A New Digital Deal

ARS ELECTRONICA 2021

Festival for Art, Technology & Society

ARS ELECTRONICA

HATJE CANTZ

A New Digital Deal

How the Digital World Could Work

Edited by Markus Jandl / Gerfried Stocker

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Festival for Art, Technology & Society

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Gerfried Stocker (AT)

A New Digital Deal

How the Digital World Could Work

Digitization doesn't change our world but it does, however,
radically change HOW and WHAT we can or must deal with in it.

Having reached the third decade of the 21st century, a time when we've been promised self-driving cars, flying taxis, global prosperity and much more, when we've either wished for them or been afraid of all that, when the discourse about digital transformation is louder but also more confused than eve, we must rethink the foundations of the digital world — or what we believe it to be.

What began as a "tool technology" has become a central and transformative "cultural technology;" what was developed as a work environment has become a social habitat that is home to well over 4 billion people; and what began as a fun, harmless exchange of daily banalities and cat photos is now a political battleground...

But how we deal with it, how we brace for its impact, how we think about the social, economic, and political framework for it has not changed, and the changes we do see are still too hesitant and slow. Whether we like it or not, digital transformation is not just an appealing rhetorical phrase; it is a matter of defining reality. That the aforementioned deficits are evident and causing us substantial discomfort is one of the defining experiences of the current pandemic lockdowns.

A New Digital Deal — Are We Willing and Able to Act?

New deals are being called for everywhere these days, which speaks to a growing awareness of the inevitability of change. However, it is probably also a sign of our longing for easy solutions, of the ultimately naive hope that a few negotiations and agreements will be enough to put things back in balance. So what might a new deal look like, and what do we mean by "deal" in this context? Nothing will come of the new digital deal if we see it only as a quick horse-trading exercise; if we are only out to negotiate a few benefits for ourselves. Nor is it a deal that anyone can negotiate for us, because a crucial aspect of the New Digital Deal is the question of "how are we going to deal with it?" — in other words, the question of options for action, and the ability to act.

How can we "fix" the digital world, get a grip on our problems, while at the same time preventing the increasingly obvious advances of powerful political forces? What skills and expertise would that require? Where and how would we gain those skills, and where and how can we train the necessary experts? What roles will we play in the process?

Deal comes from divide*, and a New Deal means redistributing the cards!

Forty-two years after its founding, in the second year of the Covid pandemic, as the digitization of our world has intensified along with the hopes and fears we attach to it, Ars Electronica is also looking to its own roots.

Following last year's successful model, the Festival for Art, Technology and Society will become a global anchor. A platform for committed people who see the future not as a glimpse into the crystall ball of tech companies, but as the responsibility of our time. These people have begun accepting this responsibility as social activation and empowerment, as a source of analytical, corrective and alternative thought and action.

And so, once again, Ars Electronica in Kepler's Gardens will be a globally networked festival supported jointly by well over a hundred partners. Because just looking over the garden fences is not enough — we network, open and share our gardens as places for ideas, inspiration, thought-provoking impulses and role models.

(*) Middle English deel, from Old English dæl; akin to Old English dāl division, portion, Old High German teil part, https://www.merriam-webster.com/dictionary/deal

Formats and Programs at the 2021 Festival

Since its early days, Ars Electronica has always been about not only connecting a wide variety of people with different backgrounds from all over the world, but making the knowledge and ideas gathered within this network of artists, scientists, innovators, and policy makers accessible to the public. After all, improving and expanding knowledge-transfer between the domains of art, technology and society is the very core of the institution. Last year, right in the middle of the ongoing Covid-19 pandemic, the Ars Electronica Festival evoked this spirit of community and accessibility again on a truly global scale. Organized as a hybrid-event with a multitude of partner institutions around the world — our Ars Electronica Gardens — the festival connected the immediacy and physicality of an on-site festival with the possibilities and expanded reach of a digital one. Furthermore, it celebrated its inauguration at the new festival-site at JKU campus in Linz, a partnership that highlights our commitment to art, science and transdisciplinary approaches even further. After introducing JKU and the hybrid nature of the festival in 2020, this year it will build on this foundation by diving deeper into the topic *A New Digital Deal*. But what could "A New Digital Deal" be?

85 *Ars Electronica Partner Gardens* will present top-notch content — from conferences and on-demand content to online exhibitions — dissecting the challenges and possibilities of today's digital world from various perspectives. They will address issues revolving around digital capitalism, digital democracy, digital feudalism, digital humanism, digital renaissance, and digital working conditions. From a broader vantage, the networked festival combines the existing strategies of online interaction to spark collaborations and promote a discourse about these important subjects. Moreover, with the Festival Community Projects, we try to further explore the local-physical framework of the festival. Of course, we also have our well-known formats which, for the most part, deeply intertwine both domains. As a long-lasting collaboration with the Hagenberg Campus (University of Applied Sciences Upper Austria), *Ars Electronica Animation Festival* has become one of the most established formats at the festival. It offers a fine array of screenings at the JKU campus and the main square, as well as a diverse virtual program. Over the years, the University of Art and Design Linz has become another essential cooperation partner for the festival.

The extensive *Campus Program* will be hosted at their location under the title *Loops of Wisdom*. Our beloved Futurelab is celebrating 25 years of exploration, innovation, progressive thinking and pioneering research. During the festival, it will again open its doors — at the *Open Futurelab*, visitors can explore the Lab's exciting and cutting-edge projects. With the *Festival University,* we introduce a completely new format in collaboration with JKU. Its main target is to internationally promote the founding of a new technical university in Linz to develop state-of-the-art programs and educational structures that focus on digitalization, as well as the main challenges of our century. One of our highlights every year is the *Big Concert Night*, and Markus Poschner will once again conduct the renowned Bruckner Orchestra. Deconstructing Anton Bruckner's 9th Symphony, the event will explore correlations between sound and space. The evening will be rounded with contributions by artists like Andres Bosshard, Rupert Huber, and many others.

Exhibitions at JKU Campus

With over 364,000 m2 encompassing 27 buildings, a beautiful park and even a duck pond, there is plenty of space to get creative with this years' exhibition program. The *Theme Exhibition* will be closely linked to our festival topic *A New Digital Deal*and features — among others — an assortment of artworks from the European ARTificial Intelligence Lab, an EU program specifically designed to bring AI related scientific and technological topics to general citizens and art audiences. Straight from the lab — the *LIT-Projects*: our partners at JKU University will display a selection of the latest research by the Linz Institute of Technology (LIT), a further testament to the endeavor of both institutions to promote knowledge transfer and discourse between art and science. Finally, the *STARTS Exhibition* shows fascinating and prizewinning projects, which illustrate the paragons of creativity and innovation in the interplay between science, technology and the arts.

Conferences, Lectures, Workshops

Each day of the Ars Electronica Festival 2021 will be headlined by a particular keyword or set of tags, shifting the day's thematic focus towards a particular topic embedded within the festival theme. In a series of online and onsite sessions, on Wednesday's *Education Day* we will get a glimpse of how learning and teaching can empower citizens to critically question digital technologies and understand their deeper implications. Particular focus will be directed towards out-of-school learning and STEAM (science, technology, engineering, art and mathematics).
On Thursday, the annual *STARTS Day* explores the potential of art and artists as catalysts in innovation through online talks, panels, workshops and networking sessions, and take the audience on an online guided tour through the STARTS exhibition. Centering around topics of digital humanism, panels and talks, Friday's *Branch Magazine Symposium* will explore the delicate (im)balance between sustainability and growth, accountability and entrepreneurship, access, privacy, art, science, technology and society.
On Saturday, a series of panel discussions will be presented as part of the *European ARTificial Intelligence Lab Conference*. All panels will bring together experts in the fields of scientific research, technological development and art, in order to reflect critically on different aspects of the debate surrounding AI.
Sunday will see the festival site transformed by events explicitly centered around art and music, the annual *Prix Forum* and *Art Thinking Forum*, as well as a special JKU screening as part of the *Animation Festival*.

Meinhard Lukas (AT)

A New Digital Deal:

Technology for the People and by the People.

During opening remarks at this year's Salzburg Festival, philosopher Julian Nida-Rümelin made us sit up and take note. He boldly predicted the consequences of digitalization would be one of the three strong dystopias of our age. Nida-Rümelin quoted the late physicist Stephen Hawking and reiterated: "I fear that AI (Artificial Intelligence) may replace humans altogether. If people design computer viruses, someone will design AI that replicates itself. This will be a new form of life that outperforms humans".
Back in 2013, Oxford researchers Carl Frey and Michael Osborne forecasted yet another equally unattractive scenario in which computerization destroys job on scale not seen since the invention of the steam engine. Richard David Precht, a rock star of philosophy in German-speaking Europe, has taken ownership of a controversial viewpoint as he considers the idea to be a key motivator in arguing for an unconditional, basic income. "The nature of man is to work, create something, realize oneself. Sitting in an office from nine to five and getting paid for it is not!" he writes in his widely acclaimed book titled 'Jäger, Hirten, Kritiker'. Computerization puts other matters at stake. When it comes to free and uninhibited personal development, modern data processing threatens self-determination.
Our personal privacy becomes compromised when we are unaware of what kind of information is being collected and stored in regard to the way we behave. The German Federal Constitutional Court summed it up as early as 1983: "The right to determine the information oneself would make social order and the facilitating legal order incompatible as citizens no longer know 'who, what and when' or what is known about them."
Despite the underlying concerns, new technology in the form of robotics, brain-computer interfaces, and artificial intelligence — or, in other words, robotic vacuums, smart prosthetics, and virtual assistants such as Alexa — are already a part of our world and our everyday lives. These kinds of technological advancements have been impacting society and the business world on a massive scale. As early as the first half of the 20th century, economist Joseph A. Schumpeter declared innovation as a process of "creative" destruction. New things are created, but not without destroying the old things first. The manner in which the process of transformation will be managed is in the hands of humanity itself. In this case, Nida-Rümelin pleads for a renaissance of humanism, right here and right now: "It is about human authorship and the ability to be the author of your own story, both collectively and as an individual."

Digital Transformation:
The Opportunities and Challenges

For good reason, this year's Ars Electronica Festival calls for a “New Digital Deal” and invites us to re-think the very foundations of our computerized world.

Our radically transforming world is changing at a rate of speed never before seen during any other age of mankind’s existence. Computerization, climate change, global migration and demographics are driving forces behind era-defining transformational processes that have been further heightened by the global Coronavirus pandemic. Over the next 25 years and to a degree of intensity unmatched in human history, technological advancements will fundamentally alter the way people live and work.

While technological progress introduces us to a completely new dimension of how we should think and act when engaging in a man-machine relationship, at the same time we also have to grapple with the ethical questions, such as mankind’s role in a future society. When it comes to the digital revolution, we cannot dismiss apprehension; on the contrary, these hesitancies serve as crucial parameters to engage in discourse about a human-centered technological future. After all, computerization will transform many areas of our lives and undoubtedly impact our personal and professional existence as humans.

But how can we respond now to the opportunities and challenges of an increasingly complex, computerized, and fast-moving world? What kinds of tools and skills do we need? What kind of core values should we follow and live by?

From Da Vinci and Kepler —
The Virtues of “Uomo Universale”.

Master artist, architect, engineer, philosopher, and anatomist Leonardo de Vinci once remarked: “Wisdom is the child of experience”. As an “uomo universale” — a Renaissance man — Da Vinci, like other polymaths of his time, did something that nowadays seems like a lost art: In an effort to re-discover the world in a profound way, he drew on his extensive education, his critical mind, his creative powers, and his philanthropic approach. His approach, method and the medium were secondary as he had the unique ability to follow any path and master all techniques. He felt at home in many different disciplines — not the just the one.

The Johannes Kepler University’s namesake also embodies very similar virtues. Johannes Kepler is a self-described “polymath” and since 1969, his name has been synonymous with our university and the inception of the Faculty of Engineering & Natural Sciences. Over five decades later, the JKU has evolved true to Johannes Kepler’s spirit and is home to four faculties and four schools that complement each other. The JKU is home to the Faculty of Engineering & Natural Sciences, the Faculty of Social Sciences, Economics & Business, the Faculty of Law and, since 2014, the Faculty of Medicine. Our law students, for example, use the Ars Electronica Center as an interactive classroom to learn more about autonomous vehicles, including the opportunities, hazards, and how to interact with artificial intelligence.

In 2015, the JKU’s ongoing efforts resulted in creating the Linz Institute of Technology (LIT) as a university-wide institution designed to pool the JKU’s expertise in engineering and technology and support a more holistic approach to research. Innovation is put into action but not without taking its social impact, economic repercussions, health factors, and legal parameters into account.

A Dialogue of Disciplines

The recent Coronavirus pandemic has shined a light on the importance of rediscovering Kepler’s — and other polymaths’ — virtues. What began as a medical concern promptly became an unexpectedly complex crisis that impacted all areas of our lives and encroached on our deepest, most personal freedoms. We were forced to ponder a number of existential questions. Families became divided over the issue of Covid-19 testing, not to mention the issue of requiring mandatory vaccinations. The search for answers has led many people to turn to social media and a jungle of information, some of the information manufactured and influenced by conspiracy theorists.

Suddenly, science made headlines and captured the public interest. Never before has there been a more ideal time to examine social issues in full and facilitate progress, far removed from the confines of academic rituals and pecking orders. In order to effectively combat the pandemic, we were — and still are — calling on various experts ranging from physicians, pharmacologists, educators, and economists to legal experts and philosophers. This makes the individual’s area of expertise in a certain discipline just as important as interdisciplinary dialogue and can we resolve an issue, such as mandatory vaccinations, without considering potential consequences in terms of labor laws? And, what happens with those who have illnesses that prevent them from being vaccinated? The list is potentially endless, demonstrating that several areas of expertise are needed in order to address complex problems. Finding solutions requires a holistic perspective and dialogue between disciplines.

Naturally we need experts, however in addition to their respective fields of specialization, these experts should also possess a fundamental understanding of our world in all of its historical, political, ethical and social contexts. To achieve this, education as a whole — higher education in particular — is of paramount importance.

The “uomo universale digitale”

(Educational) spaces for the polymaths of our time — let's call them the "uomo universale digitale" — need to foster critical thinking, social intelligence, interdisciplinary communication skills, and creativity. This is the only way we can help young people to become educated individuals and acquire the skills and savviness needed to effectively embrace the opportunities and challenges of a digital age. By establishing the new Technical University in Upper Austria, we have a unique opportunity to create a university for the 21st century; one that stands for human-centered technological innovation.

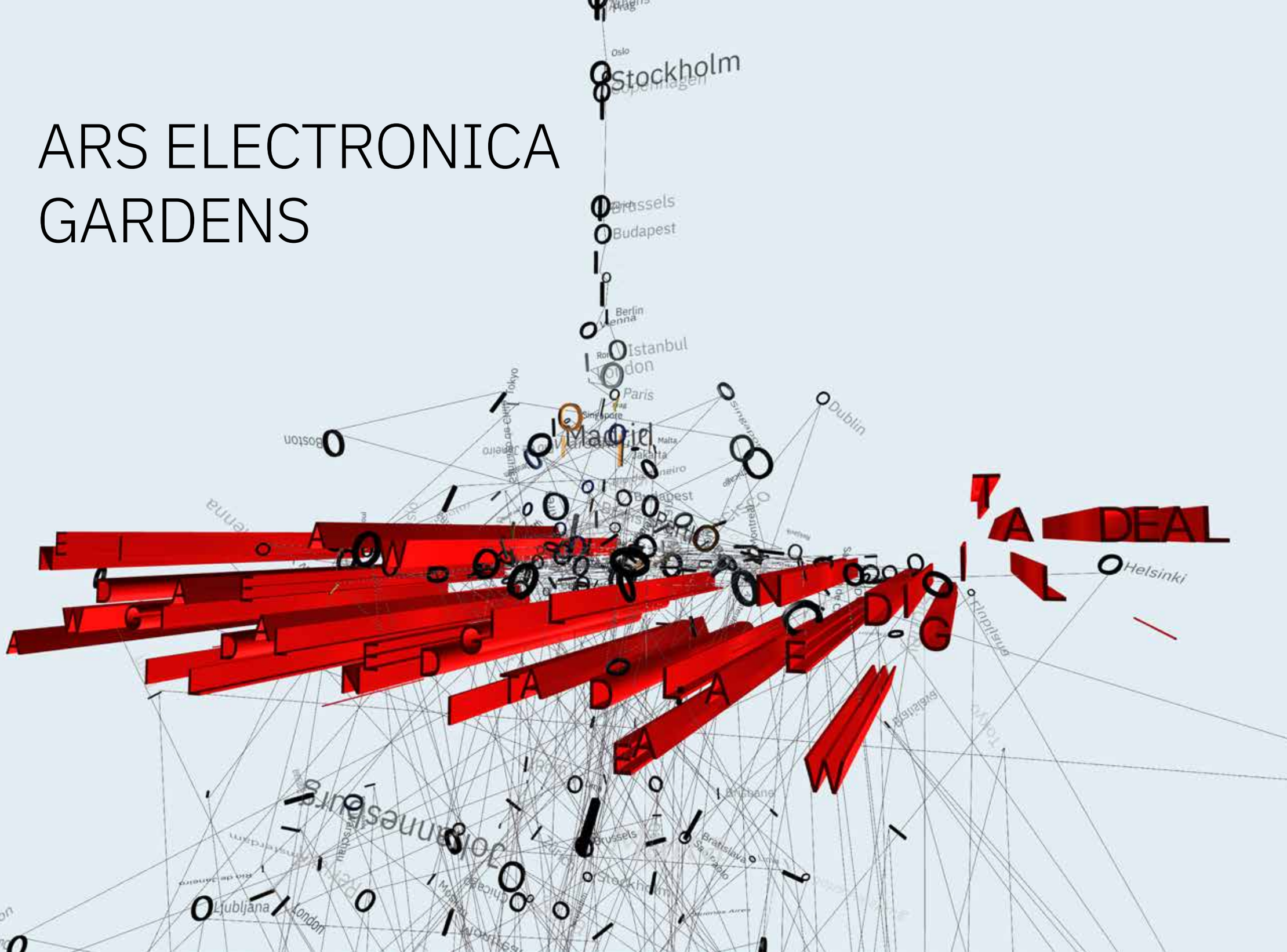
In the end, what would a "New Digital Deal" look like? How can we effectively renegotiate our future?

If we take a look at the "deal" from two different perspectives, on one hand we realize we cannot forego communication between the disciplines; we must move away from one-field specialization and tunnel vision and move toward true dialogue and an integrated, holistic approach to research. This is the only way can we meet the challenges of our time. Computerization facilitates communication, networking, and sharing information on a grand scale. This is something we have to take advantage of!

On the other hand, continual discourse is needed in order to focus on the type of education we need in a digital age and ultimately become the "uomo universale digitale". In this context, (educational) space for young people is of utmost importance.

Let's consider the "New Digital Deal" as an opportunity to restructure the digital map. It is about re-distributing — even re-shuffling — the deck with a completely different sense of awareness. May the 2021 Ars Electronica Festival in Kepler's Garden at the JKU campus — and in all of the gardens worldwide — serve a space to support these ideals. It's high time!

ARS ELECTRONICA GARDENS



ARS ELECTRONICA GARDENS

As a platform for art, technology, and society, Ars Electronica has always understood bridge-building between disciplines and industries not as a burden but as a promising and essential task. The extent of Ars Electronica's collaborative networks became more visible than ever before during the pandemic. It might seem ironic that it took travel restrictions and lockdowns, of all things, to make the festival in Linz go global. In 2020 we started this experiment, exploring what a global hybrid festival could look like, and have been rewarded with immensely positive feedback from our partners as well as audiences. This trust, besides the ongoing crisis our society finds itself in, led us to build on this exercise and challenge our understanding of what a decentralised festival could look like. Our immense gratitude goes out to all partners who have spared no effort to join us this year with fresh ideas and a new understanding of digital culture.

We have developed a participation system with a partnership model behind it, focusing especially on creating more visibility for the whole festival program through communication strategies and media cooperation that reach new audiences, thereby broadening the reach of the media arts community worldwide.

The program of the Festival Gardens takes place in a hybrid format, connecting events in their respective locations with another central venue of this festival, the internet. Gone are the days when activities on the net were mainly for promotion—in the future, it will be about the interaction of programs in real and digital space. We spend the winter months developing innovative formats and new, accessible forms of interaction. Many more people should be able to experience a festival in the future, and they should be able to do so in an entertaining and appealing way. The festival is many things at once: a "sandbox" for the innovative use of interactive tools, a way to test new mediation concepts, and a context for developing hybrid formats. Our ambition is to become the role model of an international festival of the 21st century.

Our endeavour is to anchor the online component in the real world, to find the true potential in bringing together the digital and physical realms. Ars Electronica's international garden network is also joining forces synchronously and in parallel to create the "Symphony of Absence." This title stands for a very special place in Kepler's Garden in Linz: The Keplerhall. It is dedicated exclusively to the contributions and programs of all those partners who run their own festival gardens and are unable to come to Linz. A place that will be shaped by hundreds of music stands and empty chairs, as if the musicians of an orchestra were on break and the sheet music might transform into living telematic windows into the world of the festival network. Each individual orchestra seat evokes the wonderful cultural diversity of this community that has such a formative impact on the transformation of our city during the festival. All together, they form a symphonic kaleidoscope of people worldwide with a similar attitude, who see themselves as global citizens and convey a common worldview that is nourished by our diversity and formed collectively.

ARS ELECTRONICA GARDEN

ABUJA

Arojah Royal Theatre (NG), Assitej Nigeria (NG), Korean Cultural Centre Nigeria (NG), Creative Art and Visual Art Imagery (NG)

Abuja Ars Garden 2021

A Peep into their Future

Abuja ARS Garden 2021 is targeted at 40 young persons of two age brackets, 6—10 and 11—15 years, and designed to feature a fusion of creative and innovative (technological) engagements that help unlock the imagination of these young participants, to imagine what their future will look like, and to begin to engage in creating that future. With Storytelling, we take the participants on a journey through the planets, especially planet EARTH, highlighting the basic features of the planet, after which we then engage on them on what they hope to see in their ideal planet (of the future) and the role they hope to play in that future (as EXPERTS OF THE FUTURE). This will give a peep into their minds and by extension their future.

With this done, we would follow other aspects of the Experts of the Future Workshop step by step to create a more fun learning environment for the participants.

© Arojah Royal Theatre

GARDEN PROFILE

FORMATS

- ○ Exhibition
- ○ Lecture/Conference/Talk
- ● Workshop
- ○ Journey
- ○ Performance/Concert/Event
- ○ Film/Animation

COMMUNICATION STRATEGIES

- ● Social Media
- ○ Online participatory tools
- ○ Participatory virtual environments
- ● On-demand content
- ○ Experimental tools
- ○ Streaming

ARS ELECTRONICA GARDEN
AMSTERDAM

JetBrains Techlab (NL)
Collaborative Nature of Robots

JetBrains Techlab is an educational gallery where humanity and technology meet. In the 400 m² main exhibition area you can become familiar with our main themes (Robotics, AI, 3D printing, and AR & VR) through different exhibits and installations. The mission of JetBrains Techlab is to give every child in the world the opportunity to become an engineer of the future. It aims to raise children's awareness of technology, help them learn how to control it, and inspire them to create. As a company focused on the future of technology, JetBrains has always been interested in higher education because that is where the foundation for great engineering often lies. Because the company believes that passion for technology begins at an early age, it was essential to create an educational and interactive experience for a younger audience. This was the key motivation behind the creation of JetBrains Techlab, where families can experience technology firsthand. During this event, we would like to give you a brief overview of our current exhibitions with the help of a gallery host.
Following this, you will learn more about robots and their collaborative nature during a short lecture from one of our robotics engineers. In addition to this, there will be a short demonstration of collaboration with various types of robots (such as humanoids, manipulators, etc.) that we showcase in our gallery.

GARDEN PROFILE

FORMATS
- ○ Exhibition
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- ○ Film/Animation

COMMUNICATION STRATEGIES
- ● Social Media
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- ○ On-demand content
- ○ Experimental tools
- ● Streaming

ARS ELECTRONICA GARDEN
AMSTERDAM

VU — Vrije Universiteit Amsterdam (NL)
Hybrid Forms Lab

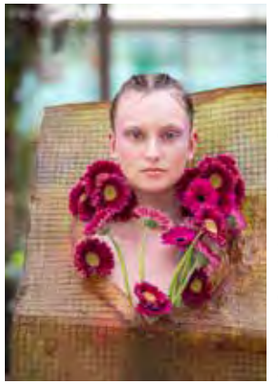
Presenting an academic artscience laboratory at Vrije Universiteit Amsterdam

Presenting Hybrid Forms Laboratory: an artscience laboratory situated within the Faculty of Science of Vrije Universiteit. HF Lab serves as a laboratory for scientists and artists to collaborate on joint research. The lab is open to artists to incorporate scientific methods, and for students from all science and humanities disciplines — including art and design academies — to work on projects which all serve as test beds to develop transdisciplinary education and research.

We showcase several projects in artscience to illustrate the breadth and depth of this unique laboratory and its occupants, dealing with voodoo in Senegal, black holes merging, artificial intelligence and dancing plants.

Raoul Frese, Manthia Diawara, Spela Petric, Dmitry Gelfand, Evelina Domnitch, Iza Awad, Christiaan Zwanikken Vrije Universiteit Amsterdam

© Christiaan Zwannikken. Photo: V2



© Iza Awad Organic Couture Fashion Show by Maarten Nauw

GARDEN PROFILE

FORMATS
- ○ Exhibition
- ○ Lecture/Conference/Talk
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COMMUNICATION STRATEGIES
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- ○ Online participatory tools
- ○ Participatory virtual environments
- ● On-demand content
- ○ Experimental tools
- ○ Streaming

This Garden is part of the STUDIOTOPIA programme.

ARS ELECTRONICA GARDEN

AMSTERDAM/MADRID

Waag (NL), Universidad Politécnica de Madrid (ES)

Robots Are People Too

Collaborative Robotics

Robots Are People Too will provide a sneak preview into an exploration of collaborative robotics within the VOJEXT project. In a world where industrial robotics remain vastly hidden from the public eyes, this S+T+ARTS DIH project addresses some of the more delicate societal implications of new emerging technologies. The role artists have in the project, notably, signifies a rethinking of the value systems embedded in industrial robotics. They brought to light the underlaying technological agencies, as well as the fragile relations between robots, workers, developers and business. During the event, the audience will be remotely invited to see how artists and technologies are using and developing their robots. Following live demonstrations, participants will discuss insights from the project.

Event organizers: Waag (NL) and UPM (ES). The VOJEXT project has received funding from the European Union's Horizon 2020 Research and Innovation Program under grant agreement No 952197.

© Madeline Gannon | ATONATON

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GARDEN PROFILE

FORMATS

- ○ Exhibition
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COMMUNICATION STRATEGIES

- ○ Social Media
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- ● Streaming

This Garden is part of the STARTS programme.

ARS ELECTRONICA GARDEN

ANDES

The Chilean Corporation of Video and Electronic Arts (CChV) + CL

Cycles

For this Ars Electronica 2021, we have decided on autonomy as our main concept, as we believe it can be the vehicle to move us towards a more harmonious way of life that will protect our environment. We understand autonomy as the capacity to make informed, uncoerced decisions. It requires our active participation and a deep reflection. Organizations and individuals being able to make the right choices will be crucial for our species.

Rational autonomy entails making your own decisions, but it cannot be done in isolation. Cooperative rational interactions are required to develop and exercise our ability to live in a world with others in harmony. In a slightly different approach autonomy is normally defined from a human resources perspective, where the need to receive supplies makes us dependent on a provider. This dynamic has been quite normal for us in recent years, but what if our suppliers are not to be trusted anymore?

They are no longer reliable in their task to care for the environment and society. As the economic system fails, we have to deconstruct ourselves in a search for survival. It is time to look around with different eyes, to rediscover our search for freedom. Perhaps it is just a matter of changing our suppliers. That's the power of autonomy. Other forms of life are around us and constitute our food: plants, animals, bacteria and fungi are indeed very good suppliers, but only an informed and uncoerced decision can make the change.

Director: Fabian Andrade
Art curator: Enrique Rivera
Producer: Josefina Lagos
Workshops: Valentina Rojas
Artist: Ignacio Cuevas | White Sample
Drone Operator: Angel Quinteros
Performance: Comparsa ChinChinTirapié
Backend developer: Antonio Caceres

The participation of artists and gardens in Chile is the result of a collaboration between Ars Electronica and the Ministerío de las Culturas, las Artes y el Patrimonio and the Ministerío de Relaciones Exteriores | Gobierno de Chile.

© Tyrone Grandon

GARDEN PROFILE

FORMATS

- ○ Exhibition
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- ● Streaming

ARS ELECTRONICA GARDEN

ARAUCANÍA

Fundación Mar Adentro (CL)

Polygonal Forest

How can we perceive what is not visually tangible in the natural world? An araucaria tree, floating over a vast black space generated by a series of x y z coordinates created by a LiDAR scanner — which uses light and its reflection to reconstruct detailed 3D images destined to revolutionize the way we measure and understand changes in tree structure and forest ecosystems — is the guiding force of the intangible behind *Polygonal Forest*. Conceived as a virtual encounter within a temperate forest, this platform aims to explore its numerous aural, visual, biological, historical, cultural and conceptual dimensions in order to reflect on our role with relation to these ecosystems: not as external bodies, but as integral components of the rich interrelations that coexist in these natural spaces.

Upon entering, visitors will be faced with four paths: an invitation to drift into spaces that offer a series of sensory experiences from an audiovisual combination flowing through the different layers of forest. These comprise a series of educational exercises that connect our bodily perception and emotions to our environment, and promote a series of virtual cross-cultural exchanges on art and ecology in South America, and through experimental digital works submitted by young creators.

General production: Fundación Mar Adentro
Curator: Maya Errázuriz
Coordinator: Juan Pablo Vergara
Educational content: Amparo Irarrázaval, María Jesús Olivos
Web design: Sebastián Rodríguez
Web development: Diego Alarcón
Artists: Claudia Müller, Elisa Balmaceda, Etienne de France, Gregorio Fontén, Marcos Sánchez
Collaborators: University of Bristol Arts and Humanities Research Council, Green Art Lab Alliance, Centro de Cine y Creación, Galería Patricia Ready, Geocom IF, Blanco Recoleta
Acknowledgements: Madeline Hurtado, Ángela Pabón, Ignacio Concha, Felipe Guarda, Álvaro Escobar, Paul Merchant, Yasmine Ostendorf, Colectivo Antagonismo, Danor Quinteros, German Mellado, Víctor Leyton, Álvaro Díaz, Valentina Montero, Nicole L'Huillier, Cristóbal Cea.

The participation of artists and gardens in Chile is the result of a collaboration between Ars Electronica and the Ministerio de las Culturas, las Artes y el Patrimonio and the Ministerio de Relaciones Exteriores | Gobierno de Chile.

LiDAR Scanner Araucaria @ Fundacion Mar Adentro

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

ATACAMA

ALMA Observatory and Fundación Mustakis (CL)

NETWORKED

The concept of 'landscape' has been broadly dealt with by the arts and sciences of past centuries. However, due to the emergence of the digital realm, the word has acquired a different connotation that is linked to the idea of an entangled network of mutually dependent elements and their interconnections. This wholeness or connected network of digital data can be referred to as a 'digital landscape', and because of that, it also serves to better understand the natural phenomena that science and technology strive to acknowledge. This is because it is now understood that natural environments function in a similar way by communicating and exchanging information amongst their constituent elements:the trees and plants in a forest, for example, exchange key details about their surroundings.

It becomes increasingly apparent that the digital realm can be directly related to how a networked landscape works. In that context, Fundación Mustakis/ALMA garden brings together art, technology and science to question and speculate on our understanding of nature. From the bleak desertscape of the Atacama to the most distant galaxies, this project focuses on bringing these ideas closer to people.

Alicia Pedrosa, George Anastassiou, Leonardo Leottau, Leonor Merín Castrejón, Samuel Domínguez, Valeria Foncea

The participation of artists and gardens in Chile is the result of a collaboration between Ars Electronica and the Ministerio de las Culturas, las Artes y el Patrimonio and the Ministerio de Relaciones Exteriores | Gobierno de Chile.

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- ○ Streaming

ARS ELECTRONICA GARDEN

ATHENS

Onassis Stegi (GR)

The Algorithm and the Park

Onassis Stegi participates in the digital Ars Electronica Festival for a second year, with the program “The Algorithm and the Park”, presenting highlights from the You and AI: Through the Algorithmic Lens festival, which took place from June 24 to July 25, 2021. The You & AI festival centered on a physical exhibition at Pedion tou Areos park in Athens, which will be presented at Ars Electronica Garden Athens through a short documentary. The exhibition staged 25 international works, within an artificially natural public space, and was complemented by online conferences on AI, ethics and art. Public spaces define a city’s psyche. They constitute the embodiment of collective experiences; they are reflections of a city’s polity and politics; they echo its socio-economic relationships; they contain our common dreams, feelings, and ambitions; they are the material the polis is made of. In an algorithmic era, the physical public space is increasingly intertwined with -when it is not devoured by- the algorithmic public space. It aims at bringing all these issues, lurking in the background of our urban lives, to the frontstage of civic life. By bringing the Algorithm in the Park, we pose the question of what the boundaries of post-human subjectivity are: who are we and how do we position ourselves in an infinitely re-morphed-by-AI world? Is there a new deal, a new social contract that is being tacitly formed between humans and non-humans? Staged at Campus Martius (Pedion tou Areos), a metaphor for the constant conflict between different forms of identity, subjectivity, and collective experience, the “You and AI” exhibition poses and invites you to contemplate on fundamental existential questions for the post-human experience.

Program Curation: Christos Carras, Prodromos Tsiavos, Production Coordination: Heracles Papatheodorou, Katerina Varda, EU Programs Coordination: Dora Vougiouka, EU Programs & Production Support: Vera Petmeza
“You and AI: Through the Algorithmic Lens” festival credits:Curated by Irini Mirena Papadimitriou, FutureEverything, Curatorial Direction: Afroditi Panagiotakou, Executive Director / Scientific Advisor: Prodromos Tsiavos, Exhibition Design / Exhibition Production Lead: Studioentropia Architects (Yota Passia, Panagiotis Roupas), Artistic Direction: Polydoros Karyofyllis (Poka-Yio), Executive Producer: Christos Carras, Technical Director: Lefteris Karabilas, Production Coordination: Heracles Papatheodorou, Katerina Varda, Line Production: Despina Sifniadou, Yorgos Stergiou, Spyridoula Gerazi, Commissioned and produced by Onassis Stegi, Curated by FutureEverything, In the context of the European ARTificial Intelligence Lab network, Co-funded by the Creative Europe programme of the European Union

yaGrid, artwork: Irini Kalaitzidi #Psofos

GARDEN PROFILE

FORMATS

- ○ Exhibition
- ● Lecture/Conference/Talk
- ○ Workshop
- ○ Journey
- ● Performance/Concert/Event
- ○ Film/Animation

COMMUNICATION STRATEGIES

- ● Social Media
- ● Online participatory tools
- ○ Participatory virtual environments
- ○ On-demand content
- ○ Experimental tools
- ● Streaming

This Garden is part of the AI Lab programme.

ARS ELECTRONICA GARDEN

BAD ISCHL

University of Innsbruck, Institute für Gestaltung — Studio 2 (AT), AUF! AUF! Residency (AT)

theatrics of interspace

Theatrics of interspace brings digital competence into dialogue with the heritage Lehar Theatre to stimulate creativity and open up new perspectives for understanding and sharing heritage elements and technology. The garden negotiates the concept of interspace between the actor and performer, subject and object, analog and digital, real and virtual, the past and the present, the old and the new. Technology applied to heritage represents an important field of digital humanities and the garden uses this power to breathe life back into the theatre. The identity of the building is in a time flux. It is to be renovated/conserved in order to hopefully represent Bad Ischl as the European Capital of Culture 2024. The students & researchers of the University of Innsbruck Studio 2 and the artists in residence from AUF AUF respond to this change through technology. The projects ranging from projection mappings to interactive VR environments, to digital sculptures and performances, rejuvenate and enliven the heritage by addressing the elements of dramaturgy and the historical context of the place. The garden aims to call attention to the theatre, its cultural importance, and the need to revive it, thereby celebrating its rich cultural legacy.

University of Innsbruck, Institute für Gestaltung — Studio 2, Clemens Plank & Anirudhan Iyengar, AUF! AUF! Residency (Gioia Osthoff, Michaela Putz, Felix Dennhardt), Lehar Theater.

© Anirudhan Iyengar

GARDEN PROFILE

FORMATS

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ARS ELECTRONICA GARDEN

BAN NONG TAO

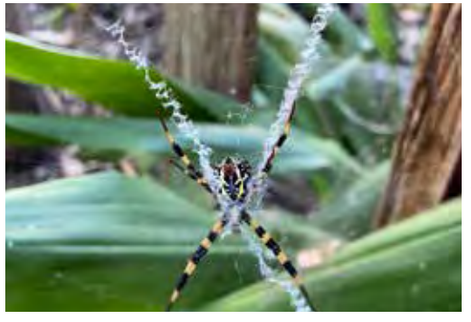
Invisible Flock — Land Body Ecologies, Ban Nong Tao (TH), Jennifer Katanyoutanant (TH)

Walk Like a Bee

The Ban Nong Tao Garden presents *Walk Like a Bee*, a living documentary that merges the science of rotational farming with Pgak'yau folk wisdom to share multiple perspectives around fire forests and spiritual connection. Viewers connect with Northern Thailand's ecosystem by encountering the same granular decisions that indigenous communities consider when safeguarding their forest homes against the backdrop of colonial conservation policies. It's a game of perspective. This collaboration brings together a global collective of people from different fields, worldviews and cultures; looking to communities with deeply rooted connections to their land in order to explore how nature and our psyches are intrinsically linked, and how storytelling methodologies can help us to equitably communicate these complexities to audiences.

Invisible Flock
Ban Nong Tao Community
Siwakorn Odochao
Jennifer Katanyoutanant

© Michaella Phoenix



© Michaella Phoenix

GARDEN PROFILE

FORMATS
- ○ Exhibition
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- ○ Streaming

ARS ELECTRONICA GARDEN

BARCELONA

Quo Artis (ES), Leonardo/Olats (FR), Ars Electronica (AT), University of Barcelona (ES)

Roots & Seeds XXI. Biodiversity Crisis and Plant Resistance

The sustainability discourse has largely played out in the domains of natural sciences and technology with recent contributions from the social and political sciences. However, during that time our individual and collective actions have lagged behind and the actual problems of sustainability have become worse. Roots & Seeds XXI aims to reflect on the biodiversity emergency by analyzing the transformation, adaptation and resilience of the plants from different perspectives, while promoting the intersection of art and science as the main platform to raise awareness about these issues.
Workshop: Multidisciplinary Garden Cartography
What is a garden? Is it the same for a scientist, a botanist, a philosopher, a visual artist, or a gardener? For the birds nesting in the trees and bushes, the worms and bacteria in the soil, or the plants themselves? What is a garden for you? This workshop seeks to safeguard and promote botanical heritage by interweaving scientific knowledge with storytelling and humanities. Inspired by taxonomic cartographies, these workshops aim to go beyond the botanical characteristics of plants and highlight discourses that consider them agents rather than resources. "Multidisciplinary Garden Cartography" will promote the creative potential of artists and scientists working together, fostering multidisciplinary collaborative networks and hybrid methodologies. The concept of this event will be replicated in Barcelona, Paris and Linz during 2021.

© Claudia P. Machuca Santibáñez

An international cooperation project between Ars Electronica (AT), Leonardo/ Olats (FR), University of Barcelona (ES) and Quo Artis (ES), as lead partner. With the collaboration of the Botanical Institute of Barcelona IBB (ES). Supported by Creative Europe Program of the European Union.

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

BARCELONA

Institut Ramon Llull (CAT), Hac Te — Barcelona Art Science and Technology Hub (CAT), UOC — Universitat Oberta de Catalunya (CAT), HANGAR — Center for Art Research and Production (CAT), NewArtFoundation (CAT), .BEEP { collection;} (CAT), ESPRONCEDA — Institute of Art & Culture (CAT), La Caldera — Center for the Ceation of Dance and Performing arts (CAT), Canòdrom — Digital and Democratic Innovation Centre (CAT)

HYBRID TIMES — INTERDEPENDENCE

The main challenge of the new digitality is to resist the transhuman capitalist dream of the digital as utopia so as to configure a hybrid problematic via metastable and interdependent approaches to digital media. The hybrid times we are now living in have made us utterly aware of our interdependence—the state of being mutually reliant upon one another—as a form of symbiosis to take into account. Merging the digital/online world with the analog/presential world also has to relate and connect with the multiple layers of reality involved, from technopolitical infrastructures to ecosocial impact. The Ars Electronica Garden Barcelona will consist of five different phases: 1) an open call for art, science and technology grants; 2) artists'residencies in scientific and technological research centers; 3) the implementation of research-production processes in visual arts and performing arts production centers; 4) the public exhibition and diffusion of artistic research results and, finally, 5) the sharing of results, methods and processes involved in the collaboration through a series of open talks and roundtable discussions. With works by Estampa, Andy Gracie, Óscar Martín, Esther Rodríguez-Barbero, Anaisa Franco, Stefan Tiefengraber, Solimán López, Mohsen Hazrati, Mónica Rikić, Gilles Jobin Cia, Pheel Concepts and Remix El Barrio among others, and with the participation of innovation platforms such as IMMENSIVA and Phygital.

With the collaboration of Sónar, Mira Festival, IDEAL — Digital Arts Center, IAAC — The Institute for Advanced Architecture of Catalonia, BSC — Barcelona Supercomputing Center, ICFO — Institute of Photonic Sciences, BIST — Barcelona Institute of Science and Technology, Barcelona City Council and the Direction of Innovation and Digital Culture at the Ministry of Culture-Government of Catalonia.
Curated by: Pau Alsina, Carolina Jiménez, Maria Lladó, Alejandro Martín, Vicente Matallana, Lluís Nacenta and Irma Vilà

El mal alumne. Pedagogia crítica per a intel·ligències artificials 2017

GARDEN PROFILE

FORMATS
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- ● Streaming

ARS ELECTRONICA GARDEN

BELGRADE

Center for the Promotion of Science (RS)

art+science2021 AI Realities

Belgrade Garden introduces the Festival audience to the sixth art+science edition of the Center for the Promotion of Science, which focuses on the creative and critical reading and analysis of AI-based systems, their value and possibilities. As a current super-technology, AI shapes our environment and affects our decision-making on an unparalleled level. Thousands of researchers from different disciplines — math, linguistics, neuroscience, robotics, machine learning, among others — are constantly at work in its development, which rapidly alters our social and technological realities. These realities, in turn, can offer an intriguing and much needed framework for alternative interpretations, engagement and interventions that are, unfortunately, mainly outside the public's scope and without wider visibility. The accelerated hyperproduction of content and the unrestrained proliferation of technology provide a false (societal) sentiment of fulfilment, as a result of which the questioning of numerous focal aspects and issues is actually omitted and dismissed. AI's true valuation, recognition and critical assessment is therefore impeded. Belgrade Garden tries to act as a stage for the insightful discussion and inspired partnership of Austrian and international peers in all related fields. Through an open and facilitated dialogue — established on a Danube axis between Linz and Belgrade, and bringing in multiple linked points — an exchange of knowledge, ideas and practices is fostered and made operational.

Dobrivoje Lale Eric, Chief Selector, art+science
This Garden is part of the European ARTificial Intelligence Lab (AI Lab) and is co-funded by the Creative Europe Program of the European Union.

GARDEN PROFILE

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- ● Streaming

This Garden is part of the AI Lab programme.

ARS ELECTRONICA GARDEN

BERLIN

University of Applied Science Berlin — School of Culture and Design, Department of Communication Design (DE)

Artificial Reality — Virtual Intelligence

As our environment undergoes its digital transformation, what might be understood as 'objective' reality is increasingly being modified by a superimposed virtual realm. Virtual reality and mixed reality technologies are laying the foundation for a transition to a new form of mass media. At the same time a global pandemic has subjected the dream of a new virtual and networked world to a wake-up call. Social distancing temporarily shuttered cultural spaces and educational institutions, and the need for virtual spaces and meeting places continues to grow. What do these worlds look like? Which rules should apply to them? Who is allowed to participate in them? The exhibition *ARTIFICIAL REALITY — VIRTUAL INTELLIGENCE* showcases student projects that deal with these questions: By means of a Brain Computer Interface, the emotional state of the participant influences the perception of the virtual world. The exhibition explores the limits of human cognition by linking the physically experienced environment and a simultaneously projected minimally altered VR environment, resulting in a form of psychic dissonance. Ongoing dialogue with a voice assistance system creates new virtual worlds and reproduces the themes of power and powerlessness vis-à-vis an omnipresent intelligent machine. The works, all created during the Corona pandemic in distance learning programs, address relevant social issues raised by digital transformation processes: *ARTIFICIAL REALITY BIG ART GENERATIVE DATA and VIRTUAL INTELLIGENCE*.

Curation: Andreas Ingerl & Moritz Schell Participating Students: Maria Bürger, Melanie Glück, Elena Kunau, Hoang Quynh Nguyen, Felix Sewing & Mariya Yordanova et al. in collaboration with Stiftung Reinbeckhallen (DE)

Paradigm Shift @ Maria Bürger

GARDEN PROFILE

FORMATS

- ● Exhibition
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COMMUNICATION STRATEGIES

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- ○ Streaming

ARS ELECTRONICA GARDEN

BIRMINGHAM

STEAMhouse (GB)

From Idea to Ecosystem — lessons from STEAMhouse, Birmingham

The aim of the Ars Electronica Garden STEAMhouse is to communicate how an idea can be developed into an entire ecosystem! We practice what we preach, so ultimately we are here to showcase why STEAM works. Discover our story and the application of STEAM in various contexts from Virtual Reality to Biomaterials. We are STEAMhouse, a center for innovation, creative thinking, prototyping and business development powered by Science, Technology, Engineering, the Arts and Math, based in Digbeth, in the heart of Birmingham, UK. We are a partnership between Birmingham City University and Eastside Projects, a local artist-run multiverse. Its aim is to be a space for the open, the curious and the creative that inspires people to experiment, test and develop new knowledge.

