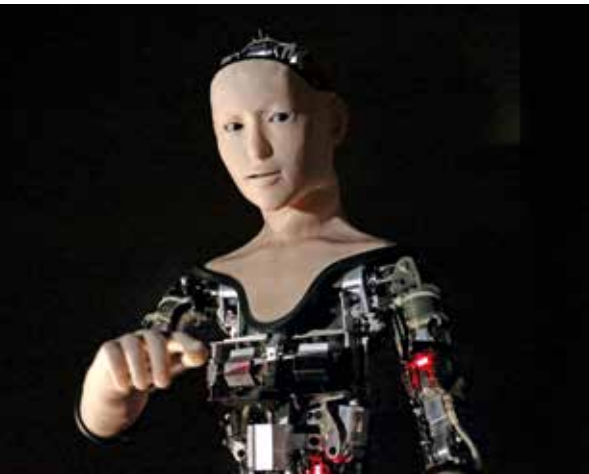
STARTS
PRIZE´18

NOMINATIONS

Alter

Kohei Ogawa, Itsuki Doi, Takashi Ikegami, and Hiroshi Ishiguro

Alter is a robot developed for the purpose of exploring what it means to be "life-like." *Alter* appears to be a machine that has been stripped bare. However, it expresses life-likeness through complex movements. These movements may look haphazard, but change constantly due to the underlying algorithm that mimics the logic of neural circuits of living things.

A moment of "life-likeness" emerges as you observe closely—what is that moment like? Attempt to find your own answer to that question. *Alter* does not move in ways that are determined beforehand; rather, the movements made by the entire body are created in real-time. Further-more, your responses are perceived by sensors and reflected into the movements. A central pattern generator (CPG) creates a basic rhythm that is cyclical, yet which gradually deviates from the original pattern. A neural network of 1,000 nerve cells is recreated on the computer, and *Alter* learns "life-like" activities based on signals sent from the sensors. *Alter* was born through co-operation between a researcher of androids, which are robots that appear identical to human beings, and a researcher of artificial life, who attempts to recreate life on a computer. Both researchers ask the same question: "What is life?"—but the hypotheses on that are different.

Kohei Ogawa (JP) is a robotics and AI researcher at Osaka University, where he has been an Associate Professor since 2017. He is working on a robotics and interaction study. **Itsuki Doi** (JP) is a sound artist and a PhD candidate at the University of Tokyo, Graduate School of Art and Science, where he also received his Master Degree of Science in 2015. **Takashi Ikegami** (JP) is a professor at the University of Tokyo. He specializes in artificial life

and complexity, and has been known to engage on the border between art and science. **Hiroshi Ishiguro** (JP) received a D.Eng. in systems engineering from the Osaka University in 1991. He is currently Professor at the Department of Systems Innovation in the Graduate School of Engineering Science, Osaka University, and Distinguished Professor of Osaka University. He is also visiting director (group leader: 2002–2013) of Hiroshi Ishiguro Laboratories at the Advanced Telecommunications Research Institute and an ATR fellow. His research interests include distributed sensor systems, interactive robotics, and android science.

Archive Dreaming

Refik Anadol Studio

Justine Emard

Commissioned to work with SALT Research collections, artist Refik Anadol employed machine learning algorithms to search and sort relations among 1,700,000 documents. Interactions of the multidimensional data found in the archives are, in turn, translated into an immersive media installation. *Archive Dreaming* is user-driven; however, when idle, the installation "dreams" of unexpected correlations among documents. The resulting high-dimensional data and interactions are translated into an architectural immersive space.

Shortly after receiving the commission, Anadol was a resident artist for Google's Artists and Machine Intelligence Program where he closely collaborated with Mike Tyka and explored cutting-edge developments in the field of machine intelligence in an environment that brings together artists and engineers. Developed during this residency, his intervention *Archive Dreaming* transformed the gallery space on floor -1 at SALT Galata into an all-encompassing environment that intertwines history with the contemporary, and challenges immutable concepts of the archive, while destabilizing archive-related questions with machine learning algorithms.

SALT Research: Vasıf Kortun, Meriç Öner, Cem Yıldız, Adem Ayaz, Merve Elveren, Sani Karamustafa, Ari Algosyan
Google AMI: Mike Tyka, Kenric McDowell, Andrea Held, Jac de Haan
Studio members: Raman K. Mustafa, Toby Heinemann, Nick Boss, Kian Khiaban, Ho Man Leung, Sebastian Neitsch, David Gann, Kerim Karaoglu, Sebastian Huber
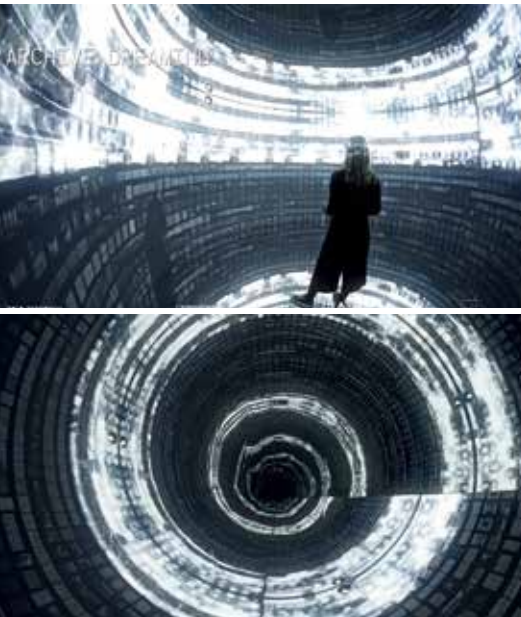
Refik Anadol (TR), born in 1985, is a media artist and director who lives and works in Los Angeles. He is a director of his own art&design studio and teaches at UCLA's Department of Design Media Arts. He is working in the fields of site-specific public art with parametric data sculpture approach and live audio/visual performance with immersive installation approach. Particularly his works explore the space among digital and physical entities by creating a hybrid relationship between architecture and media arts. He holds an MFA from University of California, Los Angeles in Media Arts.

DeepWear

Natsumi Kato, Hiroyuki Osone, Yoichi Ochiai

With the development of technology, computers are indispensable for various human production activities. Machine learning, which has been remarkably developed in the field of computer science in recent years, has attracted public attention as a technology to replace a part of human intellectual activity, and it is actively studied. However, garments that are essential to human beings are still being designed by humans. Also, the design of fashion brands is produced by several designers, so succession of technology and sensitivity is difficult. Therefore, we propose a computerized garment design created by cooperative work of human and machine intelligence using Deep Neural Network (DNN). This AI learns a certain brand design and generates new design images of clothing. From the generated image, the patterner creates the pattern and completes it as new clothes. We made clothes using the system *DeepWear* through a series of designs, such as design by deep learning, patterning by patterners, and creation of costumes. With this *DeepWear,* it is possible to inherit the design in clothing without depending on the designer.

Natsumi Kato (JP), born in 1993, is a designer and fashion researcher. She belongs to the Digital Nature Group at University of Tsukuba hosted by Associate Professor Yoichi Ochiai. She researches Fashion Technology in HCI and has published papers at top international conferences such as NIPS2017 Workshop and TEI2018. **Hiroyuki Osone** (JP), born in 1997, also belongs to the Digital Nature Group at Tsukuba University. His research is on Optics and HCI application of Deep Learning, presenting at international conferences such as NIPS 2017 Workshop, ACE 2017, and SIGGRAPH 2017. **Yoichi Ochiai** (JP), born in 1987, gained a PhD in Applied Computer Science from the University of Tokyo, Graduate School of Interdisciplinary Information Studies, in a record time of just 2 years; Assistant Professor at Tsukuba University, School of Library Information and Media Studies since 2015; Associate Professor since December 2017; Head of Digital Nature Laboratory, and CEO of Pixie Dust Technologies, Inc.