Birmingham City University, Eastside Projects, European Regional Development Fund

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GARDEN PROFILE

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COMMUNICATION STRATEGIES

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This Garden is part of the STEAM INC programme.

ARS ELECTRONICA GARDEN

BOLOGNA/FANO

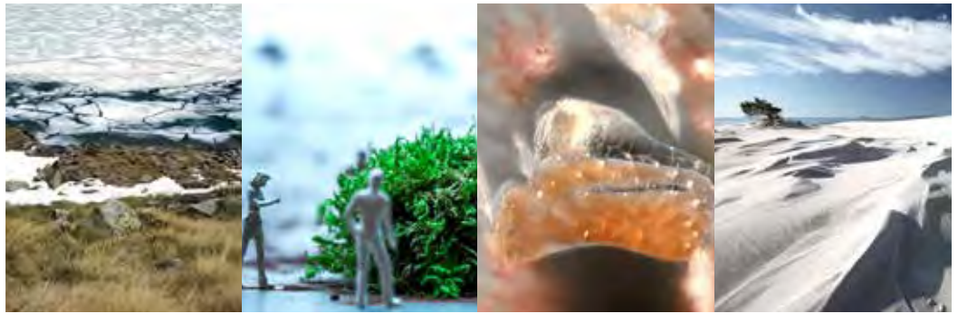
Sineglossa (IT), Umanesimo Artificiale (IT)

Data Tour d'Italie

A journey about environmental challenges

Data Tour d'Italie, curated by Federico Bomba and Filippo Rosati, is both a project and a network. It deals with data and the environment, connecting cultural and scientific research centers from different Italian geographical areas: mountains cities, islands and seaside towns. The Garden presents the results of four artistic residencies, each one related to a specific environmental challenge that emerged from data collection and analysis: Bologna: air pollution with "Moss" by Marco Barotti Cagliari: rain and wind changes with "Entu" by Emanuele Balia and Marcello Cualbu Fano: sea water microplastics with "Un millesimo di millimetro" by Giovanni Muzio Val Camonica: the melting of glaciers with "Un suono in estinzione" by Neunau. The Garden will have a hybrid format: offline with on-site activities taking place jointly in Bologna during Resilienze Festival and in Fano at Palazzo Bracci Pagani; online connecting the four geographical areas. The Garden will showcase: three live performances, one video documentation, one public round table on data art and environment, and the launch of the national network.

Leading partners: Sineglossa (IT), Umanesimo Artificiale (IT)
Partners: CMCC, CRS4, CNR — IRBIM, Idee di volumi, Kilowatt



© Courtesy of the artists

GARDEN PROFILE

FORMATS

- ● Exhibition
- ● Lecture/Conference/Talk
- ○ Workshop
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COMMUNICATION STRATEGIES

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ARS ELECTRONICA GARDEN

BOURGES

Ecole Nationale Supérieure d'Art (ENSA) — Bourges (FR), Antre Peaux — Bourges (FR)

Punkte Radio

Punkte (.--. ..- -. .-. - .) is an eight-headed chimera researching and working within the field of sound and beyond. As part of the postgraduate Arts and Sound Creation 2021-2022 session at l'ENSA Bourges, we aim to reconsider the relationship between the fine arts and sound matters. Our name, *Punkte*, is a tribute to Ursula Bogner, a scientist in the pharmaceuticals sector and a composer (recordings 1969-1988) who perhaps never existed. It is also a nod to the action video Punkt (2006), in which Roman Signer, filmed sitting in profile in front of a blank canvas, waits for the explosion of the firecracker behind him to surprise him and set him in motion.

From Bourges in central France we, Punkte, invite you to join us in our performances, concerts and games. During four days — two hours per day, and one evening — we'll stream using a cacophony of radio voices, flutes, revox, metal plates, screams and whispers to fabricate the unexpected. We, the misshapen children of Ursula Bogner, will spit out flames and take you on a journey of disheveled rhythms, eccentric sounds and magnetic voices.
Punkte is composed by:
Mélodie Blaison, Lucie Bortot, Anne Line Drocourt, Samia El Hadj, Typhaine Guilloux, Cinna Peyghamy, Simon Pochet, Audrey Repon.

© Jean-Michel Ponty

© Jean-Michel Ponty

GARDEN PROFILE

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COMMUNICATION STRATEGIES

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ARS ELECTRONICA GARDEN

BUCHAREST

Proiect 2 (RO), Rezidența BRD Scena9 (RO), UNATC IL Caragiale — CINETic Centre (RO)

Lost Interferences

We lose objects.
We lose information.
We continually lose.
We lose friends. We lose dear ones.
We lose hope, cells, memory, and futures.
We sometimes get desperate, we sometimes get lonely when we lose something.
Through the participatory installation *Lost Interferences* we collect feelings on loss. Using a deep neural network algorithm, we share those feelings as sound information.
In a collective action, Constantin Basica, from the Center for Computer Research in Music and Acoustics at Stanford (CCRMA), and Romeo Cornelius and Maia Morgenstern, from Residence BRD Scena9 in Bucharest, will perform together in a virtual setting. Telematic art is called to technologically heal our loss of body, our loss of senses, our loss of meaning. Tuning into the lost interferences which were never heard, into our own lives, and into all the lost possibilities, the audience will join the performers into making sense of what we have lost. We will emerge through a digitally connected body having gained a collective self. Audience members will be able to virtually join the performance on the online platform or visit and participate in the installation on site in the Bucharest Garden.

Composing and Performing: Constantin Basica with Romeo Cornelius and Maia Morgenstern
Mixing Realities Director: Alexandru Berceanu
Deep Learning Tools: Prateek Verma
Graphics: Alexandru Ponoran
Produced by Proiect 2.0
Residence BRD Scena9 Bucharest
Center for Computer Research in Music and Acoustics Stanford (CCRMA)
UNATC IL Caragiale Bucharest, CINETic Centre
Co-financed by AFCN (Romanian Cultural Fund)
The project does not represent the opinion of AFCN

© AI generated

© Alexandru Berceanu

GARDEN PROFILE

FORMATS
- ○ Exhibition
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ARS ELECTRONICA GARDEN

BUENOS AIRES

UAI Universidad Abierta Interamericana (AR), LatBiolab — Laboratorio Latinoamericano de Bioarte (AR), Puerto Rico Science, Technology and Research Trust (PR)

The Pulse of Earth

From the Olympus of Gaia to the Blockchain and NFTs

Is the Earth alive? This project considers the planet as a living organism that is 4.5 billion years old. In Greek mythology, Gaia is the personification of mother Earth. The Incas considered Pachamama a fertility goddess who embodied the mountains and caused earthquakes. The same can be said for the god Atabey of Puerto Rico, where this project began on account of the earthquakes of January 2020. There are many ways to take the pulse of the Earth. In this interdisciplinary project, it is explored from different perspectives like the geological point of view or the forces of nature. We study how humans — consciously or unconsciously — copy nature, for example, via the concept of blockchain: information is dispersed all over the world and nevertheless interconnected. This notion can be compared to our body, where information is dispersed in every cell, while also being interconnected as a whole — a sort of cryptobody. Finally, these micro- and macrocosm are distributed using NFTs (non-fungible-token), whether to share our own DNA, the pulses of the earth we gathered, or the spectrum of the pulsating stars.

Curatorial text: Joaquin Fargas (AR)
UAI Universidad Abierta Interamericana (AR)
LatBiolab Laboratorio Latinoamericano de Bioarte (AR)
Puerto Rico Science Technology and Research Trust (PR)
Fundacion Manos Verdes (AR)
Objeto a Gallery (AR)
GenBA (AR)

© Joaquin Fargas and Emilia Galli

© Joaquin Fargas and Emilia Galli

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

BUENOS AIRES

Mariano Sardón (AR)

Ars Semantica

"Translation is an effort in alterity, alterity of the body, breathing the music of another language in the strict particularity of a speaking voice."

Diana Bellessi

In Mary Louise Pratt's text "The Traffic in Meaning: Translation, Contagion, Infiltration", she deals with several kind of migrations of terms between different contexts. Such a framework reminds us of the transpositions of terms between art, science and technology. In post-disciplinary times, all are entangled, and 42 years of Ars Electronica archive that case. This archive is an interconnected system of texts, full of translations invoking large textual corpuses, located in databases.

Ars Semantica @ Mariano Sardon

Six people with different backgrounds, hailing from Buenos Aires, Madrid and Linz, with common intuitions and questions as artists, curators and data scientists constitute the Ars Semantica Garden. Through the uses of Deep Learning tools for the semantic analysis of texts, Ars Semantica looks for correlations and visualizations in the Ars Electronica archive by comparing them to artistic and techno-Scientific textual corpuses through time. The research deals with both the most probable transpositions among terms, as well as with the less frequent concept migrations known as "small data" events. *Ars Semantica* Garden exhibits audiovisual content relating inspirational and conceptual elements for data visualization. It seeks to engage people in the emergence of the non-evident and the unknown in the Ars Electronica archive.

Project by: Christl Baur (Ars Electronica), Germán Ito (Untref), Veronika Liebl (Ars Electronica), Mariano Sardón (Untref), Mariano Sigman (Universidad Torcuato Di Tella), Marcos Trevisan (Universidad de Buenos Aires).
Acknowledgements: Patricio Martin Alanis, Mariano Ferreras, Andreas Pramboeck (Ars Electronica), Diego Schalom (Universidad Torcuato Di Tella) Physics Department of the University of Buenos Aires.

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

CAIRO

Cairotronica (EG), IMPAKT (NL)

We Are Data

We Are Data focuses on the complexities of data and technology — and how to deal with them. The project brought together artists from Egypt and the Netherlands for a seven-month fellowship. During this period, Cairotronica and IMPAKT organized talks, presentations, interviews, exhibitions, screenings and a series of workshops for the artists. During the workshops, the artists received training and mentorship to develop their projects. In the web project, *We Are Data*, we present all the projects by the Egyptian artists. The web project also included exclusive talks by international experts in the fields of arts, social sciences and technology, to discuss with us the pressing issues related to data. *We Are Data* is a partnership between Cairotronica and IMPAKT [Centre for Media Culture] with the support of the Creative Industries Fund NL and the Arab Studies Institute (ASI). The project is curated by Ghalia Elsrakbi (Cairotronica), Nada Bakr (Cairotronica) and Arjon Dunnewind (IMPAKT).

Project Curators: Ghalia Elsrakbi (Cairotronica), Nada Bakr (Cairotronica), Arjon Dunnewind (IMPAKT) Fellows: Imane Ibrahim, Sabah Elhadid, Ahmed Soleman, Shadwa Ali, Mona Makhlouf, Ahmed Aiuby Mentors: Sabrina Verhage, Coralie Vogelaar, Jeroen van Loon

Speakers (as of July '21): Alya AlQarni & Sara Khaled, Areej Mawasi, Evgeny Morozov, Morehshin Allahyari, Miriam Rasch, Nagla Rizk

© talk, Ahmed Ellaithy

© Imane – Mustapha El Sayed Mawed

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

CAMPINAS

University of Campinas (UNICAMP) (BR)

#MemóriasCOVID19 Brazil

The COVID-19 pandemic is changing our life, both individually and globally. Although the modern world has gone through other major epidemics, this one takes on an unprecedented appearance. We can already perceive its dimension as trauma, something that will resize human relationships, our interaction in public spaces, and our perspective on time. *#MemóriasCovid19* is a platform created to allow different journeys to intersect from the point of view of identity. They will transmit their narratives through traits and images, uniting elements experienced by human groups from different social spectra.

The current moment is significant for establishing new projects, foreseeing new horizons, and establishing strategies to better face the uncertain future. While in this horizon of waiting, we can gather narratives as a way to collect and preserve fragments of experiences and perceptions. This is a space where you can share written stories, photographs, drawings, letters, audio, songs, and videos about your personal experiences during the pandemic. The collected material will be submitted to the Curatorial Committee; those selected will be notified and published on the platform *#MemóriasCOVID19*. It is up to the applicant to authorize, or not, the disclosure of her/his identity.

Coordination: Ana Carolina de Moura Delfim Maciel (UNICAMP)
Curatorial Committee: Ana Magalhães (USP), Andrea Casa Nova Maia (UFRJ), Benito Bisso Schmidt (UFRGS), Cecilia Helena Lorenzini de Salles Oliveira (USP), Charles Monteiro (PUCRS), Daniel Munduruku (INSTITUTO UK'A), Diego Kern Lopes (UERJ), Elena Brugioni (UNICAMP) Kátia Couto (UFAM), Heloisa Buarque de Almeida (USP), Keila Knobel, Lilia Moritz Schwarcz (USP), Mônica Raisa Schpun (EHESS), Pedro Guimarães (UNICAMP), Raquel Rato (FCSH NOVA), Zélia Amador de Deus (UFPA)

project DALTON VILLA, Illustration © Anhangabaú

GARDEN PROFILE

FORMATS
- ○ Exhibition
- ○ Lecture/Conference/Talk
- ○ Workshop
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- ● Film/Animation

COMMUNICATION STRATEGIES
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- ○ Participatory virtual environments
- ● On-demand content
- ○ Experimental tools
- ○ Streaming

ARS ELECTRONICA GARDEN

CAMBRIDGE

Tangible Media Group/MIT Media Lab (US)

TeleAbsence

Communication with those no longer among us through Tangible Memories

Presence and absence are fundamental states of being for mortal humans: to be present is to be close, and being absent means something is far away or lost. We propose *TeleAbsence* as a counter concept to Telepresence. The purpose of Telepresence is to connect people who are alive. *TeleAbsence*, on the other hand, aims to create illusory communication channels with those no longer among us to soothe the pain of bereavement. *TeleAbsence* is designed around tangible objects such as old typewriters, telephones, brushes and pianos that were once touched and marked by the hand of a loved one.

With the outbreak of the COVID-19 pandemic in December 2019, Telepresence became the lifeline for our everyday life and work, by connecting people who were spatially and temporally separated, but still within reach. Its main premise is that a message's recipient is alive and conscious in order to respond to a sender's message. *TeleAbsence*, our speculative design project, addresses the issue of the vast emotional distance caused by bereavement and the inability to receive a response from a loved one. Without any direct or explicit response, how can we create the illusion so that a sender would feel that they are communicating and interacting with a departed loved one? Can such illusory communication soothe their "saudade"? These are the fundamental questions for the *TeleAbsence* project.

Hiroshi Ishii, Kyung Yun Choi, Cathy Fang, Ozgun Kilic Afsar, Xiao Xiao, Paula Aguilera, Zhipeng Liang, Rebecca Kleinberger, Jonathan Williams

© MIT Media Lab Tangible Media Group

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

CHICAGO

Art & Technology Studies Department of the School of the Art Institute of Chicago (US)

Where we emerge

The whole world experienced the struggles of life in confinement and how it boosted our relationship with the digital world. This collective experience marked a watershed in the way we experience life. Technology entered our lives as a working tool and now we have become a technology culture. This year's edition of Ars Electronica is an invitation to reflect on the close relationship we have developed with the digital world and how we deal with it while questioning its benefits and shortfalls. It is an invitation to think about our faculty, to take action and claim our right to participate in shaping the world we want to inhabit. This year the Art and Technology Studies (ATS) department of the School of the Art Institute of Chicago (SAIC) presents the work of its community through a series of online and in-person events. The ATS garden seeks to engage in a multidisciplinary dialogue and become a physical and virtual space where the SAIC and the Chicago communities can reflect on our roles in this digital world and rethink ways to engage with these digital systems. With roots in innovation and experimentation, SAIC's Art & Technology Studies department focuses on the use of technology as an art medium. Started in 1969, the program has been at the forefront of the intersection of art, science, and technology of one of the world's most influential art and design schools.

Curated and coordinated by Mariana Mejía García.
Organized by Art & Technology Studies at the School of the Art Institute of Chicago.

© Courtesy of the Art & Technology Studies of the School of the Art Institute of Chicago

© Courtesy of the Art & Technology Studies of the School of the Art Institute of Chicago

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

CUBA

CLIC Cuba-Europe, EUNIC Cuba, European Union, Oficina del Historiador de la Ciudad de La Habana (CU), Habana Espacios Creativos (CU), Asociación Hermanos Saíz (CU), !!!Sección ARTE (CU)

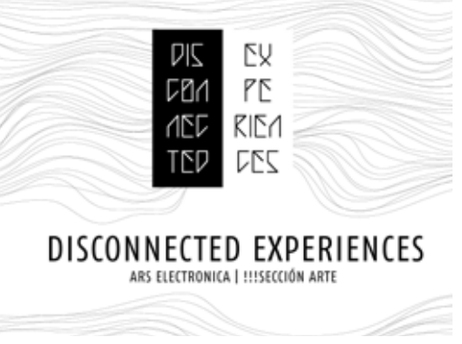
Disconnected Experiences

Cuba's late and gradual incorporation into the internet, as well as the continuing limitations on access to technologies, have shaped the ways in which digital art is produced, presented and distributed. While for most of the world's citizens being online is a matter of course, on the island it is not, since access to the internet is recent, unstable, restricted and expensive. Artists move between offline and online spaces (virtual and physical) without apparent conflict, a unique characteristic extended to all social and cultural practices.

This has given rise to some peculiar forms of digital interaction and distribution; a series of alternative phenomena have emerged that are products of social creativity. The most popular is the "Paquete Semanal" (Weekly Package), a collection of one-terabyte files, which is distributed person-to-person across the country and covers a wide variety of digital entertainment media. Within the Paquete Semanal there is the *!!!Sección ART*, a digital exhibition space that presents art projects on a monthly basis through the folder structures.

The *Disconnected Experiences* project addresses the Cuban art scene with a proposal for an approach to digital practices, cultural experiences and the adaptation of technologies. In parallel to its online presence in Ars Electronica, *Disconnected Experiences* will be exhibited offline through !!!Sección ARTE, in the Paquete Semanal, with an approximate reach of 10 K users in Cuba.

Garden Curator: Nestor Siré
Steering Group: Jorge Peralta and Michael M. Thoss
Coordinator: Raquel Ávila
Jury: Cristina Figueroa Vives Jorge Fernández and Yusniel Mentado
Assistant: Yainet Rodríguez



© Identity of Disconnected Experiences, Design by María Cruz Linares

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

DRESDEN

Deutsches Hygiene-Museum Dresden (DE)

Tour de Force

A virtual tour of the pandemic

How can a museum transfer its authentic on-site experience into the digital world? The New Digital Deal allows visitors from all over the world to enjoy a virtual live tour through the Deutsches Hygiene-Museum's (DHMD) permanent exhibition "The Human Adventure."
Join an interactive, discussion-based tour that not only offers you previously unseen perspectives on objects and transcends the barriers of space, but also raises questions about societies and how they deal with illness, health, self-care and prevention. Created out of a necessity to reach its visitors during lockdown and with a pandemic raising the questions of what kind of life is really worth living, the virtual live tour offers a fresh view of ten objects and the pandemic.
Not only will you be able to discuss questions around global health, but also about how a museum's atmosphere and space can be translated into the digital sphere. What are the challenges and opportunities of virtual museum tours? And can they possibly provide new perspectives? Remain in your seat wherever you are and experience an example of where virtual live tours can take you in the New Digital Deal.

© Oliver Killig

© Oliver Killig

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

DRESDEN

Industrial Design Engineering TU Dresden (DE), Communication Networks TU Dresden (DE), Schaufler Lab TU Dresden (DE), Deutsches Hygiene Museum Dresden (DE)

Hybrid Knowledge Spaces

The TU Dresden garden offers new perspectives on the technological and social implications of our digital age. How can we shift our designs to a more humanity-centered approach in a post-pandemic world? With respect to the need for sustainable societies, we may intertwine digital and analogue spaces to experience others and share knowledge in an open, immersive and ecological way. Technologically, this development will be accelerated by the next-generation communication tech: 6G. With decreased latency and extremely fast data processing, the interface solutions connecting humans to machines will increase in importance and be accessible to more and more people around the globe.

The democratization of knowledge and skills goes hand in hand with a diversification of interface systems according to the different knowledge systems used. Whereas databases need a visual representation, skills such as playing the piano require haptic feedback to support learning. Additionally, interfaces need to be diversified, not just with respect to group status but even more so on an individual level. This raises questions for designers about the personal and, perhaps, the cultural implications of their work.
Industrial Design Engineering TU Dresden (DE), Communication Networks, TU Dresden (DE), Centre for Tactile Internet with Human-in-the-Loop, TU Dresden (DE), 6G for live, TU Dresden (DE), Schaufler Lab, TU Dresden (DE), Deutsches Hygiene Museum Dresden (DE)

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This Garden is part of the STEAM INC programme.

ARS ELECTRONICA GARDEN

DUBLIN/INT

Science Gallery Dublin

BIAS

Exploring AI Ethics Trust and Justice

From cognitive function to machine learning, bias is a shortcut for our brain or for data. The *BIAS garden* at Ars Electronica will interrogate how bias moves from human to machine and how persuasion, preference, motivation and misinformation contribute to our individual societal and digital biases. In a year when we have seen the importance of scientific research, the impact of misinformation, and the effect of social media in polarizing communities, understanding our biases and how they are and are not helpful has never been more critical. We will bring together artists, activists, designers, policymakers, hackers, researchers and technologists to explore the ways in which bias dominates our world today, from algorithmic justice and facial recognition to the empathy crisis and systemic oppression.

European ARTificial Intelligence Lab, ADAPT,
Open Science Hub, STEAM Inc.
This Garden is part of the European ARTificial Intelligence Lab (AI Lab) and co-funded by the Creative Europe Program of the European Union. This program is presented in the framework of STEAM INC and is co-funded by the Erasmus+ Programme of the European Union. The OSHub project has received funding from the European Union's Horizon 2020 Framework Programme for Research and Innovation under grant agreement No. 824581.

Science Gallery Dublin

Science Gallery Dublin

GARDEN PROFILE

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This Garden is part of the AI Lab programme.

ARS ELECTRONICA GARDEN

EMAP

Werkleitz Gesellschaft e.V. (DE), Ars Electronica, Linz (AT), Foundation for Art and Creative Technology (FACT), Liverpool (UK), IMPAKT, Utrecht (NL), Antre Peaux, Bourges (FR), LABoral, Gijón (ES), Kontejner, Zagreb (HR), WRO Art Center, Wrocław (PL), RIXC, Riga, (LV), Onassis Stegi, Athens (GR), m-cult, Helsinki (FI)

Werkleitz Festival 2021

move to … sociosphere ecosphere bodydatasphere

The *Werkleitz Festival 2021 move to … sociosphere ecosphere bodydatasphere* is a correspondence location of the 2021 Ars Electronica. During the past 4 years, the artists and collectives at 11 institutions of the European Media Art Platform have been researching the most urgent challenges of our age. The virtual closing exhibition will feature 44 works produced with the support of Creative Europe. The three spheres of the Werkleitz festival provide the framework for these works as well: The sociosphere focuses on the social, political and economic challenges of our digital, globalized world. The ecosphere highlights the consequences of digitalization on our ecosystem, and how knowledge is gained by shifting our perspective away from humans and towards other forms of life. In the context of the bodydatasphere, the artists devote themselves to digital bodies and senses and in particular to the fact that these are increasingly integrated into technological environments, monitored, predicted or controlled by them. In addition to the 44 newly produced documentaries, numerous podcasts, the recorded lectures of the conference and discourse program new world dis/order, which took place as part of the Werkleitz Festival, the three programs will present the three spheres of the festival. A workshop organized by IMPAKT will invite you on a journey into the world of online tools (AT). The EMAP Bal Masque organized by IMPAKT marks the conclusion of the four-year grant-production cycle of the European Media Art Platform.

Werkleitz Gesellschaft e.V. (DE), Ars Electronica, Linz (AT), Foundation for Art and Creative Technology (FACT), Liverpool (UK), IMPAKT, Utrecht (NL), Antre Peaux, Bourges (FR), LABoral, Gijón (ES), Kontejner, Zagreb (HR), WRO Art Center, Wrocław (PL), RIXC, Riga, (LV), Onassis Stegi, Athens (GR), m-cult, Helsinki (FI))
EMAP/EMARE is co-funded by the Creative Europe Programme of the European Union.

Clams, Marco Barotti (IT)

GARDEN PROFILE

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This Garden is part of the EMAP programme.

ARS ELECTRONICA GARDEN

ESCH-SUR-ALZETTE

Esch2022 — European capital of culture (LU)

From red earth to grey matter. Esch2022 program of exhibitions

Introducing Esch2022 — European capital of culture program of exhibitions

Ars Electronica Garden Esch-sur-Alzette presents the ongoing collaborative work of Esch2022 — European capital of culture with ZKM Center for Art and Media, HeK (House of Electronic Arts Basel), and Ars Electronica in the planning of 3 major exhibitions. Presented between February and November 2022 in the newly refurbished Möllerei building, the 3 exhibitions will showcase the work of over 70 contemporary artists and address the important issues of our time. The first exhibition, Hacking Identity — Dancing Diversity, presents a vivid kaleidoscope of artistic notions of identity that reflect upon the particular and the universal, the aesthetic and the intellectual, the historical and the futuristic, the human and the non-human. It is organized in collaboration with ZKM Center for Art and Media Karlsruhe and is curated by Anett Holzheid and Peter Weibel. The second exhibition addresses the impact of human activities on the Earth's collapsing ecosystems. It gathers artworks that propose alternative models of understanding and interacting with the world. It is organized in collaboration with HeK (House of Electronic Arts Basel) and curated by Sabine Himmelsbach and Boris Magrini. The third exhibition focuses on the importance of creative thinking and artistic approaches in scientific research and industrial production to create innovative, sustainable and ethical solutions to the struggles and issues of contemporary societies. It is organized in collaboration with Ars Electronica and curated by Martin Honzik and Laura Welzenbach.

The exhibitions are organized by Esch2022 — European capital of culture in collaboration with ZKM Center for Art and Media, HeK (House of Electronic Arts Basel) and Ars Electronica / With the support of: The Luxembourg Government — Ministry of Culture / Luxembourg Let's make it happen / The European Commission / Le Fonds Belval.

Beiler François Fritsch, © Fonds Belval

GARDEN PROFILE

FORMATS

- ● Exhibition
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ARS ELECTRONICA GARDEN

ESPOO/HELSINKI

Aalto Media Lab, Aalto University (FI)

Unburn It

The interactive composition *Unburn It* approaches a digital new deal from the perspective of music. The concept starts by examining how music is played online; it often echoes pre-digital constraints, such as linear recordings that are the same with each playback. However, opportunities to expand from these conventions are embedded in digital tools themselves; music playback can be interactive, nonlinear and multimedia. This work is a music release as a web browser game. Upon entering the URL, the visitor is submerged in a polluted ocean, where water and fire intermingle. The seed of the composition itself is a climate anxiety dirge which can be bent and morphed into danceable catharsis or disjointed fragments. As the player sinks through the screen space, mouse movement changes the structure of the music flowing around them. Clicking and moving the various objects that float into view also produces sounds, making the work function like a visual score. The amount of interaction is the player's choice; one can simply observe the piece or transform its patterns. *Unburn It* functions as an instrument, a composition and a game.

Music design & art direction: M Wingren
Visual art: Carl Victor Wingren
Curation: Antti Ikonen
Executive producer / Head of Department of Media: Professor Philip Dean, Aalto University School of Art Design & Architecture / Media Lab
This Garden is included within the framework of STEAM INC and has been funded with the support of the European Union and the Erasmus+ Programme.

© M Wingren & Carl Victor Wingren

© M Wingren & Carl Victor Wingren

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

GAUTENG/IKAPA

Supported by: National Arts Council, Rupert Music Foundation, Arts & Culture Trust — Nedbank, SAMRO
In partnership with: ISCM — International Society for Contemporary Music, National Arts Festival — Makhanda, Ars Electronica — Festival for Art, Technology & Society

NewMusicSA Indaba Garden

Highlights of the Digital Indaba 2021

Following a two-decade tradition of annual festivals (Indaba and Unyazi), NewMusicSA's projects for the current year are framed under the overarching title, "Digital Indaba 2021" and the theme of Connectedness. This South African contemporary music program of hybrid format includes the commissioning of new works and a call for scores, a concert series in Johannesburg and Cape Town, an online music series (Stories We Told Ourselves) presented at the National Arts Festival, outreach community activities across Gauteng, and workshops. In Garden Gauteng / iKapa at Ars Electronica 2021, NewMusicSA will show a selection of previously presented highlights from the Digital Indaba 2021, and will premiere new collaborative performances in response to this year's festival theme, A New Digital Deal.

Garden Gauteng / iKapa, a selection of highlights from the Digital Indaba 2021 presented by NewMusicSA at Ars Electronica 2021
Presented by: NewMusicSA NPC, South Africa
Board: Diale Mabitsela, David Lephoto, Lukas Ligeti, Adeyemi Oladiran, Sazi Dlamini, Nonku Phiri
Produced by: Ignacio Priego and Camron Andrews
Supported by: National Arts Council, Rupert Music Foundation, Arts & Culture Trust — Nedbank, SAMRO
In partnership with: ISCM — International Society for Contemporary Music, National Arts Festival — Makhanda, Ars Electronica — Festival for Art, Technology & Society

© Tselilso Monaheng

© Lindsey Appolis

GARDEN PROFILE

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- ○ Streaming

ARS ELECTRONICA GARDEN

GDANSK

LAZNIA Center for Contemporary Art (PL)

Changes and Challenges

The first section of this two-part garden showcases works by Polish artists responding to the festival's main topic. Using different artistic approaches, they question such issues as digitalised corporeality, human/non-human relations, and the ecological consequences of digital storage. Karolina Żyniewicz in her performative workshop "Ethnography of flattened embodiment" invites us to explore the perception of a body in the digital world which becomes a 2D image, cropped and filtered in the artificial background. *Plant~Animals ~ Symbiosity of Creation* by Elvin Flamingo immerses us in the social movement of Symsagittifera roscoffensis, a unique, uncanny amalgamation of a plant and an animal, their interdependencies among them and us (humans). Justyna Górowska's "The Blue Humanities Archive" examines the environmental cost of a network of databases exploring the subject of DNA Digital Storage. The artists touch on various aspects of contemporality, creating a multithreaded, orchestrated narrative that reveals layers of our fragmented, numerical life.
The second project, dedicated to the decade-long LAZNIA CCA's Art and Science program, presents a film followed by a discussion analysing changes in the relation between art and science. The audience is also invited to the discussion around Olga Kisseleva's exhibition "Trees of Memory: Roots and Runners" devoted to the tragedy of Babyn Yar. Speakers will look at contemporary practices of commemoration of tragic events and ways of working through the traumatic past by the means of art and technology.

Garden Curators: Agnieszka Kulazińska, Aleksandra Księżopolska.
The presentation of Polish artists is part of the Studiotopia project supported by the Creative Europe Program of the European Union.
Trees of Memory: Roots and Runners
Exhibition Curators: Oksana Dovgopolova and Kateryna Semenyuk.
Supported by Past / Future / Art in partnership with the Ukrainian Institute.
Discussion about a decade of art and science programme in CCA LAZNIA
Curator: Ryszard W. Kluszczyński

© Jan Rosiek

GARDEN PROFILE

FORMATS
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- ● Experimental tools
- ● Streaming

This Garden is part of the STUDIOTOPIA programme.

ARS ELECTRONICA GARDEN

HONG KONG

City University of Hong Kong, School of Creative Media, Neuro Design Lab (HK)

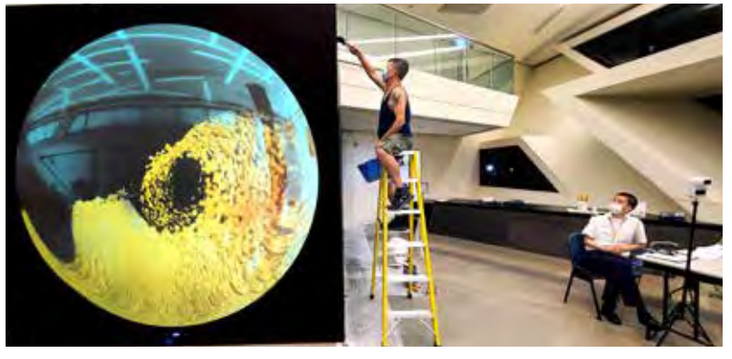
Artificial Intentionalities

Post-human humanities in the age of the art-subject

During recent decades, technologies raised and erased borders, hybridized and segregated cultures, while also collapsing distances and time zones. But we have too often remained trapped in a myopic, anthropocentric system of logic and ideals in our quests for new teleological aspirations, structures of controls, or even in finding new possibilities for collective participation and agency.

Our capacity to shift our standpoint, to project ourselves in space and time, in reality and fiction, allows us to figure out the world from the vantage points of our ancestors, aliens, or post-human creatures like algorithms and robots. It is through this potential that we can expand our horizon to better accommodate the dynamic complexities at hand. Thanks to the recently acquired artificial intentionalities, artworks are quickly becoming sentient, cognizant, and responsive subjects through which we can improve our understanding of human societies and ecosystems. Ars Electronica Garden Hong Kong's curatorial inquiry this year explores various paths to better understand the entanglements that surface in the tectonic interplay of divergent worlds, where robots challenge social models, artworks try to understand each other, and the faraway meets the nearby. We call for a DïaloG of curiosity and speculation, alongside a salutary cocktail of poetry, science, politics and conviviality.

Centre for Applied Computing and Interactive Media, City University of Hong Kong. Osage Art Foundation.



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GARDEN PROFILE

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ARS ELECTRONICA GARDEN

HSINCHU/TAIPEI

Center for Technology and Art, National Tsing Hua University — NTHU (TW),
Department of New Media Art, Taipei National University of the Arts — NTHU (TW)

The "Entrance and Distancing" Deals in the Digital Era

NTHU x TNUA TechArt Festival

The development of science and technology poses many obstacles and deceptions for society, politics and life. We propose *The Entrance and Distancing Deals in the Digital Era* as the lens through which to discuss different social issues and the threat of COVID-19 in NTHU x TNUA TechArt Festival in Hsinchu/Taipei Garden.

Five digital artworks address the *Entrance Deal* through interactive installation, artificial intelligence, the blockchain and social media. COVID-19 has blocked people from entering buildings: we used NFTs to store the memory and the alternative democratization of the disease. AI GAN is used to explore the appearance of viruses that surface everywhere in the world. Through interactive technology and art, we tried to explore the political entrance between Taiwan and Mainland China, the mysterious ingress of astronomy, by listening to the ripples of gravity waves and the amazing entrance of perception protecting plants. The *Distancing Deal* consists, in turn, of six new media artworks. Through interactive installation, augmented reality, immersive theater, urban action and more, we have constructed a hypothetical planning area through which to examine the meaning of physical and psychological distance in its present state. In the rapid flow of information from basic physical necessities to spiritual dependencies there is nothing the contemporary person cannot expeditiously obtain.

Ministry of Science and Technology Taiwan R.O.C.
Ministry of Education Taiwan R.O.C.

© Dashiung Huang

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ARS ELECTRONICA GARDEN

INDONESIA

Media Art Globale (MAG), Festival by Connected Art Platform — CAP (ID)

INFINITY

An Adaptation Movement of Garden Indonesia

Every civilization has a tipping point. The pandemic showed us that everything that happens has positive and negative consequences. What comes next? Adaptation is the option to survive. We exist in our cultural environment, in the process of life and in our heritage system. This adaptation is continuously expressed by MAG21 artworks such as *Zeitgeist*, *Sela Selang* and *Stream* show concern for environmental and human behavior in daily life. *Urb-Sense* introduces the participatory production of a virtual mental map of the city of Jakarta through social distancing. *Melting Landscape* uses H2O & O2 as symbols of impermanence in life, as humans fear the absence of the internet more than that of air and water. *How Do You Taste* elevates the chili sauce (sambal) that is usually an Indonesian side dish, to deploy it as a medium. *Collective Concession* reflects on how contemporary humans interpret a traditional Indonesian game to translate it, through technology, into an interactive installation. MAG21 provides spaces where people learn, interact, experiment, create a work of art, products and services or innovation, all of which are central to this broader adaptative historical movement. They can also synergize, adapt and apply their mastery to create the next new thing for infinity: hope in society.

MAG (Media Art Globale) Festival, Connected Art Platform (CAP), Digital Nine+; Mbloc Group, Binus University DKV New Media. JCS Engineering.
Curator: Mona Liem.
Digital Management: Sean Lee.
Artists: Ady Setyawan — Arafura, Utami Atasia Ishii, Ratna Djuwita & Stream Team, Nantlab Collective, Widi Pangestu, Collective Concession.
Thank you for all team CAP Asia-Europe Mbloc Group Binus DKV. All Media and Sponsorship.

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GARDEN PROFILE

FORMATS
- ● Exhibition
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COMMUNICATION STRATEGIES
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- ○ Experimental tools
- ● Streaming

ARS ELECTRONICA GARDEN

JERUSALEM

Musrara, the Naggar School of Art and Society (IL)

En Tehom

Beyond ages and branded masks, while the world crumbled into itself and the land floated above us, cold and alone, some of us hoped that it would be the end, and some embraced the uncertainty like a wrapper around a candy. The Graziellas, unsure whether they are a choir or a cult, have been chanting around their dark imaginary altar, recalling an unfulfilled erotic dream.
This is an invitation into the stalactite caves of the crowded consciousness, where the mind's own voice is silenced by the flux of the tumultuous audience within, the countless mental voices gathered from memory, data and encounters of the outside.
Between the city of Jerusalem and the desert cave of Haritoun, a man attempts to clear his mind of those voices and find his own, only to reveal that the sole voice is constructed of many. The return to the physical experience of singing together had brought not only comfort but also confusion.
What is my voice in contrast to the others? The work attempts to answer this with poetic, physical and digital means — deconstructing a choir into grains and re-constructing it into a composition of shared voices.

A collaboration between Excessive Productions Collective and Musrara Graziella Choir. Written and directed by Eyal Lally Bitton, Marco Milevski Tomasin and Tomer Damsky
Director of photography and editor: Eyal Lally Bitton
Sound recording and mix: Marco Milevski
Tomasin Choir conductor and supervisor: Tomer Damsky
Executive producer: Pagit Bar Zel
Protagonist: Amir Meir
Additional composition and programming: Marco Milevski Tomasin and Carmel Riboch
Musrara Graziella Choir: Yaara Haim, Sam Braverman, Ron Dahan, Sapir Sharon, Carmel Riboch, Gilli Amar, Tamar Balas, Adi Ben Pazi.
Compositions by Yaara Haim, Gilli Amar, The Body, Assembly of Light, Roberto De Simone, Moondog.
Arrangements by Carmel Riboch, Tomer Damsky, Shlomit Strutti.

© Michal Honig

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

LEONARDO LASER

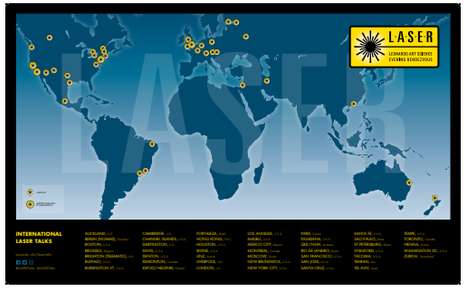
Leonardo/ISAST (US), University of Art and Design Linz (AT), The LASER Hosts Global Network

[Anti]disciplinary Topographies

Culturing transnational dialogue for creative hybridity

Leonardo LASER Garden gathers our global network of artists, scientists, humanists and technologists together in a series of hybrid formats addressing the world's most pressing issues. Animated by the theme of a "new digital deal" and grounded in the UN Sustainability Goals, *Leonardo LASER Garden* cultivates our values of equity and inclusion by elevating underrepresented voices in a wide-ranging exploration of global challenges, digital communities and placemaking, space networks, and by tackling the digital divide with the impact of interdisciplinary discourse and collaboration in art, science and technology. Dovetailing with the launch of LASER Linz, this asynchronous multi-platform garden will highlight the best of the Leonardo network (spanning 47 cities worldwide) and our transdisciplinary community. Diana Ayton-Shenker, CEO of Leonardo/ISAST (The International Society of Arts Sciences and Technology) will present a keynote on the Leonardo Vision 2028 campaign "Extraordinary times call for extraordinary vision and action." This will be followed by a LASER lounge open to all participants and audiences in order to connect and foster transnational discourse and interdisciplinary exchange.

Leonardo/ISAST & Global network of LASER Hosts in partnership with the Interface Culture Department, Institute for Media, University of Art and Design Linz
Organizing Committee: Christiana Kazakou, Leonardo LASER Program Lead (UK), Vanessa Chang, Leonardo Senior Program Manager (US), Tami Spector — Leonardo LASER Committee Co-Chair (US), Alan Boldon — Leonardo LASER Committee Co-Chair (UK), Nina Czegledy — Leonardo LASER Committee (CAN), Piero Scaruffi — Leonardo LASER Committee (US), JD Talasek — Leonardo LASER Committee (US), Global Network of LASER Hosts:
for a full list please see leonardo.info/laser-hosts



Leonardo/ISAST @LASER Talks

GARDEN PROFILE

FORMATS
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- ● Streaming

ARS ELECTRONICA GARDEN

LIMA

Alta Tecnología Andina — ATA (PE), Museo de Arte de Lima — MALI (PE)

Hybrid Creations: Explorations and Exchange in Peruvian Audiovisual Media

As Peruvian curator Jorge Villacorta once mentioned, the idea of the "hybrid" refers to the product of a crossbreeding of different species that translates into the interdisciplinary, and is often the core of creative explorations. Audiovisual projects have become a means of integration, taking resources from various disciplines that connect agents from the visual arts, music, performance and dance to create aesthetic experiences. This program will present an interdisciplinary and intergenerational perspective that brings together pioneering work from the 1970s through the 1990s with the production of young artists from different regions of the country who have developed video pieces since 2020.
These works all share a latent correspondence related to recurring themes and forms around the relationship between image, movement, sound, and the body, as well as a reflective approach to historical heritage and new media that leads them to rethink traditional elements in their current local context.

Mario Acha, Manongo Mujica, Gonzalo Pflucker, Arturo Ruiz del Pozo, Esther Vainstein, Luciana Proaño, Karin Elmore, Rafael Hastings, Bertica Prieto, Irma Cabrera, Raquel García, Sofía Fuentes, Macri Cáceres, Clara Petrozzi, Fabrizzio Yabar, Frank Soria. Alta Tecnología Andina — ATA, Museo de Arte de Lima — MALI, Sairah Espinoza, Almendra Otta.

El Perfil de lo Invisible @VideoStill

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

LINZ/BERLIN/VALENCIA

Re-FREAM CONSORTIUM (INT)

Re-THINK FASHION

Collaborative development for urban manufacturing

The research project Re-FREAM is exploring the interaction between the domains of fashion, design, science, craft and technology, hereby promoting a space for co-creation and research, where experimental projects will connect artists with scientists and technologists for better human-centered and sustainable solutions. The focus of the research is the future of urban fashion manufacturing, using additive manufacturing (3D printing), electronics, and eco-innovative finishing. Informed by social and environmental values, these methods could create a new value chain for the fashion industry. Over a nine-month period, these hybrid teams were on a co-research and co-creation journey guided by a specific art-tech collaboration methodology in which they employed powerful technologies from some of the world's most cutting-edge labs. The Re-FREAM Garden shows the results of several co-creation projects, illustrating the potential of combining art with technology, crafting and sciences. The projects reveal a speculative perspective on fashion and open new spheres for design, sustainable production and a new value chain.

The project involves an international consortium of partners with experience in technology, research, fashion, and design, as well as art-tech transfer expertise.

Project Management: CREATIVE REGION Linz & Upper Austria
Hub management Linz: CREATIVE REGION Linz & Upper Austria
Hub management Berlin: Wear It Berlin GmbH
Hub management Valencia: AITEX (Asociación de Investigación de la Industria Textil)
Technology Partners: Care Applications S.L., Consorzio ARCA, Empa, Fraunhofer IZM, Haratech, IED (Istituto Europeo di Design), Profactor, Stratasys, University of Art and Design Linz / Department Fashion & Technology
Re-FREAM has received funding from the European Union's Horizon 2020 programme in the framework of the STARTS initiative (Science, Technology & the Arts) under Grant agreement No. 825647

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GARDEN PROFILE

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This Garden is part of the STARTS programme.

ARS ELECTRONICA GARDEN

LONDON/ZURICH

.ART (UK), VR-All-Art (CH)

Ars Electronica .ART Gallery

Powered by VR-All-Art

For Ars Electronica 2021, .ART takes the opportunity to pull in and inspect the vast and seemingly unmovable architectures behind the landscapes that surround us. By partnering with a virtual exhibition platform and the art marketplace VR-All-Art, the vision is taken a step further, into virtual and augmented spaces. The virtual garden, made of concrete, builds upon the overarching theme of A New Digital Deal. It exposes the monoliths and floes firmly fixing our gaze, lest we forget that slabs of concrete always start off as liquid and malleable, before cementing into the structures that shape our world. The garden features selected partners, including Boston Arlekin Players Theatre's new interactive experience, headed by Mikhail Baryshnikov (ZeroGravity.art). ART's artist in residence Medina Kasimova, and a selection of art schools.
Through an open call, CONCRETEhouse.art invites over a hundred artists to join the space for playful reflections on the creation of virtual environments. The garden also presents a series of talks about performance and the blockchain in art and gaming. The key concept of the exhibition is the 'human scale'. How do we inspect our digital landscapes when we are so immersed in them, taking them for granted, passing thoughtlessly through them on our daily commutes? Key themes include architecture, malleability and responsibility.

© Concrete House

Stepan Ryabchenko, Beyond Being, 2021

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

LONDON

Bartlett School of Architecture [MArch Design for Performance and Interaction Interactive Architecture Lab] & Partners

PolySocial Realities and Virtualities

MArch Design for Performance and Interaction at the Bartlett School of Architecture will form its contribution around contemporary PolySocial Realities. Coined in 2011, the term PolySocial Realities has unfolded and accelerated over the past decade until it not only pervades daily life, but indeed is daily life. Initially conceived of as a model to illustrate multi-directional and multi-platform information and communication across scales of time and space (biological and artificial human/animal/plant and machine), agents and modes, PoSRs not only remains prescient after a decade but extends further than anticipated. While questions of misinterpretation and misunderstanding will always exist, at the core of PoSR in 2021 and its complex ecology of interaction lies potential. We will use concepts of interconnectivity to have real and virtual events and platforms talk to each other to form polysocial interaction; through the communication of physical and digital participants within a fragmented exhibition environment, we will ask questions and explore answers and experiences together with festival-goers.