Digital Shaman Project

Etsuko Ichihara

The *Digital Shaman Project* proposes a new mode of mourning in keeping with the technical advances of today. A 3D-printed mask of the deceased's face is placed on a domestic robot installed with a motion program that mimics the physical characteristics—personality, speech, gestures—of that individual as if possessed by their spirit. The program functions for 49 days after the person's death (the traditional Buddhist period of mourning in Japan), during which time family members can experience simulated conversation with the deceased as if he or she were still alive. On the 49th day, the robot bids farewell to the bereaved and the program shuts down. The program is thus designed to allow the bereaved to spend 49 days with a robot seemingly possessed, like a medium,

by the deceased. The creator says that she developed the concept after her grandmother's death, when she personally experienced the function that a funeral serves as a mourning ritual for those left behind. The experiment is part of a research project on funeral rites as a window into the uniquely Japanese approach to life and death.

Etsuko Ichihara (JP), born in 1988, is a media artist/fantasy inventor. She graduated from Waseda University. Etsuko has been creating artworks that interpret Japanese culture, customs, and beliefs from a unique point of view, and present new, technology-based approaches. Thanks to their strong impact, these works have been introduced across a wide range of media. Main works include *Sekuhara Interface,* the *SRxSI system,* and the *Digital Shaman Project.* Ichihara's works were included in the Excellence Award at the 20th Japan Media Arts Festival, Entertainment Division in 2017. She has recently presented her works in exhibitions such as 'Digital Shamanism: Japanese Funeral and Festivity' at NTT InterCommunication Center [ICC], Japan Media Arts Festival.

GreenCake Block

Majd Almashharawi

For many decades, Gaza has been subjected to extreme situations: three wars in 6 years and under siege for 10 years. This has led to a product and material shortage—especially of construction materials—in the Gaza strip, where construction demand is annually increasing. Simultaneously, ineffective environmental protection policies in industry are having a major environmental impact. One of the major causes of this environmental catastrophe is coal combustion, which results in huge amounts of ash being disposed of in an environmentally-unfriendly way, and Gaza has more than 6 tons/week of ash!

GreenCake blocks are high-quality, low-cost, and environmentally friendly bricks made out of ash and rubble from the demolished houses in Gaza. Instead of importing building materials (sand and aggregate) from outside, people can rebuild their houses from existing raw materials as self-sufficient communities.

Majd Almashharawi (PS). A resident of war-torn Gaza, Majd observed the acute need for access to construction material in order to rebuild damaged buildings and infrastructure. She strove to meet this need by founding *GreenCake* in 2015—a company that creates environmentally friendly bricks from ash and rubble. She also developed *SunBox*—an affordable solar device that produces energy—to alleviate the effects of the energy crisis in Gaza, where access to electricity has been severely restricted—sometimes to less than three hours of electricity a day. She received her BSc in Civil Engineering from the Islamic University of Gaza. In 2018 she was selected as one of the most creative people in business. *https://www.fastcompany.com/person/majd-mashharawi*

NeuroSpeculative AfroFeminism

Hyphen-Labs / Carmen Aguilar y Wedge, Ashley Baccus-Clark, Ece Tankal, Nitzan Bartov

NeuroSpeculative AfroFeminism is a transmedia exploration told through speculative product design, emerging technologies, cognitive research, and transhumanism. Created by and for women of color, Hyphen-Labs presents a multi-layered possible future that transcends the constraints of the present; a realm which *The New Yorker* has called "another plane of consciousness." Hyphen-Labs and its collaborators designed a roster of products—such as earrings that can record police altercations and clothing that thwarts facial recognition—thematically rooted in security, protection, and visibility. The virtual reality experience is the first chapter of a science fiction story placing you in a "neurocosmetology lab" where black women are the pioneers of brain optimization. Here, instead of ordinary braids, customers are fitted with transcranial electrodes that allow access to a surreal digital temple blending the physical with the digital. Additionally, participants are invited to contribute to ongoing neurological and cognitive impact research studies as a way of bringing scientific exploration into public spaces.

Project creators: Hyphen-Labs: Ashley Baccus-Clark, Carmen Aguilar y Wedge, Ece Tankal, Nitzan Bartov
Technical director: Todd Bryant, Future Media Labs,
Artists/Designers: Ludmila Leiva, Halime Maloof, Lajune McMillian, Adam Harvey, Shannon Walsh, Mind Traveler Design, Michelle Cortese, AB[Screenwear]
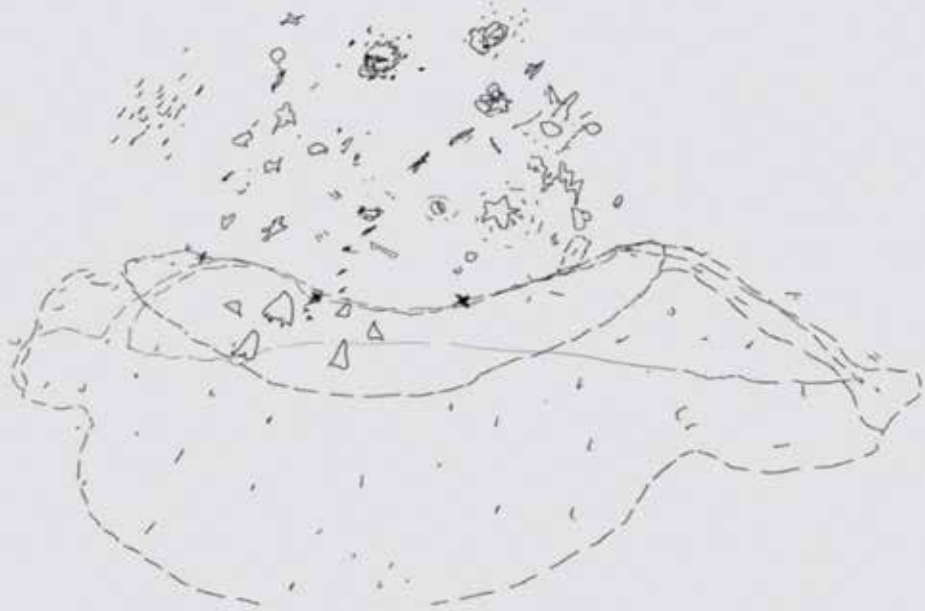Cast: Dyane Harvey, Ashley Baccus-Clark

Hyphen-Labs, an international studio specializing in the design of physical products, mixed reality experiences, and site-specific installations that influence the evolution of digitalism and technology. Hyphen-Labs creative director and co-founder, **Carmen Aguilar y Wedge** (US/MX) is a structural engineer, infradisciplinary designer, and artist, synthesizing design and technology

to develop immersive transmedia experiences. **Ashley Baccus-Clark** (US) is a molecular and cellular biologist and multidisciplinary artist who uses new media and storytelling to explore themes of deep learning, cognition, memory, race, trauma, and systems of belief. She is Director of Research at Hyphen-Labs. **Ece Tankal** (TR), co-founder, is a designer and new media artist interested in exploring interventions and interaction related to bodily, spatial, and temporal concepts through mixed media installations, virtual reality experiences, and speculative design. **Nitzan Bartov** (IL) is an architect, game-designer, and artist. She's a co-founder of n-Dimensional game studio, and a member of the Hyphen-Labs collective.