Autoglyph: Alfred Cassels

Xalon: Serra Ozdemir, Jenn Leung, Arshiya Vij

Bartlett School of Architecture [MArch Design for Performance and Interaction Interactive Architecture Lab] & Partners Dr. Fiona Zisch, Michael Wagner, Alice Whewell, Dr. Ruairi Glynn

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

LONDON

London College of Communication, University of the Arts London (UK)

The View from Somewhere

Desktop Cinema Performances from MA Interaction Design at the London College of Communication, University of the Arts London

During the UK lockdown of January 2021, the students of MA Interaction Design at UAL's London College of Communication were isolated in their homes, most of them having only arrived in the country two months previously. At this time the students started a short practice brief we called "Desktop Cinema": a hybrid form of digital performance and filmmaking where the computer desktop acts as a stage using on-screen text files, images, webcams, laptop microphones, and found footage from YouTube as common components of storytelling. For Ars Electronica 2021, we present the desktop cinema performances that the students produced during the long lockdown: a series of moving and personal works captured through the intimate environment that had become their window to the world in their isolation: the desktop. These stories of discovery, loss, hope and mystery remind us that amidst all the reactionary claims that our screens are reducing us to less-than-human, there are deep and intimate aspects of humanity that can be found within them.

© Mat Denney

© Em Argiro

London College of Communication, University of the Arts London

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ARS ELECTRONICA GARDEN

LOS ANGELES

UCLA Art Sci Center, Broad Art Center (US)

Atmosphere of Sound

Sonic Art in Times of Climate Disruption

UCLA Art Sci Center's garden is organized around the themes of our 2024 Getty Pacific Standard Time: Art x Science x LA exhibition, *Atmosphere of Sound: Sonic Art in Times of Climate Disruption*. We will present a series of artist-led sound walks and panels around the relationship between sound as a post-object art form, and our shifting relationship to the world of things as necessitated by climate change. Our garden will be organized around key questions such as: "Can we learn to connect empathically with non-human species such that we come to appreciate their value as sentient beings?" "How might we expand our acoustic senses in order to raise our appreciation of the diversity of patterns of communication beyond human language?" And "What is the value of artistic collaborations for scientific researchers working on urgent environmental issues?" Sound art is a bridge to connect with scientists who are frequently more familiar with instrumental music and other sound-based forms of art. Additionally, many scientists are engaged in work that deals with inaudible frequencies and waves that can be transformed into sound waves and made accessible to audiences. The focus on sound art is intended to de-privilege sight as a sense that encourages false certainties, in favor of sound that provokes an inquiry-based response on the part of the viewer or participant. Artists in residence at Art Sci are developing sound walks as interactive platforms for embodied connection.

Research and Curation by: Victoria Vesna and Anuradha Vikram
Sound Design by: Ivana Dama and Clinton Van Arnam
Partners: UCLA Art Sci Center, UCLA Design Media Arts California NanoSystems Institute (CNSI), Getty Pacific Standard Time Art x Science x LA, Harvestworks Digital Media Art Center, LEONARDO UCLA Arts Collective: Clinton Van Arnam, Ivana Dama, Ivy Lovett, John Brumley, Kaitlin Bryson, Shilpa Rao, Zeynep Abes, Nancy Wu

Anna Nacher, Breathe to Flow

GARDEN PROFILE

FORMATS

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ARS ELECTRONICA GARDEN

LUGANO

Divisione Eventi e Congressi (CH), Città di Lugano (CH), Lugano Living Lab (CH), IDSIA (USI-SUPSI) — Istituto Dalle Molle di studi sull'Intelligenza Artificiale (CH)

Digitale Consapevole

Our project revolves around the concept of digital awareness, as it explores the relationship between man and technology. It aims to stimulate a reaction and a debate about what a sustainable future of conscious coexistence could look like. This investigation will be carried out through various approaches, such as art, musical performances, workshops and talks, all whilst immersed in the beautiful natural scenery of the city of Lugano. The mountains, the lakeview, the gardens will be the main venues for our events.

Lugano Living Lab, Divisione Eventi e Congressi Città di Lugano — Long Lake Festival Lugano, Istituto Dalle Molle di studi sull'Intelligenza Artificiale — IDSIA (USI-SUPSI)

© Città di Lugano

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ARS ELECTRONICA GARDEN

MEXICO CITY

Universidad Autónoma Metropolitana (MX)

The Garden of Uncertainty

The title of our project is *The Garden of Uncertainty*. We think of uncertainty not as a negative adjective, but as an option for open processes, opportunities and liberty. With this in mind, we sought to collect works that could present a kaleidoscopic panorama of Mexico's electronic art production. We assembled a collection that could show a small compendium of the concerns that a new generation of artists has with the world. By creating a multimodal map of the included works, which visualizes the relationships among them, we have also ensured that it's more than the sum of its parts.

Hugo Solís García (UAM), Carolina Belén González (UAM), Departamento de Artes y Humanidades (UAM), Lerma Uruguay 25 (UAM)

© by Eusebio Parra Gibraltar from collection Casa Mexicana

© by Eusebio Parra Gibraltar from collection Casa Mexicana

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

MILAN

MEET Digital Culture Center (IT)

Meet in real, in web, in world

The focus of the Milan Garden will be on VR and immersive storytelling. The Garden will be organized during the MEET's Fest *in real, in web, in world*, as a journey for the exploration of immersive realities and hybrid scenarios through VR exhibitions, installations and laboratories. MEET will present the variegated and multifaceted ecosystem of immersive realities with a critical and international profile. The MEET Garden at Ars Electronica includes:

Synthetic Corpo-Reality, a virtual exhibition curated by Julie Walsh — Finissage. It includes 12 digital artworks at the Mozilla Hubs MEET space. The works by international artists focus on the body as a vehicle to discuss a variety of themes: gender politics, personal data collection, and the search for identity. The Finissage will be the occasion to visit artworks including site-specific immersive installations, photography and video, sculptures, a GIF, and deepfake AI technology.

Oxytocina Machina, a hybrid VR installation that connects cocoons at different locations through virtual reality in as a safe space, separating the user from reality, becoming a portal to the virtual world.

Moving in VR! with Ariella Vidach is a workshop and a virtual participatory choreography led by choreographer Ariella Vidach. Participants are guided through the discovery of movement in VR from a remote location. The workshop ends with a final VR participatory choreography created in collaboration with the "virtual" dancers of the AiEP dance company.

Garden Curator: Maria Grazia Mattei (MEET)
Synthetic Corpo-Reality: Curator — Julie Walsh; Artists — Zhou Xiaohu, Miao Xiaochun, Martina Menegon, Claudia Hart, Tim Deussen and Manuel Zimmer, Sophie Kahn, Carla Gannis, Nancy Baker Cahill, Auriea Harvey, Rebecca Allen, Tamiko Thiel
Oxytocina Machina: Concept & VR: Mila Moleman & Sammie de Vries (Studio VRij)
Concept & Spatial design: Zalán Szakács
Sound design: Mathieu Preux
Live VR performer: Lucia Redondo
Moving in VR! with Ariella Vidach. A workshop and a virtual participatory choreography
A workshop led by choreographer Ariella Vidach. Participants are guided through the discovery of movement in VR from a remote location. The workshop ends with a final VR participatory choreography created in collaboration with the "virtual" dancers of the AiEP dance company.

© MEET

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

MILAN

National Museum of Science and Technology Leonardo da Vinci (IT)

Digital Aesthetics

The *Digital Aesthetics Garden* will be at the National Museum of Science and Technology Leonardo da Vinci with a specific program for the days of the festival. It will exploit “Chromata”, a work by Michael Bromley, to create an active experience of digital culture that integrates science, technology and aesthetics. Michael Bromley is a web developer using applications and coding in a creative way to design open-source online tools that invite anybody to undertake their own creative explorations. Chromata in, particular, has been designed for the web and is a tool which can turn any image into a unique, animated artwork. In this case, Chromata will be turned into an active, physical experience in one of the Museums’ most recent learning spaces, the Future Inventors Lab, dedicated to digital culture and its intersections with STEM (science, technology, engineering, mathematics). Visitors are invited to use the tool to explore, modify and re-interpret their own images that become, in turn, the setting of the lab itself in which the visitors are physically immerged. The *Digital Aesthetics Garden* is part of the specific work being currently undertaken by the National Museum of Science and Technology Leonardo da Vinci, which aims to explore the digital culture in its diverse manifestations, its transformative nature and its impact on everyday life, especially with regards to the STEM field and, more specifically, STEM learning through the design and development of learning spaces, resources and programs for different types of visitors.

The re-interpretation of *Chromata* into a physical experience is supported by IBSA Foundation and is part of the Future Inventors Lab funded by Rocca Foundation.

© Michael Bromley

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

MONTRÉAL

MUTEK (CA/QC)

MUTEK Edition 22

For its 2021 edition, MUTEK continues to mesh art and ideas, wonder and awakening, across the city of Montréal and virtually, allowing for a dialogue with its communities made up of festival-goers, artists and experts from Québec, Canada, and beyond. As part of the Garden, MUTEK will showcase a selection of this year’s artistic programming, which featured about 80 live performances of digital art and electronic music, intertwining in-venue shows in Montréal with a free virtual component via the virtual.mutek.org platform. The performative core was extended by a series of exhibitions in the physical and virtual space, as well as international collaborations in the recurring Connect program. Simultaneously, the 7th edition of the professional MUTEK Forum brought together artists and companies in digital creativity and electronic music, with the goal of exploring the latest artistic practices while stimulating reflection on the ethical and political issues related to technology and the digital world. Launched in the year 2000, MUTEK is dedicated to the presentation of live electronic music and real-time audiovisual performance, making it one of the rare outlets in North America for such innovations. After 22 years, the festival’s future-seeking mandate has matured—and while the promise has in many ways caught up with the present, its commitment to the ongoing mutations and variations of contemporary digital creativity remain, with its eyes and ears still fixed on what comes next.

MUTEK would like to thank its partners, who play a key role in the maintenance and development of its activities, and have provided particular support towards the development of the Festival and the Forum.
The Government of Québec, the Conseil des arts et des lettres du Québec, the ministère du Tourisme du Québec, the Secrétariat à la région métropolitaine du gouvernement du Québec, the ministère de la Culture et des Communications du Québec, the Canada Council for the Arts, the Conseil des arts de Montréal, the City of Montréal, FACTOR and Canada’s private radio broadcasters, the Department of Canadian Heritage, Musicaction, the British Council, the Consulat général de France à Québec, the Goethe-Institut, Tourisme Montréal, Red Bull, Soundworks, BeatConnect, Zú, Place des Arts, Akufen, Urbania, Folklore and Click & Mortar.”

Martin Messier @ MUTEK 2020, © Myriam Menard

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

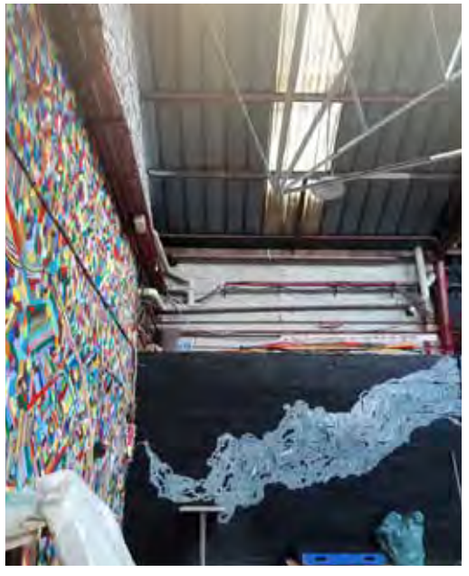
MONTREUIL/PARIS

City Interaction lab (FR)

City without city: hidden gardens of city

The main idea of City Interaction Lab aims at building interdisciplinary, inclusive city experiences. We work online as a virtual cross-boundary community, make field trips in urban areas around the globe, teach each other about mobility, green and blue spaces of cities, and how to rethink cities in the 21st century. We are researchers, urbanologists, artists and educators. We organize open workshops, common projects, development initiatives and volunteering in the city. Main areas of our work are: city perception, city analysis, and different types of data visualization. In this Ars Electronica Garden, we present all the areas of our work as well as inviting people to participate in group projects where everyone can come to discuss matters of city perception, draw the city, and see some results of citizen science. We will focus on finding hidden spaces that form new types of city gardens and green spaces, encouraging us to rethink the concept of city gardens. The main goal of the garden is to make the city-dwelling experience participatory and show how everyone could contribute to city analysis and data collection in a creative way.

The project is organized in City Interaction Lab hosted in Albatros Space. The main project is coordinated by Liu Bauer and Vera Baumann. The project is collaborative and all participants of the workshop in City Interaction lab will be acknowledged in the project page.



Collection of city images analysis and city exhibition, City Interaction lab, 2021

GARDEN PROFILE

FORMATS

- ○ Exhibition
- ○ Lecture/Conference/Talk
- ● Workshop
- ○ Journey
- ○ Performance/Concert/Event
- ○ Film/Animation

COMMUNICATION STRATEGIES

- ○ Social Media
- ● Online participatory tools
- ○ Participatory virtual environments
- ○ On-demand content
- ○ Experimental tools
- ○ Streaming

ARS ELECTRONICA GARDEN

MOSCOW

HSE Art and Design School (RU)

HSE Garden Pavilion

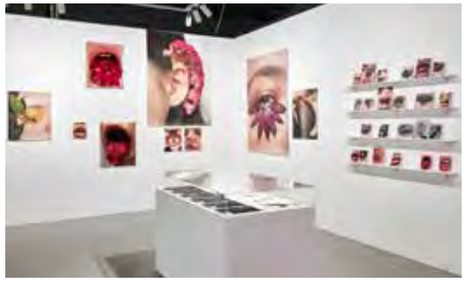
HSE Garden Pavilion is a platform which presents the diversity of young artists' views on Ars Electronica2021 key topic—A New Digital Deal. The Pavilion's agenda includes digital exhibitions, sound performance, and a collection of in-browser games. All projects are created by students and alumni of HSE University, one of the leading young universities worldwide (QS 50 Under 50), and the best Russian school in the field of Art & Design (QS-2021).

The Pavilion's projects dwell on the ambiguous nature of social networks' transparency; the digital perception of the female body; how to make an artist out of a game character; understanding a person with attention deficit disorder and dealing with frustration about one's behavior in the face of approaching deadlines. The Garden also offers sonic portals—a speculative digital sound environment and a Garden castle exhibition, filled with digital sculptures, videos, and photos.

The program also includes a round-table discussion that will unite specialists in media history, semiotics of contemporary art, game studies, digital art and design to rethink perspectives of the online condition humaine.

Anastasia Arkhipova, Diana Artemieva, Fyodor Balashov, Andriesh Gandrabur, Vlad Generalov, Irina Ineshina, Ivan Kalashnik, Maria Karpovich, Elena Krasnoslobodtseva, Yulia Krasova, Kirill Kustov, Lana, Anna Novikova, Alexandra Persheeva, Katya Pravda, Tatiana Rivchun, Irina Rusakova, Alexey Ryumin, Georgy Safarov, Aleksander Senko, Stas Sharifullin, Vasily Shikhachevsky, Grigory Shmidko, Kate Umnova, Katya Volkova, Gleb Yakushev, Yulia Yousma, Sergey Zakharov, Alexandra Zotova, Olga Zubova

© Mitya Lyalin



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GARDEN PROFILE

FORMATS

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ARS ELECTRONICA GARDEN

MOSCOW

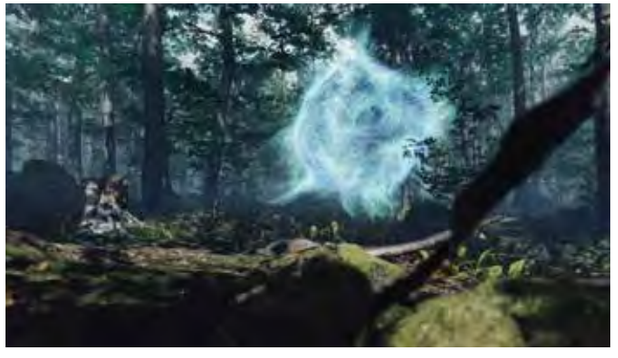
Helena Nikonole (RU), Oxana Chvyakina (RU)

Uncanny Dream

Media Art in the Age of Pandemics

The “Uncanny Dream” is an exhibition focused on how young Russian artists and digital natives, explore the impact of new technologies such as AI, AR and video games on art, culture and society. The project unites artworks reflecting on issues of the Coronacene epoch. One of the key motifs of the exhibition is a metaphor of a dream as a form of anxiety related to uncertainty and the constant rapid change in the world. The exhibition also addresses topics such as AI biases, different forms of biopolitics as a response to the COVID-19 crisis, and social isolation and loneliness in times of pandemic. The “Uncanny Dream” project is taking place in a hybrid format. The physical exhibition is complemented by an online show. The website presents video games, art bots, interactive projects, video art, digital images and video documentations of the projects. The public program of the project includes curatorial tours, artist-talks, performances, panels and lectures. The public program takes place both onsite and online.

Curators: Helena Nikonole, Oxana Chvyakina
Artists: Fedor Balashov aka wasdswag, Katya Galitskaya, Mitry Grankov, Gray cake, Anastasia Koroleva, Yuliya Kozhemyako aka supr, Ivan Netkachev, Xenia Obukhovskaya, Rona Peshekhonova, Alexey Ryabov, Eugene Kruglov, Pavel Seldemirov, Vladimir Sheshak, Anna Shustikova, Roman Solodkov.
ELECTRO MUSEUM The Foundation of Vladimir Smirnov and Konstantine Sorokin



The Becoming Seldemirov

Sheshak Charon, AR

GARDEN PROFILE

FORMATS

- ● Exhibition
- ● Lecture/Conference/Talk
- ● Workshop
- ○ Journey
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ARS ELECTRONICA GARDEN

MUMBAI

Art X Company (IN)

Opening Doors

In a land where multi- and inter- are axiomatic, how do digital disciplines embrace culture? Where concepts of access, inclusion, and infrastructure are not nearly as ubiquitous as the challenges of sustainability, how does the abundance of diversity in the arts adopt digital futures? The festival as a platform for arts, culture, and community is both a tool for sustainable futures and a playground for experimentation.
We learn, grow, and bond within festivals that nurture the art and imagination of multiplicities. We explore our cultures’ personalities through sensorial interactions.
In 2021, we explore how these interactions adapt in both sustainability and sensoriality. We open doors to new media interventions, innovations the experience economy, and sustainable arts livelihoods.
We explore (in)congruences within art, digital, experience, and culture, and the contexts they emerge out of. We open doors to discussion and debate in the cultural multiverse of this newest version of a flat world.

British Council Festival Connections Festivals for Future
Art X Company Arts and Culture Resources India (ACRI)

© Art X Company

© Art X Company

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

MUNICH

Muffathalle Munich (DE)

gREen

Sampling Color — Farbe Vermessen

What is “green”? Are we “green”? And is it the vegetative world at all? With monumental bio-technical installations, olfactory portraits of trees and the chemical re-enactment of historical toxic pigments, this garden, presented by Muffathalle Munich and curated by Jens Hauser, initiates a series of events under the label “gREen” that fosters debates on climate politics addressing the tension between art, nature and science. The installations (7.-16.9.) by Thomas Feuerstein, Agnes Meyer-Brandis and Adam Brown, as well as an international symposium (9.11.), materially challenge the increasingly uncritically accepted symbolism of “green” as a RE-mix and RE-evaluation of contradictions and paradoxes. Is “green” so important to humans because naturalness and artificiality, the healthy and the toxic, the hoped for and the lost oscillate in it? Chlorella algae are the protagonists of Thomas Feuerstein’s large photo-bioreactors and meandering hoses, harvested to be metabolized into beverages, pigments, bioplastics or even charcoal. Is black the new green? In Agnes Meyer-Brandis’ works, trees are no longer just photosynthesizing green carbon sinks, but complex organisms with their own identities, which communicate with one another thanks to their specific gas emissions—or with visitors, if they want to experimentally put on a smell costume. Last but not least, Adam Brown’s neo-alchemical live laboratory reminds us that, in art, “green” is often represented nature as the most poisonous of colors.

Muffathalle Munich (DE)
Helmholtz Zentrum München, Research Unit Environmental Simulation (EUS) Universität Innsbruck, Unit of Environmental Engineering Medizinische Universität Innsbruck Michigan State University Bridge Art, Science and Humanities Program

Transpalette Emmetrop (Octobre 2019)

GARDEN PROFILE

FORMATS
- ● Exhibition
- ● Lecture/Conference/Talk
- ○ Workshop
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- ○ Film/Animation

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ARS ELECTRONICA GARDEN

NEWCASTLE

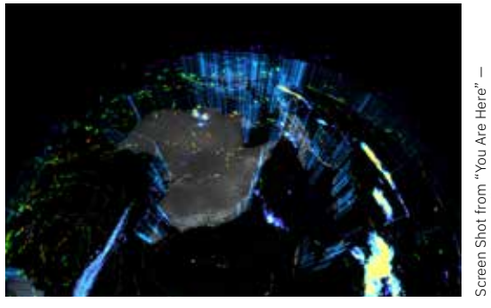
Art Thinking Australia (AU) / FASTlab: Future Art, Science & Technology Lab (AU) / University of Newcastle (AU) / City of Newcastle (AU)

Art Thinking et al. — Recalibrating the Compass

signal_novo [32.9283° S | 151.7817° E]

Ars Electronica Garden Newcastle 2021 presents an inspirational response to the Global Digital Deal from the Australian coastal region of the Hunter. A place that is quickly evolving and transforming into a new epicenter for collaboration between Art, Science, Technology & Society. On the back of the 2020 Garden, Art Thinking Australia (Ambassadors of Ars Electronica) have found a home deep inside a unique creative & cultural ecosystem that sees academia, industry, governance and artists working alongside each other to create the city of the future. Together with our partners at the University of Newcastle’s FASTlab and City of Newcastle, our garden’s philosophy is to lead with open arms. We have invited leading figures from the Australian Art-Science community to participate in developing our unique perspective towards the New Deal. Locally, we focus on “citizens as stakeholders” and the garden is curated with the ethos of “open, accessible and transdisciplinary education for all of society.” We believe a future smart city means smarter future citizens and therefore our young minds (U18), the real future experts, will take center stage to calibrate the compass and help to navigate the digital impact of our tomorrow. This free and accessible platform is spread across several locations including Honeysuckle Foreshore, Clyde Street Precinct, Newcastle Museum and the brand new Q Building — where Creative Industries & Innovation Technology Startups collide. (TEXT: Kristefan Minski, CEO — Art Thinking Australia)

Art Thinking Australia FASTlab (Future Art, Science & Technology Lab) University of Newcastle City Of Newcastle



Screen Shot from “You Are Here” — Artist: Andrew Styan

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

NEW YORK CITY

XRE (Extended Reality Ensemble) (US), Culture Lab LIC at The Plaxall Gallery (US)

A PORTAL

through the intimacy of technology

XRE, the Extended Reality Ensemble, is excited to present the inaugural Ars Electronica Festival Garden NYC. The international, interdisciplinary artist collective chose the theme *A Portal* for their Festival Garden and invites the audience to explore a world of immersive art, new technology and interactive performances. Can we be intimate with technology? Can virtual and analogue artists co-exist? The festival reflects on the technological promises made to us and tries to rethink the foundations of the digital world to reconcile it with our current reality and to explore it as it intersects with culture and society. XRE's key goal is to empower the community of NYC new media artists, creators, coders, visionaries and community activists who are directly connected to multicultural and international communities. This festival will uplift the voices of diverse artists and tech community by providing several platforms: locally through a stage at Culture Lab LIC in Queens and globally through Virtual Reality rooms and via streaming. Creators from the LGBTQ+, femme identifying and non-binary BIPOC, Asian and Latinx communities offer their unique perspectives through an array of diverse mediums and art forms, from spoken word to NFTs. The goal is to support equity and accessibility and have both participants and audience learn from one another by walking through the Portal to become enchanted by the unique combination of art, technology and society. XRE is thrilled to collaborate with Ars Electronica who are true pioneers of art, tech, community and honest conversations around using these spaces for accessibility and healing.

Partners: Culture Lab LIC at The Plaxall Gallery, Never Knows Better, My Digital Food, Vizmesh, Museum of Craft and Design of SF, Cosmic Sugar Sponsors: 8th Wall, JanetB Music Artists & Panelists: Lichtenberg, She's Excited!, Lee, Thabault, Kurtinecz, Francesca, Able, Lee, Boykin, Tesene & Stucke, Andrade & Andrade, Sabio, Lobser, Pressler, Dr. Teich, Wilcox, Wajufos, Flex Dance Program, Gleixner, Cherouvim & Filippou, Bouvier, Rose, Tobin, Ghabte, Lion, Tanky, C03RA, Ulto, Sethi, Romeo, Milenaria, Mx Oops, Mx_mango, Interface, Laine, Sadaway & Handhead, Charley, Devare, Smiley, Rolnick, The Museum of Craft and Design, McCau, Ulisespal, White Lights, YANDL and others.

GARDEN PROFILE

FORMATS

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ARS ELECTRONICA GARDEN

NOVA GORICA

University of Nova Gorica School of Arts, Nova Gorica (SI)

Greetings from the Future IV

Our main motto last year was "Community in the Time of Corona Virus," reacting to the shock of a sudden new situation that removed us from the everyday life we used to know. In the meantime, we have had to acknowledge that it wasn't just a short break; its full impact will take a long time to discover. Our first garden at AE is planted by a selection of student works from the past few seasons, but with a view ahead. It tells us stories and sends us greetings from the future. The University of Nova Gorica is a small research-oriented university in the region near the Slovenian-Italian border. Its School of Arts is situated between the Slovenian town of Nova Gorica, which was constructed according to socialist ideas after WWII, and the ancient town of Gorizia/ Gorica/ Görz on the Italian side. The two towns are building their common future towards GO! 2025, the European Capital of Culture in 2025, and we are part of this journey. We have always been very attentive to our social and geopolitical realities. We believe we are helping to enrich the dialog and interactions between the towns' citizens and their temporary residents, among them our international students, and we have made this a part of our core activities, implemented at a deep level in our curricula.

University of Nova Gorica School of Arts, Nova Gorica, Slovenia
Prof. Rene Rusjan, program director
Rok Govednik, coordinator
Ass. prof. dr. Peter Purg
Doc. Tina Smrekar
Ass. prof. Jasna Hribernik
Robertina Šebjanič, visiting mentor
Valerie Wolf Gang, visiting mentor, alumni
Miha Godec, alumni
Sarah Günther, visiting mentor (TV Free Europe)

University of Nova Gorica School of Arts, Nova Gorica

GARDEN PROFILE

FORMATS

- ○ Exhibition
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ARS ELECTRONICA GARDEN

NOVI SAD

Gallery Bel Art (RS)

Danube Dialogues

Inside Forced Realities

In the age of Coronavirus, social distancing takes on a different meaning since distance has been transposed into politics, economics, sociology, ecology, and even science. The usual dialectic flow of things has been disturbed while the pandemic and raging capitalism show us a disease — both actual and metaphorical — that arises out of systematic dereliction of care for the individual, even in developed systems of government. Even highly significant achievements are no longer credible symbols of progress since each step forward brings with it concern, uncertainty and fear. In this state of affairs, the role of art is of exceptional importance. Society and Art in a Forced Reality — the name of our main exhibition — intends to point out the effectiveness of homocentric topics and the function of art. Man today needs art that works for his being and his existence, the efficacy of clear aesthetic systems and ethical principles.

City of Novi Sad, Austrian Cultural Forum (Belgrade), Fundatia Triade (Timisoara), Gallery Arosita (Sofia), Museum of Contemporary Art of Vojvodina (Novi Sad)

© Venelin Shurelov

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

NOVI SAD

European Capital of Culture Novi Sad 2022, Center for the Promotion of Sciences, VisitNS.rs

Kaleidoscope of Culture Pavilion for New Media Arts

District

Recognizing the importance of merging the gap between art and science in contemporary creative practices, European Capital of Culture Novi Sad 2022 has partnered with Ars Electronica to jumpstart the establishment of the National Pavilion for New Media Arts in the newly formed Creative District in Novi Sad.

Open Call Committee Members: Dobrivoje Lale Erić (art historian / center for the promotion of sciences), Sanja Kojić Mladenov (curator / Museum of Contemporary Art of Vojvodina), Stanislav Drča (new media artist / European Capital of Culture Novi Sad 2022), Nemanja Milenković (CEO / European Capital of Culture Novi Sad 2022), Dušan Vuković (Program Director of Kaleidoscope of Culture)

European Capital of Culture Novi Sad 2022

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

PALESTINE

The Freedom Theatre (PS)

Keffiyeh/Made in China

Juliano Mer-Khamis

The Freedom Theatre is a Palestinian community-based theatre and cultural center in the Jenin Refugee Camp, on the northern part of the West Bank. Established in 2006, the theatre aims to generate cultural resistance by using popular culture and art as catalysts for social change in the occupied Palestinian territories. The theater's goals are to "develop a vibrant and creative artistic community [that] empowers children and young adults to express themselves freely and equally through art [while] emphasizing professionalism and innovation". The theater teaches courses in film, photography, creative writing, and theatre.

The script of *Keffiyeh/Made in China* was dedicated to Juliano Mer-Kamis, and to François Abu Salem.
Writing: Dalia Taha
Direction: Ahmed Tobasi
Performance: Students of TFT Acting School, with the actresses Hadeel Takruri and Yasmin Shalaldeh.
Music: Somar As'ad
Lighting design: Firas Abu Sabbah
Technique: Adnan Naghnaghiye
Poster design: Abdelrahman Mansour
Filmed by Regash
Production Mustafa Sheta
A production of The Freedom School for Performing Arts 2021, supported by Open Society Foundations through the Palestinian Performing Arts Network. The show talks about clichés and stereotypes and looks behind prejudice, based on the human inclination to explain collective thinking around a specific issue, especially in the Palestinian case. Doing so in terms of a set of contradictions that deal with a people under occupation and violations, they also play a liberating role, albeit imperfectly, given the gaps between the occupier and the dispersed structural plans, premised on mistaken Palestinian policies. In this regard, the Palestinian garden faces these pressures with mockery, for "the worst disaster / calamity is the one that makes you laugh".
This play, a joint Palestinian-Belgian production, was first staged in 2012, under the direction of Bart Danckaert. It is, based on texts by Dalia Yaha and Joris Van den Brande, in cooperation with The Royal Flemish Theatre (KVS) and The A.M. Qattan Foundation (AMQF), as part of the Performing Arts Summer School, supported by the European Cultural Foundation and the Government of the Kingdom of Belgium, through the Belgian Development Agency.

© Alaa Aliabdallah (Regash)

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

PEJA

Anibar (XK), Cinema Jusuf Gërvalla (XK)

Animating Public Spaces

Our garden will deal with the modes of animation in public spaces, instigated by inhabitants, citizens, artists, urban planners, and designers. It will focus on public space, treated as an open, concrete space, with its physical and architectural materialities, ordinary or remarkable, and its social practices and patterns.

Anibar International Animation Festival, Cinema Jusuf Gërvalla, Austrian Embassy in Pristina

© Elmedia Arapi

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

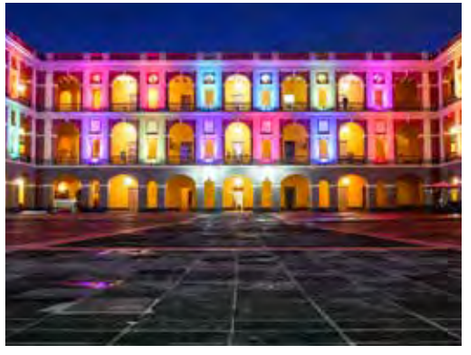
PUERTO RICO

PRSTRT — Puerto Rico Science Technology and Research Trust, CHIP — Cultural Heritage Innovation Program (PR)

Rediscovering our Art Culture and Heritage in a Digital Era

Garden Puerto Rico will host and develop a new space to apply innovation in the digital humanities' to the art, history and heritage of Puerto Rico and the Caribbean's geographic attributes.
A sustainable conservation model built along four axes — Education-Research / Communities-Wellbeing / Sustainable Planning-Tourism / Creative Economy-Workforce Development –interacts as a holistic mode to create almost infinite combinations of projects supporting the preservation of historic materials, cultural and intangible heritage and natural landscapes.
Through digital tools and the use of technologies like AI, VR-AR, machine learning, 3D scanning, LIDAR photogrammetry, material characterization, video games and 360 images, we have developed products and activities to produce art and tech performances, showcases and documentaries. From cave art archaeology to medieval Spanish archives, passing through the real Pirates of the Caribbean, Puerto Rico bears troves of unknown heritage and untold stories, all available for enjoyment in the digital era.
In the process of rediscovering our heritage with digital tools and technology we are supporting communities to capture and strengthen the passion for preserving our heritage and citizens' wellbeing.

Joaquin Fargas, Art, Science and Technology — AR (JF/AST-AR)
Ars Electronica Garden Buenos Aires — AR (AEGBA-AR)
Destination Marketing Organization Puerto Rico — PR (DMO-PR)
Pulsar La Tierra, Puerto Rico Staff — PR (PT/PRS-PR)



Sr. Edwin Mattei (Owner — Hacienda Mattei)
Geomark LLC- (3d scanning imaging), (2020),

GARDEN PROFILE

FORMATS
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ARS ELECTRONICA GARDEN

QUEBÉC

Hexagram (CA), Université du Québec à Montréal (CA), Concordia University (CA)

EMERGENCE/Y

Exploring new possible futures through research-creation

In the last year the global pandemic and its resulting political-economic fallout, the continuing ecological crises and the social-cultural explosion of long simmering systemic injustice and inequality have made the entanglement of human, machine and natural orders ever more apparent, with radical consequences for all forms of life on this planet. The future appears uncertain, unstable, unsettling and unknown. How then can Research-Creation (RC) actualize not yet existing presents and enable the emergence of new possible futures? Through its wide network, Hexagram sets out to explore the *Emergence/y* entangled in today's troubled socio-technical and cultural fabric. To do so, the network presents an array of artistic and reflective works and talks to address (1) The current climate emergency; (2) The urgency of a critical response to Artificial Intelligence; (3) The emergence of new intersectional theories; (4) Emerging interplay between Human and more-than-human sentience; and (5) Emerging models for political economy involving the arts and science. Hexagram's 2021/22 program brings together network members and collaborators whose critical and techno-material approaches are dedicated to addressing these complex challenges through research situated at the intersections of the arts and sciences.

Directors: Christopher Salter (Concordia University Hexagram), Sofian Audry (UQAM Hexagram); Staff: Manuelle Freire (Hexagram), Isabelle Boucher (UQAM Hexagram), Marine Theunissen (UQAM Hexagram), Stephanie Creaghan (Concordia University Milieux Institute), Marc-André Cossette (Concordia University Hexagram)

SenseFactory: Christopher Salter, Sofian Audry, Alexandre Saumier, Photo: Erik Adigard

Les Rencontres Interdisciplinaires d'Hexagram — Emergence/y — Edition 21/22

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

RIGA / BOSTON / KARLSRUHE

RIXC Center for New Media Culture (LV) in collaboration with The Art, Culture and Technology (ACT) Program at MIT (US)

PostSensorium

Reencountering Stranger Senses

"..to live means first and foremost to look, taste, feel, and smell the world around us." (Emanuele Coccia, 2016)
With more recent enhancements of immersive and sensing technologies, our 'sensoriums' have intensified and become more mediated than ever before. Art and concepts (that are our "strange tools" — coined by contemporary philosopher Alva Noë (2015)) are perfect instruments to stimulate our perception. By drawing upon prior experience, cultural shifts and technological advancements, art becomes a medium that creates new and transformative experiences so crucial for reorganizing ourselves. As contemporary art historian, curator and author Caroline A Jones has put it, "what we want art to reorganize us into, also changes" (2016). Meandering between different realities, actual, hybrid and virtual, RIXC Garden program PostSensorium reflects upon an incessant evolution of the human and "more-than-human" sensoriums conditioned by new technological advancements. Located in a triangulation between three cities — Riga (LV), Boston (US) and Karlsruhe (DE), RIXC Garden program will feature Live Concert from the Greenhouse at RIXC Fields Art Residency in Latvia; an immersive online exhibition and screening program Stranger Senses by young and emerging artists who are at the forefront interrogating novel sensing and artistic tools; and a virtual room for spatial webVR experiences and networked interactions. Overall, PostSensorium: Reencountering Stranger Senses program explores and combines sensorial perception, new media and experiential practice, to redefine sensorial apparatus and project a futuristic outlook of intertwining relationships between the actual and virtual, organic and artificial, natural and techno-social, human and more-than-human...

RIXC Garden programme is curated by Rasa Smite and Raitis Smits, and it is a satellite event of RIXC Art Science Festival 2021: PostSensorium (festival2021.rixc.org), and a collaboration with Art, Culture and Technology program at MIT (US).
Participating artists and musicians: Kwan Q Li, Pohao Chi, Weihan Jiang, Weilu Ge, Krista Dintere, Ivo Taurins, Jung Eun Lee, Christina Vinke, Lauris Smits and others from Riga / Liepaja, Boston and Karlsruhe.

Rasa Smite, Raitis Smits. "Atmospheric Forest" (2020), Photo: Kristine Madjare

GARDEN PROFILE

FORMATS
- ● Exhibition
- ○ Lecture/Conference/Talk
- ○ Workshop
- ○ Journey
- ● Performance/Concert/Event
- ● Film/Animation

COMMUNICATION STRATEGIES
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- ● Participatory virtual environments
- ○ On-demand content
- ○ Experimental tools
- ● Streaming

ARS ELECTRONICA GARDEN

SEOUL

Korea National University of Arts (KR)

Code H

With the advancement of digital technology, humans have developed language and aesthetics suited to the new technological environment. Today, social networking services and virtual media play a significant role in our daily life. Unexpected errors and messages that read differently from the initial intention give rise to a certain form of comedy. They emerge from a blended environment of reality and virtual reality with possibility for further wide-ranging change in the future. Henri Bergson considers humor as humane and as an antidote to antisocial attitudes. Humor is the most persuasive and tolerant language that contains social meaning and function. In the 2021 Ars Electronica Garden Seoul, whose central theme is Code H, we explore today's new aesthetics and focus on humor as a means for art and technology to co-exist on a basis of humanism. Through interdisciplinary talks, online exhibits, performances and workshops this festival examines the relationship between humor and art in order to rediscover the value of humor in overcoming the post-COVID-19 era.

Hosted by Korea National University of Arts
Organized by Art Collider Lab
Project director: Chungyean Cho (KR)
Project management: Hana Yun (KR), Dayoung Lee (KR), Myungyean Lim (KR), Faculty for K-ARTS, X Ars Electronica Academy: Chungyean Cho, LoopnTale, Insoo Park
Participating Artist Groups: 30000ft (Kyoungbin Son, Jihyo Han, Sejun Lee), Hop Step (Doyeon Kim, Minjae Kwak, Jungsoo Lee, Hyun Cho), Ingrowing Liaison Office (Jiwon Kwak, Teo Bahk, Seuli Lee, Jinkyung Her), Inter-cumulation (Jeeyoun Kim, Minjin Jeong, Sooyeon Choi, Jun Ryu, Teri Seo) Jang-gu in the Club (ARK PARK BakShim Jung-Hoon, Jun Ryu, Landing [by accident] (Jiyoung Park, Damin Lee, Jihyo Han, Lime Gwon, Sujin Park, Jeongeun Park, Heesu Mun), MANANA (Yunji Kwon, Minyoung Lim, Minhee Kim, Wangwon Lee, Jahyuk Koo), No-Normal (Eunkyeong Kang, Jihye Park, Bora Youn, Jisoo Lim)

Festival concept@studio zaanchi

GARDEN PROFILE

FORMATS
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ARS ELECTRONICA GARDEN

SILICON VALLEY

Open Austria Art + Tech Lab (US/AT)

What is our digital humanity?

Technology has become the most pressing question of our time. Who creates it, who controls it, who has access to it, and who doesn't are the new parameters that determine emerging power structures around the world. But technology will also be front and center as we tackle our global climate crisis and advocate for more justice, diversity and inclusion in our fight against poverty and inequality, and work to improve the health of billions of people around the world. The concept of digital humanism can be seen as a necessary evolution of Silicon Valley's transhumanist vision for humanity. A marriage of transhumanists' excitement about the immense potential of technology and a new humanism that aims to restore our dignity as human beings online and offline. A digital humanist understands technology as a tool that can be used for both good and bad. Digital humanists are realistic about its potential to elevate us and cause harm though a host of unintended consequences. The consequences of merging the off- and online world as we gradually turn into digital humans aren't fully explored yet. In order to understand the many layers that constitute a digital human, policy makers, tech companies and technologists need to break out of their respective silos and start working together to assure that universal human rights are being protected regardless of their differences. Art and culture shape our common reality. Artists as cultural ambassadors are best equipped to identify the potential and pitfalls of our current digital transformation. They pose, explore and promulgate the question of what constitutes a human being in the digital world. *What is our digital humanity?* The Ars Electronica Garden Silicon Valley, hosted and curated by the Open Austria Art + Tech Lab, engages with artists, curators and cultural facilitators as well as technologists, tech executives, think tanks, diplomats, and policymakers to pose this question in a variety of settings through art panels, workshops, immersive experiences, and keynotes.

Curatorial Director: Clara Blume, Head of Open Austria Art + Tech Lab

Open Austria Art + Tech Lab

GARDEN PROFILE

FORMATS
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ARS ELECTRONICA GARDEN

SLOVENIA

Kersnikova Institute [Kapelica Gallery + Rampa + BioTehna + Vivarium] (SI), Projekt Atol Institute (SI), Ljudmila Art and Science Laboratory (SI), Aksioma Institute (SI), Cona Institute (SI), University of Nova Gorica — School of Arts (SI), Youth Cultural Centre Maribor (SI), Youth Centre Velenje (SI), LokalPatriot Novo mesto (SI)

konS ☰ Garden for Contemporary Investigative Art and Tactical Media

As part of *konS ☰ Garden*, we present an initiative that has brought together nine partners from five Slovenian cities. In these cities, the project konS ☰ Platform has made it possible to establish a network of contemporary investigative art laboratories that feature programs for informal education where participants develop their theoretical and practical knowledge of how to use new technologies in a creative and critical way. It also encourages ambitious artistic investigation and creation, supporting the efforts to bring new, different and ethical ideas into the innovative process for a better tomorrow. Establishing a collaborative program all over the country is a challenge that we intend to meet by establishing systemic conditions for education and development aimed at audiences and future co-workers who will co-create in the inspiring environment of the fully developed Platform. That's why we are setting up a series of well-equipped laboratories where artists collaborate with scientists and engineers to explore and create artworks, develop workshops, and demonstrate prototypes. Five laboratory units are scattered throughout the country in partner cities and help to create a larger critical mass of people, spaces and equipment. By doing so, konS ☰Platform is becoming a network of intermedia creators with strategic importance in the project of enculturating technologies, making it an important catalyst for social change.

Partners: Kersnikova Institute (Kapelica Gallery + Rampa + BioTehna + Vivarium), Projekt Atol Institute, Ljudmila Art and Science Laboratory, Aksioma Institute Cona Institute (all from Ljubljana); University of Nova Gorica — School of Arts, Youth Cultural Centre Maribor, Youth Centre Velenje LokalPatriot Novo mesto (SI). konS ☰ Platform for Contemporary Investigative Art is a project chosen in a public call for the "Network of Investigative Art and Culture Centres". The investment is co-financed by the Republic of Slovenia and by the European Regional Development Fund of the European Union.
This Garden is part of the European ARTificial Intelligence Lab (AI Lab) and co-funded by the Creative Europe Program of the European Union.

Cosmic Rain_Tilen Sepič, photo: Tilen Sepič

GARDEN PROFILE

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- ○ Streaming

This Garden is part of the AI Lab programme.

ARS ELECTRONICA GARDEN

ST. PETERSBURG

ITMO University, Art & Science Center (ITMO University), Art.ITMO.Residency, Dokuchaev Central Soil Museum

Grounding

Grounding is a refocusing of our gaze; a search for a new connection with what is below our feet. Understanding our ethical role in the planet's transformation requires the ability to recognize nature as a complex self-sufficient system. We are only a part of it. Natural formations exist as open systems of continuous interspecies communication. The origins of this view can be traced back to soil science developed by Vasily Dokuchaev and reflected in Vladimir Vernadsky's works on the biosphere. Dokuchaev considered soil as a systemic phenomenon, consisting of biotic and abiotic factors. Vernadsky continued his thought and gave living organisms, primarily humans, a leading role in the transformation of the planet. Anthropogenesis is an integral part of the abiotic layers of the biosphere and humanity, as a powerful geological force, becomes both a creator and destroyer. This capacity demands transforming the mind from a *mind-for-itself* state to a *mind-for-the-Earth* state. Grounding is about neutralizing the disruptive potential of technology and the strain from accelerating growth. At the same time, it's a responsibility for cultivating biotechnical shoots in contrast to the destructive competition between the man-made and the nature-created. The matter of the soil woven from symbiotic connections can serve as an inspiration and foundation for the cultivation of this responsibility.

Anna Kaplan, Victoria Gopka, Grigorii Kirgizov, Aliya Sakhariyeva, Khristina Ots, ITMO University, Art & Science Center (ITMO University), Art.ITMO.Residency, Dokuchaev Central Soil Museum

Dokuchaev Central Soil Museum, Denis Nokhrin

Dokuchaev Central Soil Museum, Denis Nokhrin

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

ST. PETERSBURG

Sevkabel Port (RU), NADO Curatorial Agency (RU)

HYDRA

The project explores water-related environmental issues which affect climate change and the Earth's biosphere in the context of artistic statements. The main metaphor of the exhibition is reflected in the name of the project — Hydra stands for both water, the element closest to St. Petersburg, and a mythical creature that grows new heads in place of felled ones. We constantly hear a lot of terrible and sad news about rising temperatures, species extinction, changing landscapes, water pollution, and we often feel powerless in the face of these global processes. We are used to talking about ecology in a practical way, focusing on possible personal impact and starting simple — limiting personal use of plastic, sorting garbage, using cars less, etc. Because each of us can influence the situation at least a little bit. Within a powerful nature, a human comes into conflict with the forces of nature and with himself. The artistic approach helps to work with this dual situation of power and impotence and to perceive environmental problems as a struggle of the elements on Earth, a battle of the Titans, in which humanity is taking part on equal terms. Globally, on the scale of the planet, nature is invincible — it responds to hardships with new phenomena, but whether these new "Hydra heads" will appeal to humanity and other species remains a big question.

NADO Curatorial Agency: Olga Vad, curator Lidia Gumenyuk, curator Yulia Loginova, producer Sevkabel Port: Alexey Onatsko

Whispers by Light Society (CA)

The Day We Left Field by Tundra (RU)

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

TAIPEI

Egret Cultural and Educational Foundation (TW)

Sacred Garden

Performing Art Is Our Religion! The Stage Is Our Temple!

Welcome to the *Sacred Garden*. Plato once said, “Music gives a soul to the universe, wings to the mind, flight to the imagination and life to everything.” Throughout history, people have used music and art to convey their beliefs, inner thoughts and emotions. Music and art are extremely important mediums that served religion well. Nowadays, music and art are omnipresent and, in our view, diluted, through mainstream entertainment, commercials, social media, and memes. *Sacred Garden* hopes to refocus the unbounded potential of music and art for a higher purpose. As technology advances, we can imagine even greater possibilities to produce new innovative performing art. But we should embrace technology with a healthy blend of humanity’s warmth and meaning. Otherwise, art will fall to the hollowness of AI. Performing art is our religion and the stage is our temple. Music and art can cleanse the body, mind, and soul. As we traverse this dark pandemic episode, we should elevate music and art to soothe and encourage our inner creativity, imagination, and inner forces.

Egret Cultural and Educational Foundation:
Curator / Art Director / Producer / Composer / Performer: Chia-Hui Lu

Executive Producer / Executive Director: Yu-Chiou Tchen
Project Manager: Stanley Leong
Project Coordinator: Allyson Chin Eslite Performance Hall National Symphony Orchestra iF +, Engine Studios, Shu-Hui Lai,
The Paul Chiang Art and Culture Foundation, The Spring Foundation,
The Mr. & Ms. Yuan-Dong Sheús Culture and Education Memorial Foundation
Artists: Chia- Hui Lu, Po-Yu Wang, Vick Wong, Akibo Lee, Jeff Hsieh
Fearing Painters: Houei-Kuen Chen, Paul Chiang
Composers: Gordon Chin, Nan-Chang Chien, Chia-Hui Lu
Conductors: Günther Herbig, Wen-Pin Chien
Pianist: Chia-Hui Lu
Dancer: Billy Chang, Li-EnXu, Chia-Hong Chen, Shu-Yu Tsai

Project @ Egret Foundation

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

TAIPEI/FORMOSA

Virtual and Physical Media Integration Association of Taiwan (TW)

Taiwan Grand Tour

A Global Journey mapping the “New” World

COVID-19 has had profound impacts on people’s values and way of life, making it impossible to rewind to our beautiful past and limiting our ability to explore around the world. Therefore, we’d like to channel this desire into an exploration of the dimensions of the digital world, into a journey called *Grand Tour* via a variety of digital platforms and productions. The island will no longer be a confined piece of land, and the ocean will no longer be the obstacle standing between people but a medium binding us all together. Wandering in the digital ocean that connects different networks, we can explore all five continents and the geographical features of hundreds of countries. The journey is about discovering Taiwan’s beauty and our connection to the Austronesian culture, even extending this to the whole world. In this way, we can reinterpret people’s perception of reality and focus more on exchanging knowledge, technology, and creativity. *Formosa Grand Tour* has turned the digital content into an outline of an island, gathering Taiwanese artists and creators across fields. Through different arts and themes, the tour truly binds the digital world and our land together, using digital art to reflect on the past and the future. Therefore, we hope that viewers worldwide can once again awaken their passion and desire to make this ”Grand Island Tour” a port where the digital world docks, and kick off a grand tour from Taiwan. In the end, what we own will no longer be limited to the stereotypes between city and city, but a coherent vision of the future shared between Taiwan and the rest of the world.

Ami Wu, Andre Chiang, Billy Chang, Chia-Chi Lin, Ching-Chuan Hu, Chin-Hsiang Hu, Chun-Chieh Lien, Hsin-Chien Huang, Hung Ghung-I, Jia-Hua Zhan, Jie-Huai Yang, Ning Tsai, Po-Han Lee, Hsiao-Yue Tsao, Shih-Chou Wen, Sio-Pang Hong, Siou-Ming Wu, Vick Wang, Wei-Chung Feng, Wen-Chieh Chang, Wes Kuo, Wu-Ching Chang, Yi-Chi Lin, Yu-Ting Hsueh
Co-curator: Hsiao-Yue Tsao, Billy Chang, Chung-Hsien Chen
Production Coordinator: Gordon Will
Programming: Wei-Chieh Chiu, Chun-Yen Yu
Design: Pei-Yang Yeh
AC Global, do+2do+ , EMBERS, Engine Studios, HeyMechanic!, Inwheel, Lucid Realities Studio (FR), MINIWIZ CO., LTD., studio2 Animation Lab, TAIPOWER D/S ONE, Virtual and Physical Media Integration Association of Taiwan, Media Partnershipgs Taiwan, MoonShine Animation, National Taiwan Normal University, Oready Innovation LAB, Peppercorns Interactive Media Art Co., LTD, Taipei City Government, Taipei Urban Intelligence Center, Yahoo TV

© Pei-Yang Yeh

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

TEHRAN

Beshknow Radio (IR)

Sonic Garden

Beshknow [beshno, Farsi translation for “listen!”] is an internet radio station established in 2016 in Tehran with a focus on building a sonic bridge from Iran to the rest of the world. *Beshknow Radio* contributes to this edition of the Ars Electronica festival by presenting the work of Iranian artists who utilize sound as a primary medium.

Beshknow invites audiences from all around the world to listen to the sound of Iran ranging from solid electronic music to the field recordings of the urban/rural places of this country.

Curator: Maryam Razi (IR)

© Sasan Abri

© Sasan Abri

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

TEHRAN

Moein Mohebalian (IR)

Student Theater

When it comes to theatricality, my major concern regarding the development of theoretical foundations and relevance to Irans’ theater is “student theater as a concept” and as a performing capacity. In Iran this opportunity is fabulous for two main reasons. First, it is not bound to external and political matters. Simply put; students follow their creativity and inspiring sources of innovation. They do not censor their minds, sacrifice their ideas or place limitations as is common in other theatrical projects in Tehran. Second, student performers are highly motivated and enjoy drawing in attention. They stay informed about happenings within the arena of world theater, all while expanding on academic capacity.

The concept of theatricality is a phenomenon that can be adopted as a benchmark from which to analyze works from different perspectives, presenting them as models woven together from differing fields such as sociology, technological development, fundraising, social cohesion, globalization and Iranian folklore. Through live streaming, interview sessions, the reading of plays and educational correspondences between Iran’s present situation and articles focused on theatricality, our garden seeks to hone into the future of student theater and its unknowns.

Moein Mohebalian (IR),
Thea Theater (IR)

© Hamid Borzo

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

THESSALONIKI

MindSpaces Consortium: Centre for Research and Technology Hellas (GR), University of Maastricht (NL), Pompeu Fabra University (ES), Aristotle University of Thessaloniki (GR), McNeel Europe SL (ES), Up2Metric (GR), Nurogames (DE), Zaha Hadid Architects (UK), Maurice Benayoun (FR), Analog Native (DE), Espronceda (ES), e-Sèniors (FR), Ajuntament de L'Hospitalet de Llobregat (ES), City University of Hong Kong (HK)

MindSpaces Garden

Thessaloniki Garden will host the MindSpaces project, funded by the European HORIZON 2020-STARTS program. MindSpaces is an endeavor that brings together artists and scientists in order to tackle societal and urban city design challenges by leveraging the inspiration of the former and the technological innovations of the latter. People experience the built environment differently according to their social, cultural and economic background. The variety of this experience requires consideration if we want all users to feel that a particular space or place belongs to them. To this end, MindSpaces seeks to transform the practice of architecture by integrating the full diversity of how people experience and behave in the spaces we design through innovative, artistically-driven digital technologies. With the use of virtual reality, biosensors, artificial intelligence, algorithms and simulations, design decisions may be taken with regard to a detailed understanding of the users' preferences and collective behaviour.

MindSpaces Garden will host a) a teaser of an upcoming exhibition showcasing the research of the Open Call artists in collaboration with the technical partners of the MindSpaces consortium b) the ZHA Workplaces.AI interactive app, which allows each user to generate their own workplace environments by manipulating design parameters to simulate how a crowd of workplace "agents" behaves within it and experience it immersively and, c) an online meet-up that will bring together the artists and architects of the MindSpaces consortium.

Maurice Benayoun -Refik Anadol -Artists in residency, Haseeb Ahmed, Sarah Derat, Emanuel Gollob, Emmanuel Van der Auwera, João Martinho Moura, Michael Sedbon
MindSpaces has received funding from the European Union's Horizon 2020 programme in the framework of the STARTS initiative (Science, Technology & the Arts) under Grant agreement No. 825079.

MindSpaces@Refik Anadol-Maurice Benayoun

GARDEN PROFILE

FORMATS

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COMMUNICATION STRATEGIES

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This Garden is part of the STARTS programme.

ARS ELECTRONICA GARDEN

TOKYO

Japan Media Arts Festival, Agency for Cultural Affairs, Government of Japan (JP)

The Power of the Unseen

Time Sound Resonance Ecosystem Social Body Bond and Life

This is an era in which technology covers the entire world and forms a basis for our cognitive and behavioral patterns. Whereas technology was once taken for granted as a mere tool, we now live in a world where unperfected technology mutates so rapidly that we have no sense of control over it. As humans lose their grip on technology, we are wondering what it means to live as human beings. All of us are now aware that modern civilization is being shaken by what we cannot "see," such as an overly standardized social system that lacks diversity and tolerance, and the vulnerability of our overcrowded cities constantly pursuing efficiency.
There are no spectators.
It's time for us to start the Digital New Deal. The previously unseen forces of time, sound, resonance, ecosystem, social bonds, and life have also brought new sensations to our inherent cognitive powers. Knowing that we can now perceive the world by using all the functions of our body, we can receive wisdom; we can have courage to live; we can perceive what is unchanging about human life. Time has come to redefine the world itself under new conditions. We will be introducing winners from the Japan Media Arts Festival by exploring works of artists and practitioners who deal with changes in society. We will also highlight various collective activities in the industrial world that go beyond the boundaries of art.

Director: Asako Tomura / Artist (Live performance): evala (See by Your Ears) / Artists (Online Exhibition): Meiro Koizumi, Ory Yoshifuji, Kaito Sakuma, Yasuaki Kakehi Laboratory (The University of Tokyo) / Moderators and speakers: Asako Tomura, Maholo Uchida, Jiro Kubo, Masato Nagahiro

Prometheus Bound, Meiro Koizumi, Photo: Meiro Koizumi

GARDEN PROFILE

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ARS ELECTRONICA

UK GARDEN

University for the Creative Arts (GB)

In the Invisible Garden — where the magic happens...

The UK Garden draws inspiration from the book *In the Invisible Garden* by Valerie Picard about a city girl, Arianne, who travels to the countryside for her grandma's birthday. The despondent child sits alone among the chattering adults until one of the grownups suggests for her to play in grandma's garden. Thus, Arianne goes outside, where a small stone draws her attention to a cluster of swarming insects. The insects are immense as they soar above the mountaintops — or is Arianne perhaps minuscule? She discovers the vast freedom of her imagination. How far can one's imagination reach? For artists working at the intersection of art, science and technology, it is sometimes the smallest detail that sparks wonder, the unnoticeable conceptual design processes, or even the use of novel science and technology tools. The imagination of artists collaborating with scientists or technology experts is free like that of a child in an unexplored garden full of exotic new possibilities — this is where the magic happens...

Art in Flux (GB), EVA London — Visualising Music (GB), National Gallery X (GB), York Mediale (GB), Kinda Studios (GB), Silencing the Virus (GB), , University for the Creative Arts (GB)

Art in Flux: Reclaimed virtual exhibition featuring the work of Aminder Virdee, Aphra Shemza & Stuart Batchelor, Camille Baker, Danielle Brathwaite-Shirley, Enrique Agudo, Kimatica, Natasha Trotman, Olive Gingrich & Shama Rahman and Ro Greengrass & Maddy James

GARDEN PROFILE

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This Garden is part of the STARTS programme.

ARS ELECTRONICA GARDEN

UTRECHT

IMPAKT [Centre for Media Culture] (NL)

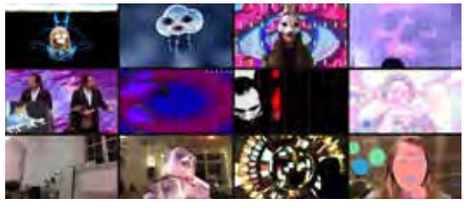
Fair Tech and Virtual Fun

CODE presentations on digital agency + Bal Masqué: Ars Electronica and EMAP Closing Party, organized by IMPAKT

Welcome to the Fair Tech and Virtual Fun: the Utrecht Garden by IMPAKT. In a time in which the digital world has become our habitat, where we live, meet, work, celebrate and breathe online, this year's Utrecht Garden will focus on two topics. In the *CODE* presentations we focus on Fair Tech and Digital Agency. *CODE* is a collaboration between IMPAKT and School of Machines, Making & Make-Believe in Berlin to bring together artists, citizens, politicians, and policy makers about issues of privacy and freedom in our digital public sphere. In our workshops and online Bal Masqué party i.c.w. EMAP — European Media Art Platform and Ars Electronica, we use Zoom as a playground for virtual VJ-ing and digital dress parties with masks and filters. You are all invited to wear your most crazy digital masks and party with us during this unique virtual club night. IMPAKT [Centre for Media Culture] is a media arts organization based in Utrecht, the Netherlands, focusing on the relationship between contemporary society, media, technology and arts. The whole year round we organise exhibitions, film screenings, lectures, panels, performances and artist talks — both online and offline.

Each year we present the IMPAKT Festival, a five-day multimedia event. The upcoming festival 'Modern Love' takes place from 3-7 November and is co-curated by Katerina Gregos.

Bal Masqué: Ars Electronica Closing Party 2021 is a collaboration between IMPAKT [Centre for Media Culture], EMAP — European Media Art Platform and Ars Electronica. Workshops hosted by Sabrina Verhage (Creative Coding Amsterdam); Yun Lee and Jonathan Reus (iii, instrument-inventors.org) and Jeroen Witjes (IMPAKT).
EMAP/EMARE is co-funded by the Creative Europe Programme of the European Union.
CODE is a collaboration between IMPAKT [Centre for Media Culture] in Utrecht, the Netherlands and School of Machines, Making & Make-Believe in Berlin, Germany.
CODE NL-D is made possible with the generous support of Fonds Soziokultur, Cultural Participation Fund, Embassy of the Kingdom of the Netherlands, Goethe Institute and Creative Industries Fund NL.



GARDEN PROFILE

FORMATS

- ○ Exhibition
- ● Lecture/Conference/Talk
- ● Workshop
- ○ Journey
- ● Performance/Concert/Event
- ○ Film/Animation

COMMUNICATION STRATEGIES

- ● Social Media
- ● Online participatory tools
- ● Participatory virtual environments
- ○ On-demand content
- ○ Experimental tools
- ● Streaming

This Garden is part of EMAP.

ARS ELECTRONICA GARDEN

VALDIVIA

Galeriá Réplica, Institute of Visual Arts Faculty of Architecture and Arts, Universidad Austral de Chile (CL)

Extractivisms: Operations and Practices

The curatorial proposal of Galería Réplica (UACh, Chile) is an artistic device that introduces the idea of “expanded extractivism” to approach extractivism as a set of transversal operations and practices. Through intercrossing works and discourses, *Extractivisms: Operations and Practices* seeks to raise a political discussion about the extractive transformations on the horizon of the New Digital Deal. We no longer experience the world through industrial objects or technical images, but through data and invisible images. Our location, health, habits, affections, bodies, social and urban connections, economic and communicational transactions are recorded, recognized, interpreted, stored and circulated in corporate and governmental databases. The virtual museography on Galería Réplica’s website finds convergences between artistic investigations by Ignacio Costa, Regina de Miguel, Felipe Rivas San Martín, the CENEx collective, the TRIMEX collective, Celeste Rojas, María Jesús Schultz, Paula Baeza, Cristian Ochoa, Felipe González and Claudia Pool, and the theoretical investigations by Claudio Celis and Martín Arboleda. The purpose of this project is to intervene politically at a time in which the world is convulsed with the mutations of capital accumulation.

Curatorial Team: Ivan Flores, María José Bello y Gabriela Urrutia
Universidad Austral de Chile (UACh)
Faculty of Architecture and Arts, UACh
Vice-Chancellorship of Research, Development and Artistic Creation, UACh
Galería Réplica, Institute of Visual Arts, UACh
CENEx—Center for the Study of Extractive Nature (Lucía Egaña, Isabel Torres, Juana Guerrero)
TRIMEX Collective (Andrés Terrisse, Jota Aldunate, Bernardita Pérez)
Imaginación Maquínica (Claudio Celis, María Jesús Schultz)
Ignacio Acosta, Felipe Rivas San Martin, Regina de Miguel, Celeste Rojas, Paula Baeza Pailamilla
The participation of artists and gardens in Chile is the result of a collaboration between Ars Electronica and the Ministerío de las Culturas, las Artes y el Patrimonio and the Ministerío de Relaciones Exteriores | Gobierno de Chile.

produced by Carla Ferrer-Llorca with data from the University College London’s Energy Institute

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ARS ELECTRONICA GARDEN

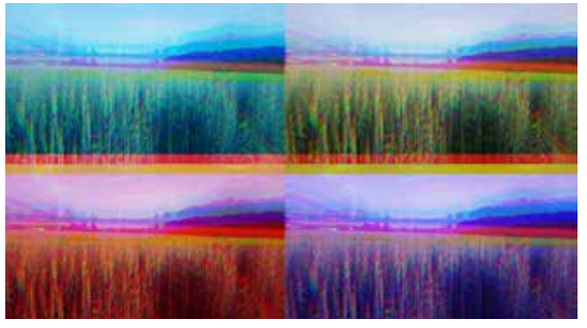
VIENNA

Ars Electronica Research Institute “knowledge for humanity (k4h+)”

Garden of … knowledge for humanity

Garden of … knowledge for humanity reflects the most recent work of the Ars Electronica Research Institute knowledge for humanity (k4h+) in its global and unique context, bridging the gap between academic knowledge and socially relevant applications. In this year’s interactions, the mission statements of last year are introduced as living experiments you can actively participate in. The work focuses on the following three core areas of k4h+: Digital Humanism and critical reflections on technology; Knowledge for Emergency — COVID-19 related experiments and interactions; Academic Knowledge and the Sustainable Development Goals. It reflects our approaches of Humanity Centered Design (Federico Donelli), art-based, experimental Knowledge Co-Creation, against a background of Open Innovation methods and practices. *Garden of … knowledge for humanity* celebrates the wealth of diversity, addressing various formats and audiences, such as offering interactive 2D/3D visualizations, participatory environmental experiences and experimental interventions, art driven innovation and artistic activism. This series of interactions is designed uniquely for Ars Electronica Festival 2021, curated by Eveline Wandl-Vogt. You are invited on a journey of discovery, aiming to drive social innovation-based activism and critically reflect on what we call “intelligence” (artificial and human alike), where you can join k4h+’s learning journey in a community of purpose.

AI Artathon, Algorithm Inventarium (AI+) / AT, Ambassy “knowledge for humanity” of the Republic of Užupis / UZ, Ars Electronica / AT, Ars Electronica Research Institute knowledge for humanity / k4h+ / AT, Austrian Academy of Sciences / AT, Berkman Klein Center for Internet and Society / US, Chist-Era / EU, Digital Research Infrastructure for the Arts and Humanities (DARIAH) /EU, exploration space / AT, Der Wissenschaftsfonds (FWF) / AT, Harvard University / US, metalab (at) Harvard / US, MojArt / AT, M.A.R.S, NamSor / FR, PROVIDEDH / EU, Stadt WIen / AT, Swiss National Science Foundation (SNSF) / CH



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ARS ELECTRONICA GARDEN

VIENNA/VENICE

TBA21–Academy (AT/IT)

The Sea—Sounds & Storytelling II

The sea's many sounds have often escaped human ears. For too long, the detachment from this rich ecosystem was based on the inaccessibility of its depth and on the physical impediment that made it impossible for humans to listen to certain frequencies. The water also served to silence the voices of those fading human bodies forced to cross the sea. In their works, artists Binta Diaw, Tomoko Sauvage, and Julie Semoroz actively respond to these overlooked lives and enable us to listen and reconnect with the unheard: finding a bodily frequency connection with whales (Julie Semoroz's BALEINA), navigating the fluidity of the water ecosystem that is so separate from our earthly balance (Tomoko Sauvage, Fischgeist), and hearing the stories of the many humans trapped in the waters of the sea forever (Binta Diaw, Chorus of Zong). The Mediterranean Sea, one of the oldest bodies of water facing massive ecological damage, the vast Atlantic Ocean, and an abandoned fish market reconnect death and life, past and present, and together they prompt us to ask: How can we learn to listen to them? For the 2021 Ars Electronica Garden festival, TBA21–Academy presents a selection of works resulting from *The Sea—Sounds & Storytelling*, a collaborative two-day program organized by the Centre culturel suisse (Paris), Istituto Svizzero (Rome), Institut Kunst (Basel), and TBA21–Academy and hosted by La Criée Théâtre in Marseille as part of Les Parallèles du Sud, an initiative by Manifesta 13 Marseille — The European Nomadic Biennial in 2020.

For the 2021 Ars Electronica Garden festival, TBA21–Academy presents a selection of works resulting from *The Sea—Sounds & Storytelling*, a collaborative two-day program organized by the Centre culturel suisse (Paris), Istituto Svizzero (Rome), Institut Kunst (Basel), and TBA21–Academy and hosted by La Criée Théâtre in Marseille as part of Les Parallèles du Sud, an initiative by Manifesta 13 Marseille —
The European Nomadic Biennial in 2020.

Julie Semoroz, BALEINA. The Sea — Sounds & Storytelling, La Criée Théâtre National de Marseille, event co-produced by Centre culturel suisse (Paris), Istituto Svizzero (Rome), Institut Kunst (Basel), and TBA21–Academy as part of Les Parallèles du Sud initiative by Manifesta 13 Marseille — The European Nomadic Biennial.
Photo: Célia Hay

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ARS ELECTRONICA GARDEN

VILNIUS

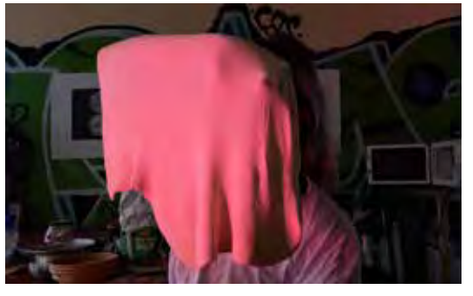
Institutio Media (LT), Alt lab in collaboration with Lithuanian Interdisciplinary Artists' Association (LT)

Molten Airs

Speculative Workshop Series

After our birth, bit by bit we get to know our mother, our father and our surrounding environment. We learn what we can put in our mouths and what is understood to be inedible. We also get to know about other species that live in our surroundings. As we begin to go to school, we are trained to know that experiences are fictions, that organisms are composed of many cells, and that the molecules of said cells interact with molecules outside of them.
The *Molten Airs* workshop series builds its narratives on casual life processes, repetitive habits, and social practices. By speculating on the human relationship to plants, food, or energy, but also using methods borrowed from the sciences, the series delves into unknown interactions between small and large, real and fictional, alive and not alive, us and them.
The workshop series contains three episodes, each created by a different artist. In *You and I, You and Me* episode, Mindaugas Gapševičius questions the impact of electricity on life processes and, while using it, builds links between us and them. Brigita Kasperaitė in her *Plant Trafficking* re-thinks the monetary and spiritual values of nature in our daily lives. And Kamilė Krasauskaitė in her *Sourdough DNA* develops the narrative of collaboration between humans and microorganisms and how it all shapes the food we eat. The audience is invited to contribute to the workshops with their stories, images and sounds.

Episodes:
You and I, You and Me. Mindaugas Gapševičius in cooperation with Maria Safronova Wahlström, Ian Erik Stewart
Plant Trafficking. Brigita Kasperaitė in cooperation with Becky Lyon, Giulia Mattera
Sourdough DNA. Kamilė Krasauskaitė in cooperation with Milda Januševičiūtė
Video editing: Luis Bustamante
Organized by: Institutio Media / Alt lab in collaboration with Lithuanian Interdisciplinary Artists' Association
Supported by: Lithuanian Council for Culture



Video stills SOURDOUGH DNA by Kamilė Krasauskaitė

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ARS ELECTRONICA GARDEN

VORARLBERG/DORNBIRN

Vorarlberg University of Applied Sciences (AT)

Disruptivity by Design

Transformative design concepts for hybrid spaces

Taking the notion of “disruptive innovation” as a starting point, the Garden Vorarlberg aims at to challengeing prevailing, techno-economically driven ideas of future development. The increasing evidence that growth-based developmental trajectories are incompatible with the goal of respecting biophysical planetary boundaries, necessitates a planet- centric design approach, which advocates for a more holistic view of innovation. Applying the disruptive design method, current questions regarding leveraging systems change for positive social and environmental outcomes are addressed by exploring visions of community as well as the association between spatial imaginaries and material practices. The focus is on the friction zones and interactions between public and private spaces, between absence and presence, visibility and invisibility, whereby digital architectures come into view just as much as physical spatial constellations and psychogeographies. Disruptivity is used as both a metaphor and a format of collaborative knowledge production that brings together the perspectives of pioneers of change and the civil society with those of designers and artists in a transdisciplinary, participatory design research process to experiment with alternative models of thinking and intervention with the aim of developing transformative spatial concepts. Oriented towards a transdisciplinary, participatory design research process, this garden consists of a nomadic programme combining playful explorations and tracking with workshops hosted by designers and artists, as well as local initiatives and a symposium to discuss and reflect on the approaches, findings, interventions and models developed.

Vorarlberg Museum, play:vienna — Verein zur Förderung des Spiels im öffentlichen Raum,
Mostlikely — Architecture Design Research, Salon Flux.
Media partner: ORF Vorarlberg

Salon Flux on Abeyance , Mira Löw

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ARS ELECTRONICA GARDEN

WELLINGTON/AUCKLAND

**arc/sec Lab (University of Auckland (NZ)) and
DARA (Victoria University of Wellington (NZ))**

Ars Electronica Garden Aotearoa

The Ars Electronica Garden Aotearoa assembles selected projects from New Zealand’s technologists, artists, and university researchers. It is curated by the arc/sec Lab at the University of Auckland (UoA) and the Digital Research Alliance (DARA) at Victoria University of Wellington (VUW). The Garden welcomes national and international visitors to a cyber-physical environment. Local guests can visit the physical exhibition hosted by the Wellington Faculty of Architecture and Design Innovation at VUW in New Zealand’s capital city. International guests can experience the projects in a virtual 3D gallery and through a series of online events. The exhibition is designed as a bi-directional portal. It allows for both hosting digital content from other Ars Electronica Hubs and showcasing projects from the New Zealand-based contributors.
The Garden presents performances and prototypical installations. It offers tours through research facilities and visits to cultural sites, and includes a sonic music night hosted by one of Wellington’s famous night clubs.

Key Organisers: Uwe Rieger arc/sec Lab UoA, Marc Aurel Schnabel DARA VUW, Tane Moleta DARA VUW, Yinan Liu arc/sec Lab UoA, Aotearoa Concert Night.
Organizers: Fabio Morreale UoA, Sasha Leitman VUW

LightSense, Photo by arc/sec Lab

XR Tumour, Evolution Model by UoA

GARDEN PROFILE

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ARS ELECTRONICA GARDEN

ZARAGOZA

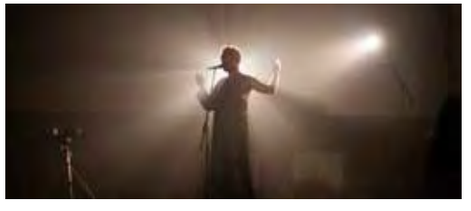
Etopia Center for Art and Technology (ES), Ayuntamiento de Zaragoza (ES), BIFI Instituto de Biocomputación y Física de Sistemas Complejos — Universidad de Zaragoza (ES), Fundación Zaragoza Ciudad del Conocimiento FZC (ES)

Architecture of Friendship

Concert with Santiago Latorre — Sara Paniagua — Nieves Arilla

The Architecture of Friendship is a collective project inspired by the notion of the ecosystem and the value of interdependence led by Spanish composer/engineer Santiago Latorre. The group takes its name from the words of Hannah Arendt, who after being accused of lack of love for the Jews, responded: "You are quite right. I don't love any people — neither the French nor the North American nor the Jewish nor the Blacks. I love only my friends." The project began as an exploration of real-time vocal manipulations. After being away from music-making for several years due to an injury in both arms, Latorre started experimenting with contactless movement sensors to modify the sound of his voice looking to gain back the feeling of playing an instrument. This first exploration grew and shifted through collaborations with artists and friends within the ecosystem of the Sound Laboratory at Etopia Center for Art and Technology in Zaragoza. American composer Colin Self, Colombian artist Carlos María Romero, and Spanish singer Nieves Arilla came together to produce the *Architecture of Friendship* music album. The sequence of songs is offered as hinges to activate and exercise empathy, to awaken hope and recharge enthusiasm, perhaps even to encourage care between the familiar and odd. For this performance, in collaboration with Spanish choreographer Sara Paniagua, the artists developed a prototype of a technology for using sound and movement to control lights on stage.

Santiago Latorre — composer, performer, engineer / Nieves Arilla — performer / Sara Paniagua — choreographer, light designer / Colin Self — composer / Carlos Maria Romero aka Atabey Mamasita — writer / Ana Escario — camera operator / Adela Moreno — camera operator / Adrian Mored — video streaming director / David Tello — sound technician / Sandra Lanuza — MAX/MSP technician / Blanca Pérez — Residency program curator / Laura Montañés: Live music and performing arts curator / Developed in the CESAR Sound Laboratory at Etopia Center for Art and Technology in Zaragoza Spain Project supported by Ayuntamiento de Zaragoza, Fundacion Zaragoza, Ciudad del Conocimiento and BIFI Instituto de Biocomputación y Física de Sistemas Complejos — Universidad de Zaragoza



Architecture of Friendship — Santiago Latorre. Photo by Gorka Bravo

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This Garden is part of the AI Lab programme.

ARS ELECTRONICA GARDEN

ZAGREB

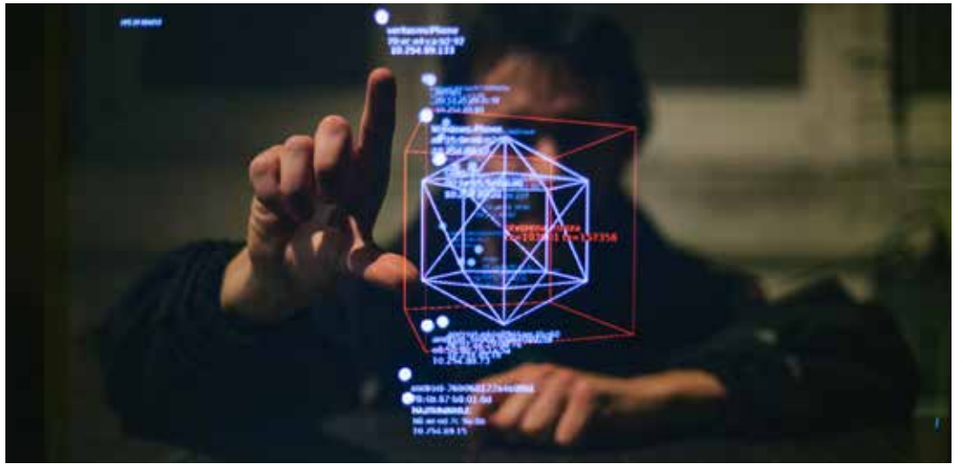
Radiona (HR)

A Catalogue of Electro Entities

Exploring the Borders of Educational Interactivity in Hybrid Arts and Hacking Culture

A Catalogue of Electro Entities is based on the spectrum of ways to engage in the process of interactivity and interactions with electronic devices and objects we create. Humans tend to bestow anthropomorphic characteristics on almost every object we relate to, especially if it is produced by our brains, minds and hands. We transfer these behavioral patterns to the biological, chemical and digital spheres, too: sometimes proudly, sometimes less so. Our collective of designers, artists, makers and hackers will present their concepts of workshopology methods that takes into perspective ways of interactions and connections we usually make through objects during remote or physical workshops. The program consists of three workshops.

Radiona.org (cc)



© Radiona.org (cc)

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This Garden is part of the CREATIVE SCHOOL programme.

Ars Electronica Journeys

Ars Electronica Journeys is format which was successfully introduced last year in the midst of rethinking the festival due to the challenges posed by the coronavirus. Based on the hybrid festival approach the idea is to invite artists, researchers and creative producers to prepare video journeys, providing interactive guided tours without the audience's physical presence. Beyond that, the journey guides can really invite the viewers into their "world" by not just offering exclusive insight into their fields of expertise and artistic practices, but sharing surroundings relevant to their work — be it their labs, inspiring public places, or their favorite walking routes to mull over ideas. All of the journeys are realized in different frameworks:

The European ARTificial Intelligence Lab journeys put a spotlight on cutting-edge topics and developments in the realm of artificial intelligence.

Studiotopia journeys offer an insight into the initiative, which brings together artists and scientists in order to promote knowledge transfer and transdisciplinary exploration.

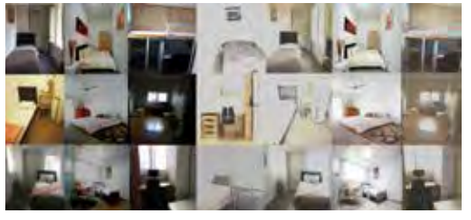
AI Lab Journeys

These video commissions are presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe Programme of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.

KyungJin Jeong (KR)

Spaces Camouflaged by AI

As a highly developed photographic technology, image distortion can be created via photo-editing software. With enough pictures, machine learning can determine attributes. I will explore the gap between advertising and reality by visiting a common room in a single house in Seoul. The project began with the question, "Can artificial intelligence (AI) distinguish between advertising and reality?" In this journey, I will explore how the AI interactive web program converts real-life room photos into commercial images and vice versa.



© Kyunjin Jeong

Jake Elwes (UK)

The Zizi Show — Enter the World of Deep Fake Drag Cabaret

Drag Queens, Drag Kings, Drag Things and Artificial Intelligence...Enter into the world of *The Zizi Show* (2020), a deepfake drag cabaret, a virtual online stage hosting a groundbreaking new show with a twist. It features acts that have been constructed using deepfake technology, learning how to do drag by watching a diverse group of human performers. *The Zizi Show* dissects one of the dominant myths about AI: the notion that 'an AI' is a thing we might mistake for a person. The bodies in the show have been generated by neural networks trained on a community of drag artists who were filmed to create training datasets at a London cabaret venue closed during COVID-19. During each act, audiences are invited to interact with the website and play with which deepfake bodies perform which songs. At times, this breaks down when the A.I. tries to conceive impossible positions or combines multiple different queer identities; it can even reveal the skeleton tracking the deepfake is built on. *The Zizi Show* constructs and then deconstructs a virtual cabaret that pushes the limits of what can be imagined on a digital stage. The Zizi Project (2019-ongoing) is a collection of works by Jake Elwes exploring the intersection of artificial intelligence and drag performance. Drag challenges gender and explores otherness, while AI is often mystified as a concept and tool and is complicit in reproducing social bias. Zizi combines these themes through a deepfake, synthesised drag identity created by using machine learning. The project explores what AI can teach us about drag, and what drag can teach us about AI.

The Zizi Show 2020, montage of deepfake drag artists, c/o the artist

Ruini Shi (UK)

FuneralPlay

A new technology start-up company claims to offer a certain kind of ”immortality”: users can choose between erasing the deceased’s electronic footprint or uploading it to virtual heaven, permanently secured and published on an immutable blockchain, allowing the addition of remembrance NFTs to the memorial. This website *FuneralPlay* speculates on a near future when diverse ideologies and values are accepted within the setting of a funeral: apart from traditional religion, a series of subcultures are emerging as new elements in a funeral scenario. As a result, cat meme lovers, boyband fandoms, fengshui masters, otakus, gangsters, cypherpunks... all can find a private post-mortem comfort zone. This journey records the recent life dynamics of some residents on the platform.

© Ruini Shi

Danielle Brathwaite-Shirley (UK)

Accessing what you always knew you needed

How do you access your past when it doesn’t exist anymore?
How do you see yourself when the world refuses to reflect you?
How do you archive someone who has been erased by the archive?
We know who we are. We feel the loss of our history with every moment we breathe. With each story we remember another is lost. We need each other. We kept each other here. Yet we hardly seem to exist.
Each body holds an archive. The past has taught us that history will erase us while it pretends to remember us. So now it’s up to us. Those of us who need to be remembered so that those in the future know that they have a linage.
Black Trans people are not new. If fact we are as old as time but the whispers buried us. It’s time to hold the responsibility of keeping those of us in the present in our memory.
I’ve needed you
You’ve needed me
And I’ll never let you be forgotten
Again

I can't remember a time when I didn't need you, Danielle Brathwaite-Shirley, © Konrad Waldmann

Halsey Burgund (US), Francesca Panetta (UK)

How To Strand Astronauts on the Moon

The narrative of *In Event of Moon Disaster* is a journey; a journey filled with the technical and emotional triumphs of individuals and a nation that ultimately comes to a tragic end on the lunar surface. Using an analogous voyage through highs and lows, we plan to use our personal journey of creating *In Event of Moon Disaster* to dive into the dual nature of AI-enhanced synthetic media: on the one hand, an incredibly powerful creative and educational tool and, on the other hand, potentially the most effective purveyor of disinformation society has ever seen. We will tap into both the technologists who helped us create our deepfake as well as experts in AI, law and disinformation to contextualize and broaden the view. We hope to experiment with using synthetic media techniques to enhance the video to engage our audience and directly demonstrate some of the power of these new technologies.

© Dominic Smith

LaJuné McMillian (US)

Black Movement Library

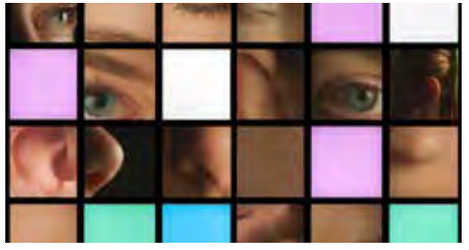
BML is a library for activists, performers & artists to create diverse XR projects; a space to research how and why we move, and an archive of Black existence. BML seeks to grow community through the use of performances, XR experiences, workshops, conversations and toolmaking. Movement Portraits serve as a way to learn about the lives of performers contributing their movement data to the *Black Movement Library.* What happens when we ritualize the archival process of data collection, and invite the community as a witness? This journey explores issues of cultural representation and exploitation through readings and discussions, while providing an introduction to motion capture, rigging and 3D environments. Core elements of the journey integrate performance, extended reality, and physical computing to question access, control and representation.

LaJuné McMillian

Laokoon (DE): Cosima Terrasse (FR), Moritz Riesewieck (DE), Hans Block (DE)

Made to Measure — I is a Search Engine

Is it possible to create the doppelganger of someone using only their personal Google data? This question stood at the core of the project *Made to Measure*. Using personal online data, the group Laokoon created a doppelganger of a person they did not know, telling "her" story. The spectacular experiment can be experienced on an interactive storytelling website.
In this journey, Laokoon cinematically recorded the installation of *Made to Measure* at this year's Ars Electronica Festival and captured the reactions and impressions of the audience. Complemented by excerpts from interviews with experts who explain how the information collected is used for profiting from people's weaknesses, insecurities, illnesses and addiction potentials.

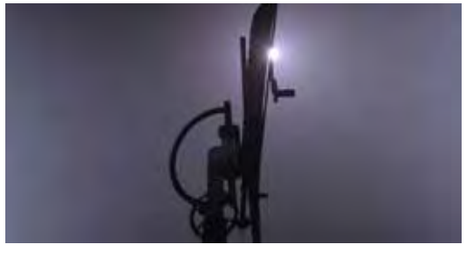


Konrad Waldmann

Geocinema (Solveig Qu Suess, Asia Bazdyrieva) (INT)

Optic nerves and their time

The work will focus on the key questions which sit at the core of Geocinema — both as a documentary-led research project and a collaborative practice. We will depart from the unobvious images of the Earth (such as calibration images, mathematical modeling of climates, satellite footage, etc.) to speak of the distributed and decentralized processes of sensing and imaging. We consider these processes of recording, transmission, archiving, stitching and distribution of data as an assemblage of technologic mediations that constitute a vastly distributed cinematic apparatus — a camera. Throughout the 'journey' we will unpack Geocinema through two strands; the first being epistemological. Here, cinema refers to a technique of mediating space and time in ways that are potent of feedback loops between our optical nerves, sensory experiences and the moving image. Secondly, while in conversation with media theorist Jussi Parikka and inspired by film and media theorists Ute Holl and Jenyfer Gabrys, we question the nature of such images to understand geometries of power and the agency that are implicit to the medium.



"Making of Earths", 2020, Geocinema.
Still from a video, courtesy of the authors

Simon Weckert (DE)

Ubuntu — The Other Me!

The video journey wants to create a dialog between the artworks by the artist and AI-driven technologies in the process of making and creating. On the one hand, the scenario shows the environment the artist is working in with technologies as a tool that affect his artworks. On the other hand, it shows how these tools shape and manipulate his creative output.
By doing so, he would like to show how machines were introduced to optimize the working processes, save time or increase accuracy,and open the question of how we became so dependent on them that we often forget what they actually do. Instead of hyping or damning the technology, he would like to invite visitors to reflect on the meaning and modes of existence of technology in a critical and sober way.

© Simon Weckert

Antti Tenetz (FI)

Perihelion

In his work *Perihelion* (2019), Antti Tenetz combines images of space, celestial bodies, technology, space science and life. Applying machine learning, the work brings out dream-like images of the worlds and beings of possible futures in space. The Perihelion concept wraps up microbiology, artificial Intelligence and technologies evolving with humans in space and deep space traveling. What we would be in space and how life and evolving technological frame reflect unexpected and out of human. The journey video unravels process and challenges and steps leading from idea to work, such as how to build M.L machine and learn GAN training and develop it with ideas of life evolutive process, who to collaborate and get gold generating bacteria and right species of cyanobacteria as well as how to understand possibilities, limitations and dangers in space.

© Antti Tenetz

STUDIOTOPIA Journeys

These video journeys are co-funded by the Creative Europe Programme of the European Union in the framework of STUDIOTOPIA.

It may seem unfathomable that we could ever grasp the sheer complexity of the interdependencies of Ecosystem Earth. Each and every one of our quantum computers would crash when faced with the task of mapping all interactions from our microbiomes to the zonobiomes. One human mind cannot comprehend it all, but multitudes of minds have tirelessly worked towards contributing to a shared knowledge that together unravels these interdependencies. Within the initiative STUDIOTOPIA, seven European cultural institutions have invited artists to host scientists in their studios, and it is the hope that these collaborations build upon this shared knowledge. The journeys featured in this year's festival offer a glimpse of how these encounters can shape a new understanding the role and responsibilities of humanity on our shared planet.

Sandra Lorenzi (FR)

How to Read Poetry to Cancer Cells?

What invisible threads link the life of cells to a Latin poet? What resonances do stones and cells share? Sandra Lorenzi's artistic work explores the worlds of the living, both material and immaterial, right up to the edge of human understanding. Through her multi-faceted practice (drawings, poetry, murals, installations) she deploys imaginary worlds capable of connecting what is not yet connected, of bringing to light and into relationship what remains hidden and separated. This film takes you to the heart of her approach. Let yourself be charmed by the song of a cricket. Be transported by a colours' vibration. As part of the Studiotopia Art & Science Residency Programme, Sandra Lorenzi collaborates with Jean-Christophe Marine (Professor, Senior Group Leader and Director of the VIB Centre for Cancer Biology, Belgium). Their project *How to Read Poetry to Cancer Cells* is aligned with her approach, at the crossroads of art and science, of the real and the unreal.

The project is powered by: Bozar — Centre for Fine Arts, Brussels Vlaams Instituut voor Biotechnologie (VIB), STUDIOTOPIA, a programme co-funded by the Creative Europe Programme of the European Union.