Norman

James Paterson

In 2017 I created a custom animation tool—for myself. A tool to enable and facilitate my imagination and flow. *Norman* is the animation tool I've always wanted. Named after Norman McLaren, a visionary Canadian animator, the tool is built in JavaScript, runs in a web browser, and lets me animate naturally in 3D using VR controllers. The project—initially funded by Google Creative Lab— is available as an open-source tool. This enables everyone to peek into the inner workings, see how it's made, and/or adapt it for their own purposes.

It makes the process of animating more like playing a musical instrument. For instance, one mode automatically creates new frames and advances through the timeline each time you make a mark. The user can get completely lost in the process of drawing through time and space, without having to manually control the timeline. *Norman* is an experiment in building a medium and using that medium to create concrete works, at the same time.

James Paterson (CA) is an artist and creative technologist whose work hangs out at the intersection of drawing, animation, and code. Each of these mediums offers limitless room for exploration, but when braided together they can open up wormholes of creative possibility. Weaned on books like *Neuromancer* and *Snow Crash,* James has been daydreaming about the emergence of spatial computing since childhood. Over the past few years he's finally gotten a chance to explore creative tools popping up in this new space, and experiment with building his own tools from scratch like *Norman*—an open source VR animation sketchbook which runs in the browser. Since 1999 Paterson has exhibited his work at galleries and museums all over the world.

Off Grid

Andrew Styan

Scientific research cannot exist in isolation from society. This is certainly true of renewable energy research where (at least in Australia) the imperative for environmental sustainability is frustrated by short-term economic and political demands. *Off Grid* responds to these issues. Researchers at the University of Newcastle are developing ground-breaking organic solar cell material that is low-cost, water-based, and printed with off-the-shelf technology on flexible film. *Off Grid* incorporates this film in the construction of three microprocessor controlled motorized blinds that are suspended in the trees in a local bushland setting. Each device acts autonomously and is powered by available sunlight, raising and lowering its blind to maintain its charge and taking no more sunlight than it needs. The reflective surface of the solar blinds mirrors the surroundings while recorded bird calls signal their presence and evoke the peaceful ambience of a natural environment—hinting that the devices belong there. Recorded statements on renewable energy and climate change from political leaders past and present break the peace when the blinds are lowered or raised.

Andrew Styan (AU), born in 1958, is a visual artist and researcher developing approaches for building "common ground" in an increasingly polarized world— creating a space for the conversations and ideas needed to address our common social and ecological crises. Building on a former career as an industrial metallurgist, his practice uses coding, data visualization, interactivity, and mechatronics to create objects, videos, and installations that often reference natural processes and scientific principles. His research explores how this practice can be applied beyond traditional art environments.

Pounding Heart

Yasmin Litschauer, Chiara Mazanec, Aisling Pircher,
Laura Scheidl, Johannes Zottele

The motivation for our *Pounding Heart* project was the desire to bring more art into our lives through the fusion of aesthetics and science. We wanted to create something that's appropriate for public spaces as well as the private sphere.

Our idea is to visually depict heartbeat frequency by means of a piece of sculpture. While participants wearing headphones listen to various acoustic situations, the change of their pulse is measured by an electronic device, which sends the registered data to the sculpture, where it's visualized with light. The concept video shows what the performance looks like and suggests what other areas of application there might be in the future.

After giving this plenty of consideration and staging a few brainstorming sessions in autumn 2017, we agreed on an experimental project. It's designed to be visually appealing and to enrich the lives of people in the future. We then began to develop storyboards, which we completed in early 2018. Videos were shot and animated films created. Then came the post-production. Finally—and just in time—we created an audiovisual form.

If and when the project actually comes to fruition, we'll produce a 30-centimeter-high fiberglass sculpture in the form of a slightly abstracted human heart, within which are LED fixtures that blink in time with the pulse of the individual linked up to the sculpture. The connection is made by a pulse measuring device that sends the information via Bluetooth to the LEDs' receiver. The sculpture could be set up in a hospital, a living room, or an office, whereby the particular purpose it serves there is up to the individual.

Yasmin Litschauer (born in 2000), **Chiara Mazanec** (born in 1998), Aisling Pircher (born in 1999), **Laura Scheidl** (born in 1999), and **Johannes Zottele** (born in 2000) attend Vienna's High School of Graphic Arts where they major in Multimedia. They're passionately interested in design and art as well as high-tech. After graduation, all of them plan to pursue creative studies.

Quantum Fluctuations

Markos Kay

Made as a series of virtual experiments, *Quantum Fluctuations* shows the complexity and transient nature of the most fundamental aspect of reality, the quantum world, which is impossible to observe directly. In the laboratory, elementary particles are observed by measuring the spoils of a proton collision and comparing the findings with data collected from supercomputer simulations. It is perhaps the most indirect method of observation imaginable, a non-representational form of observation mediated by computer simulations. In *Quantum Fluctuations*, particle simulations are used as the brush and paint to create abstract moving paintings that visualize the events that happen during a proton collision. In these virtual experiments millions of virtual particles interact to create stochastic structures and patterns that allude to quantum properties such as wave-particle duality, superposition, entanglement, and indeterminacy. The film begins with the underlying quantum fluctuations and interactions that occur in the background of a collision. It shows the intricate structure of the proton beams that collide to create an outflow of particle showers which create composite particles that eventually decay. These visualizations were created with input from scientists working on the Large Hadron Collider at the CERN, Geneva. By using computer simulations as an artistic tool, this conceptual reimagining of quantum theory aims to challenge our ideas of how scientific observation and knowledge are formed.

Markos Kay (CY/UK) is a digital artist, director, and lecturer with a focus in art and science. The aim of his work is to create public engagement with complex science. His art and design practice ranges from screen-based media to projection and print. Kay's work can be described as a series of experiments using generative methods which explore and abstract the complex worlds of molecular biology and particle physics.
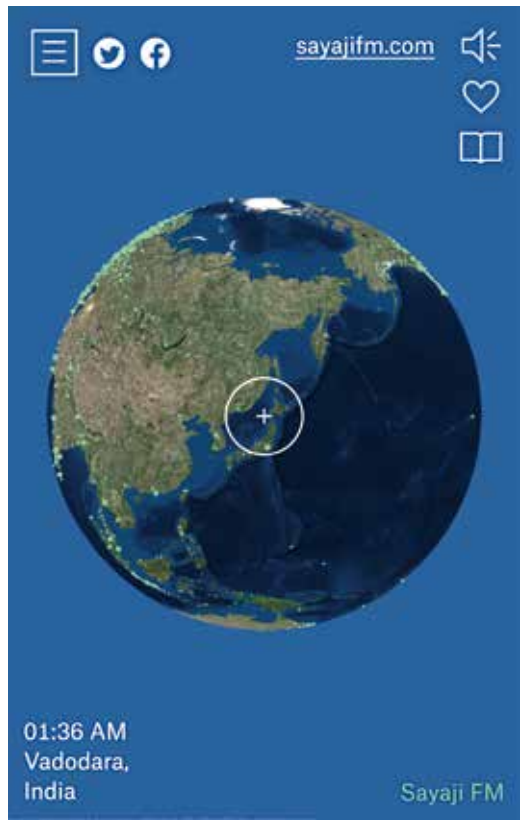
Radio Garden

http://radio.garden

By bringing distant voices close, radio connects people and places. *Radio Garden* allows listeners to explore processes of broadcasting and hearing identities across the entire globe. Thus, it celebrates human communication across borders through a growing selection of archival sources and live radio streams.