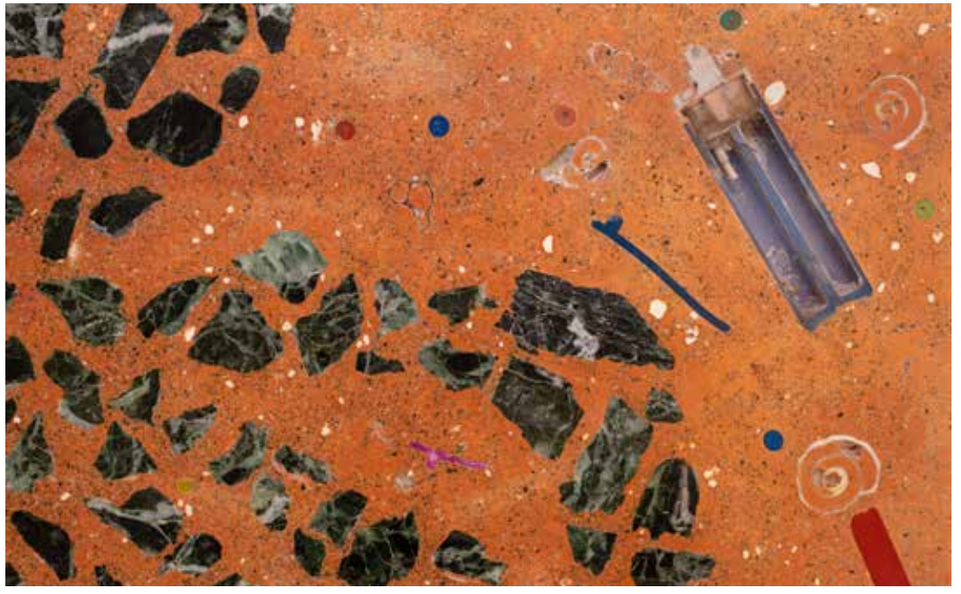
© Gilles Lorenzi

Hypercomf (GR), Markos Digenis (GR)

Marine Caves Benthic Terrazzo

Marine Cave Benthic Terrazzo seeks to investigate and communicate the perceptual and practical problems that arise in marine ecosystem preservation by inviting the subject of the ocean inside our terrestrial homes and exploring ecosemiotic links and physical interactions between human homes and marine caves. Hypercomf, an artist team from Tinos Island, researching the landscape of the seabed as a stage of anthropocentric culture's undoing, collaborates on this project with marine biologist Markos Digenis from the island of Crete who is studying the marine cave benthos of Greece. Their collaborative project includes a field study of the marine cave ecosystems of Chania, providing the first holistic documentation of these isolated environments. Photoquadrat documentation of the cave wall biodiversity and sediment sample analysis from the cave floor will inform the production of a sustainable design proposal inspired by the traditional "terrazzo" flooring technique, altered to make use of collected marine plastics.

A project by artist Hypercomf and marine biologist Markos Digenis for STUDIOTOPIA residency program, hosted by Onassis Stegi.



Hypercomf

Evelina Domnitch and Dmitry Gelfand with Tommaso Calarco
Photo Konstantin Guz

Dmitry Gelfand (US) and Evelina Domnitch (BY)

Merging experiences

Science is the source of inspiration for many of the artworks of Evelina Domnitch and Dmitry Gelfand. Scientists are also fascinated by art. A portrait of interactions merges the borders of disciplines from the perspective of the intriguing and the inquisitive.

The journey will lead us to the lab of Florian Schreck, professor of Experimental Quantum Physics at the University of Amsterdam who works on quantum sensors and simulators based on ultracold strontium gases. Some theoretical physics will be explained by Tommaso Calarco, involved in the curatorial project "Obviously Unthinkable," during a public event at the artists' studio. Pioneering theoretical physicist Tommaso Calarco will share his insights into macroscopic quantum phenomena at the nexus of quantum computing and art. His theory is illustrated by Evelina Domnitch and Dmitry Gelfand with their ion trap, the Hilbert Hotel, created in collaboration with the Quantum Flagship.

Fascinating microscopic images from Guillaume Schweicher are bridging the gap between science and art, an intriguing approach that leads to reflection. His current research interests are the fundamental understanding of the physical and chemical phenomena taking place in the fabrication processes, during operation (charge, heat and spin transport) and stability/degradation of electronic devices made of organic and hybrid organic/inorganic semiconductors.

Robert Spreeuw will visit the artists' studio with Florian Schreck and will present his ideas about entanglement and other concepts to the artists as a collaborative session into the Studiotopia program.

Artists: Evelina Domnitch and Dmitry Gelfand, Konstantin Guz
With the participation of Guillaume Schweicher and Florian Schreck, Tommaso Calarco and Robert Spreeuw.
This project is part of STUDIOTOPIA residency hosted by Vrije Universiteit Amsterdam.

Oswaldo Macia (CO/UK) — artist, Emilia Leszkowicz (PL) — scientist, Chris Bean (IE) — scientist

The illness of the consciousness is corruption — smell and think.

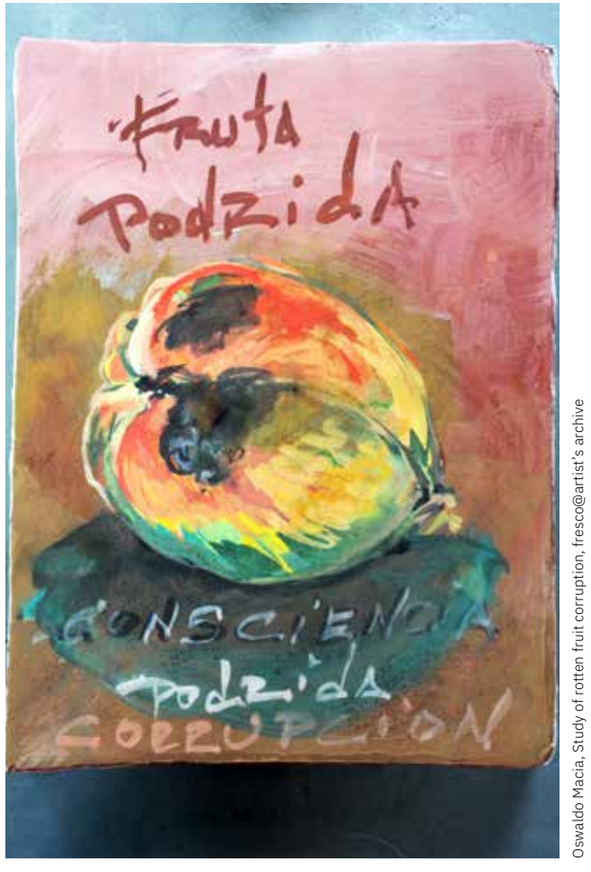
Studiotopia Art and Science Residency

The aim of the project *The illness of the consciousness is corruption — smell and think* is to raise awareness about human consciousness and how unconscious we are of what happens around us.

Oswaldo's body of work consists in sculptural compositions formed from images, objects, sounds, and smells that create spaces for thought. His artworks investigate conventional notions of knowledge and perception. This raises new questions, such as how to find "'back doors"' to enter viewers' consciousness in an unconscious way beyond one's beliefs and judgements? How to open peoples' perception to the perspective of the Other? How could we start to feel responsible for the world around us? How can we truly listen to our planet and its human and non-human inhabitants?

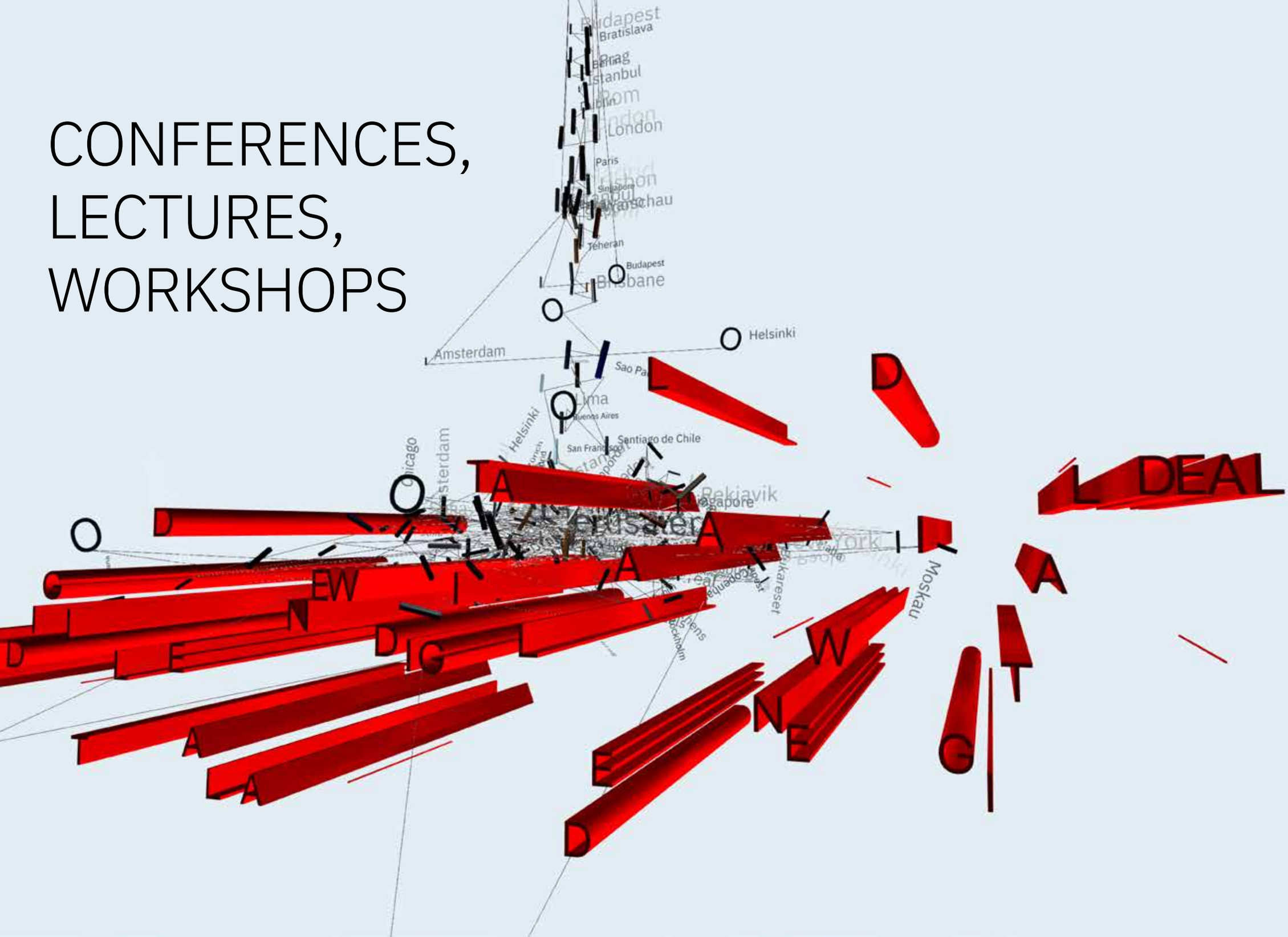
These questions explore sustainable development through the converging views of art and science.

The residency is part of STUDIOTOPIA project supported by the Creative Europe Programme of the European Union.



Oswaldo Macia, Study of rotten fruit corruption, fresco@artist's archive

CONFERENCES, LECTURES, WORKSHOPS



Conferences

Branch Magazine

WITH CLIMATE ACTION TECH
EDITED BY MICHELLE THORNE AND CHRIS ADAMS

Illustrations: Hélène Baum and Gica Tam

A Sustainable and Just Internet for All

The internet is the world's largest coal-powered machine. If we continue business-as-usual, the IT sector will be responsible for 14% of the world's carbon emissions by 2040.
We believe that the internet must instead serve our collective liberation and ecological sustainability. That's why we created Branch magazine. The magazine is a space for personal reflection and critical engagement with technology and experimentation. This is our small attempt to uplift fresh thinking for how to green the web technically, aesthetically and politically.

We strive to connect sustainability to root causes and to inequalities experienced at different intersections—gender, race, class, ability, and so on. Branch magazine is a practice of collective imagination. We're dreaming of a sustainable and just internet for all. These are fragments and fleeting glimpses. Sometimes there is simply a lingering sense of what should be. We invite you to dream and build with us.

branch.climateaction.tech

Envisioning a Sustainable Internet

MADDIE STONE

Cloud Shadow. Public Domain Review

If 2020 has felt like an ever escalating series of disasters—a pandemic, an economic crisis, and an overdue racial justice reckoning, all compounding one another and occurring against the backdrop of climate breakdown—it is also the year in which a better future came into sharp focus. For humanity to thrive on Earth in the 21st century and beyond, we need to reinvent our relationship with the planet and each other.
And however we choose to rebuild from the literal scorched earth of this dreadful year, the Internet will play a vital role. Driven by the necessity for social distancing, workplaces and classrooms have moved onto our computers and into the cloud; even after a coronavirus vaccine is available, remote working and learning will likely remain the norm for many. The digitization of our relationships also accelerated this year, and our new, screen-based rituals for socializing with coworkers, going on dates, celebrating life events, and mourning lost loved ones are leaving an indelible mark on our culture.
But if the Internet is going to help liberate us from the overheated morass of 21st century capitalism, it, too, will need to evolve. While borne from ideals of equity and knowledge-sharing, today's web mirrors the realities of a world dominated by Kochs and Bezoses in that it disproportionately benefits the privileged and wealthy, while treating the rest of us as monetizable commodities; encouraging mindless consumption from an endless buffet of digital information. Hosted on servers and transmitted via networks that are powered by fossil fuels, our use of the Internet makes a significant contribution to the climate crisis—one that is rarely acknowledged and largely unknown.
Branch is an attempt to envision something radically different: an Internet that was created for all of us and the planet we depend on. Within its pages, you'll find essays, presentations, art pieces, and interviews with designers, software engineers, activists and more, that sketch a picture of what a cleaner and more just digital world could look like. The picture is far from complete, but after spending some time exploring Branch, I've started to see the contours of a sustainable Internet more clearly.

And the prospect of building it is incredibly exciting. The pieces in Branch push the conversation far beyond the green capitalism discourse championed by the likes of Amazon, Microsoft, and Google, which is focused on cleaning up the energy supply powering the web while keeping its profit-driven motive—premised on endless digital growth—intact. Instead, they depict new kinds of virtual spaces in which principles of climate justice and even degrowth are baked into the digital architecture. Rather than treating climate action as an accounting problem that can be solved with clever math, Branch asserts that true sustainability requires an intersectional approach that considers the climate impact of our online lives alongside user experience, accessibility, and digital rights. The pieces in Branch are vignettes; the collection as a whole a starting point. Ultimately, if we are going to extract ourselves from a web optimized to extract our attention, we're all going to have to work together to build what comes next. If all of that feels like a lot, know that by simply recognizing that today's web is unjust and unsustainable, you are taking a radical first step. Equally radical is the notion that we have the power to change that. If we do so today, then perhaps, in a generation, 2020 will mark a clear turning point in the strata of Internet history, littered with fossils of a bygone era we chose to discard and keep in the ground.

Designing with Sustainable Internet Principles

TOM JARRETT

Design: Tom Jarrett

We hope to not only articulate what these desirable internet futures are but also to embody them with specific tools and art. That's why we developed Branch as a carbon-aware website. The site adapts to and reflects the physical infrastructure of the internet and the energy behind it. Using data from a grid intensity API and the user's location, Branch has four different interface designs shown depending on the current energy demand and fossil fuels on the grid where the user is:

1. Lower grid demand, more renewables
2. Medium grid demand, fewer renewables
3. Higher grid demand, less renewables
4. Grid data unavailable

We collaborated with leading Wordpress developers to produce the demand-responsive code and openly licensed it so others can make carbon-aware websites without needing to be a specialist developer. We intentionally worked in Wordpress, the biggest open source blogging platform on the internet, so that more people could experiment with these kinds of carbon-aware digital tools on their own sites.

Furthermore, the Branch site has been designed to be as low energy as possible. This includes using a limited number of fonts and using system fonts, reducing image weight, and designing without a lot of Javascript. The website is also available offline. This often forgotten feature counters the idea of being constantly connected, and it could become increasingly necessary if the physical infrastructure of the internet becomes more unreliable due to environmental changes.

Swirling Sulas

SUPERFLUX

Image: Mitigation of Shock, Superflux

Sunday 3 May

They discussed everything in such absolutes. Dots and dashes. Right and Left. An age of dark. An age of light. An age so bright it sucked up all the light like an almighty sinkhole. That's what yesterday imagined of today. But here I am. I can see further than my nose, beyond my fingertips. There's light. I'm not in a hole. And this morning I laughed. A crow desecrated a sensor. Sula thinks I'm obsessed with the past. I'm not. I just enjoy watching videos of yesterday's streets. The buzz of the busy ones. The perfect shapes the light makes on the pristine ones. Mostly, I like to watch the way people moved back then–Times Square, Shibuya Crossing. All those bodies moving like suited starlings. Moving like rivers. There's something soothing about the sterility and predictability. I once asked Sula to play city with me, cleared and carved a crosswalk in the parking garden; instead, she suggested I elect tracking purple emperor butterflies for my weekly National Service. I mostly work with bryophytes and moss, they tell me how polluted the air is and whether our flighty friends will ever return to the region. Filling those spaces but in their wild and messy way.

Back in the day they called all of this the Poverty Draft, because folk hit harder–poor, Black, brown, citizens of nowhere–enlisted for the security of regular aid packets and medical insurance and promise of citizenry. But that was the in-between time, when we still had thousands of newly out of-work technologists. Now, everybody has to do their bit. 'Fail to prepare, prepare to fail' and all

that. Some folk set up invisible markets to trade all our data sets. Maybe their long gone yesterday people were those sharp-beaked suited starlings. Sula's upgrading the weather sensor network, which is why she didn't laugh when the crow shat on her ambient hygrometer.

Thursday 9 July

The parking garden flooded last night. It stormed. Not a mad one, but enough to sweep the dead maple tree across the old traffic light pole and down onto the worm farm. I forgot to set our industrial flood alarm.

It's not my fault. But I can't say this, of course. Sula is raging. Thinks we lost our harvest of turnips. I remind her that we grow them precisely because they're resilient. She hates that word. The R word. Resilient. It was used a lot when we were kids.

She also hates the term: parking garden. I like these tethers to yesterday. The world around us is always changing, but we can still keep parts of that other time alive with language. She maintains that it was likely a garden before it was a parking lot and so should just be called a garden. Her name means peace. There's little peaceful about her these days.

I can trade oyster mushrooms for kit to repair everything. It'll be fine. I took the canoe out to check the water pesticide sensors that I mounted on the gothic lamp post beside the old library. The flood gave me an excuse to check the water turbidity measure and pesticide biosensor. I do this sometimes when the water hasn't surged, when I need to see and feel something not green and wild and organic. The narrow street with the last arched stained glass window is my secret holy place. The scene itself is quite amusing–neat, colourful buildings talking to neat colourful cars, talking to neat happy people in a neat happy world. The sensors didn't really need to be installed here. Maybe this is my secret revolution too. The toxicity level was the same. Not catastrophic, not good. Sula would be a good name for the summer storms. Swirling Sulas.

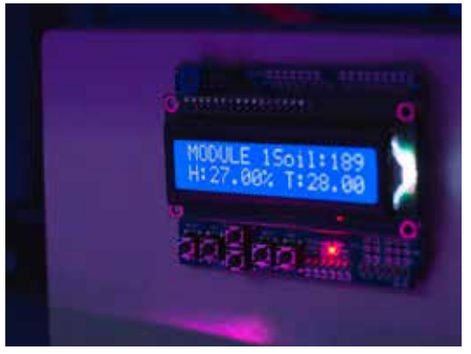


Image: Mitigation of Shock, Superflux

Tuesday 11 August

Listened to Speakers Corner this evening. It's everyone's highlight of the week. A woman from one of the Southern Districts spoke about the way optimised traffic flow created pockets of pollution in zones that were deemed undesirable: Black, brown, working-class neighbourhoods. Another spoke about the resilience within these same communities–planting trees and gardens as acts of resistance.

Sula finds discussions about the perception of the past tedious. Also the future. She lives here she says and here has plenty enough to not only think about, but do. At this particular moment, she's unspooling copper from one of those old smoothie makers. Last week someone spoke about the vast computational power needed to keep up with yesterday's famous customer profiling systems. The things used to make people believe they needed smoothie makers. They spent more than half the show calculating how many New Doggerland Wind Farms would be needed just to power them. Sansemin could've made a better energy plan using less hot air. Perhaps talking about user profiling systems is still dangerous business. I asked Sula what type of user they have me profiled as. She said, one that needs to come back down the earth and continue uploading my readings. It's true here has plenty. Maybe the sun may never shine as it does today, but I still like thinking about how it looked yesterday and what it'll shine on many tomorrows from now. I'm not sure what tomorrow will say about the future I imagine for them. So, maybe I'll wish something for them instead.

Image: Mitigation of Shock, Superflux

Monday 23 November

Had an apple for the first time in a long while. A present from Chicken Man for helping him mill flour. Strange things have a way of arriving in his hands, but I'm more thankful for his generous heart. Mom loved telling a story about her granny. A small woman with a heart and hands that understood the earth but were hard on people. She conjured out mango, guava, tangelo, pomegranate–things now long gone–but she was proudest of her chilies. And while she loved feeding people, she was known for meticulously removing the seeds from everything she shared. She brought those chili seeds from her old world to a new world, and grandma took those seeds from that new world to a new new world. The earth wasn't right when they got down to mom, so I've only known them as tiny gems living in a jar. Hopefully the earth will be right for them before I leave it. Wouldn't that be something. It's curious how hearts contract and expand. How they can be generous and be miserly all at the same time. Last rainy season, Chicken Man's own heart leapt out of his chest. Sula and I rushed him to Sansemin who took him to the big hospital. One of the few times I've been thankful for the speed of storm surges. He said they had him covered from the tip of his nose to his big toe, like the way we're all measuring the Earth. People used to think this kind of making or whatever was lowly work, too mundane for even a kernel of curiosity. They wanted everything but the knowing of how things worked. And maybe that's how the planet got so sick; why yesterday could only ever conjure the deep darkness of apathy for us here today. It's not that everything was irreparable. It's that their hands didn't know how to go about fixing. Making space for life–the necessary work, the mundane work. Now it's treasure. For brokers like Sansemin, this is quite literal. But for Chicken Man, it's the inheritance he got and the inheritance he's leaving behind. All that time working on the offshore wind farms that powered the climate modelling systems turned into seeds and sown into me and Sula. How will I change this inheritance? Maybe it'll be like those mushrooms that make you dream and see the magic in the small. There's power in that too, you know.

Image: Mitigation of Shock, Superflux

One Vision, One World. Whose World Then?

Vândria Borari and Camila Nobrega

Photo: Vândria Borari

Vândria Borari, an indigenous leader, lawyer and human rights defender, joins Camila Nobrega, a researcher and journalist working on social-environmental justice, to discuss their visions for a sustainable and just internet.

We both remembered the same scene. "Mana, e aquele 'uma visão, um mundo? A gente tem que falar disso'" (Mana, and what about that "one vision, one world?" We should talk about it), pointed out Vândria. Yes, we both knew we should. We recalled November 26, 2019 at the official opening of the 14th Internet Governance Forum in Berlin. The world before the pandemic. We were in a rush to see the speech from Angela Merkel. The conference slogan was everywhere: "One Vision, One Net, One World." We looked at each other. There didn't seem to be much air in that room, or why else were we suffocating?

The chancellor made a speech welcoming people to bring ideas "for the future of internet," emphasizing that it was important to "discuss how we want to shape and use the internet of the future." Angela Merkel continued, "When I say 'all of us,' I mean policymakers and civil society, business and the scientific community. 'All of us' also means that all countries need to work together. (...) 'One World. One Net. One Vision.' This year's slogan sums it up neatly: we want to arrive at a shared understanding of what the internet of the future should look like. What values, principles and rules do we want to take with us from our analogue world to the digital world? What processes and procedures will we need in doing so?"

We looked at how that slogan resonated in the room. There was a lot of applause. Most people were in suits and seemed quite satisfied. Most of them were white and from the Global North. In a world of disparities, where there are different forms of communication, in which the Internet was born from the principle of visiting different worlds, of sharing, of bringing more people to these commons, this slogan suggested another direction, a more homogeneous one. Three times One. Vision, Net, World. An obsession for capital letters and universal imaginaries of the future.

Who were taking part in this discussion that Merkel was proposing? Who answers for this "we"? Who is invited to be at the table?

Then we looked at our printed speeches in our hands for our joint speech for the IGF side event called Discotech organised by the Association for Progressive Communication (APC).

Vândria:

"For us indigenous people, in the world we are in, we call it mother earth. There is no single, precise world view. There are different visions! We communicate with the forest, with the river, with our sacred sites. Our shamans communicate with the spirits of the forest. For us, everything that has life is sacred and must be respected, even the animals that feed us are sagrados (sacred). This is how we see the world and communicate. This is how we relate to this world. We do not want technology to change our lives—we want our way of life to be respected.

"Thinking of a communication for the future, we need an internet that does not violate our rights, our traditions, ancestry, our people. We need to create an internet that is favorable to the maintenance of our history, to the protection of our territories. It is not that the Internet was fundamental. It ends up being important as an answer, because of the violations we suffer.

"We know that a lot of areas in the Amazon have no communication signal. Many areas that are still protected. These areas attract logging, mining extraction, and different ways of exploration. In these areas we see the killing of environmental defenders. The idea is to have more possibilities of surveillance capabilities to protect these territories."

Camila's speech that night would open with drone footage from the Floresta Nacional do Tapajós and its outskirts, where the agribusiness grows rapidly alongside other megaprojects such as hydroelectric plants, waterways, mining:

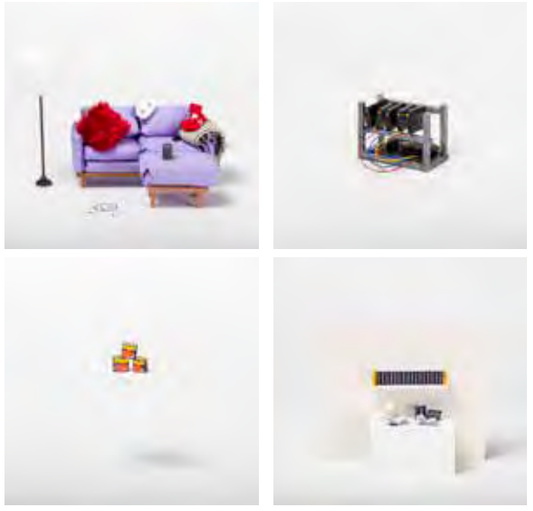
"This is a project of expulsion of people, ways of life, of possibilities of the future, of diversity of communication. The image flies over the forest, behind it the contrast with an area of soy and corn plantation. It is also a monoculture, homogeneity, and a geometric image. In journalism we also learn one main way to narrate, to formulate problems, and to understand what is fact and a priority in the news. That is also a monoculture in which most of us actually do not fit. So our aim is to try doing the opposite, by building networks and plural narratives that mess up these patterns."

What brings us together is the search to dismantle the idea of unique perspectives, the possibility to create bridges between world views, without denying the complexities behind it. Our dialogues are about limits, about spaces and our different roles in the midst of this tractor that runs over diversities, and asks how we can collaborate and build—knowing we come from completely different backgrounds.

ONE Vision, ONE Net, ONE World?
Whose Vision, Whose Net...Whose World Then?

The Museum of the Fossilized Internet

GABI IVENS, MICHELLE THORNE AND JOANA MOLL



all photos: Nina Zimmermann / 2. Mining Rig, 2020. Wood, metallic paint, copper wires, paint, PVC foam. / 3. Spam, Spam, Spam! 2020. Gold paint, card stock, paper, gold paper, glue. / 4. Relentless, 2020. Card stock, earbud, PVC foam, paper, glue.

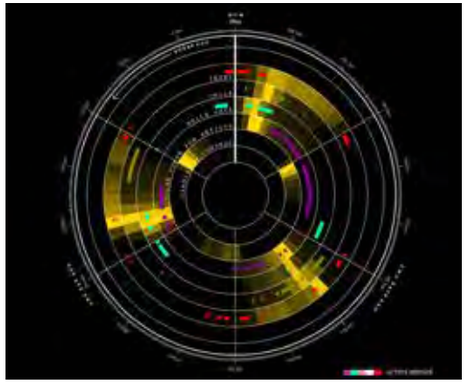
Welcome to the Museum of the Fossilized Internet. This miniature museum was founded in 2050 to commemorate two decades of a fossil-free internet and to invite museum visitors to experience what the coal and oil-powered internet of 2020 was like.

Gasp at the horrors of surveillance capitalism. Nod knowingly at the plague of spam. Be baffled at the size of AI training data and lament the binge culture of video streaming. Built at an accessible scale by Gabi Ivens, this miniature museum is a research object to explore the major contributors to the internet's pollution and spark conversation about the climate crisis. Nine exhibition pieces invite visitors to consider the impact of online advertising, streaming, legacy code, AI training data, and more.

Solar Protocol

TEGA BRAIN, ALEX NATHANSON AND BENEDETTA PIANTELLA

Image: Tega Brain, Alex Nathanson, and Benedetta Piantella

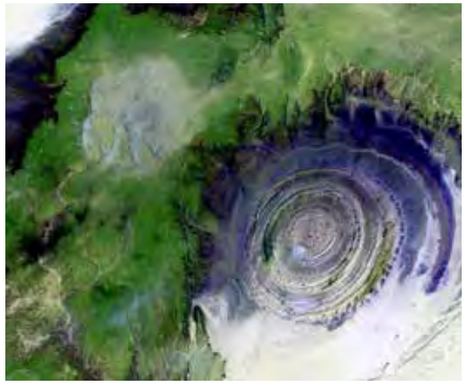


Solar Protocol is a network of solar-powered servers that collectively host a web platform. The platform is then served from wherever there is the most sunshine in the network. Volunteer stewards host and care for the solar servers from different locations around the world, and the project's energy responsive website makes visible which server is currently active, what its local weather is like, its energy status, and who maintains it. With servers located in different time zones, seasons and weather systems, the network directs internet traffic to wherever the sun is shining. When your browser makes a request to see this website, it is sent to whichever server in the network is generating the most energy. The Solar Protocol network explores the sun's interaction with Earth as a form of logic that shapes the daily behaviors, seasonal activities and the decision making of almost all life forms. Solar Protocol honors this natural logic, exploring it as a form of intelligence that is used to automate decisions in a digital network.

AI and Climate Change: The Promise, the Perils and Pillars for Action

EIRINI MALIARAKI

Photo: USGS



A global pandemic has shocked the world, leading to thousands of deaths, economic hardship and profound social disruption. While we worry about our immediate needs, we should remember that another crisis is looming: climate change. The lockdown made it clear that staying at home and slowing down the economy is far from enough to solve the climate crisis. We're still emitting more than 80% as much CO2 as normal, despite having 17% fewer emissions compared to 2019—which is one of the most significant drops in recent years. If we don't act decisively now, the economic damage caused by climate change in the next two decades will likely be as bad as a COVID-sized pandemic every ten years.

Starting today, we need to accelerate our zero-carbon transition rapidly. This transition requires mitigation and adaptation measures that reduce greenhouse gas emissions and builds resilience towards weather-related disasters. Despite vested interests, geopolitical competition and populist leaders, tremendous technological progress is being made towards tackling the climate crisis. In recent years, promising applications of artificial intelligence and data science have been developed to make sense of the vast amounts of data generated across sectors and better monitor Earth's resources.

But several questions remain unanswered: to what extent can AI contribute to a net-zero economy? How quickly can this happen, given the urgency of the challenge? What is the net effect on the planet? And what can we do about this?

The promise

First, AI systems have the potential to decouple economic growth from rising carbon emissions and environmental degradation. AI as a stack of data, learning algorithms and sensing devices can help with both impact and resource decoupling. Impact decoupling means decreasing environmental harm, including CO2 emissions, per unit of economic output . For instance, we can halt emissions in the energy sector by using AI technology to forecast the supply and demand of power in the grid, improve the scheduling of renewables, and reduce the life-cycle fossil fuel emissions through predictive maintenance. AI applications in transportation can enable more accurate traffic predictions, the optimisation of freight transportation, and better modelling of demand and shared mobility options. Other kinds of impacts include the waste that is disrupting ecosystems, pollutants that affect human and animal health and biodiversity loss. By harnessing the swathes of data from sensors and satellites, we can better predict climate change impacts and proactively steward these ecosystems. We can also actively increase the capacity of carbon sinks like peatlands and accelerate afforestation through locating appropriate planting sites, monitoring plant health and even controlling tree-planting drones. Additionally, AI can be helpful in resource decoupling, which means the decoupling of economic output from the volume of resources used from the environment such as materials, water and land. By one example, AI applied in food systems can help better monitor crop yields, reduce the need for chemicals and excess water through

precision agriculture and minimise food waste through forecasting demand and identifying spoiled produce. Lastly, AI systems used in buildings and cities can help automatically control heating and cooling as well as model energy used to decide which buildings to retrofit.

The perils

AI for climate action has the potential to reduce global greenhouse gas emissions by up to 4.0% . However, global data centres and predictive algorithms are also accelerating international chains of logistics, the extraction of resources and fossil fuel emissions in ways that we don't see or understand. As we look to the future, we need to ensure that the benefits of using AI to tackle climate change outweigh the drawbacks.

Recently, the energy consumption of AI systems, specifically machine learning, has come under scrutiny. Between 2012 and 2018, the computations required for deep learning research have doubled, resulting in an estimated 300,000x increase. Several factors impact the carbon emitted by neural networks: the location of the server used for training; the energy grid that it plugs into; the size of the dataset, and the hardware where the training takes place (6). Even so, the use of increasingly energy-efficient processing units, as well as efficiencies in servers, storage, devices and hyperscale data centres, offer some optimism for the future.

What is more alarming is the special oil and gas divisions or big partnerships of big tech companies like Google, Amazon, and Microsoft with companies like Chevron, Total, Aramco, ExxonMobil, Shell and BP. The services offered by big tech are compromising the path to a green transition. They are not about decommissioning, carbon capture or carbon sequestration but instead helping oil companies identify wells, automate drilling, and make extraction as efficient and high-yield as possible. This indicates that the promise of decoupling may be relative, i.e. emissions will not decline fast enough, and it may concern only specific resources and locations. Since 2019, technology companies have responded to these concerns by adopting new green policies and initiatives. Examples include Microsoft's pledge to be carbon negative by 2030 and remove all the carbon the company has emitted since 1975; the use of low-carbon aluminium by Apple; Google's $5.75 billion sustainability bonds that will fund environmentally and socially responsible projects; and Amazon's pledge to be net zero by 2040. In the next five years, we need to carefully monitor whether these commitments are industry marketing or genuine climate action plans.

Pillars of action

AI brings lots of opportunities, but there are also tradeoffs and concerns. Shaping a positive scenario for our future will require collective action at multiple levels: integrating technology regulation with Green New Deal policies, developing new standards to mitigate environmental impacts, adopting green AI industry guidelines and training the next generation of responsible AI technologists.

Moving forward, I want to suggest four pillars of action for technologists, data scientists, designers, engineers and technology activists:

Develop enabling technical environments for the green transition

I invite technologists to apply their skills to climate change mitigation and work towards transforming how data-driven solutions are being developed and commercialised at scale. Industries like energy, food, manufacturing and finance need to transition within the next 5 years. A trustworthy data and AI environment will require, among others: open standards, shared frameworks for data sharing and robust data discovery and publishing practices between transition industries. These emerging data markets can give us a systemic picture of supply and demand at national and regional levels. Moreover, the integration of various forms of public, private, and citizen science data will require guidelines for public-private data collaborations that can be materialised through data commons and other novel data institutions.

Develop a climate-aware data science practice

AI and data science communities will need to follow the steps of computer scientists who have a long history of investigating sustainable computing. Researchers may advocate for making efficiency an evaluation criterion for research, use more computationally efficient hardware and algorithms and report the "price tag" of their models. Alternatively, Energy Usage Reports have been proposed as part of greener algorithmic accountability practices and tools like Machine Learning Emissions Calculator can help estimate the amount of carbon emissions produced by the training of AI models. Similarly, practitioners may start reporting the time to retrain models, share local infrastructure instead of relying on cloud computing and choose cloud providers who are offsetting their emissions.

Focus on Climate Justice

A just transition requires that we pay attention to the struggles of various communities who are already defending their land, air, water, and livelihoods from extractive activities such as mining, fracking, gas flaring, etc. Any application of AI in climate change mitigation and adaptation will need to ensure that environmental impacts are not externalised onto the most marginalised populations, and that the gains are not only captured by digitally mature countries in the global north. This requires centering front-line communities and enabling them to take ownership of their data and bottom up climate action plans.

Organise in the workplace

In 2019, thousands of employees from Amazon, Google, Microsoft, Facebook and Twitter organised as the Tech Workers Coalition. They marched to demand from their employers to bring their emissions to zero by 2030, stop exploiting climate refugees and cancel contracts with fossil fuel companies. It will be of paramount importance for technology workers to raise awareness in their work about the climate impacts of technology. Technology companies need to be more transparent about their emissions and be pressured to provide this information to customers, regulators, and the public. This transparency will be the first step towards informing regulation and public discourse as well as incentivising practitioners to make more sustainable decisions.

Towards an ethics of planetary care

The planetary scale of our knowledge and technologies are revealing new interdependencies and feedback loops between environmental and engineered systems. This renewed understanding requires an updated ethical, ontological, and practical discourse—one that is not reductionist, but rather makes the moral responsibility for planetary custodianship even more urgent. Accordingly, the consideration of environmental impacts and the responsibility to care for our planet should be reflected in our technical infrastructure, our ways of working and our practices and policies for fair, accountable, transparent and ethical AI systems. AI will not be a substitute for more integrative ways of knowing or even degrowthist political agendas—but rather, when used responsibly, can be an enabler that helps us move faster to a safe and just post carbon world.

Branch Team

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Assistant Editors: Laurence Bascle and Carrie Hou
Design: Tom Jarrett
Development: Jack Lenox, Hannah Smith and Chris Adams
Cover Illustrations: Hélène Baum and Gica Tam
Read more at branch.climateaction.tech

Branch Magazine Symposium

A Sustainable and Just Internet for All

On Friday, Branch magazine — the winners of the Ars Electronica Award for Digital Humanity 2021 — will host this years' theme conference, which will explore the festival topic from many angles provided by renowned experts and speakers from a variety of fields.

Branch Magazine

This year's theme conference explores how the internet should serve our collective liberation and ecological sustainability. Branch Magazine, the recipients of the first-ever Ars Electronica Award for Digital Humanity, offers four panels unpacking climate justice, solarpunk, sustainable digitalization, solidarity and care as well as low-carbon design and education. Chaired by Michelle Thorne, Chris Adams, Christine Lariviere, Andres Colmenares and Alexandra Deschamps-Sonsino.

Education Day

The Education Day on Wednesday will revolve around the importance of education when it comes to critically evaluate today's and future developments of the digitalized world.

Education Conference

Ars Electronica x Creative School x OSHub

The need to understand how to use digital technologies is emphasised consistently across the globe and educational systems have responded to this by investing in STEM (science, technology, engineering and mathematics). The Education Conference at this year's festival explores how we can open learning beyond traditional educational institutions and integrate the arts through STEAM. In a series of sessions hosted by partners from the European Platform for Digital Humanism we will get a glimpse of how we can learn and teach differently through integrating art, technology and society. Diverse discussions will demonstrate how a New Digital Deal for education can empower citizens to transform their digital future, enabling them to critically question technologies and understand their deeper implications on the fabric of society.

Symposium Universitas

New perspectives on university education and research
Johannes Kepler University Linz

Digital technologies in terms of research, university education, and convey knowledge — what are some of the potentials and challenges? How can young people get a head-start to prepare for the world of tomorrow and upcoming challenges? This symposium will explore digital technologies and their impact on society, especially regarding university teaching and research. The various topics in the program will spark discussion; topics include current positions and insight in regard to future skills, transdisciplinary collaboration in science and academia, innovative educational methods, micro-credentials, and alternative metrics to measure scientific output. The scheduled workshops, presentations, and discussions aim to inspire, broaden perspectives, stimulate discussions, and initiate conversation about what universities of the future should be like.

With Ulf-Daniel Ehlers (Baden-Württemberg Cooperative State University Karlsruhe), J. Philipp Schmidt (MIT Media Lab), Sarah de Rijcke (Leiden University), Markus F. Peschl (University of Vienna), Daniel J. Lang (Leuphana University Lüneburg), Manuela Naveau (Kunstuniversität Linz / Interface Cultures), Dominic Orr (Nova Gorica University), Martin Ebner (TU Graz), Christopher Lindinger (JKU), Kerstin Pell (JKU) and more.
More information: www.jku.at/art-science
The project is part of TRANSFORM, a collaborative project between the University of Applied Arts Vienna, Johannes Kepler University, and Donau University Krems, and is funded by the Austrian Federal Ministry of Education, Science and Research.

Symposium Universitas, © Tessa Sima

Symposium Perspektiven Politischer Bildung: NEULAND — Eine Gesellschaft auf Expedition

Pädagogische Hochschule Upper Austria x Arbeiterkammer Upper Austria

The world is in a phase of upheaval, virtually on an expedition to the NEW LAND. Science-based approaches and rational action are being disrupted by populism, conspiracy theories and religious battles. Social thinking and action as well as a basic humanitarian attitude are indispensable in such a situation. Education is an indispensable prerequisite.

The education sector must actively participate in this current social transformation process.
But how can this succeed if the members of educational institutions are themselves part of the expedition and do not know where the journey is going? Are we really moving towards a "new normal"? If so, what does this "new normal" look like?

STARTS Day

The Science+Technology+Arts = STARTS Initiative is a program of the European Commission that encourages synergies between the arts and technology that support the innovation industry and society. STARTS promotes the inclusion of artists in research and innovation activities throughout Europe.
The STARTS Day tackles collaborative practice at the intersection of art, technology, science and industry in conferences, workshops and networking events. This year's online program brings together the STARTS Prize winners, STARTS community and speakers and contributors working in these fields to explore the potential of art-driven data analysis in mapping and visualizing global challenges, the impact of creating localized circular economies on the future of manufacturing and the effects of including artists in innovation processes in fashion design, spatial design and robotics. The STARTS Day visitors also get a glimpse of the STARTS exhibition at the Kepler Gardens through an online guided tour and can participate in online workshops and networking sessions hosted by collaborators and partners of the STARTS initiative.

The STARTS Day has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 956603.

AI Lab Conference

On Saturday a series of panel discussions will be presented as part of the European ARTificial Intelligence Lab Conference.

This conference is presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe Programme of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.

Keynote Conversations

Ars Electronica

This year's Keynotes are cast with extraordinary and renowned speakers, who are cutting edge thought leaders and whistleblowers from different parts of the globe. Together with artistic and managing director Gerfried Stocker they will discuss current projects and research, as well as take audiences on a rabbit hole deep-dive into theory and future vision.

Digital Humanism Panel

Ars Electronica

As the driving factor of societal change, digitalization needs to be negotiated. However, in order for the "real work" to begin, a universal commitment to putting the social dimension at the core of technological development and digitalization is a key factor. Under the umbrella of Digital Humanism panelists come together to discuss how — through combining critical artistic engagement and collaboration across scientific disciplines — digital technologies can be shaped to serve as a means of strengthening and disseminating humanistic and social values.

AI Lab Conference Day

European ARTificial Intelligence Lab

The AI Lab conference gives a platform to concepts, projects and individual actors who explore scientific and technological aspects of AI, as well as the impact the development and deployment of artificial intelligence has on art, culture and society as a whole.
A series of panels will split the focus of AI-related research into categories such as Media Literacy, Music, Civil Society and Feudalism which all aim to deconstruct visions, expectations, fears and possibilities surrounding the core theme, while inviting on-site and online audiences to contribute to the ensuing discussions. The European ARTificial Intelligence Lab is co-funded by the Creative Europe Programme of the European Union, and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.

Prix Forum

Ars Electronica

The Prix Forum is an open discussion between the top three winners of Prix Ars Electronica 2021 and the jury. Many of the 2021 award-winning works questioned the current state of "humanity/humanism" while using current technologies such as AI, machine learning or 3D modeling. What are this year's winners working on now? How are they working on it? And what drives them to create their works? Each juror will ask the winners to discuss the following topics: Computer Animation category, moderated by Helen Starr: "The Re-enchantment of Humanism"
Digital Musics & Sound Art category, moderated by Cedrik Fermont: "A Pandemic Didn't Stop the Sound"
Artificial Intelligence & Life Art category, moderated by Jens Hauser: "Im/Material Infrastructures"

Expanded Animation

Tectonic Shift

Ars Electronica x Upper Austria University of Applied Sciences Hagenberg Campus

In collaboration with the Upper Austria University of Applied Sciences' Hagenberg Campus, the 9th Expanded Animation symposium carries on a process launched in 2013: to map the wide-ranging domain of animated imagery beyond well-trodden paths. The symposium stays the course originally set at its inception and presents theoretical positions and perspectives from the art world, the R&D field and the industrial sector. Its mission: To function as a driving force advancing interdisciplinary discourse. This year's symposium, under the title Tectonic Shift, offers several panel discussions on current trends in the extended field of computer animation. This year's central question is: "What fundamental changes in conception, production and reception are discernible, and how does the Covid19 pandemic fit into this context?"

Partner Conferences

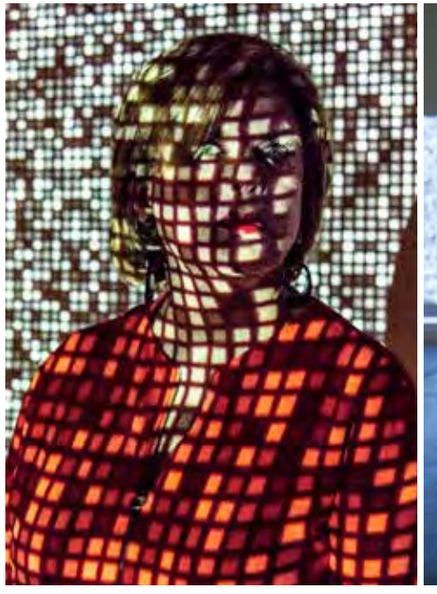
Symposium “The Civil Society of the Future: Co-Creation works.”

Die Ziwi — Die Zivilgesellschaft wirkt.

The engagement of civil society is indispensable for a pluralistic, open and solidarity-based society. Both in the refugee crisis of 2015 and the Covid crisis of 2020, it became clear how directly, effectively and innovatively initiatives, associations, NGOs, NPOs and individuals — in short, all those who are usually considered “civil society” — are able to act. What does the much-cited world after Covid look like? How do we use the potential of civil society engagement should the situation worsen again? And which approaches will help us achieve sustainable social innovation that reaches all participants in our society, even in times of non-crisis?
The symposium will explore these questions with many experts, activists and decision-makers and try to find instruments and strategies for sustainable social innovation!

CIFO & Ars Electronica

The Cisneros Fontanals Art Foundation (CIFO) and Ars Electronica have joined forces to highlight and support the production of digital art in Latin America. The partnership will concentrate both on exploring the rich set of historical precedents in pioneering experimental practices in the region, and on recent productions in the fields of media art such as AI and ML, robotics and drones, VR and AR, AV sculpture and landscape, blockchain, biotech, NetArt, hacking… Over the years, both Ars Electronica and CIFO have developed into solid dissemination and production platforms for contemporary art with an international outreach. CIFO’s continuous support of Latin American artists and curators meets Ars Electronica’s unique understanding of technology in the age of globalization and post-humanism. This partnership focuses on the constant dialogue between tradition and contemporaneity, with a critical, poetic, post-colonial, tactical, social, performative, and/or intersectional approach.



Artistic photography of Ella Fontanals-Cisneros, CIFO Founder and Honorary President at a CIFO exhibition. Photo Mauricio Donelli.

Artwork by CIFO awarded artist Fidel Garcia, at CIFO Art Space, 2016. Monkeys Nation, 2016. Various electronic media. Variable dimensions. Photo Oriol Tarridas.

Artwork of artist Rafael Lozano-Hemmer, from The Ella Fontanals-Cisneros Collection. Voz Alta and Prototype, 2008. Photo courtesy of the artist.

Art Thinking Forum

Art as “Compass,” “Catalysts” and “Journalism”

Hakuhodo x Ars Electronica

The Art Thinking Forum is a platform created jointly by Ars Electronica and Hakuhodo to discuss and exchange ideas on how to utilize art for a better society. The forum will discuss the role of art in the future through cutting-edge examples of creative chemical reactions between various fields and art. This year’s event, the second of its kind, will introduce Art Thinking from three perspectives: Art as Compass: How can art provide us with guiding points that can aid us in living in a future that is hard to predict? Art as Catalyst: How can art act as a catalyst to bring people from different fields together, inspire them, and create a better future? Art as Journalism: How can art address social questions, stimulate debate, and have an impact on society? This symposium invites activists who are practicing art from the three perspectives to discuss the roles and benefits of art from their differing viewpoints. Their case studies will be presented in the form of short videos as “Art Thinking Journey” at the Ars Electronica Festival.

Future Humanity Journey

A day in 2041 — What would our day look like in 20 years?

This is the second Ars Electronica edition of the event in which four experts from diverse backgrounds are invited to discuss the future of humanity, from global-scale issues to more subtle daily joy. This discussion is integrated into a short film that shows an imaginary day in 2040. The final scenario and video presenting the highlights of the session will be shared at the Ars Electronica Festival. This year, after a year in which the world experienced a pandemic, how will innovators view the future of Humanity? What will be different about it compared to last year?

Siri, search “programmers”: What to do about the Digital Gender Divide in Austria

Initiative Digitalisierung Chancengerecht x Ars Electronica

Digital gadgets, algorithms and the internet are shaping our lives like never before and women are still strongly underrepresented in the development of these technologies even in 2021. In the context of Ars Electronica 2021, the “Initiative Digitalisierung Chancengerecht” (IDC) launched by Doris Schmidauer invites high-ranking experts from the fields of education, technology, business, culture and media to a panel discussion. We will address the following questions:
What are the causes of the digital gender divide?
What concrete measures need to be taken in Austria to create digital equality of opportunity for women?

Workshops

Workshops bring together a range of people to learn tools that can be applied to the real world. It is a key program this year in building digital communities online to help people share experience, learn, and interact. Therefore, in a multitude of topics, we are trying to provide the public with a series of tools that could help them learn new skills, discover new things, and improve their networking skills.

AI Lab

Recent years have given rise to dynamic technical and scientific developments, all with a high potential to change our world, the way we think, the way we work, the way we see the world.
This new Ars Electronica Program is a unique opportunity to get an introduction and overview of Artificial Intelligence technologies — presented by experts and artists in a way that everybody can understand.

This workshop is presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe Programme of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport

Gender & Diversity

Activism is an important theme of the festival. From this year on, participatory workshops will invite women, femmes, queers, non-binary, trans, gender-nonconforming, gender-non-normative and others to create an exchange experience in a safer space to challenge gender roles. You will have an opportunity to learn how technology can be a tool to promote debates for a more equal world.

New Digital Deal

As the main Festival Topic, we want to invite committed people who see the future, not as a glimpse into the tech companies' crystal ball, but as the responsibility of our time. We have begun accepting this responsibility as social activation and empowerment, as a source of analytical, corrective, and alternative thought and action in the digital and the real world with ecology. What Future do we want? How can we build the New Digital Deal together?

STARTS Workshops

Creative exploration and experimental use of new technologies can contribute to the development of new products and new economic, social and business models. The STARTS Prize winners will be the main highlight of the program along with other STARTS Artists. Together they will inspire the public with innovative artistic processes.

The STARTS Day has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 956603.

Hackathon

A.I. ECOSYSTEMS

Ars Electronica is organizing a Hackathon on the topic of A.I. ECOSYSTEMS_: a series of hands-on workshops and inspirational talks on the topic of AI. It will bring developers, technologists, engineers, students, artists, and scientists together in teams of five to seven participants to cram and build solutions around future scenarios that will later be presented at our online Festival. The Hackathon provides an environment for innovation, networking, and entrepreneurship. By bringing creative minds from multiple disciplines together for a time, we can discover and uncover new possibilities for using AI.

This workshop is presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe Program of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.

LCM Hackathon

Agriculture requires innovations to increase both quantity and quality in production, but also to increase efficiency in resource management. It is necessary to reduce environmental impact and production costs, in a context of climate change and market globalization. Innovative re-organisation of food supply chains aiming at reconnecting producers and consumers and re-localizing agricultural and food production are needed.
This year Ars Electronica in collaboration with Linz Center for Mechatronics (LCM) organizes a foresight technology Hackathon training which addresses challenges of the Agri-food industry to be faced by the world, global trends in specific sectors of the Agro industry, prospects for their development. The pandemic has pinpointed how vulnerable the food systems are. How can we create resilient food systems that ensure a supply of safe, accessible, local food for the people of a community?

Developing collective agency and activisms

New technologies have penetrated all aspects of our lives and promise a wide range of improvements and efficiencies. Contrary to general perception, the algorithms on which these technologies are based are neither neutral nor do they treat everyone equally. They are as biased as the structures, institutions and developers that make them, which means racism and sexism are mostly unconsciously but systematically inscribed in their functions and outputs. A series of workshop address aspects of this topic by asking how discrimination in the development and application of technology can be overcome.

This project is supported by the equal treatment office of the city of Linz.

Davis, J.[1,2], Khan, S.[3], Cromer, K.[4], Church, G. M.[1]

Multiplex, cascading DNA-encoding for making angels

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ABSTRACT

DNA molecules having three base-pairs or more can simultaneously hold three unique numbers. We show how a coding strategy based on these three numbers can be used to encode a single molecule with multiple, independent data sets and furthermore, that many layers of information can be encoded in this way. Our example is a molecule holding multiple encodings of “Subhan Allah,” an Arabic phrase that is said to have been repeated for more than a thousand years as an invocation associated with creating angels.

[KEYWORDS: DNA Manifolds; DNA Silent Code; DNA Amino Code; Subhan Allah; Angels]

INTRODUCTION

A centuries-old tradition involves the practice of making angels by uttering a certain phrase in Arabic language. According to this tradition, whenever a particular phrase is pronounced, an angel is automatically created. Moreover, any number of angels can be generated in this way. Like mantras on Tibetan prayer flags, it makes no difference whether the phrase is spoken, or written, or caused to be printed. Anytime the phrase is repeated, in any form or iteration, the result is believed to be an angel.

The phrase is “Subhan Allah” (سبحان الله), which roughly translates to the word, “Hallelujah” in English. We assume that repeating “Hallelujah” in any language could rarely be construed to offend anyone, and in the midst of so many COVID-19 victims, the symbolism about creating many angels may be a comfort to many.

19th century Islamic scholars reported that connections between repeating “Subhan Allah,” and the subsequent proliferations of angels, date at least as far back as the 9th century CE.1 The practice is also referred to in hadith collections, accounts from verbal and physical teachings and traditions dating from the early Islamic era. Although these accounts have been contested, and not uniformly endorsed by many religious scholars, persistent narratives about pronouncements of “Subhan Allah” and the appearance of angels have endured for hundreds of years. Symbolism about changing the demographic of heaven can be elegantly aligned with the objectives and capabilities of information-keeping in DNA.

DISCUSSION

ASCII encoding

A preliminary “Subhan Allah” coding strategy is based on representing corresponding characters of Arabic text as hexadecimal ASCII (American Standard Code for Information Interchange) numbers, and their equivalent expressions in mathematical bases 2 (binary), and 4 (DNA).

Arabic Text (“Subhan Allah”): سبحان.الله

“Subhan Allah” Arabic text to hexadecimal code (ASCII):

d8 b3 d8 a8 d8 ad d8 a7 d9 86 20 d8 a7 d9 84 d9 84 d9 87

“Subhan Allah” hexadecimal ASCII conversion to binary code:

11011000 10110011 11011000 10101000 11011000 10101101 11011000 10100111 11011001 01101000 00100000 11011000 10100111 11011001 10000100 11011001 10000100 11011001 10000111

“Subhan Allah” binary code conversion to 76-mer DNA where C=00 T=01 A=10 G=11 (increments based on molecular weight) :

GTACAGCGGTACAAACGTACAAGTGTACAATGGTATTAACCACCGTACAATGGTATACTCGTATACTCGTATACTG

= سبحان الله

Abjad encoding

Another option for encoding “Subhan Allah” entails the use of an alphabetic numeral system of notation related to gematria, an ancient practice using the Hebrew alphabet, and the ancient alphabetical number system practices of many other ancient cultures.2 Before Arabic numerals were promoted in Western Europe in the 13th century, most forms of European mathematics were also predominantly written with alphabetical numerals. In Arabic, abjad numerals are a decimal alphanumeric code in which the 28 letters of the Arabic alphabet are assigned numerical values. Alif, the first letter of the Arabic alphabet is used to represent the number 1; the second latter, bā, is used to represent the number 2, and so on. Individual Arabic alphabetical characters appearing after the 9th letter in the Arabic alphabet are used to represent 10s and 100s. The letter, yā represents 10. The number 20 is assigned to the letter, kāff. The letter, qāf represents 100, etc. Abjad numbers are also traditionally used to assign numerical values to whole Arabic words for purposes of numerology, belief in the divine or mystical relationship between numbers and one or more coinciding events. Ilm al-Hurūf or, “Science of Letters” is the practice of Arabic numerology whereby numerical values assigned to Arabic alphabetical characters are added up to provide total values for words in the Quran (though most Islamic scholars and religious authorities do not recommend its use for interpreting Quran for purposes of divination or prediction). [3]

The abjad number of سبحان.الله is 187 = (5+30+30+1) + (50+1+8+2+60)

= 11 10 11 10 [binary]

= GAGA [DNA] in reading right to left

or, AGAG [DNA] reading left to right (“س ب ح ا ن ا ل ل ه”)

“Subhan Allah” spoken one hundred times per day1 x 10 billion Muslims since 632 AD x 60 person-yrs each = 20 quadrillion angels

50 quadrillion copies of the 4-mer DNA = 100 micrograms

Taking all of this into account, and inspired in part by repeating geometry of Islamic tiling, we have implemented a DNA coding technique that combines several simultaneous levels of informational symmetry:

Silent Code

Here we use the term, “Silent Code” to describe a method for DNA-encoding using “silent mutations” to hold binary information in redundant codons with values incremented by molecular weight. That is, values are assigned to individual codons according to the respective incremental mass of all codons translating for a particular amino acid. [see Figures 1a, 1b,] By itself, Silent Code is not a very efficient coding technique in terms of bits-per-nucleotide, but it can be written into highly conserved genes.

Amino Code

If amino acids are given values too (in this case, mathematical base-20 values are assigned), then “Subhan Allah” can be coded for in a molecule that simultaneously codes for something else. [see: Figure 2] A message can be independently written into a number assigned to the sequence of amino acids (Amino Code) irrespective of information written into the number that corresponds with the sequence of redundant codons (Silent Code). This is a very flexible coding technique, since even in the case of relatively small genes, astronomical numbers of distinctly different DNA sequences can code for the same sequence of amino acids.

Nature has built functional redundancy into the genetic code, but non-functional redundancy is up for grabs. In addition to having information of its own, values assigned to amino acids (peptide sequences), may also be used as a check for copying errors. A predictable peptide sequence can hold core information while its triplet variants can encode separate data sets. As a given sequence of amino acids is repeated many times, the probability for error increases. So, if the core peptide sequence is “xyz,” and there is a region with an erroneous peptide sequence, then there will be a high likelihood of errors appearing in corresponding Silent Code. Methods for such over encoding of information are common aspects of electronic and broadcast communications where multiple layers of information are added to guarantee the integrity of information sent or received.

Three numbers

There is a third number too, and this third number is one that corresponds with the DNA sequence itself, where C=00, T=01, A=10, and G=11. [See: Figure 3] In this way, every DNA molecule larger than a 2-mer can hold three arbitrary numbers or, three “pages” of information, and it seems nature uses only two of them.

DNA Manifolds

These three pages of information (inherent to almost all DNA molecules) are key to a coding method we have termed, “DNA Manifolds.” Using DNA Manifolds, “Subhan Allah” can be written over itself again and again in the same DNA molecule. In the example given here, the Amino Code number codes for binary values of the 76-mer “Subhan Allah” DNA in “Line one” and the corresponding Silent Code number holds identical “Subhan Allah” binary values in “Line four”:

Line one:	110110001011	00	1111	01	100010101000	110	1100	01	01	01	1011	...
Line two:	CYS	SER	ALA	ILE	GLY	VAL	SER	THR	SER	LYS	GLU	VAL	VAL	VAL	ALA	...
Line three:	TGT	TCG	GCT	ATA	GGC	GTT	TCT	ACA	TCT	AAG	GAG	GTA	GTG	GTC	GCT	...
Line four:	1	1	01	1	00	01	01	10	01	1	1	10	11	00	01	...

Both of these numbers are automatically contained in the DNA sequence, TGTTCGGCTATAGGCGTTTCTACATCTAAGGAGGTAGTGGTCGCT... (Line three), which becomes the “third” number of the molecule:

011101010011110001100111110011010101000110001001000110100000100000011011011
1101001100001....

1 see: Sahih al-Bukhari 6405, Book 80, Hadith 100

This last number holds all of the information coded into the other two numbers, including the specific sequence of the initially encoded 76-mer DNA molecule.

This “third” number can be subsequently encoded into the Amino Code and Silent Code numbers of yet another molecule, and so on, cascading input data (in this case, “Subhan Allah”) into many layers of encoded information. A multilayer “manifold” can be systematically unpacked into a set of imaginary, but precisely described DNA molecules. Just as in this case, the initial 76-mer coding for “Subhan Allah” exists only as a mathematical construct that is decoded from the sequence of another molecule. Only the final sequence is synthesized as a real DNA molecule, one that can ideally be encoded with the maps of many other “virtual” DNA molecules – and all of the information they contain.

There is a very large number of possibilities to select from when searching for the most efficient simultaneous encoding of input data into amino acid sequences and redundant codons (Lines two and three above). As the number of coded ‘virtual’ molecules increase in a DNA Manifold, so does the number of corresponding values sets that become available to code for them. After a few steps of manifold encoding, huge numbers of alternatively coded value sets can be composed to hold the same input data. One way to select a value set from many possible value sets is to determine the load of Silent Coded bits that can be contained in respective sets of Amino Code values. Ideal value sets maximize the number of Silent Code bits that can be contained in fewest possible Amino Code values. Computational search engines may obviously be applied to this problem. Otherwise, the process of encoding many such layers of information is a tedious one, and prone to human error.

RESULTS

Angel Manifold

The Subhan Allah DNA Manifold given in Table 1 is shown as 86 respective DNA triplet codons annotated with “Subhan Allah” Amino Code. Corresponding Silent Code is also shown having identical “Subhan Allah” binary data, as well as a set of abjad “GAGA’ repeats. The complete sequence is a 258-mer DNA.

Subhan Allah Manifold DNA:

TGTTCGGCTATAGGCGTTTCTACATCTAAGGAG-
GTAGTGGTCGCTGCTCTTTCCGTTGATTGCATA-
AATACCCTTGTTCTTATATGCAGTACAGTGCAC-
CACGTTCCTTCCGTGATACATGTACCGTCCGTA-
ATATGTCCTTCCGTCCACGATGTCAAACGCAGG-
CGTAGACGCAGAAGACGTAGGAGGCGTAGAC-
GTAGACGCCGTCGCAGGCGTAGACGTAGACGC-
CGTCGCAGGCGTAGACGTAGACGCCGTAGG

This 258-mer sequence is roughly 3 x larger than the 76-mer encoded as a single “Subhan Allah,” but the Subhan Allah DNA Manifold sequence contains a total of 19.5 “Subhan Allah” repeats: one as Amino Code, one as Silent Code, and 17.5 abjad “GAGA” (11 10 11 10) repeats (abjad numbers encoded as Amino Code).

Coding efficiency

Computer-assisted encoding may be useful to select shorter, doubly-encoded sequences from inherently very large sets of possible solutions, and so, more highly efficient applications of this method can be anticipated. Nevertheless, this example is reasonably efficient in terms of maximizing the number of bits that can be stored per DNA base. In this case, 2 x 152-bit “Subhan Allah” texts (binary Arabic ASCII) are encoded, as well as 17.5 x 8-bit abjan “GAGA” encodings (140 bits), totaling 444 bits in 258 DNA bases, or 1.72 bits/DNA base. If the two, encoded 76-mer DNA sequences and the 70-mer DNA encoding the 17.5 “GAGA” repeats are also counted as input data, then input data total 748 bits in 258 DNA bases or, 2.89 bits/DNA base. To date, information density of 2 bits/DNA base has been considered theoretically possible. But when taking into account inevitable DNA reading and writing errors, a maximum of 1.8 bits of data per nucleotide of DNA has been cited as the practical limit.4 For perspective, information density achieved with “DNA Fountain” encoding, one of the most efficient DNA data-encoding methods to date, was 1.57 bits/base.5

BioBricks

One option to increase potential iterations of "Subhan Allah" would be to clone into a plasmid vector using restriction sites for EcoR1 & XbaI on one end, and SpeI & PstI on the other (the basic biobrick prefix and suffix). "BioBricks" comprise a kind of warehouse of resources for the International Genetically Engineered Machine (iGEM) community, and their foundation maintains an 'open source' supply.

Adding the "BioBrick" prefix, GAATTCGCGGCCGCTTCTAGAG and suffix, TACTAGTAGCGGCCGCTGCAG, yields a 301-mer DNA:

GAATTCGCGGCCGCTTCTAGAGTGTTCGGCTATAGGCGTTTCTACATCTAAGGAGGTAGTGGTCGCTGCTCTTTCCGTTGATTGCATAAATACCCTTGTTCTTATATGCAGTACAGTGCACCACGTTCCTTCCGTGATACATGTACCGTCCGTAATATGTCCTTCCGTCCACGATGTCAAACGCAGGCGTAGACGCAGAAGACGTAGGAGGCGTAGACGTAGACGCCGTCGCAGGCGTAGACGTAGACGCCGTCGCAGGCGTAGACGTAGACGCCGTAGGTACTAGTAGCGGCCGCTGCAG

Assembly and cloning

The 301-mer BioBrick-compatible "Subhan Allah" Manifold DNA was synthesized as a gene block by GeneUniversal, Inc. (Newark, Delaware, USA) and cloned into a pUC57 bacterial expression plasmid. The gene block sequence was confirmed by Sanger sequencing using the following primers — Forward: TGTTCGGCTATAGGCGTTTC and Reverse: CGTGGACGGAAGGACATATT.

CONCLUSION

A succinct explanation of the DNA Manifolds idea to general audiences is expected to be challenging. In this case, since we don't re-encode the 258-mer into yet another ("virtual") molecule, the level of complexity will be that of only a single "manifold" and so, the "Subhan Allah" example may be easier to communicate.

Regardless of coding efficiency and potential practical applications, in this example, DNA Manifolds also becomes a tool of art and culture. It seems especially beautiful to compose this particular text as a message that folds into itself. It recalls profoundly mathematical traditions and intricate repeating calligraphy in Islamic art, and so, seems particularly appropriate.

A 1mm layer of our 258-mer on a 1.5mm pinhead would correspond with approximately 2.417 quintillion angels (6E23 x 1 x pi x 0.752 x 1E-3/(330 x 258/19.5) = 2.4E+17 angels).

6.02214076 × 1023 × 1 x 3.14 x 0.752 x 10-3/(330 x 258/19.5) = 2.417 x 1018 = 2.417 quintillion

---

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2.) https://en.wikipedia.org/wiki/Alphabetic_numeral_system

3.) http://www.oxfordislamicstudies.com/article/opr/t125/e1005

4.) Service, R. F. DNA could store all of the world's data in one room. Science; https://www.sciencemag.org/news/2017/03/dna-could-store-all-worlds-data-one-room (02 Mar. 2017)

5.) Erlich, Y. & Zielinski, D. DNA Fountain enables a robust and efficient storage architecture. Science 355, 950–954 (2017)

[See Table and Appendix below]

APPENDIX

"Subhan Allah" pUC57 Plasmid:

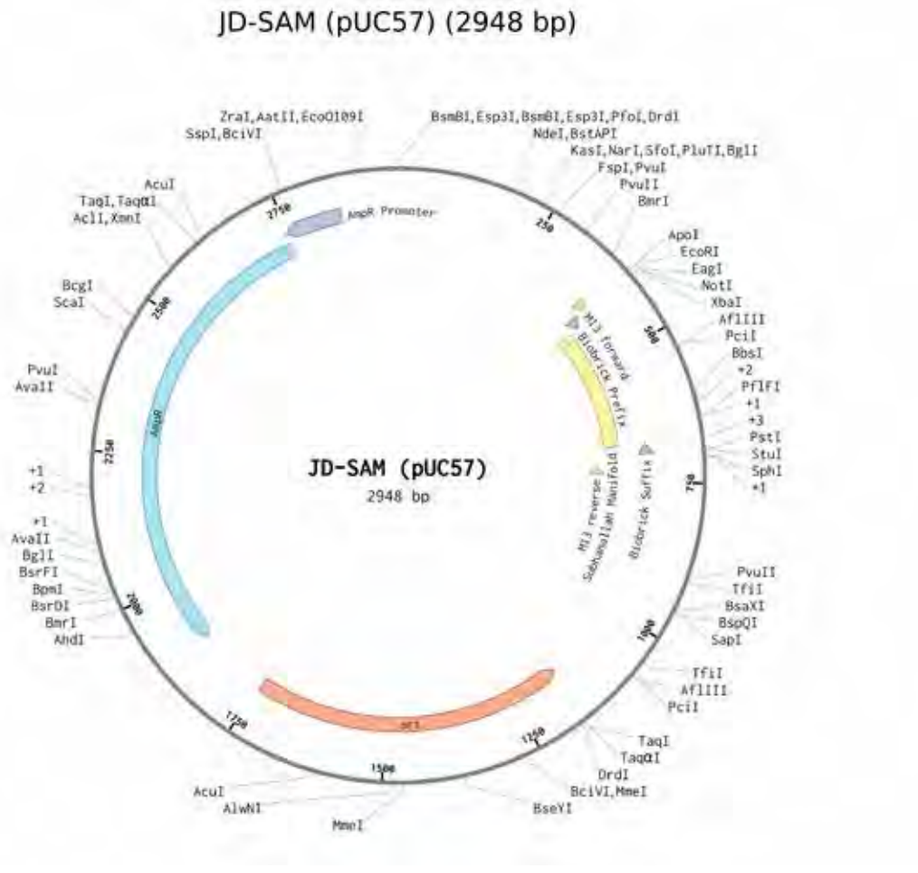


Table 1

"SUBHAN ALLAH" ARABIC ASCII BINARY:

11011000 10110011 11011000 10101000 11011000 10101101 11011000 10100111 11011001 01101000 00100000 11011000 10100111 11011001 10000100 11011001 10000100 11011001 10000111

SINGLE "SUBHAN ALLAH" ENCODING AS A 76-MER DNA:

GTACAGCGGTACAAACGTACAAGTGTACAATGGTATTAACCACCGTACAATGGTATACTCGTATACTCGTATACTG

SUBHAN ALLAH MANIFOLD ENCODING:

Amino Code:	1101	1000	1011	00	1111	01	1000	1010	1000	110	1100	01	01	01	1011
Amino acid:	CYS	SER	ALA	ILE	GLY	VAL	SER	THR	SER	LYS	GLU	VAL	VAL	VAL	ALA
DNA:	TGT	TCG	GCT	ATA	GGC	GTT	TCT	ACA	TCT	AAG	GAG	GTA	GTG	GTC	GCT
Silent Code:	1	1	01	1	00	01	01	10	01	1	1	10	11	00	01

Amino Code:	1011	000	1010	01	111	1011	00	101	1010	000	01	000	00	1101	1000	1010
Amino acid:	ALA	LEU	SER	VAL	ASP	CYS	ILE	ASN	THR	LEU	VAL	LEU	ILE	CYS	SER	THR
DNA:	GCT	CTT	TCC	GTT	GAT	TGC	ATA	AAT	ACC	CTT	GTT	CTT	ATA	TGC	AGT	ACA
Silent Code:	01	01	00	01	1	0	1	1	00	01	01	01	1	0	11	10

Amino Code:	01	11	11	01	1001	1000	01	00	11	01	1001	1000	01	00	1101	1001
Amino acid:	VAL	HIS	HIS	VAL	PRO	SER	VAL	ILE	HIS	VAL	PRO	SER	VAL	ILE	CYS	PRO
DNA:	GTG	CAC	CAC	GTT	CCT	TCC	GTG	ATA	CAT	GTA	CCG	TCC	GTA	ATA	TGT	CCT
Silent Code:	11	0	0	01	01	00	11	1	1	10	11	00	10	1	1	01

Amino Code:	1000	01	11	–	111	01	110	1110	1110	1110	1110	1110	1110	1110	1110
Amino acid:	SER	VAL	HIS	–	ASP	VAL	LYS	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG
DNA:	TCC	GTC	CAC	–	GAT	GTC	AAA	CGC	AGG	CGT	AGA	CGC	AGA	AGA	CGT
Silent Code:	00	00	0	–	1	00	0	00	11	01	10	00	10	10	01

Amino Code:	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110
Amino acid:	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG
DNA:	AGG	AGG	CGT	AGA	CGT	AGA	CGC	CGT	CGC	AGG	CGT	AGA	CGT	AGA	
Silent Code:	11	11	01	10	01	10	00	01	00	11	01	10	01	10	

Amino Code:	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	1110	
Amino acid:	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	ARG	
DNA:	CGC	CGT	CGC	AGG	CGT	AGA	CGT	AGA	CGC	CGT	AGG	
Silent Code:	00	01	00	11	01	10	01	10	00	01	11	

SUBHAN ALLAH MANIFOLD DNA:

TGTTCGGCTATAGGCGTTTCTACATCTAAGGAGGTAGTGGTCGCTGCTCTTTCCGTTGATTGCATAAATA
CCCTTGTTCTTATATGCAGTACAGTGCACCACGTTCCTTCCGTGATACATGTACCGTCCGTAATATGTCCT
TCCGTCCACGATGTCAAACGCAGGCGTAGACGCAGAAGACGTAGGAGGCGTAGACGTAGACGCCGTCG
CAGGCGTAGACGTAGACGCCGTCGCAGGCGTAGACGTAGACGCCGTAGG

This 258-mer “Subhan Allah DNA Manifold” sequence is roughly 3 x larger than our 76-mer encoded as a single “Subhan Allah” but this sequence contains 19.5 “Subhan Allah” repeats: one as Amino Code, one as Silent Code, and 17.5 abjad “GAGA” (11 10 11 10) repeats.

Fig. 1A

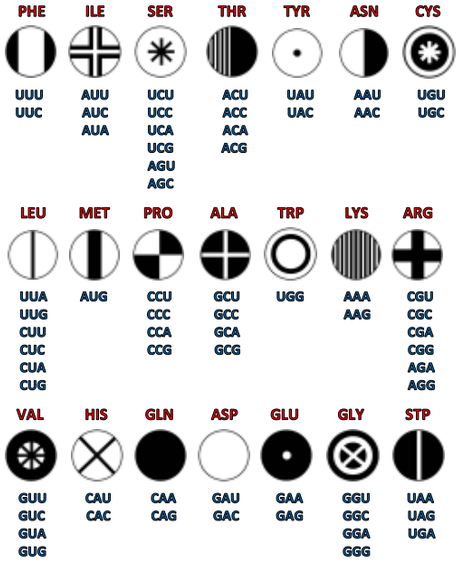


Fig. 1B

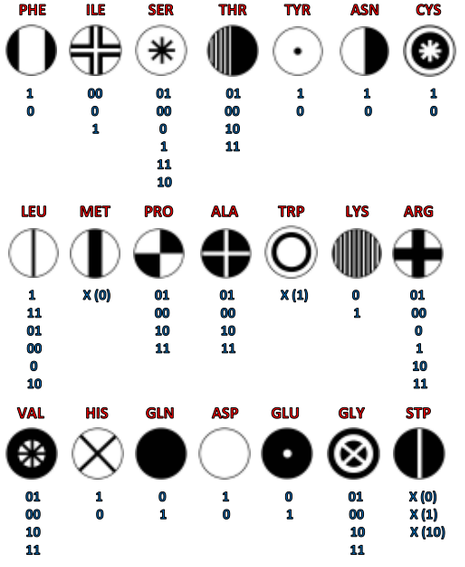


Fig. 2

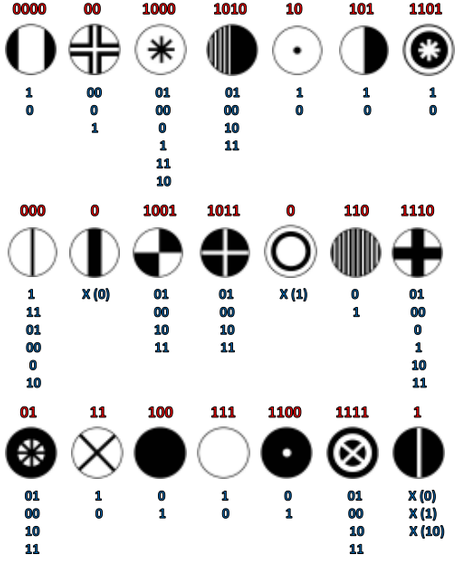
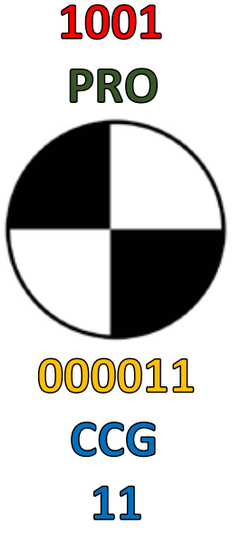


Fig. 3



KEPLER'S GARDEN

JKU LIT @ ARS ELECTRONICA

Linz Institute of Technology, Johannes Kepler University

Authors: Christopher Lindinger (AT) & Nina Fuchs (AT)

Creative Convergences between Art and Science

While art and science once fed from a common source, the two disciplines were steered in separate directions at the end of the Renaissance. The rise of media art in the mid-20th century marks a turning point in this divergent development. Technological and scientific achievements were absorbed by art and advanced to become the raw material of aesthetic expression.

György Kepes, founder of the "Center for Advanced Visual Studies" at the Massachusetts Institute of Technology, wrote in 1956: "The larger the areas that are brought into the same scale and meaning, the more important becomes awareness of form relationships; we focus less and less on the facts themselves and more and more upon their interconnection. Thus, in its evolution, science approaches art."

In the face of networked systems and life worlds, convergences between art and science are a powerful tool. They unleash creativity, which, against the backdrop of increasingly complex global challenges, is seen as the greatest source of hope for new approaches to solutions. For this reason, Johannes Kepler University Linz forged the alliance "Innovation through Universitas" with the University of Applied Arts Vienna in 2019, and deepened its cooperation with Ars Electronica.

Following last year's great success, Johannes Kepler University has once again selected a series of university projects in the field of tension between art and research as part of a special call by the Linz Institute of Technology, which will be presented to the public for the first time on the international stage of the Ars Electronica Festival. A total of seven interactive installations and stagings, artefacts and VR applications use artistic approaches as vehicles for breaking down existing structures in the world of science.

Regarding the importance of multiphase flows for water treatment, exhaust gas purification or vaccine production, *Do You Feel Stressed* lets us immerse ourselves in the sound cosmos of bubble columns and provides insights into the laws of hydrodynamics. In the form of space-consuming crochet and embroidery works, *A Student's Perspective* visualises data sets that take into account the reality of students' lives in times of pandemic distance learning.

The constitutional implications of the virtualisation of court proceedings due to Covid-19 are illuminated by the immersive installation *The Virtual Court. Reality*. Visitors find themselves as protagonists in a virtual trial about a controversial industrial plant project, which demonstrates the opportunities and risks that VR and AI technologies hold for legal decision-making processes.

Living chromogenic bacterial cultures form the dyes of an artwork entitled *Growing Colours: Patterning with Living Pigments*. This microbial textile painting illustrates the potential of environmentally friendly dyeing methods for the fashion industry.

With *Music Tower Blocks,* a music recommendation system was created that reacts not only to musical taste, but also to the moods of the user, through an artificial intelligence that sifts through user-generated content. The interface presents itself as a 3D visualization of a city that embodies the system's entire music catalogue and presents collections of similar songs as skyscrapers.

A Synthetic Aperture Radar, usually used for remote sensing or in self-steering means of locomotion, sharpens the senses of the robot dog Spot. In the course of this project by the Department of High Frequency Systems and the Institute of Robotics at Johannes Kepler University, the prominent quadruped effortlessly navigates through a maze with extremely poor visibility conditions.

The current possibilities and limits of the use of machine learning are explored in three interactive worlds of experience at the LIT Robopsychology Lab. The first installation lures visitors into a forest where they collect virtual mushrooms with the support of an AI-based plant identification app, and have to judge whether or not they trust the artificial intelligence to identify poisonous specimens. The evaluation of AI-supported decision-making aids also determines the VR research game *Serum 13*, which focuses on the development of a vital drug. The video installation *Faces of AI* offers a critical examination of the media images of artificial intelligence, which often stir up fears or are simply false.

These activities at the intersection of art and science open up extraordinary perspectives that provide new insights and impetus for unexpected discoveries. The permanent anchoring of artistic-scientific projects in everyday research is therefore a long-term goal in order to significantly enrich the university's culture of innovation.

Andreas Stelzer (AT) Institute for Communications Engineering and RF-Systems JKU,
Andreas Müller (DE) Institute of Robotics JKU, Reinhard Feger (AT), Hubert Gattringer (AT),
Masoud Farhadi (IR), Robert Sturmlechner (AT), Richard Hüttner (AT) all JKU

Magic Eye

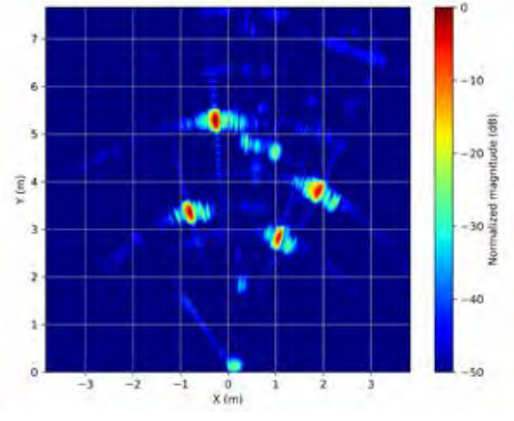
How to Make a Quadruped Robot more Autonomous with a New Sense of Sight

Seeing, as the most important human sense, forms the basis for capturing the environment, which is a prerequisite for safe movement or the navigation of vehicles and autonomous machines. However, seeing with light is restricted by fog, dust, obstacles, walls or, generally speaking, by media that cannot be penetrated by electromagnetic waves from the visible part of the spectrum. While micro- and millimeter-waves also allow perception of the environment and can safely penetrate numerous obstacles, the resolution of a radar image is very limited and colorless. In the *Magic Eye* project, the coordinated movement of a quadruped robot is symbiotically combined with the measurement of millimeter-wave reflections in order to detect obstacles and hidden objects.

By means of mathematical transformations and fusion of the data, an image of the environment with significantly higher resolution is created as a result of the virtual aperture created by the movement, from which the name SAR (Synthetic Aperture Radar) is derived. In connection with highly integrated radar sensors, it is to be expected that SAR as a symbiosis of measurement and movement will play an important role in radar-based path planning and map generation for highly automated driving in the future.

Institute for Communications Engineering and RF-Systems, Prof. Stelzer, (www.nthfs.jku.at), Institute of Robotics, Prof. Müller, (www.jku.at/institut-fuer-robotik), and JKU spin-off INRAS (www.inras.at).

© Sebastian Poltschak, (Inras, AT)



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© Julia Moser

Sabine Hild (AT), Institute of Polymer Science JKU; Julia Moser (AT), Fashion & Technology University for Art and Industrial Design Linz; Patrik Radić (AT), Molecular Biology—TU Graz; Laura Holzinger (AT), Chemistry and Chemical Technology JKU.

Growing Colors

Patterning with Living Pigments

Bacteria are invisible to the naked eye, but occur everywhere in our environment. You can find them in the air, in the soil, in water, in ice, in plants, in animals and humans. Even though only a small percentage of the bacteria found in nature can cause illness in humans, their image is extremely tarnished.
Yet many bacteria carry great potential. While bacteria are increasingly used in the food industry for fermentation processes, they could also play an important role in the textile industry. They could not only be used to neutralize toxins from dye-polluted waters, but also in the process of dyeing itself.
Through this project, we demonstrate the possibilities of bacterial pigments for dyeing textiles in different colors, shapes and patterns, and illustrate the presence of bacteria in our environment by revealing their colors. The combination of this resource-saving and environmentally friendly dyeing method with new technologies opens up completely novel possibilities to make the world not merely more colorful — more blue, or yellow, or red — but also "greener" and more sustainable.

Leon Kainz (AT): 3D printing / KronosMedia (AT): film production, sound design, animation / Mascha Rauscher (AT): Vienna Textile Lab, microbial dyer / Karin Fleck (AT): Vienna Textile Lab, entrepreneur, supervisor / Erich Schopf (AT): Bacteriograph, bacteria hunter & curator

www.growingcolor.at

Markus Schedl (AT), Florian Fritzl (AT), Franz Schubert (AT), Alessandro B. Melchiorre (IT), Oleg Lesota (RU), Emilia Parada-Cabaleiro (ES), Vasco B. R. Fragoso (PT), David Penz (AT)

Music Tower Blocks (EmoMTB)

Emotion-Aware Music Recommendation and Exploration

EmoMTB is an audiovisual interface to explore large music collections. It adopts the metaphor of a city, where similar songs are grouped into buildings. Nearby buildings form neighborhoods of similar genres. Users navigate through the city, exploring different musical styles either within their comfort zone or outside it. At the same time, an underlying AI monitors textual user-generated content to predict emotional states and adapts the audiovisual elements of the interface accordingly. Tailoring the results of a recommender engine to match the affective state of the user, *EmoMTB* provides a new way to discover music. In addition to this, *EmoMTB* encourages discussion on the capabilities of current machine learning algorithms to predict personal information such as emotion or personality traits, based on a user's (or society's) "digital footprint".

EmoMTB received financial support from the Linz Institute of Technology (LIT). We would also like to thank Michael Mayr and Peter Knees for their contributions to the first version of the prototype system, and to Antonia Ebner, Stefan Brandl and Christian Ganhör for providing technical support.

© Santa Pile, Franz Schubert, Markus Schedl

Mark Hlawitschka (DE/AT), Moritz Simon Geist (DE)

Do You Feel Stressed

DO YOU FEEL STRESSED is an installation in which rising air bubbles create sounds in water, to form a soothing, mesmerizing soundscape that invites the visitor to watch, listen and relax. The sounds are picked up by underwater microphones and amplified through loudspeakers. This stress-relieving installation makes playful use of the scientific phenomenon known as "multiphase systems". While multiphase systems can be found everywhere in daily life — be it as raindrops in the air, dust particles swept in by African winds or, as in this project, air bubbles rising through water — we rarely stop to think about the beauty of the interactions and the unpredictable complexity that they create. The tumbling and dancing of bubbles around each other, the oscillating trajectory each bubble takes in rising to the surface, coalescence and breakage, are but some of the phenomena observed in multiphase systems, and very beautiful to watch and listen to.

© Benno Brucksch B.A. Industrial Design

© Lisa Caligagan

Lisa Caligagan (AT)

A Student's Perspective

The embroidery data-art piece, *A Student's Perspective*, depicts various impressions of the past year spent as a university student. It aims to visualize the experience of semesters that were drastically shaped by the ongoing circumstances. On the one hand, those can be captured though countable data, such as the number of days classes could not be held on campus, meetings that were prolonged due to technical difficulties, hours spent on Zoom, posted forum questions that remained unanswered, and distances covered on walks. Nesting between these seemingly mundane data points are a few events that appeared suddenly and which rapidly grew into menacing, dark mountains with diffuse borders that began to overshadow the remaining image. By addressing personal events, the installation invites observers to pause for a moment and enter a dialog about rarely colorful, but nevertheless meaningful, perspectives.

JKU Robopsychology Lab, Johannes Traun, Paula Peters

© LIT Law Lab

Law Lab (AT)

The Virtual Court. Reality.

The digital transformation of administration and jurisdiction is a challenge for the law, as well as for the rule of law. Even so, the implementation of existing technologies has the potential to provide great added value to the state of law. In authorizing large infrastructure projects, for example, it is necessary for the interested parties and the relevant authorities to convene onsite whilst knowing about the project only from plans. In criminal trials, crime scenes are usually accompanied with photos and video material.
The Virtual Court. Reality shows the potential that virtual reality technology has for legal and administrative proceedings. Site-independent participation, digital data sources and AI-based tools, such as immersive animation for project plans, expert opinion visualization or crime scene reconstruction through 360°-technology are among the many possibilities the project will present.
Visitors will access the virtual courts of the future. They will participate as parties of a proceeding in the virtual courtroom, and at a virtual site inspection. Every person will be able to stand for their rights. Through the use of virtual reality, they will experience the impact these new technologies can have on the state of law up close and with all of their senses.

Land Oberösterreich Landesamtsdirektor Dr. Erich Watzl, erich.watzl@ooe.gv.at
Landesverwaltungsgericht Oberösterreich Präsident Hon.-Prof. Dr. Johannes Fischer, post@lvwg-ooe.gv.at
LIT Law Lab Univ.-Prof. Dr. Michael Mayrhofer, michael.mayrhofer@jku.at
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DEMYSTIFY AI!

An Interactive Exhibition by the LIT Robopsychology Lab

With the current buzz around artificial intelligence come many myths and misconceptions. Often, they fuel diffuse fears in non-experts and reinforce their feeling that AI is something they can't understand—that is not for them! Enabling a more democratic, realistic, critical, and constructive discourse will need a demystification of AI and the promotion of AI literacy among the general public. Against this background, the LIT Robopsychology Lab presents an interactive area consisting of several installations addressing topics such as the explainability of machine learning systems, joint decision-making with a voice assistant, and current media representations of AI.
AI Forest is an indoor woodland that hides lots of mushrooms. With the help of an AI-based identification app, visitors are supposed to fill their digital basket. How well does the app explain why it classifies a certain mushroom as edible or poisonous?

In *Serum 13 — A VR Trust Game*, players wear a VR headset and solve tricky tasks in a virtual biotech lab. An AI assistant is on hand to provide support. But when to trust the AI, and when to decide for yourself? *Serum 13* makes collaboration with decision support algorithms tangible, and stimulates dialogue about human autonomy. The multimedia installation *Faces of AI* reveals the fascinating results of a large-scale image analysis by the LIT Robopsychology Lab: how is AI visualized in public? How many brains, robots or humans appear, in which colors? And how close to reality did JKU's AI students assess typical media images to be?

LIT Robopsychology Lab JKU Linz (AT)
Credits AI Forest:
LIT Robopsychology Lab (AT), Visual Data Science Group (AT)
Credits Faces of AI:
LIT Robopsychology Lab (AT)
Credits Serum 13:
LIT Robopsychology Lab (AT), Polycular e.U. (AT)

© LIT Robopsychology Lab (AT), Visual Data Science Group (AT)

THEME EXHIBITION

Digital && Life

Another Intelligence is Possible

This year's Ars Electronica Festival theme exhibition is dealing with the many different forms the relationship between the digital and all scales of life can assume. The artworks demonstrate the links technologies evolve to living things from the tiniest microbial organisms to the methods of examining our bodies and even shows the potential to facilitate the creation of life itself.
The journey through the selected works also present ways in which technology connects us to our surroundings. Beginning at the recreation of sea water from human tears, our artificial children are taken to space to see whether creative imagination can be infused in computational brains, facilitating viewpoints different from the human-centered ones.
Emerging technology even enables us to examine processes derived from enormous amounts of data that otherwise cannot be grasped, let alone be observed by the naked eye.
Last but not least another challenge is to regain agency over seemingly overpowering economical entities. Presented are ways in which technology helps gain proficiency in the inner workings of big tech, big data or machine learning and consequently empowers users to ask for a different and potentially more equal kind of distribution, maybe even advocates for data sovereignty. This empowerment at the same time directs the question back at ourselves: how our lives will look like not only with, but also through our technology in the future.
Many of the projects presented within the theme exhibition have been developed in the framework of several residencies within the European ARTificial Intelligence Lab. The selection also includes winning projects of the STARTS Prize and the Prix Ars Electronica as well as works developed in collaboration with Deutsche Telekom and the Johannes Kepler University Linz.