From its very beginning, radio signals have crossed borders. Radio makers and listeners have imagined both connecting with distant cultures, as well as re-connecting with people from "home" from thousands of miles away—or using local community radio to make and enrich new homes. The online platform *Radio Garden* introduces a new way to listen to radio online. By turning a 3D globe, you can tune in to 14,000 stations in more than 7,000 cities. At a time when most people tend to be focused on their own immediate environment, this project shows that radio has no borders and can unite the world.

Rapid Liquid Printing

Self-Assembly Lab, MIT + Christophe Guberan + Steelcase

In collaboration with Steelcase, we are presenting a new experimental process called *Rapid Liquid Printing,* a breakthrough 3D printing technology. *Rapid Liquid Printing* physically draws in 3D space within a gel suspension, and enables the creation of large-scale, customized products made of real-world materials. Compared with other techniques we believe this is the first development to combine industrial materials with extremely fast print speeds in a precisely controlled process to yield large-scale products. 3D printing hasn't taken off as a mainstream manufacturing process for three main reasons:

1) it's too slow compared to conventional processes like injection molding, casting, milling, etc.

2) it's limited by scale—although it's good for creating small components, it's not possible to produce large scale objects and

3) the materials are typically low-quality compared to industrial materials.

Rapid Liquid Printing addresses all of these limitations: it is incredibly fast (producing structures in a matter of minutes), designed for large-scale products (you can print an entire piece of furniture), and uses real-world, industrial-grade materials.

Self-Assembly Lab Team: Kate Hajash, Bjorn Sparrman, Schendy Kernizan, Jared Laucks & Skylar Tibbits
Steelcase Team: Yuka Hiyoshi, Rob Poel, Markus McKenna, Paul Noll, Sharon Tracy, Chris Norman, Charlie Forslund
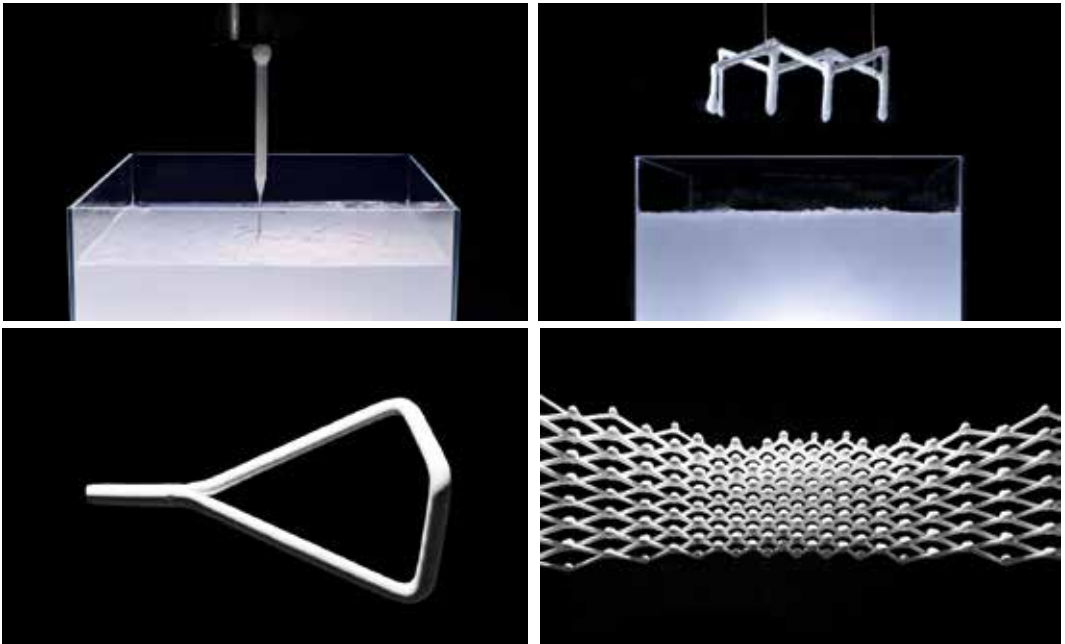

Christophe Guberan (CH/US) is a product designer who graduated from the École Cantonale d'Art de Lausanne ECAL and is the 2016 laureate of the Hublot Design Prize. He explores the possibilities of material interactions, digital manufacturing, self-assembly, and variable aesthetics in his creations. **Self-Assembly Lab** (US). Skylar Tibbits is a Co-Director and the Founder of the Self-Assembly Lab 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.

Rediscovery of Anima

Akinori Goto
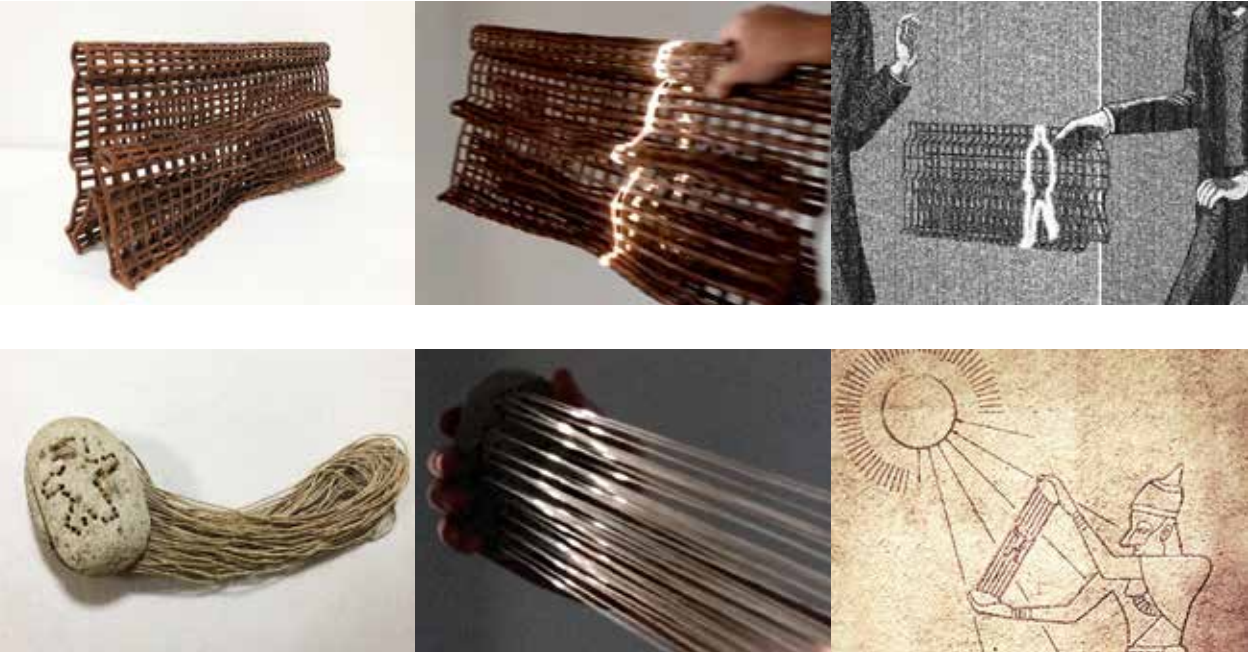
Bumpei Kimura

The aim of this project is to discover "anima," which could have existed, but did not exist. The word "anima" means "life" or "soul" in Latin, and "animation" derives from this word.

When I was creating the *Toki*-series, which uses a 3D printer to create time from movement and give shape to this "time," I realized that the reason this creation worked was not because the current technology exists. This creation could have existed a long time ago, just as long as the idea and inspiration existed. So I did not at all use the digital technology I have previously used and instead used technology that could have existed in the 19th century, when movies were born, as well as in ancient times, and tried to rediscover the anima. I explored what kind of connections the creation could have had with society if the anima did exist.

Through this I wish to once again pose the thrill and happiness one can feel from seeing movement, in the modern era, a time when technology is advanced and images are being consumed in various places.

Akinori Goto (JP), born in Gifu in 1984, is an artist. He graduated from Musashino Art University, Department of Visual Communication Design. His works, capturing invisible connections and relationships by combining cutting edge technology with methods and media that existed long ago, are now on exhibition. The main exhibitions in which he recently participated include Ars Electronica Festival 2017, SXSW ART PROGRAM 2017, and STOP LICHT exhibition 2017. His works are being publicly collected by the National Media Museum in the UK.

RidRoid "CanguRo"

Future Robotics Technology Center (fuRo), Shunji Yamanaka

As a partner robot, it never leaves the side of its master. It transforms into a vehicle that augments its master's physical functions—motional and sensory—and travels with the master as one. It is a machine lifeform produced from the latest robotics and AI technologies fused by product design. In robot mode, *CanguRo* operates like R2D2 in Star Wars. As a loyal partner, it follows its master. It encourages its master by AI-based communications, providing a heart-warming support, and even works as a terminal for communications with friends. Even when *CanguRo* is away, the master can summon it using a smart phone. *CanguRo* comes to its master by fully automatic operation based on scanSLAM—fuRo's proprietary SLAM technology that boasts world's highest-level performance. The transformation to ride mode is automatic. In ride mode, *CanguRo* works as an extension of the master's body. The master leans right and left to tell *CanguRo* which way to go and *CanguRo* actively transforms its body right and left. *CanguRo* has a built-in body-sonic system and outputs heartbeat-like pulses modulated by the travel speed, allowing the master to have haptic recognition of the current speed. In near-accident situations, a smart stop function automatically applies brakes.

Yusuke Nishibe

Future Robotics Technology Center (fuRo) at Chiba Institute of Technology was established in 2003. Led by Dr. Takayuki Furuta, a pioneering robot researcher, engineers and researchers have gathered to conduct research and development of key technologies of the next generation. With fuRo at the core, future technologies are being developed through collaborative efforts inside and outside of the university. Its famous achievements include the surveyor robots used in the Fukushima Nuclear Power Plant. **Shunji Yamanaka** (JP) is a design engineer and Professor at the University of Tokyo. He graduated from the Faculty of Engineering at the University of Tokyo in 1982. After working for Nissan, he founded the Leading Edge Design in 1994. His products have received several kinds of Good Design Awards, including the Gold Prize, and he has been selected for the NY MoMA Permanent Collection.
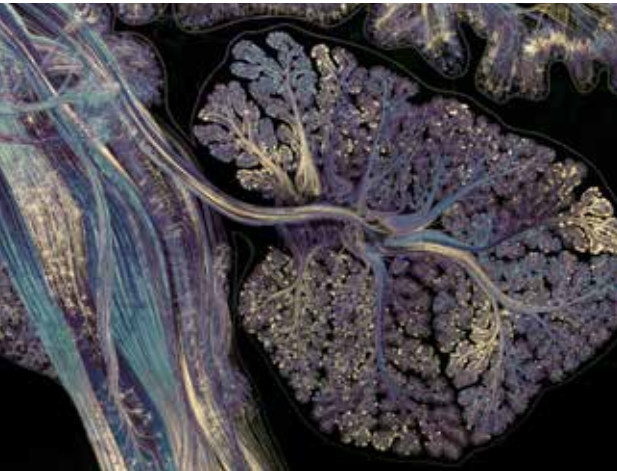
Self Reflected

Greg Dunn, Brian Edwards, Will Drinker

Dr. Greg Dunn (artist and neuroscientist) and Dr. Brian Edwards (artist and applied physicist) created *Self Reflected,* the world's most complex artistic depiction of the human brain, to reveal insight into the complexity of consciousness by revolutionizing the way in which the average person thinks about the brain. *Self Reflected* bridges the visual and conceptual connection between the macroscopic brain and the microscopic behavior of neurons by fusing neuroscientific data, hand drawings, algorithmic manipulation, optical engineering, photolithography, and gilding to etch half a million neurons into large sheets of gold. The result, a technique called reflective microetching, uses animations created through reflected light to create an ultraprecise depiction of the enormous scope of beautiful and delicately balanced neural choreographies designed to reflect what is occurring in our own minds as we observe this work of art. *Self Reflected* was created to remind us all that the most marvelous machine in the known universe is at the core of our being and is the root of our shared humanity.

Dr. Greg Dunn (US) is an artist who received his PhD in neuroscience from the University of Pennsylvania in 2011. While a graduate student, Dunn's artistic experiments demonstrated that the qualities of neural forms fit seamlessly into the aesthetic principles of minimalist Asian art. Greg invented the revolutionary technique reflective microetching together with **Dr. Brian Edwards** (US), an applied physicist who is the only recipient of Greg Dunn's prestigious honorary distinction Beast of Knowledge. An experimentalist with a capital E, Brian likes to make things work and doesn't care if he gets electrocuted, burned, or poisoned in the process. **Will Drinker** (US) is a filmmaker, documentarian, producer, puppeteer, ventriloquist, musician—a man dedicated to his craft who does not rest until the shot is got.

Social Wallet

Dyne.org

The once called *Freecoin* project, today renamed *Social Wallet,* is developed by Dyne.org Foundation as a result of 7 years of research, community co-design, and development within the works of two European projects on Collective Awareness Platforms for Sustainability and Social Innovation. Being activists and hackers at the core of the team developing the *Social Wallet,* this software was born as a reaction to the extractive monetary status-quo. A techno-political shift for the exodus from the fiat money system, the *Social Wallet* enables to build self-governance administrative environments promoting autonomy and freedom of economic interaction through the collective re-appropriation of the power of money creation. Designed and implemented with simplicity and configurability in mind, the *Social Wallet* is a collection of software components one can use to create complementary currencies and it is compatible with most blockchain-based systems. The codebase is modular in order to enable customization depending on different needs. It contains components to authenticate wallets, show statistics, encrypt and store data.

Written in Clojure, a LISP running on the JVM, it is easily deployable with a set of pre-packaged executables. All the code is open source and freely available for use and modification.

Dyne.org Foundation leads the blockchain research and development effort for the *D-CENT* project (Decentralized Citizens Engagement Technologies), designing three different complementary cryptocurrencies for communities in Spain, Iceland, and Finland (2013–2016). This research and development effort continued with the *Commonfare* project, an ongoing experience to build an information and management platform for the Commons, including money as commons. Here the concept of "Commonfare" or "Welfare of the Commons" is powered by a digital currency named "Commoincoin." In both projects the Dyne.org developers have adopted the *Social Wallet* as a collectively administered platform for grassroots communities to run their own clearing house, providing full transparency to participants and privacy-by-design auditability for cooperating institutions.

VFRAME
Visual Forensics and Advanced Metadata Extraction

Adam Harvey

VFRAME is a computer vision toolkit designed for human rights researchers and investigative journalists. It provides customized state-of-the-art tools for object detection and quantification, scene classification, visual search, image annotation for creating datasets, APIs to integrate with existing workflows, the ability to train new algorithms, and graphic content filtering algorithms to reduce exposure to traumatic content. *VFRAME* is currently working directly with the Syrian Archive project to establish the most effective and relevant technologies to accelerate their work on documenting the Syrian conflict. The *VFRAME* computer vision toolkit along with the methodologies and API examples will all be published as open source material as the project develops further. The main goals of this project are to provide innovative tools designed specifically for human rights researchers and to publish clear documentation and web-based demos that facilitate engagement with these issues from a wider and non-technical audience. Anyone with access to the project website will eventually be able to test the computer vision algorithms and explore the datasets created for *VFRAME* project collaborations.