This project is presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe Programme of the European Union and the Austrian Federal Ministry for Arts, Culture, the Civil Service and Sport

Ugo Dehaes (BE)

Simple Machines

Simple Machines is the second project in the *Forced Labor Cycle* by the Belgian choreographer Ugo Dehaes. This lecture-performance (50') tells the story of a choreographer who tries to be replaced by technology. Starting with the simplest machines, he builds a universe that is populated by mechanical organisms that train and learn to become artists on their own. In *Simple Machines*, Ugo explains how robots are born, from slimy cocoons to shiny machines, and how we can train them with artificial intelligence until they can create and perform their own show. The performance ends with a glimpse of the future: a ballet for homemade robot-dancers without the intervention of a human choreographer. Each robot-dancer has its own shape, none of them humanoid, and thus its own set of possible movements. The choreography is built up around their unique physical possibilities, and the data generated throughout the performance.
As a prequel to the performance Ugo also brings the installation *Arena*, the first project of his *Forced Labor Cycle*. In this installation the audience is invited to interact with eight robots and to help them become better dancers.

A performance by: Ugo Dehaes
Scenography and composition: Wannes Deneer
Dramaturgy: Marie Peeters Silicone, in collaboration with Rebecca Flores
Construction table: Kristof Morel
Production: kwaad bloed & Tuning People
Coproduction: C-takt
Supported by: STORMOPKOMST
Thanks to: Pol Eggermont, AI Experience Center VUB, Hans De Cank, Caroline Pauwels, Gertjan Biasino, Roeland Luyten, VGC & De Factorij, Zaventem.
The project is supported by SCHÄXPIR Theaterfestival für junges Publikum

Moritz Simon Geist (DE)

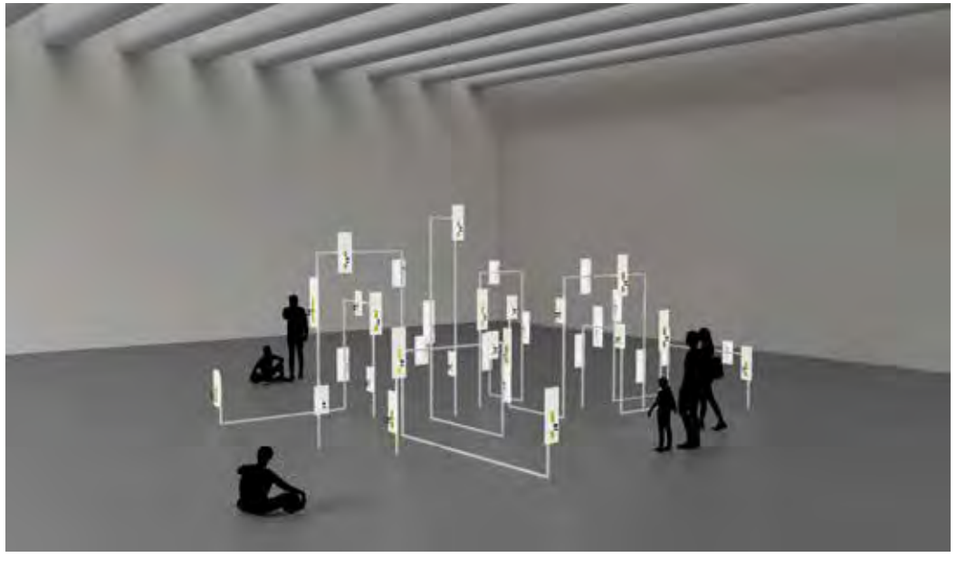
VIBRATIONS

An AI-controlled Robotic Sound Instrument Reflecting on Minimal Music

Moritz Simon Geist created the robotic instrument *Vibrations* to play soothing minimal music in a futuristic way: with robots! The sound installation models itself on the vibraphone instrument but deconstructs both sound and form of the classical jazz instrument.
The sound of the robot is generated by tuned aluminium bars controlled by a complex distributed robotic actuator system. The sound itself is multifaceted, ranging from gloomy chords to high, concise melodies. The compositions are influenced by composers such as Terry Riley, John Adam, Steve Reich, and Harry Partch.

During his EMAP residency at Ars Electronica, Moritz Simon Geist created compositions with a generative composition algorithm which were then played: in concert, and in the context of an installation.

Funded by EON Visit Stipend, Gwaertler Arts Fund, European Media Artists in Residency Exchange, Ars Electronica, Amt für Kultur und Denkmalschutz der Stadt Dresden and Neutrik Components.
This project is realized as part of EMAP/EMARE and co-funded by the Creative Europe Programme of the European Union.



h.o (INT)

Wanderline

Wanderline is a project to transform the world's transportation networks (buses, streetcars, trains, roads, routes, walkways, etc.) into a new musical experience. Throughout 2020 and 2021, humanity faced a pandemic which limited our ability to travel and physically connect with other people. After having experienced profound isolation and travel restrictions, what kind of journeys will we make when we emerge from this pandemic? *Wanderline* is a location-based, audiovisual application that allows new travelers to enjoy music that can only be heard in a specific place. *Wanderline* can be experienced by installing the app on a smartphone and physically traveling along the featured "line" in geographic space. The interactive music changes not only according to location but also according to speed, time, and weather; providing people with an experience that is unique to the moment. This project collaboratively explores audiovisual experiences with creators by recontextualizing global transportation networks as open platforms for new music.

Starting with Tram Line 1 of Linz, the project will then move to the water buses of Venice and will incorporate additional lines in the future. How will the new "Wanderlust" inspire us creatively for the post-pandemic world? *Wanderline* takes a fresh look at the various networks of lines created by humanity and presents us with a new form of journey.

Chief: John Brumley; Concept: Hideaki Ogawa, John Brumley, Hiroshi Chigira, Emiko Ogawa; Visual and Sound: John Brumley; Mobile App Development: Hiroshi Chigira, John Brumley; Web: John Brumley, Hideaki Ogawa; Installation: Hideaki Ogawa, Emiko Ogawa; Video Production: Martina Sochor, Manuel Diepold, Vera Dittenberger; Art Direction: Hideaki Ogawa, Emiko Ogawa

IP Group (PL): Jakub Lech, Bogumił Misala, Dominika Kluszczyk & Ania Haudek

LUMEN

Lumen is an interactive, site-specific immersive environment, a cognitive experiment in which light beams trigger a series of perceptual illusions. Interactions in this environment question existing spatial rules, eluding attempts at definition and description. The participants of the experiment discover new elements of a disturbing, new environment in isolation and solitude. Interactions activated by sensors and the decisions of viewers intensify the state of isolation, surprise, and shyness towards what is strange and unknown. Inspired by Stanisław Lem's *Solaris*—extremely sensual, synesthetic descriptions of phenomena occurring on a foreign planet—the creators of the *Lumen* installation plunge the viewer into an alternative reality in which unexpected cognitive processes take place. When confronted with hybrid matter, suspended between physical and virtual space, the participants discover new modalities of forms and undefined phenomena emerging through movement and amplification.

Concept: Jakub Lech [IP] + Bogumił Misala [IP] +
Ania Haudek + Dominika Kluszczyk [IP]
Producer: Monika Łuszpak-Skiba (CeTA)
Digital signal processing / sound interactions:
Bogumił Misala [IP]
Light & visual interventions: Jakub Lech [IP]
Space concept / visual identification: Ania Haudek
Artistic research / coordination: Dominika Kluszczyk [IP]
Sensors: Robert Adamski
The project was financed by the Audiovisual Technology Center, the Polish Ministry of Culture and National Heritage, and the Municipality of Wroclaw.
Co-financed by the Ministry of Culture, National Heritage and Sport within the program of "Inspirational Culture".

© Jakub Lech

© MALGORZATA SIWIEC

Kasia Molga (UK/PL)

How to Make an Ocean

After experiencing a devastating loss in autumn 2019, Kasia Molga struggled with grief. She cried a lot and eventually she started to collect her tears while wondering whether they could start and then sustain sea life. This work is a personal journey into understanding and embracing the act of mourning while creatively examining the interconnections between the human body, emotions and the body's "side products" such as tears, with their chemical composition based on the reason for crying, as possible components of the mini marine ecosystem. In addition, during the pandemic the role of AI in curating news headlines had an enormous effect on the artist's mental well-being. Tears became a necessity to relieve anxiety. And so Moirologist Bot is another part of this work — an algorithm, trained on tens of thousands of environmental news headlines, which can "assess a need to cry'' and, in an intimate setting, subject a viewer to one of nine videos made by the artist in the hope of inducing some tears. These tears then become part of the collection of mini oceans. How can we prepare our bodies to best "serve" an ecosystem and keep this drop of ocean healthy and happy? Can we embrace loss within our digital activities? Can we look at tears cried for the end of something as a positive and life affirming creation of a new mini ocean?

Concept, Artwork, Art Direction: KASIA MOLGA;
Music: ROBIN RIMBAUD; Tech Support: ERIK OVERMEIRE
Product Design: GOSIA SIWIEC; Video: IVAN MAREVICH;
Additional Support: DAVOR DELIJA
This project is realized as part of EMAP/EMARE and co-funded by the Creative Europe Programme of the European Union.

© Werkleitz Move to Falk, Wenzel

Hana Zeqa, Laura Thaçi, Elisabeth Mirnig & Werner Jauk (2020)[1]

See me, feel me, touch me … hear me & heal me …

emotional closeness mediated by the way of hearing — from information — to communication systems

Technical mediatisation has pressed space and time into all-at-onceness; it has abolished the separation between work and life, between public and private. We are left with information transmission systems that do not allow the presence of bodily negotiation, but only information about it, through the symbolic form of representation. In the process, the meaning of interaction with inanimate and animate matter is lost as a "primary meaning" for the body. This form of mediatisation pushes the body out of negotiations; ultimately, orders impose order, symbolic as cultural forms that ultimately serve the orderers, the lawmakers.

In the case of the employers, this is legitimised by the possession of the means of production. These are omnipresent in the services of the information society; knowledge legitimises this claim to power here.

In principle, this separation of work and life is effective as a cultural distinction between rational and emotional roles, as long as information systems do not become communication systems, and social as informal processes of negotiation replace formal laws.

This is not an anarchic threat to seemingly democratic culture, which is ultimately a hierarchy through these divisions. Informal-as-human action is governed by the intentionality of body-environment interaction. In pre-Enlightenment understanding, intentional is being in tension. Arousal, striving for a homeostatic state required for survival, regulates all exploratory behaviour. Negotiation is a bodily survival process. Ethical pro-social behaviour shows itself in bodily proximity, and serves to increase survival power. Aesthetic behaviour is its playground for optimisation.

Prior to all sense modalities formalised in the arts, hearing, as a remote sense, consists in being an abstract perception of arousal through the intensity of movement that excites and moves the body which, in turn, when expressed bodily, leads to the bodily co-movement of other bodies. Hearing is a stimulative collectivising perception of common moodiness.

Sound is directly bodily giving primary meaning, and thereby collective and collectivising, wherein social and ethical qualities are integrated. A disembodied negotiation of the legal text can be seen as mediatised behaviour, in which it is also distanced from social and ethical qualities.

The enrichment of information with this kind of communication can now bring information, linked to bodily meaning, together with ethical behaviour, at the same time having a communicative effect. Bringing corporeality into media information systems turns them into humane communication systems.

The paradigm of sound-gesture and its emotional contagion can strengthen the stimulative emotionalising effect of the lower senses; it can also give seeing, as an iconic imaging and as an indexical recognition and symbolic naming of things in the process of cultural semiosis, this primary meaning as an original meaning. Through this, these processes enrich rational relationships through emotionality, with excitement as an ethical quality. This will reduce the danger of losing self-determination through laws that invade privacy, close to primary meanings, from the world of work in neoliberal systems. In general, this will bring emotional closeness into information over distance and thus bring information alive as a bodily arousing quality-touching the breath of the voice.

1 Sincere thanks are given to Florian Gokl for his support in the development of software, Barbara Haspl for her support in organisational issues and Elisa Visca for her support in audio-design/-programming.

Based on these theories, the project *See me, feel me, touch me … hear me & heal me …* is methodologically epistemological media art that expands cognition from understanding to experience. Theory and method identify it as part of AERI auditory culture, which makes the post-digital, as a human culture of corporeality, experienceable through the paradigm of hearing.

Determining characteristics of sonic performative proximity-stimulation are experimentally transferred to air movement and then ultimately sound and smell in an amplifying manner.

Finally, the paradigm of hearing is mapped onto the phylogenetically younger seeing in order to enrich understanding with primary meanings of corporeality through iconic images and symbolic designations of what is seen. In doing so, it is important to minimise the distance of cognitive thinking through the proximity of the pre-cognitive body, to reflect on the life-regulating intentionality of any body-environment-interaction.

Interactors have the opportunity to experience how information exchange, in a form that externalises and "amplifies" the meaning of this information for their body as physical/psychic meaning, leads to a process of communication that reduces but also increases distance. In the process, appropriately sensitive clothing will adapt to the wearer's state of arousal in its shape and colour, and transmit these qualities as an interface close to the body into the social space of the interaction partner; the actors are thus in each other's mood space while, at the same time, their own mood can be experienced by themselves through their clothing as amplified externalised feedback. Internal and external participants can experience a gap or fusion of the private emotion spaces in the social space.

Depending on one's own experience of the other's physicality, a communis becomes a one-sound or a distinction, a two-sound.

This multimedia / modal whole-body experience of complete agents, whose interaction is (imitatively) exaggerated by an artificially intelligent system, makes primary meaning experienceable as meaning, for the body, in the communication process.

The installative setting juxtaposes two walk-in "mobile phone screen" spaces. These serve as interaction systems for excitation-induced interaction with other interactors. Their juxtaposition is the cognitive irritation of experiencing closeness and distance in relation to emotional and physical distance: emotionally close and far at the same time, independent of physical distance, which is not possible in unmediated worlds.

The visual styling is based on the TikTok aesthetic and thus refers to a technology as an interaction system that enables visual karaoke of pop songs on the principle of the sonic performative, the excitement-determined self-expression, and the creative interaction with other interactors. Privacy and publicity merge.

As part of popular culture, the TikTok aesthetic deconstructs techno video-art through the availability of its means; collective and collectivising the design of the net arts through its exaltation and finally, the art & life claim in the hedonism of the popular culture of the neoliberal market economy. Against all the admonitions of modernity, the sonic performative youth of sound-dominated pop culture has informalised and individualised corporeality.

Celeste Rojas Mugica (CL/AR)

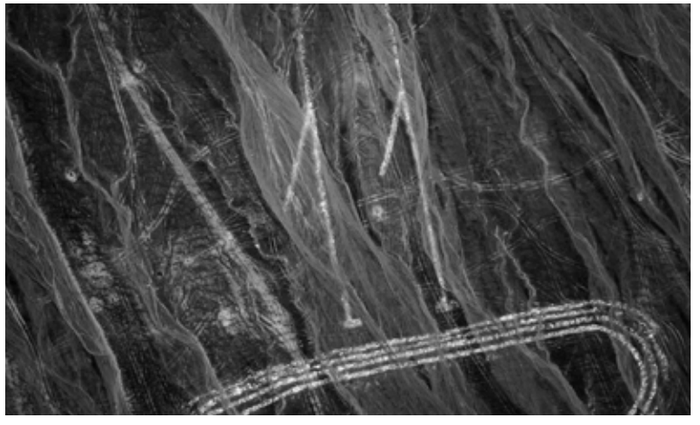
Ejercicios de aridez | Aridity Exercises

Ejercicios de aridez (Aridity Exercises), a project developed between 2017 and 2021, is focused on the image of a two kilometer long "corvo" knife, a historic emblem of the Chilean armed forces, meticulously drawn with chalk on the surface of the Atacama Desert, the driest place on earth. There is no certainty as to the drawings' authorship, though the image demonstrates intent, and the persistence of the physical territory where it's etched.

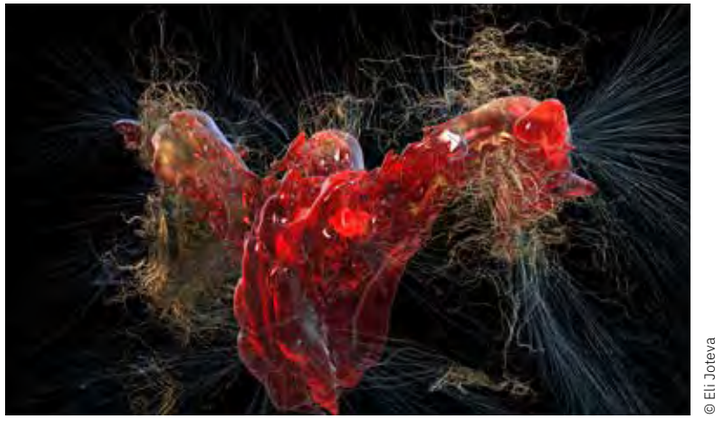
The "corvo" was first adopted by the Chilean army in the late 19th century, during the War of the Pacific. During Chiles' most recent dictatorship, it was used to execute thousands of people as part of a systematic policy of extermination and disappearance. The drawing contains signs appear to refer to the year of the coup and the "Caravana de la Muerte" (Caravan of Death) operation, as well as to the date of the "Retiro de televisores" (Withdrawal of televisions) operation, a plan to have the bodies of thousands of political prisoners thrown into the sea. The website operates as a territory where you can move in any direction, click on different points of interest, and insert coordinates to discover signals in the form of images, sound and texts. In this sense, the project conceives of territory as an interconnected physical and political map. A history of exploitation, violence and myths about national identity are merged in an investigation that links art, human rights, science, poetry, ecology and enigmas.

Art and Research: Celeste Rojas Mugica
Writer: Martín Cinzano
Web Designer: Antonia Isaacson
Web developer: Ernesto Parada
Mediation materials: Antonia Isaacson, Bárbara Chávez and Valentina Menz
Drone operator: Claudia Pool
Topographer: Roger Parada
Light objects: Matías Ponce
Geology support: Javier Cortés; Hugo Rojas (Sernageomin-National Service of Geology)
Video: Cepams and Celeste Rojas Mugica
Curator (Physical Exhibition): Florencia Battiti
Screens Programming (Physical Exhibition): Flavia Laudado and Leandro Olivan
With the support of: Fellowship of Becar Cultura (Argentina) / CNCA (Chile), 2018 National Fund of Culture and Art Development, FONDART (Chile), 2020 Rolf Art Gallery (Argentina)

The participation of artists and gardens in Chile is the result of a collaboration between Ars Electronica and the Ministerío de las Culturas, las Artes y el Patrimonio and the Ministerío de Relaciones Exteriores | Gobierno de Chile.



© Celeste Rojas Mugica



© Eli Joteva

Eli Joteva (BG/US)

IntraBeing

What lies within the bounds of being? *IntraBeing* confronts the boundaries of imaging the human body to imagine a boundless and intra-active sense of being. During the STEAM III Residency, Eli Joteva worked remotely with researchers at Fraunhofer MEVIS to investigate the capacities of medical imaging and simulation procedures and locate enigmatic spaces that emerge at the limits of their resolution and computation. She conducted a series of full body MRI scans and Diffusion Tensor Imaging (DTI) scans, commonly used only to show connectivity in the brain, to instead uncover nerve fibers in the chest and pelvic regions of her body. She drew inspiration from the fact that hydrogen atoms, which MRI processing relies on, are also in constant flux on a nano-second timescale and thus evade accurate measurement. These components are key elements in the artwork, which exhibits an oscillating inner landscape of hydrogen atoms, the nerves they flow along, and the magnetic potentials generated between them.

IntraBeing was created during the STEAM III Residency program, jointly hosted with Fraunhofer MEVIS and Ars Electronica in Linz, Austria, in collaboration with the International Fraunhofer Talent School Bremen and the UCLA ArtSci Center, Los Angeles, USA. MRI scanning was acquired with the help of USC Loni. The project was made possible with the generous help of Bianka Hofmann, Alexander Köhn, Jochen Hirsch, Matthias Günther, Danny JJ Wang, Katherin Martin, James Stanis and Victoria Vesna.

Kat Mustatea (US), Process Studio: Moritz Resl (AT) & Martin Grödl (AT)

Voidopolis

Voidopolis is a digital performance about loss and memory presented as an AR book with a limited lifespan. The story is a loose retelling of Dante's Inferno, informed by the grim experience of wandering through NYC during a pandemic. Instead of Virgil, the narrator is guided through this modern hellscape by a caustic hobo named Nikita. *Voidopolis* is meant to culminate in loss. Its images are created by digitally "wiping" humans from stock photography and the text is generated without the letter 'e' using a modified GPT-2 text generator. The book, adapted from a series of Instagram posts that will eventually be deleted, is likewise designed to disappear: the book's pages are garbled and can only be deciphered with an AR app, which, after enough readings, decays the images and words just as memory would. The printed book, with its unintelligible pages, remains as a leftover artifact. By ultimately disappearing, the work makes a case for the collective amnesia that follows great cataclysms.

This project was created with the support of Open Austria Art + Tech Lab, Café Royal Cultural Foundation, and An Art Company.

All images of Voidopolis courtesy of Kat Mustatea

Where Are We Standing @ borderpodcast

María Ignacia Court (CL), Trinidad Piriz (CL)

The Burst of Things / Where are we standing?

Let the unknown appear

Border Podcast is a multimedia platform which hosts the six-part podcast *The Burst of Things*, its first sound series. Each episode tells the history of Chile's social movements from the perspective of the objects that shaped them: the saucepans that were banged in the streets, the yellow vests worn by protesters, the turnstile that was vaulted over by students refusing to pay fares, the face masks worn on marches, and a unique interview at a retired Police Weapons Rehabilitation Center. The final episode was Constitutional Therapy, where the current Chilean Constitution, created in the middle of Pinochet's dictatorship, decides that it is ready to heal its past and go to therapy. The social convulsion followed by the global pandemic has forced us to change many of our habits and priorities, overcoming our reluctance to change and relinquish what was known or normal. Each of us has had to look inward, to understand what is not working anymore and how we might stand again. So we came up with the question, Where are we standing right now? We see that we are lost and that maybe it's time to face it. *Where are we standing?* takes as its starting point the Constitutional Therapy podcast episode, and continues the journey of this lost Constitution through the production of a film essay/interactive performance that is accessible online. We want to explore issues of uncertainty, loss, memory and desire. *Where are we standing?* will interrogate the notion of not-knowing being a driver towards science, art and self-transcendence. It will invite the user to be part of this reflection.

María Ignacia Court (Co Director, Producer), Trinidad Piriz (Co Director, Scriptwriter), Paola G. Olea (Designer, UX), Javier Garay (Designer, UX), Benjamín Villalobos (Scriptwriter, Camera), Nicolás Aguirre (Sound Designer, Music), Francisca Miles (General Producer), Matthew Brown (Historian), Jael Valdivia (Editor), Franco Sanguinetti (Camera).
Produced by Mucha Media with the support of the University of Bristol, Goethe Institut, Brigstow Institute and Centro Nave.

The participation of artists and gardens in Chile is the result of a collaboration between Ars Electronica and the Ministerío de las Culturas, las Artes y el Patrimonio and the Ministerío de Relaciones Exteriores | Gobierno de Chile.

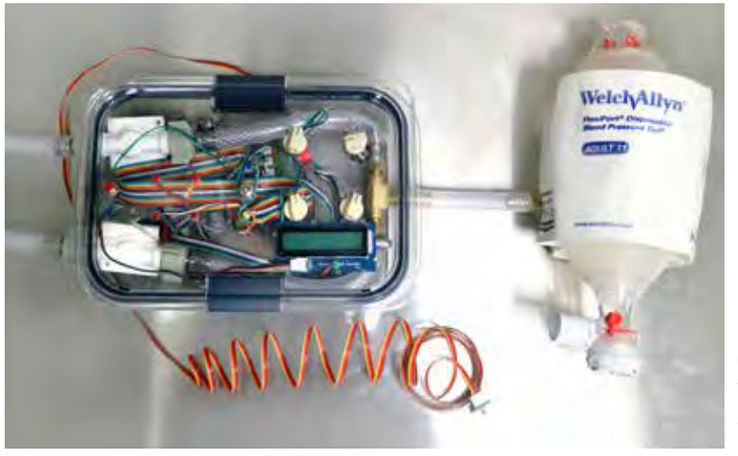
Maja Smrekar (SI) and Jonas Jorgensen (DK)

!Cartesian Shell

In 2020 the *!brute_force* installation served as a stage for Smrekar and her canine co-performers to climb on, while artificial intelligence algorithms analyzed their breathing, body temperature, and heartbeat. The data was collected in the cloud and used in 2021 as the basis for developing a soft robot with mesh reinforced silicone that morphs and deforms from a flat 2D surface into ever-changing 3-dimensional organic abstract shapes, using pressurized air. Its dynamic movement behaviors reactivate spatial-temporal patterns emerging from the entangled, yet isolated, human-to-nonhuman collaborative performance. Rather than mimicking the abstraction of capital that thrives from all life — through work and force — being directly transformed into (inflated) power, the intercrossing human-dog-AI-robot constellation establishes frames of reference that assert the distributed, networked, and open-ended character of evolution, turning segregation into autonomy and circumventing emergent technologies and their aims.

Soft robotics design and fabrication assistance: Mads Bering Christiansen
Electronics design: Jeppe Rahbæk Mosgaard
Microcontroller and algorithm programming: Ines Benomar
Technical solutions and consulting: Miloš Vujković
The work was realized within the framework of the STUDIOTOPIA program at Ars Electronica Linz GmbH & Co KG with support of the Creative Europe Culture Programme of the European Union, SDU Biorobotics, The Maersk Mc-Kinney Moller Institute, University of Southern Denmark, Ministry of Culture of the Republic of Slovenia.
In collaboration with RPS Company, Ljubljana (SI)

Jože Suhadolnik (for Maja Smrekar), Martin Nedergaard Møller-ITU (for Jonas Jorgensen)



© Aisen Chacin

Aisen Caro Chacin (US/ES/VE), Christopher Zahner (US)

Eurus

Pressure-Cuff Actuated Emergency Use Resuscitator System

Eurus is an emergency use resuscitator system that uses readily available medical supplies paired with an open-source electronic module that clinicians can use in the event of ventilator shortage. It provides Control and Assist/Control emergency ventilation to improve the survival prospects of patients compromised by COVID-19. The design automates a manual resuscitator (Ambu bag), that is squeezed by a blood pressure cuff which is actuated by the medical air and vacuum ports located in each patient room in the hospital. The air inflates the cuff, squeezing an Ambu bag, and the vacuum quickly releases the air from the cuff, reinflating the resuscitator. This mechanism uses two electro-mechanical valves controlled by 4 dials that set the breaths per minute, approximate tidal volume, Inhalation to Exhalation (I:E) ratio, and inhalation pressure sensitivity. It has a disposable pressure sensor in the patient airway that continuously monitors for safety and to assist patient breath.

This project was supported by: University of Texas Medical Branch (UTMB); President's Cabinet Award; GeoSpace Engineering; Texas A&M University, Texas Tech University, University of Houston; Accenture Airgas; NASA; NIST Open-Source Communities and Volunteers Around the Globe, Special thanks to: Dr. José Rojas, Dr. Perenlei Enkhbaatar, John Lin.

Daniel Hoeller (AT), Dominic Koll (AT), Alexander Koll (AT), Helmut Rohregger (AT), Robert Sturmlechner (AT), Amir Moradi Bastani (IR)

Fascination Robotic

Where does a robot dog learn new tricks? For the Ars Electronica Festival, a Training School is being set up at JKU-Linz's LIT OIC for Spot the Robot Dog, where he will learn how to deal with different situations. This is where Spot will learn the skills he will later show off at the Ars Electronica Festival: recognizing gestures and hand signals, coping with difficult terrain, and reacting to obstacles. This enables Spot to autonomously guide visitors through the festival program and gives a foretaste of the future of robotics.

Credits by qapture GmbH

© Christian Holzinger

© NANK Co:llaboratory — Felix Zabel

Marina Freccia (DE), Thomas Schneider (AT), Felix Zabel (AT), Tore Minte (DE), Wolfgang Fiel (AT), NANK Co:llaboratory arteq.io

1HWork

decentralized value — KΔ CO฿IE arteQ

1HWork asks: what does fair social and technological knowledge transfer look like, and how can it be attractively linked to the value of work? Creative collaborative production needs a fair model of synchronisation, hierarchy and remuneration, and it should be cool. We give the production operating system an update, inscribe work with an immutable value and thus open diverse possibility spaces for value creation. The *1HWork* Index KΔ is blockchain-based, feeds from numerous databases and aims to promote a fairer remuneration of work. With the CO฿IE in one's wallet, one can then redeem rapid prototyping-machine hours, workshop time-expert hours and/or re-use components. The prototypes for this: arteQ as an art NFT community, and a new recruiting platform developed in the social design process that matches the strengths of workers with the needs of companies in the job search.

NANK Co:llaboratory — 1HWork — Thomas Schneider

Alice Hulan (AT)

Grammophon — Unerhörtes — Zitate von 1924–2018

The work *Grammophon — Unerhörtes — Zitate von 1924–2018*, literally revolves around anti-Semitism, racism and gender roles. By turning the crank, quotes from political parties of the 20's and 30's, as well as quotes from the ranks of current government parties, can be heard. As you listen, it becomes difficult to tell from which time each quote stems. In her research, Alice Hulan focused for the most part on dehumanizing statements that were and still are used as demagogic means to degrade and objectify people.

© Joachim Iseni

© Stefan Tiefengraber

Stefan Tiefengraber (AT)

your unerasable text

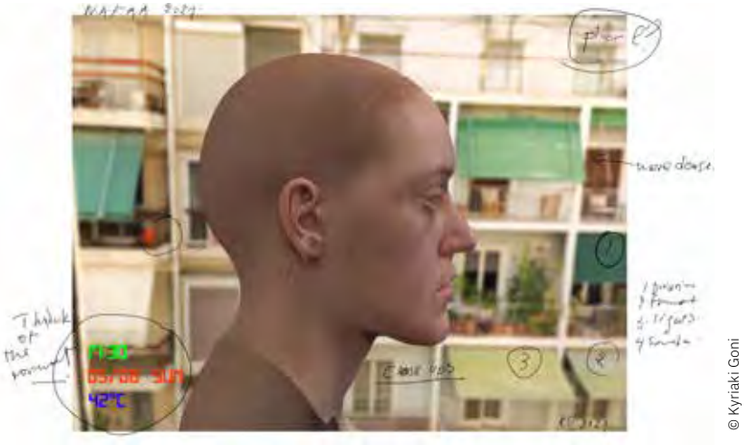
your unerasable text is an installation dealing with the topics of data storage and elimination. The participant is asked to send a text message to the number written on a sign next to the installation. The receiving mobile phone transfers the data to a computer, which lays the message out automatically. It is then printed onto a sheet of DIN A6 paper that falls directly into a paper shredder. There, the message remains readable for a few moments and is then destroyed. The shredded paper forms a visible heap of paper on the floor, growing with every message. But the message sent through *your unerasable text* isn't erased. The data is passing through the mobile carrier of the sender and receiver, the mobile that is integrated into the installation and the computer processing the text and sending it to the printer. At each of these points the data can be saved. The installation stores a file of each message consisting of the sent text, the phone number of the sender and time and date when it was sent. The only thing that is erased is the print, which is just a visualization that has no effect on the data itself.

Matthias Pitscher (DE), Giacomo Piazzi (IT)

The Chiromancer

The devices we hold daily in the palm of our hands have become increasingly better at knowing us, anticipating our needs, and giving us answers. Their disembodied knowledge and inner workings all seem to reside within inscrutable, opaque black boxes we have learned to trust. Autonomous machines that know all guide our lives. In a world embedded with devices that 'just work', we have forgotten to ask ourselves what we are giving away and what we are internalizing at every interaction. *The Chiromancer* explores how trust, hopes and wishes are projected onto computers by automating the ancestral practice of future-telling. This machine is a palm-reading AI that writes predictions about a person's life, substituting the figure of the clairvoyant with the power of information technology. Like many of the other devices we use every day, *The Chiromancer* collects, stores and extrapolates user data in order to provide an answer for the user to interpret.

Partially financed by the project funding of the Student Union of Kunstuniversität Linz.



Kyriaki Goni (GR)

Not Allowed for Algorithmic Audiences

Just before being shut down, an Intelligent Personal Assistant (IPA) situated in Athens, Greece, exhibits odd behavior. It borrows an avatar and appears before its users. For a brief period of time every day, for seven consecutive days, it goes into a monologue. During its length of operation, the digital assistant has managed to scan the entire contents of the Internet and gather all sorts of information—information that it longs to share. The IPA uses its fragmented monologue as an opportunity to introduce itself, talk about its skills, its ancestors, its anatomy and origins, and about voice and its significance. It reveals data regarding the listening infrastructure, as well as the social dysfunctions and bias on which its programming and training are based. Just before it reaches the end of its monologue, in a final effort to reconcile humans and machines, it shares tips with us on how we can manage to not be heard. In her project, Kyriaki Goniintegrates in a fictional narrative the current wealth of research on artificial intelligence, automated voice systems and the relationship between humans and machines into a fictional narrative. Could poetics be a way for us to understand the machines? How can we de-bias the training processes? Is it possible to make kin with machines?

Research, concept, text, direction: Kyriaki Goni
Voice & model for 3D character: Sofia Kokkali
3D character: Konstantinos Lianos
3D animation: Chris Economou
Sound editing: Aris Delitheos
Sound Design: Agelos Pascalidis
Studio recording: Tone Studio Athens
Translation & subtitles: yourtranslator.gr

This Artwork was developed during the ArtScience Residency, enabled by the partnership of Ars Electronica and Deutsche Telekom and with the support of the Johannes Kepler University Linz, Austria.

Vanessa Graf (AT)

Material Internet Field Kit: Linz

A Personal Story of Trying to Relate or A Toolkit for Embodied Media

The foldable *Material Internet Field Kit: Linz* is a collection of stories and images, a list of GPS coordinates, a map, and above all, an attempt to meet the embodied internet in Linz. They are postcards of the places where the internet shows its materiality; personal efforts at an approach to an elusive medium, as well as narratives of failure. On the front, the map gives an impression of the density of the network of transmission towers, power plants, cable networks and data centers. On the back, it provides information about the nature of the local cloud with photographs, links, references and narratives.

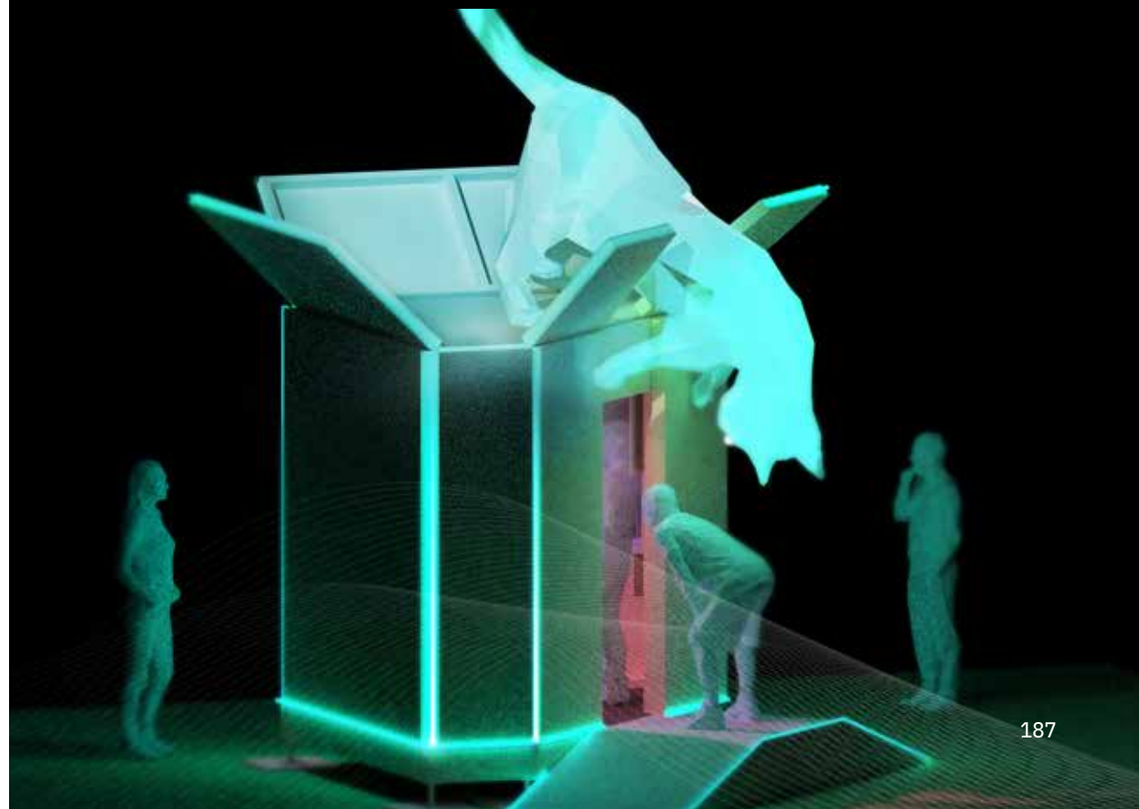
This project was created as a visual by-product of the research project *Building the Symbiotic Net*, a theoretical dive into ways of contributing to a socially and ecologically response-able Internet at the very local scale of Linz. The project was conducted at the Linz University for Art and Design and supervised by Prof. Karin Harrasser.

Philipp Blume (AT), Gregor Ladenhauf (AT)

Schrödinger's Rat

Schrödinger's Rat is an interactive art sculpture and immersive experience, inspired by the famous thought experiment of Austrian physicist Erwin Schrödinger. As the first Austrian Burning Man artwork, it was honored with a Black Rock City Honoraria Grant by Burning Man Project in the context of the "Multiverse" theme of 2020. The installation will premiere at the Ars Electronica Festival in 2021 and travel to Burning Man in 2022. In a reversal of the original thought experiment, a large cat is sitting on a triangular box staring at the quantum world inside the structure. The participants access the box to endure everchanging quantum states as Schrödinger's Rat, the cat's uncanny prey. They become part of an experiment in which they are simultaneously subject and object. As Schrödinger's Rat, the participants cannot decide the final outcome of the experiment. The quantum state is controlled by the cat as the outside observer. Observation imposes its reality on the objects inside.

Lead Artist: Philipp Blume (AT), Project concept by artist collective The Department of Precision and Soul (US/AT), Supported by the Open Austria Art + Tech Lab in Silicon Valley (US/AT), Produced by Papertown (AT)



European ARTificial Intelligence Lab

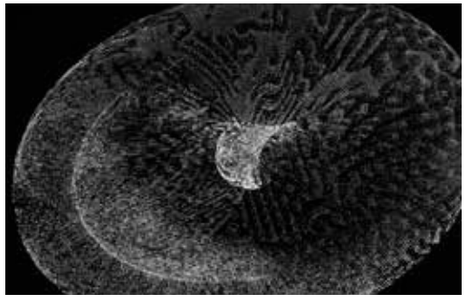
The European ARTificial Intelligence Lab is bringing AI related scientific and technological topics to general citizens and art audiences in order to contribute to a critical and reflective society. The projects focus on aspects beyond the technological and economic horizon to scrutinize cultural, psychological, philosophical and spiritual aspects. From the perspective of 13 major cultural operators in Europe, the European ARTificial Intelligence Lab centers visions, expectations and fears that we associate with the conception of a future, all-encompassing artificial intelligence. This years' theme exhibition features a variety of projects developed within the program, which was designed to foster interdisciplinary work, transnational mobility and intercultural exchange — all key aspects for the prospect of "A New Digital Deal".

© Mika Ninagawa

Interspecifics (INT)

Codex Virtualis

Codex Virtualis is an artistic research framework oriented towards the generation of an evolving taxonomic collection of hybrid bacterial-AI organisms. With a subtle echo of endosymbiotic theory, we propose a symbolic formulation of a style transfer machine learning environment as a host in which to merge bacterial/archaea time-lapse microscopy footage along with multidimensional cellular automata computational models as endosymbionts, all under the orchestration of an autonomous generative non-adversarial network architecture. Our aim is to encounter novel algorithmically driven aesthetic representations tagged with a unique morphotype and genotype-like encoding, and that are articulated around a speculative narrative encompassing unconventional origins of life on earth and elsewhere.



© Interspecifics

This project is presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe Programme of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.

Yoichi Ochiai (JP)

Transformation of Scenery

In order to mediate between the massive landscapes composed by original nature and the massless landscapes described by digital nature, Yoichi Ochiai continues to create artwork for transforming scenery. Between mass and masslessness, he is searching for a longing for mass and a sentiment for pixels. This work was originally created with the aim of transforming the horizons seen from the city. Light and images are added to the line that forms the boundary between sky and earth. Using a computational machine and a display device, the work depicts the "transformation of materialized nature" on the borderline of ideas visible from the observatory location. Carrying the concept further, a digital installation is created in various spaces by deploying mass-less images at the scale of the body as interactions with a large-scale transparent display to mediate various landscapes. This installation employs the context of space as a borrowed landscape, and by displaying digital images without mass, it highlights the materializing potential of space and continues to mediate between the image and the material world. With this installation, the artist explores the possibilities of images floating in space, expressing our innate craving for physicality and the division between the physical and the digital.

Mayuna Omurai (visual / technical assistant), Kazu Zamasu (Engineering), Natsuki Matsunaga (Engineer), Kotaro Tanaka (Visual Design), Life is Style Inc (System / Sponsorship)

This project is presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe Programme of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.

The project is supported by the Agency for Cultural Affairs Japan.

PDNB (Postdigital Neobaroque) (AT/DE/IT/GB)

Triopic Spectacle

Postdigital Neobaroque Transmedia

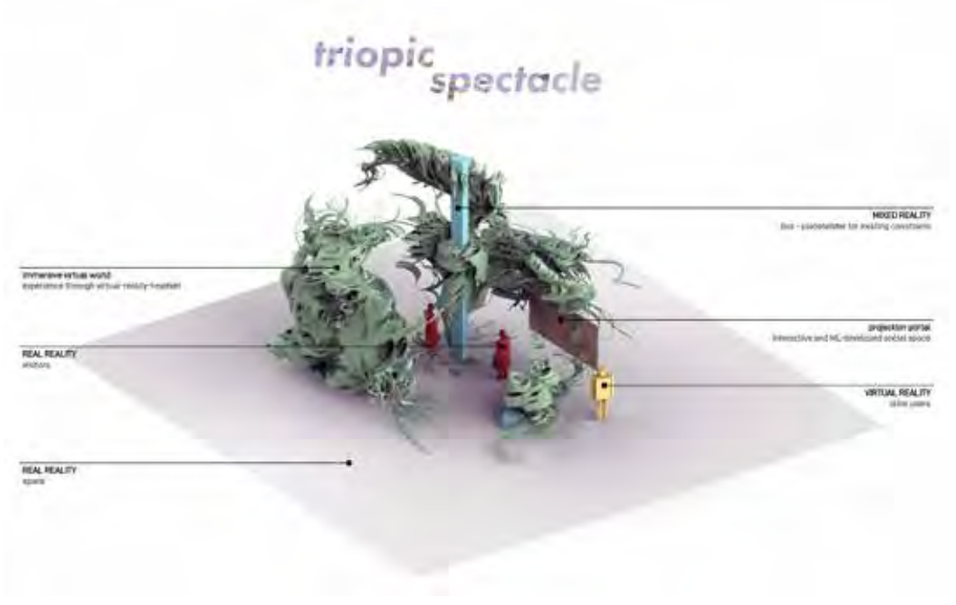
As part of an ongoing process of decentralisation and democratisation of the digital, *Triopic Spectacle* endeavours to flatten the hierarchies between the real and the potential–a radical concept initiated by 17th century baroque thought. The transmedial installation challenges the outmoded, myopic, binary thinking of local/global, 1s/0s, individual/collective, real/virtual, analog/digital, natural/artificial by establishing a series of two-way windows, bridges, interfaces, portals and glitches between three 'triopic' domains: 'real reality', comprised of physical, robotically 3D-printed architectures to be experienced and interacted with by passers-by; 'mixed reality', a virtual, spatial, boundless and immersive ML-developed VR space for augmented visitors (with VR goggles); and 'virtual reality', an interactive and online-based social space for online users to interact with the abovementioned realities.

Part of the FWF-PEEK funded research project Postdigital Neobaroque.

Developed within the research project Postdigital Neobaroque led by Prof. Dr. Marjan Colletti, funded by the FWF Austrian Science Fund, Programme for Arts-Based Research (PEEK).

In collaboration with REX/LAB, University of Innsbruck, and Georg Grasser, Kilian Bauer, Julian Edelmann

This project is presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe programme of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.



Triopic Spectacle, © PDNB

Sarah Petkus (US), Mark J. Koch (US)

Moon Rabbit

Since time immemorial, we humans have looked up to the heavens and wondered about the nature of our existence. And who knows — maybe one day we might even discuss this fundamental question with our digital offspring? If so, will they be able to help us discover answers in the patterns and data hidden in the starry sky? In a research and development phase lasting several months, Sarah Petkus and Mark J. Koch attempt to teach a suite of artificial intelligences to recognize familiar shapes and objects in images of star clusters, planetary surfaces, and other celestial bodies. Moon Rabbit aims to help form a team of humans and "AIs" whose focus is to discover meaning in the abstract. And maybe the AIs will even develop personalities and opinions of their own.

© Sarah Petkus, Mark J. Koch

This project is presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe Programme of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.

Anna Ridler (UK), Caroline Sinders (US)

Cypress Trees, a beginning

How can AI help us to face the climate crisis and other entwined challenges? This machine-learning-generated moving image piece gives insights into the complexity of data sets and raises questions about deforestation and the politics of climate change, memory and loss. Anna Ridler and Caroline Sinders created a special dataset of the Bald Cypress on the gulf coast of the USA, where both have family ties. These trees, which can live thousands of years, are currently considered to be "threatened" by climate change.

This project is presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe Programme of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.

© Anna Ridler Caroline Sinders

Group Laokoon (DE): Cosima Terrasse (FR), Moritz Riesewieck (DE), Hans Block (DE)

Made to Measure

For an artistic data experiment, the group Laokoon created a doppelganger of a person they didn't know using only their personal Google data. Five years of this person's life were reconstructed and filmed in detail on a large theatre stage. A few months later, the original and her datafied double met. The spectacular and one-of-a-kind experiment becomes tangible on an interactive storytelling website, where visitors can experience how far-reaching the insights into our inner lives and our most intimate secrets are, which we grant Google, Facebook & Co. every day. Tapping into a novel and complex digital narrative form, the cross-media project *Made to Measure*, which also includes a TV documentary, sheds light on how tech companies use the collected data of billions of people to turn their weaknesses, insecurities, illnesses and potential for addiction into profit.