Adam Harvey (US) is an artist and researcher based in Berlin whose work explores the topics of privacy, surveillance, and biometrics. Harvey is a graduate of the Interactive Telecommunications Program at New York University (2010) and the founder of the Privacy Gift Shop (2013). His previous projects include developing a proof-of-concept camouflage against face detection *(CV Dazzle,* 2010), thermally reflective clothing to evade military drones *(Stealth Wear,* 2013), and a low-cost WiFi geolocation spoofing device *(SkyLift,* 2015). His work has been featured widely in publications and is included in the permanent collection at the Victoria and Albert Museum in London.

Who Wants to Be a Self-Driving Car?

Joey Lee, Benedikt Groß, Raphael Reimann, MESO Digital Interiors,
David Leonard

Who Wants to be a Self-driving Car? is a data driven trust exercise that uses augmented reality to help people empathize with self-driving vehicle systems. We built an unconventional driving machine that lets people use real-time, three-dimensional mapping and object recognition, displayed in a virtual reality headset to navigate through space. Discussions around the future of mobility are currently focused, among others, on the possible large-scale changes posed by self-driving cars. Of particular interest are the questions rising around the many ways life is increasingly being affected by artificial intelligence and how we can learn to interact and understand these systems. In most cases, these challenges and questions are being addressed behind closed doors and in domain-specific contexts and are often inaccessible to the wider public.

Our goal is to bring people closer to these discussions by experimenting with new, immersive media experiences and interactive prototypes. What happens when people are able to empathize with self-driving cars? What might we discover when people are forced to "see the world" through sensors and make decisions based on data, probabilities, and statistics? And how can we use new technologies like VR to better reach audiences who might not typically engage with these topics?

Joey Lee (US) is a practicing interaction designer and creative technologist, formally trained as a researcher in Geography (BA, MSc), specifically in experimental methods for mapping and monitoring urban environments. **Benedikt Groß** (DE) is a speculative and computational designer who works antidisciplinarily. He holds an MA in Design Interactions from the Royal College of Art. **Raphael Reimann** (DE) is a multi-disciplinary urbanist. He quickly found the intersection of fast-paced digital services and persistent city infrastructure as an extremely interesting and challenging field. As part of moovel lab, they work in a creative environment collaborating with different people. moovel lab is all about exploring ideas and technologies related to what moves us in our urban surroundings. **MESO Digital Interiors** is a Frankfurt-based design studio creating digital systems for communicative spaces. Sebastian Oschatz, Theron Burger, Johannes Lemke, Sebastian Kujas, Timon Skerutsch, and Urs Hofmann formed the MESO team. **David Leonard** (US) is a journalist, artist, video director, writer, technologist, and educator based in Los Angeles.

5₁ **STARTS PRIZE '18** Jury

All nominations are judged by a jury to decide on the two prize-winning projects and up to ten Honorary Mentions.

Seiichi Saito, Kazuko Tanaka, Victoria Vesna, Alexander Mankowsky, Francesca Bria, Sophie Lamparter, Daehyung Lee, Andrej Heinke, Alex Verhaest

STARTS PRIZE '18 Jury

Francesca Bria (IT) is Senior Advisor and an expert on technology and innovation policies. She has a PhD in Innovation Economics from Imperial College, London and an MSc in Digital Economy from University of London, Birbeck. As Senior Programme Lead at Nesta, the UK Innovation Agency, she has led the EU D-CENT project, the biggest European Project on direct democracy and digital currencies. She also led the DSI project on Digital Social Innovation in Europe, advising the EU on digital social innovation policies. She has taught at several universities in the UK and Italy and she has advised Governments, public and private organizations, and movements on technology and innovation policies, and their socio-economic impact. Francesca Bria is an adviser to the European Commission on Future Internet and Innovation Policy and she heads the *DECODE* project, *http://decodeproject.eu,* on data sovereignty in Europe. She is currently the Commissioner of Digital Technology and Innovation for the city of Barcelona

Andrej Heinke (DE) is director for corporate foresight and technology strategy at Robert Bosch GmbH, a technology company based in Stuttgart. Previously he worked for the policy planning department of the German Foreign Ministry, Daimler AG, and Sony Corp., after having completed his studies at Harvard's Kennedy School of Government and Free University of Berlin with a PhD.

Sophie Lamparter (CH) is founder and CEO of DART, a testing lab bringing Design, Art, Research and Technology together to create clever human-machine interfaces. DART works with research projects and early startups, enterprises, and investors. Sophie Lamparter's passion is finding new ideas and talent with a creative approach to technology. She helps them scale their ideas and consults with organizations to challenge the status quo and launch new partnerships. Before starting DART, she was Associate Director at swissnex San Francisco, Switzerland's Innovation outpost in Silicon Valley. Sophie Lamparter has organized and curated interdisciplinary exhibitions and programs in media, digital and data arts interaction and game design, robotics, VR, AR, architecture, and urbanism. She debuted as a STARTS Prize juror in 2017 and has spoken at international events such as SXSW in Austin, Gray Area in San Francisco, and the Lift Conference in Geneva.

Daehyung Lee (KR), art critic, curator, and POWER LEADER 2012 acclaimed by Forbes Korea, has been curating contemporary Asian art for the last 17 years. He curated Korean Eye Moon Generation in 2009 and its nomadic show until 2012 at Saatchi Gallery in London. Currently he leads Hyundai Motor's ARTLAB and its global art partnerships that include MMCA's Hyundai Motor Series to Tate Modern's Hyundai Commission, LACMA's The Hyundai Project, Bloomberg Brilliant Ideas. Most recently, he curated "Counterbalance: The Stone and the Mountain" at the Korean Pavilion, La Biennale di Venezia 2017 and the Max Mara Coats! in Seoul, 2017. He holds an MA in Curatorial Studies from Columbia University in New York and has advised the interdisciplinary playground ZER01NE (2018), Gwangju Biennale (2016), Busan Biennale (2014), and Cheongju Craft Biennale (2013).

Alexander Mankowsky (DE), born in 1957 in Berlin, studied Social Science, Philosophy and Psychology at 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.

Seiichi Saito (JP), born in Kanagawa in 1975, began his career in New York in 2000 after graduating from Columbia University with a Master of Science in Advanced Architectural Design (MSAAD). Since then, he has been active in creative work at the Arnell Group, and returned to Japan upon being selected for the Echigo-Tsumari Art Triennial event. He produces works in the commercial art field which are three-dimensional and interactive while also being based on a firm grounding in logical thought that he cultivated through architecture. Seiichi Saito has won numerous international awards since 2009. He currently serves as Director of Rhizomatiks Co., Ltd., while also lecturing part-time at the Department of Graphic Design in the Faculty of Kyoto Seika University. In addition, he was a member of the 2013 D&AD Digital Design jury, the 2014 Cannes LIONS Branded Content and Entertainment jury, and the Good Design Award 2015-2017 jury. Seiichi Saito also acted as Milan Expo Japan pavilion theatre space director and Media Art Director at Roppongi Art Night 2015.

Kazuko Tanaka (JP) joined the marketing solutions company Hakuhodo in 1998 and started her career in account services, further expanding into new business development with leading foreign marketing firms—and at the same time having 3 children. Believing that working mothers, still a minority in Japan, need a place to share information and ideas, she started the "Hakuhodo Working Moms' Link" in 2012, networking across over 50 companies/ 500 working mothers through "Lunchcation—lunchtime communication" actions. Kazuko joined VoiceVision Inc. in July 2013 as one of its founding members, serving as community producer, and facilitates community projects for companies and local governments. Kazuko has also been on the joint team project between Hakuhodo and Ars Electronica—Ars Electronica Tokyo Initiative—and has worked four seasons at the Ars Electronica Festival's Future Innovators Summit.

Alex Verhaest (BE) is a filmmaker investigating the possibilities of interactivity and responsivity within cinematic arts. The basis of her films is a highly narrative script, existing or newly written, around which she creates a cinematic installation consisting of objects, videos and interactive videos. Her work operates on the juxtaposition of painting, video game and cinema extended. With each new film, Alex Verhaest dives into what it means to make films in a multi-screen post-Nintendo society. Her work has been selected by several arts and new-media festivals and competitions such as the FILE electronic language festival in Sao Paolo, the New Technology Art Award in Gent, TAZ Oostende and Arts Festival Watou, and her work is featured in the Akzo Nobel Collection. Alex Verhaest has won the prestigious Japanese Media Arts New Face Award as well as the Golden Nica in 2015 in Ars Electronica's Computer Animation/Film/VFX category.

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.*

STARTS PRIZE '18 Nomination Committee

All submissions are judged by a nomination committee in the order of their arrival.
The nomination committee selects up to 15 projects to nominate for prize consideration by the jury.

Francesca Bria (IT) is Senior Advisor and an expert on technology and innovation policies. She has a PhD in Innovation Economics from Imperial College, London and an MSc in Digital Economy from University of London, Birbeck. As Senior Programme Lead at Nesta, the UK Innovation Agency, she has led the EU D-CENT project, the biggest European Project on direct democracy and digital currencies. She also led the DSI project on Digital Social Innovation in Europe, advising the EU on digital social innovation policies. She has taught at several universities in the UK and Italy and she has advised Governments, public and private organizations and movements on technology and innovation policies, and their socio-economic impact. Francesca Bria is an adviser to the European Commission on Future Internet and Innovation Policy and she heads the *DECODE* project *(http://decodeproject.eu)* on data sovereignty in Europe. She is currently the Commissioner of Digital Technology and Innovation for the city of Barcelona.

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STARTS PRIZE´18 International Advisors

20 international advisors who have reputation and credibility in the field recommend projects and help to encourage a wider range of participants as well as a geographical and gender balance

Rama Akkiraju (US) is a Director, Distinguished Engineer, and Master Inventor at IBM's Watson Division, where she leads the AI mission of enabling natural, personalized and compassionate conversations between computers and humans. In her career, Rama Akkiraju has worked on agent-based decision support systems, electronic marketplaces, and semantic Web services, for which she led a World-Wide-Web (W3C) standard. Rama holds a master's degree in Computer Science and received a gold medal for highest academic excellence from New York University for her MBA. She is the 2018 President of ISSIP (International Society for Service Innovation Professionals).

Jussi Ängeslevä (FI) is a designer, an artist, and an educator. With 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, 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.

Camille C. Baker (CA/UK) is a Reader at the School of Communication Design, University for the Creative Arts, Epsom, UK. She is also a media artist-performer/researcher/curator who has done recent work in participatory mobile and sensor performance using wearable technologies, and is now exploring creative coding and electronic development for smart-fashion projects. Her other research interests have included: responsive interfaces and environments, video art and live cinema, experience design, telematics, networked communities, web animation, digital media curating, and music composition and performance.

Régine Debatty (BE) is a writer, curator, critic, and founder of http://we-make-money-not-art.com/, a blog which received 2 Webby awards and an honorary mention at the STARTS Prize. Régine Debatty writes and lectures internationally about the way in which artists, hackers, and designers use technology as a medium for critical discussion. She also created A.I.L. (Artists in Laboratories), a weekly radio program about the connections between art and science for Resonance 104.4 FM in London (2012–14), and is co-author of the "sprint book" *New Art/Science Affinities* published by Carnegie Mellon University.

Chiaki Hayashi (JP) is the co-founder and 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 registered creators, Fab-Cafe— 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 has recently founded the Hidakuma initiative, which aims to rebuild nature and promote local creativity.

Nadav Hochman (IL) is the director of a digital art initiative at The Tech Museum of Innovation (Silicon Valley, CA, USA), catalyzing new collaborations between global artists, industry, and research institutions. Prior to joining The Tech, Nadav Hochman led acclaimed projects in the startup industry, academia, and the art world. His work has been featured in media outlets such as *Popular Science, The Atlantic, Wired,* and *The Guardian.* Nadav Hochman holds a PhD in Art and Information Science.

Mohamed Hossam (EG) is a Media Artist, Art Manager, and Educator based in Cairo. He is the founder of Creative Coding Cairo and Cairo Media Lab, the Interaction Design Mentor at Fab Lab Egypt, a member of the Curatorial team at Cairotronica International Symposium for new media, and a speaker at Node Forum & Ars Electronica. He is starting work on his MFA in Computational Arts at Goldsmiths, University of London, 2018. He previously attended VVVV Academy in Berlin and studied Art Education at Helwan University. He was an EMUNI University Fellow in Slovenia and an award-winning artist at The Egyptian Academy of Fine Arts in Rome in 2017. He has exhibited at such venues as the National Museum of Wales, Cairotronica Symposium, Goethe Institute, and Opera House.

Maša Jazbec (SI) is an artist, curator, and academic researcher. She holds a PhD in human informatics from the University of Tsukuba and an MA in interactive art from the Interface Culture program at the University of Arts and Design Linz. She was a visiting researcher at Ishiguro Laboratory at ATR. She is engaged in the vision and execution of the Trbovlje New Media Setting project in Slovenia, and organizes events integrating science, art and technology at the new media culture festival Speculum Artium.

Brenda Katwesigye (UG) is the founder and CEO of Wazi Vision, a company that builds mobile technologies for diagnosis of eye defects and provides eyeglasses made from recycled material to school children in Uganda. She is passionate about creating sustainable solutions that make health care more accessible, available, and affordable. Brenda holds a bachelor's degree in Telecommunication Engineering and is a Certified Information Systems Auditor. Her passion for technology has led her to teach herself programming in Python, Java, and Ruby on Rails, which has furthered her mobile technology exploits. She is a calculated risk-taker with deep tech industry knowledge and has championed various mobile health care solutions.

Pascal Keiser (FR) has developed transversal projects between culture, digital society, and economy since 2003. He is co-founder and general coordinator of French Tech Culture— the national cultural and digital label of the French government—since late 2013,. He is co-founder of The Bridge, European accelerator of startups on crossovers, culture & technology in Avignon, and was director of Technocité Creative Industries Knowledge Center in Mons from 2007 to 2017. He also directed the digital program of Mons 2015, European Capital of Culture, and is a member of the steering committee of the new Horizon 2020 VERTIGO STARTS program.

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. Silvia 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, urban and infrastructure studies.

Kenric McDowell (US) has worked at the intersection of culture and technology for twenty years. His résumé includes work for Nike, Focus Features, HTC Innovation, and Google. He currently leads the Artists + Machine Intelligence program at Google Research, where he facilitates collaboration among Google AI researchers, artists, and cultural institutions. Kenric McDowell's work often draws from the history of culture and philosophy for metaphors and models that can be applied to emerging 21st century culture and technology.

Eurico Neves (PT) is the CEO and founder of INOVA+ S.A., a leading European firm in innovation services. He is also a venture capitalist who has created or supported more than 15 new firms in the ICT field since 1997. Before that, he worked for the European Commission in Luxembourg between 1994 and 1997 and participated in the team developing the European Green Paper on Innovation in 1995. He was a member of the Business Chamber of the Enterprise Policy Group of the European Commission, an advisory board to Vice-President Tajani on innovation and entrepreneurship matters, and a renowned expert and evaluator of many European programs in the field of innovation, entrepreneurship, and research.

Angela Oguntala (US) is a director at Greyspace, a design and futures consultancy. She has led foresight projects and advised global organizations from education to healthcare to various industries looking to understand the possible impact of near-future technologies and cultural shifts. Angela Oguntala previously headed up a lab in Copenhagen, a group focused on designing and experimenting around emerging technologies.

Erick Oh (US) is a Korean filmmaker / animator based in California, USA. His independent films have premiered and been honored at numerous international film festivals including Student Academy Awards, Annie Awards, Annecy Animation Festival, Hiroshima Animation Festival, Zagreb Film Festival, SIGGRAPH, Anima Mundi et al. After receiving his BFA from the Fine Art Department at Seoul National University and his MFA from UCLA's film program, Erick worked at Pixar Animation Studios from 2010 to 2016 as an animator and participated in Oscar-winning films such as *Inside Out* and *Finding Dory*. Erick Oh recently joined Tonko House, founded by Dice Tsutsumi and Robert Kondo, also former Pixar artists, to write and direct *PIG : The Dam Keeper Poems.* Erick Oh was also nominated at the Annie Awards 2017 for Best Animator.

Heritiana Ranaivoson (BE/FR) is Senior Researcher and Project Leader at imec-SMIT-Vrije Universiteit Brussel (Belgium). He is currently coordinating the EU Horizon 2020 *WEAR Sustain* project, which supports teams of artists and technologists to develop ethical and sustainable wearables. Before joining imec, he was associate researcher at Cerna, the Centre for Industrial Economics at Mines ParisTech (2008-2010). He holds a PhD in Industrial Economics from Université Paris 1, Panthéon-Sorbonne.

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 Satomi 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 co-author of the e-Textile online database "How To Get What You Want."

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 the A340, A350, and A380. In 2009 he joined the project team that created the award-winning Airbus Concept Cabin with its bionic structure. Bastian Schäfer is the project leader of the Bionic Partition project where he is focusing on generative design combined with 3D printing technology.

Jacques Vermeulen (BE) has been Nokia's Global Go To Market Lead for Smart Cities developing strategy, solutions, partnerships, and business since 2009. He is passionate to tap into his ICT, digital video, Smart City eco-system, and customer experience in order to help build sustainable urban development. Prior to his current role, Jacques Vermeulen was in business development and sales for Alcatel-Lucent since 1998, in R&D for speech recognition, as well as ICT lead in the early '90s for the world's first full digital audiovisual editing, production, and television broadcast company. This was followed by business development and sales for these systems in Europe. He received an MS degree in Computer Science in 1990 and resides in Belgium.

Filip Visnjic (UK) is a lecturer, curator, and a media technologist born in Belgrade and now living in London. He is the founder and editor-in-chief of CreativeApplications.Net. The site tirelessly beat reports innovation across the field and catalogues projects, tools, and platforms relevant to the intersection of art, media, and technology. In 2012, Filip Visnjic co-founded Resonate, a new educational platform and a festival located in Belgrade, Serbia. In the same year, he co-launched *HOLO,* a magazine about art, science and technology and is currently "director of platform" at FRM, working on a new canvas for digital art. He lectures at several UK universities.

Ars Electronica 2018

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

Organization
Ars Electronica Linz GmbH & Co KG

Managing Directors
Diethard Schwarzmair, Gerfried Stocker
Ars-Electronica-Straße 1, 4040 Linz, Austria
Tel: +4373272720
Fax: +4373272722
info@ars.electronica.art

Co-organizer Prix Ars Electronica Gala and Big Concert Night
LIVA – Linzer Veranstaltungsgesellschaft mbH,
Brucknerhaus Linz
Directors: Dietmar Kerschbaum, Thomas Ziegler

Co-organizer CyberArts Exhibition
OK Offenes Kulturhaus im OÖ Kulturquartier
Directors: Martin Sturm, Gabriele Daghofer

Co-organizer Campus
Universität für künstlerische und industrielle Gestaltung
Rector: Reinhard Kannonier

Directors Ars Electronica: Gerfried Stocker, Christine Schöpf
Head of Festival: Martin Honzik
Technical Head: Karl Julian Schmidinger
Head of Finance & Organization: Veronika Liebl

Production Team: Alex Anikina, Christl Baur, Klaus Birklbauer, Amelie Brandstetter, Bernd Breitenauer, Florina Costamoling, Florian Cossee, Melanie de Jong, Anna Eder, Chris Eichenauer, Stephan Feichter, Hannes F. Franks, Marion Friedl, Benedikt Foreith, Jessica Galirow, Violeta Gil-Martinez, Eva Maria Grabmair, Dominik Greuter, Jürgen Hagler, Randolf Helmstetter, Bernhard Hinterreiter, Ferenc Hirt, David Holzweber, Nikolaus Jungwirth, Isabella Kartusch, Andrea Kohut, Katharina Kolar, Katia Kreuzhuber, Bernhard Küllinger, Tobias Leibetseder, Juliane Leitner, Michael Lehner, Magdalena Lettner, Sami Mandee, Lisa Martl, Kristina Maurer, Felix Merten, Hans Christian Merten, Claudia Moser, Fabian Mühlberger, Manuela Naveau, Michaela Obermayer, Emiko Ogawa, Hideaki Ogawa, Matthias Paul, Franz Peterseil, Veronika Platz, Moana Ponesch, Christina Radner, Isabella Reder, Katharina Richtsfeld, Elena Robles-Mateo, Alexandra Röck, Michael Samhaber, Michael Sarsteiner, Sonja Schachinger, Miro Schawalder, Thomas Schlager, Julian Schmiederer, Daniel Schöngruber, Laurin Siehs, Markus Sigl, Killian Sochor, Karla Spiluttini, Nora Spiluttini, Sebastian Sprenger, Lukas Traxler, Jochen Tuch, Tatiana Villacob, Gohar Vardanyan, Joschi Viteka, Andreas Weilguny, Laura Welzenbach, Sophie à Wengen, Nina Wenhart, Michaela Wimplinger, Alexander Wöran, Viktoria Wöss, Carla Zamora Campos

Co-curators
Architects: Jürgen Haller, Christoph Weidinger
Ars Electronica Animation Festival: Christine Schöpf, Jürgen Hagler
Campus Exhibition, Interface Cultures: Christa Sommerer, Laurent Mignonneau, Tamiko Thiel, Michaela Ortner, Fabrizio Lamoncha

Campus Exhibition, Hexagram: Chris Salter, Anna Kerekes
Expanded Animation: Jürgen Hagler, Alexander Wilhelm
Himatsubushi Trail: Himatsubushi Research Team
Music Monday: Werner Jauk
Nightline: Salon 2000
Sonic Saturday: Volkmar Klien, Se-Lien Chuang, Andreas Weixler

Prix Ars Electronica 2018

Idea: Hannes Leopoldseder
Conception: Christine Schöpf, Gerfried Stocker
Coordination: Martin Honzik, Emiko Ogawa
Technical Management: Karl Julian Schmidinger
Finance & Organization: Veronika Liebl

Production Team: Christl Baur, Florina Costamoling, Ingrid Fischer-Schreiber, Marion Friedl, Jessica Galirow, Eva Maria Grabmair, Elmar Glaubauf, Jürgen Hagler, Kristina Maurer, Hans Christian Merten, Manuela Naveau, Tatiana Villacob, Christina Radner, Jutta Schmiederer, Nana Thurner, Joschi Viteka

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Ars Electronica Linz GmbH & Co KG

Managing Directors
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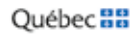
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