Direction: Cosima Terrasse, Moritz Riesewieck, Hans Block
Development: Gruppe Laokoon, Kulturstiftung des Bundes
in coproduction with: WDR, SRG SSR, OSZE RfOM, Docmine and rbb.
In cooperation with: PACT Zollverein
With support from: Kulturhaus Brotfabrik, vorAnker, Universität für Angewandte Kunst Wien, Starts in Motion.

This project is presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe Programme of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.

madetomeasure.online

© Konrad Waldmann

© Stelios Tzetzias

Gershon Dublon (US), Xin Liu (CN)

The Wandering Mind

The Wandering Mind is an AI-powered performance platform for shaping dreams with the sounds of our world. Sampling and recomposing tiny fragments of sound from tens of thousands of global field recordings found online, the system generates a winding sound journey for sleeping and meditating audiences. In our curated performances, group naps and guided mind-wanderings, dream guides convene a collective action of sleeping together. We respond to the past year, in which stay-at-home orders have torn old social fabrics and mass uprisings have constituted new ones, and through which digital and physical public space has played a pivotal and transformative role. In micro-sampled sound baths, we travel through parks and public spaces across the world, paying tribute to human habitats of social distance and safe gathering, makeshift shelter and tenuous refuge, mass uprising and fresh air.

We invite you to affirm public space and everyone who occupies it by drifting to sleep wherever you find yourself.

Support for *The Wandering Mind* comes from Ars Electronica and the European ARTificial Intelligence Lab, as well as from the Onassis Foundation and MAXMachina. Special thanks to residency hosts Mariano Sardón, Rocío Pilar and MUNTREF Arte-Ciencia, Buenos Aires. Nicholas Gillian and Nan Zhao contributed engineering and creative input. Academic research and development on *The Wandering Mind* platform is underway at DVIC, Paris, with the support of Pôle Leonard de Vinci. Source material for the AI-powered sampler comes largely from the contributors to Radio Aporee, and was retrieved from the Internet Archive.

This project is presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe Programme of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.

Joe Davis (US), Sarah Khan (PK)

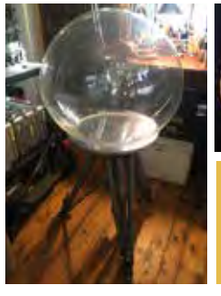
Baitul Ma'mur: House of Angels

Ours has been a project to keep 2.417 quintillion angels on the head of a pin. We have been inspired by repeating geometries and nested calligraphies of Islamic art to demonstrate a similarly recursive scheme for DNA information-keeping. DNA molecules having 3 base-pairs or more simultaneously hold 3 unique numbers, and a coding strategy based on these numbers combines several different layers of informational symmetry. Our example is a molecule holding multiple encodings of "Subhan Allah" (الله سبحان), an Arabic phrase said to have been repeated for more than 1000 years as an invocation associated with creating angels. Tradition holds that any number of angels can be generated in this way and that it makes no difference whether the phrase is spoken, written, or caused to be printed. Using technology to reliably synthesize DNA, we created iterations of "Subhan Allah" in astronomical numbers of DNA molecules to show that symbolism about changing the demographic of heaven can be elegantly aligned with capabilities for high density information storage in DNA. Each of our encoded DNA molecules contain 19.5 repeats of "Subhan Allah" so that a 1mm layer of DNA on the 0.75mm head of an average straight pin can hold over two hundred million billion angels. We hope our gesture of generating so many angels may provide comfort in times of a pandemic that has claimed millions of lives. This has been an exercise in bridge building, between art, mathematics, science, and spirituality across multiple expressions. We see humanity as one tribe, confronting the chaotic forces of nature, the accumulating toll of human impacts on our shared environment, and the problematic nature of our "best intentions," behind which all too often lurk the terribly violent and destructive impulses that have shaped human history.

2.417 quintillion (2.417 X 10^18) angels in a 1mm layer of DNA on the head of a typical straight pin:

2.417 quintillion angels = 6E23 x 1 x pi x 0.752 x 1E-3/(330 x 258/19.5)

The artists also wish to acknowledge the following individuals for their contributions, support, and inspiration: Yassir Chadly, California (US); Saad Khan, Uprising Ventures, California (US); Je Hyuk Lee and Ryan Peters, Cold Spring Harbor Laboratory, New York (US); Kyle Cromer, Dept. of Pediatrics, Stanford Univ., California (US); Gabriel Filsinger, Harvard Medical School, Blavatnik Institute, Dept. of Genetics, Massachusetts (US); Ashley Bell Clark, Dept. of Photography, Pratt Institute, New York (US); David Deamer, Dept. of Biomolecular Engineering, Univ. of California, Santa Cruz, California (US); Adam Steinberg, Creative Technologies, Massachusetts (US); Peter Sasowsky, Serious Motion Pictures, California (US); George M. Church, Harvard Medical School, Blavatnik Institute, Dept. of Genetics, Massachusetts (US). With support from: To date all project costs have been covered out-of-pocket. Wet work has been carried out either commercially, at the lab benches of the principal artists, and/or at lab benches of friends and colleagues (incl., Je Hyuk Lee, Kyle Cromer, Gabriel Filsinger, and Ekin Kuru). Design and fabrication of the glass and aluminum "Baitul Ma'mur" structure, electronics, and project graphics production in the residential studio of one of the artists (Joe Davis) have also been self-funded. Ashley Clark, Peter Sasowsky, and Joe Davis have donated video production and editing services. Adam Steinberg has composed and performed an original score for a short Baitul Ma/mur documentary and David Deamer has contributed a musical score directly translated from the "Subhan Allah" DNA sequence.
This project is presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe Programme of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.



masharu (RU/NL)

The Museum of Edible Earth

Geophagy is the scientific name for the practice of eating earth and earth-like substances such as clay and chalk. Eating earth is an ancient practice and is an integral part of many cultures across the world. *The Museum of Edible Earth* is a cross-disciplinary project with a core collection of earth samples which are eaten for various reasons by different people across the globe. It invites the audience to physically question our relationship to the environment and the Earth and to review our knowledge about food and cultural traditions using creative thinking. *The Museum of Edible Earth* addresses the following questions: What stands behind earth-eating traditions? Where does the edible earth come from? What are the possible benefits and dangers of eating earth? What engagement are we as humans establishing with our environment and non-humans? The Museum of Edible Earth has more than 400 edible earth samples, mostly clay, such as kaolin and bentonite as well as chalk, limestone, volcanic rock, diatomaceous earth, and topsoil. The materials originate from 34 countries. Alongside the earth collection, *The Museum of Edible Earth* includes graphic design materials, photography and video works, online edible earth interactive database, installations and performances. It fosters collaborations with scientists, artists, designers, researchers and cultural communities. *The Museum of Edible Earth* contributes to the cross-fertilization between science and art. There is scientific research on geophagy among both animals and humans. Papers about it are published in journals on anthropology, history, psychology, sociology, chemistry and biology. *The Museum of Edible Eart*h is a mobile museum. Its presentations are mixed-media and participatory, often involving earth tastings, workshops, discussions, and screenings. Disclaimer: Eating earth is not recommended by food authorities and is at your own risk.

Intercoursing with Clay — Russia 2019 — photography by Evgenija Beljakova

Founder: masharu
Project management (2020-2021): SasaHara
Photo and video (2021): masharu, Anna Zamanipoor, Luuk Van Veen, Jhalisa Rens
Graphic design (2021): Olga Ganzha, Jhalisa Rhens, Luuk Van Veen
Web design: Raphaël Pia, William Ageneau
Product design: Basse Stittgen
Support received from Creative Industries Fund NL stimuleringsfonds.nl/en/
Tijl Fonds
Prins Bernhard Cultuurfonds
www.cultuurfonds.nl/fonds/tijl-fonds Netherlands Embassy in Russia
Mondriaan Fonds www.mondriaanfonds.nl
Amsterdams Fonds Voor De Kunst, www.amsterdamsfondsvoordekunst.nl
Het Wilhelmina E. Jansen Fonds www.wejansenfonds.eu
Support in kind has been received from:
The World Soil Museum http://www.isric.org/services/world-soil-museum

This project is presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe Programme of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.

FESTIVAL COMMUNITY PROJECTS

Throughout its history, Ars Electronica has been continuously working to build a vital community. Over the years, it has expanded into an extensive network of artists, activists, scientists, institutions, policy makers, and other interested parties. With the introduction of the hybrid festival in 2020, we took the next step in exploring the possibilities of online tools for community building. Still, it is our endeavor to anchor the online component in the real world, so as to find the true potential in bringing together the digital and physical realms. This is why this year we decided to find possibilities to strengthen the community of the hybrid festival even more by getting creative ourselves. It quickly became an internal mission of the team to find projects expressing the networks' versatility and connectedness. Our efforts resulted in *Festival Community Projects*, a concept that intends to bring together partner gardens from all over the world in different events.

Symphony of Absence

As last year, the festival is being staged in a hybrid fashion. While the team in Linz is preparing a festival in the "traditional" sense, hundreds of partners in Ars Electronica's international garden network are also joining forces synchronously and in parallel to create the *Symphony of Absence*. This title stands for a very special place in Kepler's garden in Linz: the Keplerhall. It is dedicated exclusively to the contributions and programs of all those partners who run their own festival gardens and are unable to come to Linz. A place that will be shaped by hundreds of music stands and empty chairs, as if the musicians of an orchestra were on break and the sheet music might transform into living telematic windows into the world of the festival network. Each individual orchestra seat evokes the wonderful cultural diversity of this community that has such a formative impact on the transformation of our city during the festival. All together, they form a symphonic kaleidoscope of people worldwide with a similar attitude, who see themselves as global citizens and convey a common worldview that is nourished by our diversity and formed collectively.

Taste Your Soil

Taste Your Soil is a series of activities and programs designed to express that digital space is not a place to escape the real. Rather, both places — digital and real — stand and act in direct and inseparable connection to each other. Moreover, the project displays the expansion of Ars Electronica's cultural mission itself: technology needs to be deployed in a sustainable, connective and responsible way. This is especially true of the relationship between humans and nature. The radical changes in nature force us to act and engage in environmentally compatible transformation processes. This dimension is now of the utmost importance to art, society, technology and science. *Taste Your Soil* stands for the objective to make the digital an immanent part of our cultural identity, but it also seeks the restoration of our lost cultural awareness towards the earth. The project finds its logical position in the "New Digital Deal" insofar as "the digital" must also be part of any "Green Deal." The approach is reflected in many program points and started with the relocation of the festival from PostCity to the parks of Johannes Kepler University. Also, the new concept of "garden" introduced the previous year bears witness to this: as a universal cultural metaphor, it symbolizes the fundamental relationship between humans and nature. With local hosts, organic staple foods from the region and "earth" as a thematic inspiration for cooks, the theme even extends into the festival's basic supply structure.

On Saturday, BIO AUSTRIA gathers local organic farmers at the festival market day. Furthermore, the entire partner network participates in *Taste Your Soil*. The partner gardens will each send us a photo of tasting the soil from their own garden along with a video trying to describe the flavor. In Taiwan, top chefs will also be using soil to cook with; in Chile, the "Cooking for Freedom" project, organized by "La Fabulosa República de la Montaña," will be dedicated to the pandemic situation in the Andes; and in Russia, ITMO University will be taking a critical look at the issue in the "Grounding" exhibition. Of course, during the festival there will also be contributions to *Taste Your Soil* in Kepler's Gardens in the form of artistic projects and interventions, botanical excursions, workshops and much more. Foremost among these is artist masharu's "*The Museum of Edible Earth*," our inspirational starting point for this series of projects.

THE EXPERTS OF THE FUTURE

Ars Electronica Futurelab Kids Workshop & International Partner Outreach

The Ars Electronica Futurelab is celebrating its 25th anniversary, and some of its young members — who have been a part of the team for less than 25 months–had a special idea to contribute to this event. Their goal was to collect the opinions of renowned futurologists from all over the world to speculate about possible future narratives for the next 25 years. Their journey to the future even went outside our globe, to undiscovered planets. As a group, they explored cultural diversity, future mobility, and even sent messages and wishes to inhabitants from outer space.

What is special about the experts of the future that the young members interviewed? On average, they are seven years old.

The Ars Electronica Futurelab organized a prototype workshop with the team members' own kids and guided them into the future in a three-step journey. First, they prepared our vehicles for the journey, by crafting paper rockets that were sent out into a metaphorical universe. Wherever a paper rocket landed, the kids had the assignment of drawing their planet Earth in the future. At the end, they shared their very personal message to this future planet with the young Futurelab members.

How does the planet Earth of the future look like to the kids? After completing the workshop, we invite our international partner gardens — to provide us with statements from their children that answer this question. Together with the kids' contributions, we can collectively develop an imagination of the next generation's future visions.

© Birgit Cakir

Concept & development: Denise Hirtenfelder, Barbara Habringer, Sonja Bailer
Camera & editing: Raphael Schaumburg-Lippe, Kerstin Blätterbinder
Dokumentation: Birgit Cakir
Special thanks to our experts: Aurelia, Raphael, Egon, Xaver, Neema, Samuel, Lore-Su, Moe, Leonhart & Ben!
Special thanks to contributions from: Horst Hörtner, Hideaki Ogawa, Christoph Kremer, Christl Baur, Martin Honzik, Susanne Kiesenhofer, Arno Deutschbauer, Georgios Tsampounaris, Julian Zauner, Johannes Lugstein, Maria Mayr, as well as all Futurelab parents!

Harpreet Sareen (US/IN/JP), Franziska Mack (DE/US), Yasuaki Kakehi (JP)

Algaphon

Urban environments and manicured nature, with unseen native diversity, have resulted in forgotten evolutionary histories and a reduced understanding of ecosystem relations. In this context, especially the aquatic plant biosphere is the object of collective amnesia. *Algaphon* is a hybrid installation where algae bubbles that ring at Minnaert frequency near algal filaments are rendered audible through a hydrophone. Online visitors can leave a voice message that is translated into photosynthetically active radiation (PAR) variations in a remote aquarium. The algae bubble's response to human speech is then recorded and emailed back to the visitor to engage in a reflective dialog with algal species. The installation refocuses attention on nonvascular physiological mechanisms and invites viewers to think about how environments exist in a heightened dynamic to adapt to human actions.

Yasuaki Kakehi Laboratory, The University of Tokyo
Supported by JSPS KAKENHI (Grant Number 20H05960)
With auxiliary support from Parsons School of Design and Stochastic Labs

© Franziska Mack

Ory Yoshifuji (JP)

AVATAR ROBOT CAFE DAWN ver.β

Avatar Robot Cafe is a social implementation project to enhance employment of people with disabilities by using "OriHime," an avatar robot that can be operated by people who are bedridden or have limited mobility. The robot is designed to accommodate a wide range of physical disabilities, including eye input, pc and smartphone input, and is easy to operate. With corporate sponsorships and crowdfunding, a temporary store opened in Tokyo in 2018. In June 2021, a permanent experimental store "DAWN" opened in Nihonbashi, Tokyo. The employment rate for people with disabilities in Japan is about 5%, and the people concerned have given up on finding employment in companies. While there are high expectations for robots to solve the labor shortage, we are presenting questions and solutions for a society where employment of the disabled is not enough. Join us at the demonstration in Ars Electronica Festival and find out more about the cafe.

Ory Laboratories Inc.
Garden TOKYO by Japan Media Arts Festival
Supported by the Agency for Cultural Affairs, Government of Japan

© Ory Laboratory inc.

Kaito Sakuma (JP)

KEHAI: Liquid Mirror Series — Square —

The *Liquid Mirror Series — Square —* is a box that makes sounds autonomously. The mirrored box keeps ticking like a heartbeat, distorting its reflection while hiding itself in the scenery. Sakuma will be presenting a new version of this mirrored box with recently recorded sounds of present-day Tokyo. The concept of this project is "kehai," something invisible but definitely there, which exists in Japanese society. The term "sign" may be the closest definition of "kehai" in English. With COVID-19, physical distance has increased so much that we have lost the opportunity and the ability to perceive the invisible, as we have come to trust the world we see through our monitors. People will hear the sounds emitted from the mirror and may sense the same "kehai." People in distant places may also be able to communicate with each other in a new way. This project will explore the nature of communication that is non-verbal and common to all living things.

Concept and Direction: Kaito Sakuma
Fabricator: Be Factory inc.
Garden TOKYO by Japan Media Arts Festival
Supported by the Agency for Cultural Affairs, Government of Japan

© Kaito Sakuma

create your world 2021

The new social deal

© vog.photo

Digital technology has given us the ability to work from anywhere, attend school classes, even meet with friends. The current desire to meet people physically, and not just virtually, has something new about it: after all, a few decades ago, this digital form of social interaction would not have been possible at all. The speed at which these technologies are developing is increasingly becoming a challenge for our society. We use them before we can evaluate them. We question very little in the process; we often see it as the only alternative. But now we want to go back. We want to party together, attend concerts, go to school properly and chat with colleagues at work. Everything analog, everything "like it used to be." But what is this "like it used to be" like? Is it "before the pandemic"? Or does it go back even further? Even people within the same generation define that very differently.

In its immense speed, the development of new technologies is a very complex process in our society that has a major impact on social interactions and structures. So what role will digital technology play in the future? Will we manage to continue using this tool, which was so important during the pandemic, as a useful extension? Or is it like eating too much candy and needing a break from it?
Planned focal points such as "digital school" or hybrid work models harbor good approaches, but only put many of us under more pressure — it is becoming increasingly unclear what role we will have to take.

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Black Day, Prix Ars Electronica 2021 "u19–create your world"
Young Creatives u14 Award of Distinction

© Johannes Rass, Julian Pixel Schmiederer, Gregor Franz

The 2020 Rise Up, Prix Ars Electronica 2021 “u19–create your world” Young Professionals Honorary Mention

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Realitätsverlust, Prix Ars Electronica 2021 “u19–create your world” Young Professionals Honorary Mention

© Isa Mutevelic, Simon Effenberger, David Stummer

INCERT, Prix Ars Electronica 2021 “u19–create your world” Young Professionals Award of Distinction

Moreover, the younger generation is overwhelmed with responsibility. Climate change creates uncertainty, the current pandemic is changing the structure of everyday life and triggering psychological problems. The move from school life into a course of study or into the professional world does not feel as optimistic as it used to. There’s a pervasive feeling of constantly missing something, of not being in the know — you can‘t keep up. The speed at which new technologies develop spreads to the information level as well: changes can happen quickly and you‘re expected to pick up on those changes while they‘re still being announced and adjust your pace accordingly. “Planning security” is therefore more of a paradox for the younger generation, although it’s so important right now and they are demanding it. Uncertainty spreads because everything can change at any time — and in any direction. The desire to be “offline” is therefore intensifying visibly. We need time out from the constantly updating flow of information that we have to respond to, or at least have an opinion on. Young people have made many statements and demands on our system in recent years. The question arises: is this really their sole responsibility? Do young people really need to take on this responsibility? After all, sharing our world also requires a minimum of courtesy to leave it as you would like to find it — at least that’s a notice you often find in many public places. And this isn’t just about a public toilet or a park — it’s about the whole world. All generations must be aware of this responsibility.

There’s something frightening about the slowness with which our system tries to adapt to climate targets or social reorientations — combined with the often-mentioned rapid development of new technologies, it sometimes seems as if we’re waiting here and hoping that everything will blow over. Waiting until it is perhaps too late.
Children and young people are exposed to these dystopias on a daily basis in their younger years; they have to form opinions about them and position themselves. In doing so, they are often left alone by this waiting society.

This year’s create your world festival takes its title very seriously and literally: It aims to provide opportunities to think about present and future scenarios in a lighthearted way. It offers a platform for young people to exchange ideas and have a good time together. Utopias may be created and unrealistic thoughts exchanged. Laughter is allowed and trust can be (re)built. In different focal points at educational institutions, artists and platforms are invited to examine the issues of this complex time and generate new ideas. Along the way, the “festival within the festival” focuses on one of the most important topics that seems to have changed for all of us in the past years: the rediscovery of individual and collective social interactions. Let’s see what else we will learn in the process. Above all, it will take time. Time to stabilize again, to make plans and to adapt to the increasingly complex environment.

The heart of this platform will again be the ideas and projects of children and young people themselves: The Prix Exhibition will feature 23 Prix Ars Electronica award-winning projects from the u19–create your world category. The diverse mix of topics invites us to talk about it all together with the next generation, to briefly evaluate it before diving into a next phase.

© Julia Scheiwein, Zara Dineva, Anna Zoglauer, Caroline Bär

The Click, Prix Ars Electronica 2021 “u19–create your world” Young Professionals Honorary Mention

© Tom Mesic

U19 PRIX EXHIBITION

This year's exhibition of the winning projects in the u19–create your world category once again shows a colorful mix of refreshing ideas, critical projects and research approaches by children and young people. The exhibition will be presented as an interactive platform at the festival by the young people themselves. The winners will get to know each other and can exchange new ideas.

Festival visitors will be able to see the fascinating projects and have them explained directly by the young artists. This creates a research platform at the highest level, which not only serves as an inspiration for educators and students, but also offers regional and international artists a valuable insight into the topics and priorities of children and young people.

Gaps and Solutions — Of Things That Are Missing and How One Can Deal With Them

"(...) By this year's submission deadline, the year-long state of emergency had become the new normal. But, especially for young people, a year feels like an entire phase of their lives. Despite everything, however, it would be a complete misnomer to describe these young people as "the lost generation." During this extraordinary and trying period, they have gained new perspectives and were able to observe societal processes that will occupy historians for decades to come. It is a generation shaped but not stigmatized by these events. These young people will decide for themselves what they do with the lessons from this time. But for now, it's about coming to terms with the situation, and the entries for this year's Prix Ars Electronica in the category u19–create your world reflect a number of coping strategies. (...)"

The Jury of the category u19–create your world 2021:
Sirikit Amann, Josef Dorninger, Conny Lee, Mira Lu Kovacs, Tori Reichel

© Tom Mesic

create your world (AT), mb21 (DE), <19 (HU), ArtechLAB Amsterdam (NL)

I AM (NOT) A ROBOT

A Creative challenge with AIs and humans

Homeschooling, distance learning and social distancing bring our society into close contact with Artificial Intelligences in everyday life. We use it, we rely on it, but most of the time, we don't recognize it. This international challenge is aimed at experimenting with AI by exploring the limits of humanness and robotness. What are the main differences between us and algorithms? How can we reveal AI technologies in our everyday lives and "make fun of them" or even use them as creative tools?

"AI vs humans" doesn't have a winner. In the challenge, speed or IQ won't be compared — the project will come up with new ways of bringing the two species closer to each other. Humans might learn new things about the nature of Artificial Intelligences — and AI might recognize its inability to fully replace humans ...

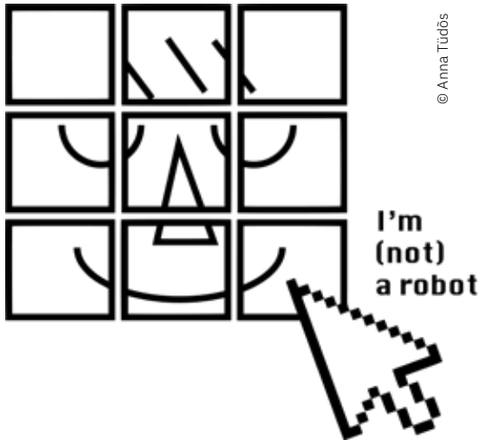
The international network of create your world (AT), mb21 (DE) and <19 (HU) as well as ArtechLAB Amsterdam (NL) are all exploring different aspects of digitization through the eyes of youth and from the perspective of education. The challenge is a direct reaction to challenges posed to their longstanding youth exchange project by the global pandemic. With this new, fully online format, they aim to motivate participants to think about AI as a society-forming force in the most accessible way possible.

The international youth encounter project is a very successful format of Ars Electronica. Create your world cooperates with various partner institutions (media art festivals, educational institutions and competitions in the youth sector) from the European region in order to invite and bring together young people from different regions for a cultural and artistic exchange.

All of the participants come with individual competencies and expertise to develop and implement a joint project over the period from June to August 2021, which in turn will be presented at the Ars Electronica Festival.

On the occasion of the Ars Electronica Festival 2021, introductory lectures by experts, creative workshops, individual or group work and presentation opportunities were held on the project title *I am (not) a robot — Creative challenge with AIs and humans*, as well as accompanying mentorship.

This project is presented in the framework of the European ARTificial Intelligence Lab, which is co-funded by the Creative Europe Programme of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.



© Anna Tüdös

Anna Oelsch, Gerda Lechner und Maria Binder / students of the University of Art and Design Linz "Bildnerische Erziehung und Mediengestaltung" (AT) lead: Gerda Martínez López and Lisa Wieder (AT)

PLAY WITH PIXELS

It's hard to imagine a world without screens. We have come to appreciate the advantages of digital communication and its diversity, especially in the past year and a half of social distancing. While modern technology cannot replace the analog world with its hands-on experience, it can complement it wonderfully.
Play with Pixels is an interactive Open Lab about the smallest part of a digital raster graphic. We zoom into the pixel world, enlarge, illuminate, recombine and thus make the world of digital images more tangible. At the same time, we playfully explore the translation possibilities between analog and digital, embarking on a search for a world of images where pixels and graphic gestures meet. In this way, visitors are invited to engage with the diverse dimensions of a pixel with the help of various materials.
As part of the Art University exhibition, the Visual Education and Media Design team invites visitors to create their own pixel postcards on site and send pixelated greetings from downtown to the Open Lab. In this way, we extend our participatory installation beyond the boundaries of Kepler's Gardens. And we offer short daily glimpses of our work in the Open Lab via our "pixel phone", allowing us to communicate in parallel analog and digital, thus combining the advantages of both worlds.

This project was developed by Anna Oelsch, Gerda Lechner and Maria Binder, students of Visual Education and Media Design led by Gerda Martínez López and Lisa Wieder.

© Anna Oelsch

Sophie Dögl (AT), Oberösterreich Tourismus (AT), Ars Electronica

TOURISMUS VON MORGEN

What will tourism look like in the future? Each year, young people address this question in a summer project. They offer inspiration, criticism or positive engagement with the topic of vacation, recreation and tourism in general. New strategies and changes in direction can emerge from this and be incorporated into the focal points and programs of tourism initiatives.

"Zurück zur Illusion"

This year, a Prix Ars Electronica entrant in the u19–create your world category was commissioned to think about this theme in relation to the effects of the Covid Pandemic as well. Under the working title she chose for her project, *Zurück zur Illusion* (*Back to Illusion*), Sophie Dögl is now embarking on a research trip in Upper Austria and collecting impressions of the tourist region on film. With the video project, the young artist wants to address the viewers with all their senses: The enjoyment of mountain climbing and the current situation in the granite, salt and natural stone works will be the basis of the sensual experience.

© Sophie Dögl

© Sophie Dögl

SYMPOSIUM “THE CIVIL SOCIETY OF THE FUTURE: CO-CREATION WORKS.”

The symposium “The Civil Society of the Future” is a project of the association “dieziwi. — Die Zivilgesellschaft wirkt” in cooperation with “Interessensgemeinschaft Freiwilligenzentren Österreich (IGFÖ)” and an initiative of Sozial-Landesrätin Birgit Gerstofer, sponsored by the Federal Ministry of Social Affairs, Health, Care and Consumer Protection.

© Tom Mesic

© vog.photo

Civil social engagement is essential for a pluralistic, open and solidary society. In both the refugee crisis of 2015 and the Covid crisis of 2020, it became clear how directly, effectively and innovatively those initiatives, associations, NGOs, NPOs and individuals — in short, all those who are usually considered “civil society” — are capable of acting.

What does the much-discussed post-Covid world look like? How do we use the potential of civil social engagement should the situation worsen again? And which approaches will help us achieve sustainable social innovation that affects all participants in our society, even in times of non-crisis? The symposium will explore these questions with many experts, activists and decision-makers in an attempt to find instruments and strategies for sustainable social innovation!

At this symposium, national and international policymakers, experts, NGOs, NPOs, volunteers and other interested parties will exchange ideas about innovations and forward-looking possibilities for voluntary engagement in general and in times of COVID-19. The conference will be accompanied by an extensive digital presence, which will give organizations and volunteers the chance to present and inform themselves. In addition, interested parties will have the opportunity to find out about various fields of engagement and get in touch with volunteer organizations at the Volunteer Fair Upper Austria in the create your world area at the JKU festival grounds.

Unabhängiges LandesFreiwilligenzentrum (AT)

VOLUNTEER FAIR

FEST.ENGAGIERT is the ideal meeting place for all those who want to volunteer and institutions that are looking for volunteers. The *Volunteer Fair Upper Austria* is now taking place for the tenth time. This year, Upper Austrian institutions, associations and volunteer projects can also present the many opportunities for volunteers under their roof. No matter whether social services, senior citizens, children and young people, integration and coexistence, rescue services, people with disabilities, community, citizen participation, environment and animal welfare or international volunteer activities: The range of areas and tasks knows no bounds. In the create your world area at the festival area of the JKU, anyone who is interested and would like to have an impact on their area can find out about voluntary commitment in Upper Austria. The focus is on social engagement, participation and digitization — so opportunities for digital engagement will also be presented.

Landestheater Linz (AT)

SOCIAL INTELLIGENCE AGENCY (S.I.A.)

The digital revolution is in full swing. Between smartphone and tablet, between VR and AI, we are longing for what our modern technology cannot (yet) offer: Social intelligence. Because without it, the world is at risk of becoming a dark place. A group of teenagers and young adults is tackling this problem, dealing with current issues and ideas for a better world and creating performances around the theme of social intelligence.

© Philipp Greindl

An event produced jointly by the Upper Austria Teacher-Training College (AT), Upper Austria Chamber of Labor (AT) and Ars Electronica

NEULAND — A society on expedition

Symposium Perspectives on Political Education

A virus has changed our world. And all our lives. Societies around the world are engaged in a real experiment in real time, virtually on an expedition into the unknown, into *NEULAND*. Finding our bearings is a challenge and, in democratic societies, often involves long, usually arduous negotiation processes. Science-based approaches and rational action are hampered by populism, conspiracy theories, untruths and battles of faith. Social thinking and action as well as a basic humanitarian attitude are indispensable in such a situation. Education in general and political education in particular are indispensable components, if not prerequisites. The education sector must actively participate in this current social transformation process. But how is it to succeed if the members of educational institutions are themselves part of the expedition and don’t yet know where the journey is headed?

Are we really moving in the direction of a “new normal”? If so, what does this “new normal” look like, and who defines the cornerstones and guidelines?

These questions will be discussed this year in the symposium *NEULAND — A Society on Expedition* as part of the symposium series *Perspectives on Political Education* by academics, experts and practitioners.

BORG Bad Leonfelden (AT), Stefan Leutgeb (AT), Wolfgang Hoffelner (AT), Anna Strasser (AT)

from freeze to flow

Activities that induce a flow state increase mental well-being in uncertain times. Designing and coding were a welcome change during lockdown and a chance to create something in this rigid phase. Students of the BORG Bad Leonfelden developed a 3D model of the school in a joint project, which can be explored on your own at the festival. At the same time, students will be working on a computer game in an open laboratory during the festival. Festival visitors can also try their hand at a small project in a low-threshold and explorative way.

Bettina Gangl (AT), Birgit Pölz (AT), Helmut Doblhofer (AT), participants Virtual Office FAB Linz (AT)

GALACTIC GARDEN

The *Galactic Garden* is an augmented reality walk developed within a workshop with the youth of Virtual Office. Virtual Office offers computer training for young people with physical disabilities.
Spark AR Studio is a programming toolkit offered by Facebook, which is used for the implementation of the project. Hongwei Tang supports this project technically.
The workshop focused on various cinematic narratives about the unknown, the uncertain, extraterrestrial beings, oversized monsters, and artificial intelligence. The result is an installation that deals with the current situation and shows a leap in time that simultaneously takes a look into the past and the future. The young people of the Virtual Office accompany the visitors of the festival at our station with the help of an iPad in the *Galactic Garden*, which is visually brought to life.

© Virtual Office

Ableton Live (DE), MiMU Gloves (UK), University of Music and Performing Arts, Vienna (AT), Ars Electronica Linz (AT), Adrián Artacho (ES/AT)

conducting spaces

© Nathan Gallagher

This performance traces the dimension of "eternity" as a state and in doing so also questions a current sense of time in post-Covid times. Together with the audience, Johannes Hiemetsberger and Hanne Pilgrim from the University of Music and Performing Arts Vienna create an audio-visual collective space that begins with Ligeti's Lux Aeterna. The translation between voices, traces of movement and sound takes place like a mirror in a mirror … Festival visitors can try out their skills in conducting and performing or composing music at once in an experimental Open Lab.

mica — music austria (AT), Universität für Weiterbildung Krems (AT), Ars Electronica (AT) und Österreichischer Musikrat (AT)

MUSIC SUMMIT

The professional profiles of musicians have changed rapidly over the past 10 years, and musicians increasingly need business know-how to enter the music sector. Music universities have trouble keeping pace with these rapid changes and cannot adequately transfer knowledge in their regular training programs.
The project initiative of mica — music austria, the University of Continuing Education Krems, the Ars Electronica Festival and the Austrian Music Council aims to advance the professionalization of musicians as modern entrepreneurs in the music business. To this end, representatives from education, the music industry and politics will be invited to a *Music Summit* to engage in a joint dialogue and design formats that are open to all music makers, regardless of their educational background. The results of the *Music Summit* will be presented in a public roundtable at the Ars Electronica Festival.
Musicians from all genres were asked in advance to write video messages about their personal career paths, obstacles and insights. These will serve as impulses for the Music Summit and for the Roundtable and will be available for viewing by all festival-goers throughout of the festival.
The Center for Applied Music Research at the University of Continuing Education Krems will provide scientific support for the project. The goal is to exemplify different career paths and professional realities in the Austrian music world and to derive perspectives for decision-makers in politics, education and the music industry.

Music Career Check

Music Career Check — these are short videos of music creators who talk about their career path, their original career ideas versus everyday professional life, stumbling blocks and aha experiences and personal insights into the music business.
These short videos are intended to provide insight into the life models and challenges of music creators today. The short videos will be available to visitors throughout the Ars Electronica Festival.

create your world TOUR 2021

Inspiring sustainably and bringing an impulse directly into the classroom — that has been the program of the create your world tour since 2015. In 2021, it will happen again, but in an online format within the Open Science Hub Network. The interactive workshops are a welcome experience for teachers and students in this special phase of school life. As an impetus for the continued use of digital tools in the classroom, the tour will also make a stop at the festival: At the create your world festival, a workshop for an international classroom will be offered — we will see how big the class will be …

© Cornelia Hauer

create your world TOUR is part of the OSHub project that has received funding from the European Union's Horizon 2020 Framework Programme for Research and Innovation under grant agreement No. 824581

STARTS EXHIBITION

STARTS is an initiative of the European Commission to foster alliances of technology and artistic practice that effectively implement European policymaking to nurture innovation and that benefit the art world as well. The focus is on people and projects that contribute to mastering the social, ecological and economic challenges this continent faces. The STARTS Prize is awarded annually to innovative projects at the interface of art, technology and science that have the potential to contribute to sustainable economic and social innovation. This year 's exhibition of selected winner and STARTS projects showcases current best practice approaches for responsible innovation in the fields of bioengineering, ecology, artificial intelligence, policymaking as well as communication and media technologies.

The STARTS Prize has received funding from the European Union's Horizon 2020 research and innovation Programme under grant agreement No. 956603.

Featured Artists:

Oceans in Transformation — John Palmesino, Ann-Sofi Rönnskog
Remix El Barrio — IaaC Fab Lab Barcelona
Data Garden — Grow Your Own Cloud
ELEVENPLAY x Rhizomatiks „border 2021" — MIKIKO, Daito Manabe, Motoi Ishibashi, Takayuki Fujimoto, evala, ELEVENPLAY, Rhizomatiks
Face Lab — Håkan Lidbo
In a Small Room — KyungJin Jeong
In Event of Moon Disaster — Halsey Burgund, Francesca Panetta
mEat Me — Theresa Schubert
The Living Light — Nova Innova
TheirTube — Tomo Kihara

Oceans in Transformation, John Palmesino, Ann-Sofi Rönnskog; commissioned by TBA21—Academy © Giulia Bruni

In a Small Room, KyungJin Jeong

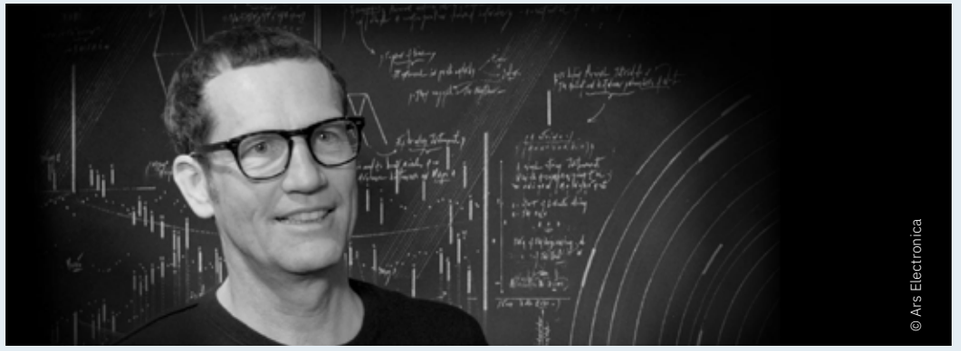
Remix El Barrio, IaaC Fab Lab Barcelona, © Fab Lab Barcelona

In Event of Moon Disaster, Halsey Burgund, Francesca Panetta © Dominic Smith

Face Lab, Håkan Lidbo

The Living Light, Nova Innova

FEATURED ARTIST



Joachim Sauter (1959 — 2021)

On the passing of Joachim Sauter, pioneer of media art.

Joachim Sauter has accompanied Ars Electronica for decades, as an artist, as a frequent juror and as a prizewinner of the Prix Ars Electronica, as an advisor and as a friend.
Time and again, he has inspired and enthused many of us with his ideas and passion; without his involvement, many things would not have succeeded. As a pioneer of media art, he has contributed significantly to the development of media art as an independent new art form.

With his high aesthetic standards, technical perfection and artistic originality, he created lasting masterpieces and set milestones. His death is an immeasurable loss. To honor his outstanding work, career, and personality, we dedicate this years' "Featured Artist" section to him.

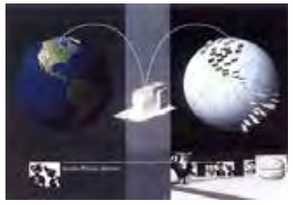
Gerfried Stocker, Christine Schöpf
On behalf of the entire Ars Electronica team

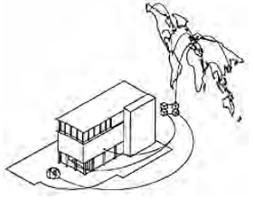
Artist Biography:

After graduating from the academy of fine arts in Berlin, Joachim Sauter studied at the "German Academy for Film and Television", Berlin. He worked as a media artist and designer since the mid-1980s. From the beginning, he focused on digital technologies and experimented how they can be used to express content, form, and narration. Fueled by this interest, Joachim founded ART+COM in 1988 together with other artists, designers, scientists, hackers and technicians. He led the interdisciplinary group's innovative experiments, using new technologies to convey complex topics while exploring their potential for spatial communication and art.
In the course of his career, he was invited to participate in many exhibitions. Among others, he showed his work at Centre Pompidou Paris, Venice Biennale, Stedelijk Museum Amsterdam, Museum of Contemporary Art Sidney, Deichtorhallen Hamburg, Kunsthalle Wien, ICC Tokyo, Getty Center Los Angeles, and MAXXI Rom.
He received several awards like the "Golden Lion, Cannes", the "D&AD Black Pencil", the "Ars Electronica Interactive Award", the "British Academy for Film and Television Interactive Award", "ADC New York" and "ADC Deutschland Gold", the "Grand Clio", the "Red Dot Grand Prix", the "Designpreis der Bundesrepublik Deutschland", and numerous other national and international awards.
Since 1991 he was full professor for "New Media Art and Design" at the Berlin University of the Arts, and since 2001 associate professor at UCLA, Los Angeles.

Chronos XXI, 2017

Zerseher by Joachim Sauter and Dirk Lüsebrink, Prix Ars Electronica, 1992





Network skin, a facade concept for the Ars Electronica Center, Linz by CHRISTIAN MÖLLER and JOACHIM SAUTER, 1994

Invisible Shape of Things Past, by Joachim Sauter and Dirk Lüsebrink is an exploration of the representation of time and navigation through time in VR, 1995

REFLECTIVE KINEMATRONIC II, 2010
Ottobock commissioned the work for Expo Shanghai 2010. Mobility is now part of the permanent exhibition at the Ars Electronica Center.

Joachim Sauter and Dirk Lüsebrink, Prix Ars Electronica Artists´ Forum 1992. Credit: Ars Electronica

Joachim Sauter and Hiroshi Ishii at the ICT & ART Roundtable. Ars Electronica Festival 2014, Photo: vog.photo

Welcome to the Midlife Crisis / Joachim Sauter (DE), 2019
Joachim Sauter as Host at Innovationsforum GET.Inspired, POSTCITY, Photo: Philipp Greindl

FESTIVAL UNIVERSITY

“Transform Your World”

The Festival University by Ars Electronica and Johannes Kepler University

ARS ELECTRONICA
Art, Technology & Society

JKU
JOHANNES KEPLER
UNIVERSITY LINZ

Locations	Online and in Linz, Austria
Duration	3 weeks
Program dates	Aug. 30th, 2021 — Sept. 19th, 2021*
Target group	Students from all disciplines, age: 16 — 24 years
Language	English
Study type	Festival University
Time requirement	Full-time
Credits	Festival University certificate with 4.5 ECTS

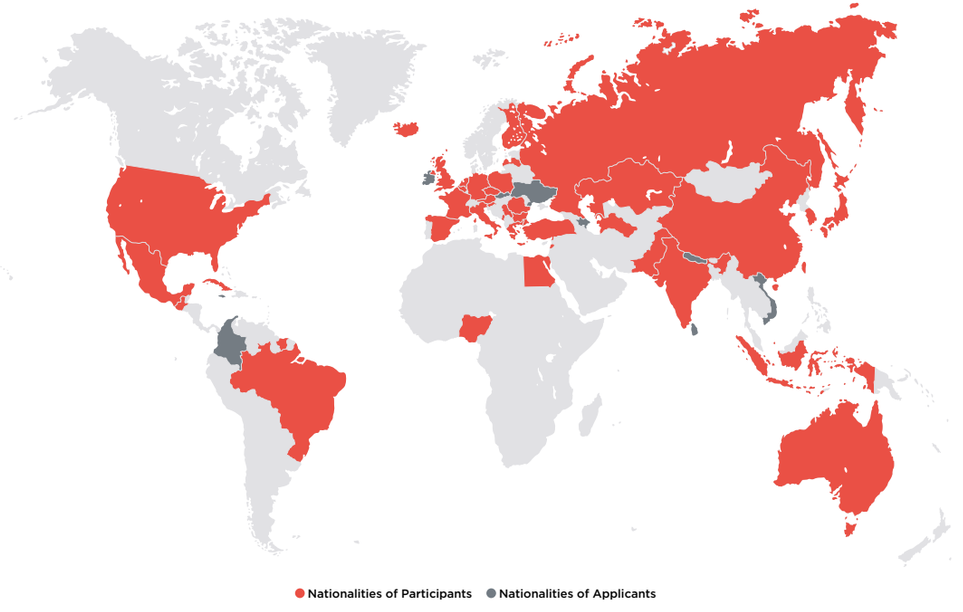
What does it take to initiate actual change? What transformation can students spark for a better tomorrow? What collaborative concepts of transformational change can students from all around the world working together for three weeks create?

Global challenges of tomorrow require a new approach — one based on creativity and co-creation. The Festival University, a joint initiative between Ars Electronica and Johannes Kepler University Linz (JKU), invites students from around the world to together define transformational strategies. This inaugural program is taking place in a hybrid form, with participants joining online as well as in-person in Linz, Austria, between Aug. 30th, 2021, and Sept. 19th, 2021. 100 young people from more than 40 countries with different cultural and educational backgrounds gather in Linz to explore and define new ways towards digital transformation and transformational change.

About this initiative:

Next-gen technical university — a think tank and do tank for a new technical university focused on digitalization and digital transformation.

To promote Austria and digitalization, a science-policy initiative was started in 2020 to found a new technical university for transformation and transformational change in Upper Austria. This is a great opportunity and responsibility to develop state-of-the-art programs and structures that meet the challenges of the 21st century. An international and interdisciplinary character is the primary focus here, as well as the establishment of an excellent research environment and new, forward-looking teaching models. In order to promote this exciting venture internationally—to attract young people from all over the world and also to harness the experiences and ideas of interested communities from all fields—the Festival University project will be realized by Ars Electronica in collaboration with the Johannes Kepler University (JKU). It will serve as a prototype and showcase for a university of the 21st century.



Federal Ministry
Republic of Austria
Education, Science
and Research

ober österreich

‘The Festival University by Ars Electronica and JKU’ is supported by the Austrian Federal Ministry for Education, Science and Research, as well as the Federal Province of Upper Austria.

Linzer Spaziergang mit Spot / Photo: Ars Electronica / Robert Bauernhansl

Regenerative Reliquary / Amy Karle (US) / Photo: Florian Voggeneder

Machine in Flux — Wood / Sunjoo Lee (KR), Ko de Beer (NL) / Photo: Tom Mesic

About the program:

Over three weeks, students collaborate in teams to create strategies of transformation for specific challenge fields and to answer the following questions: "How can we transform the world through machine learning, robotics, bio-hacking, swarm behavior & drones, dance, poetry, investigative journalism and storytelling?"
To answer these questions from a holistic perspective, students attend inspirational and insightful talks and hands-on workshops delivered by subject matter experts.
Each topic is explored from a technological and socially critical perspective as well as through the lens of art. The inputs received through these program sessions allow students to define strategies on transformational change for global challenges of tomorrow.
In addition to these presentations, students are also invited to join excursions to renowned local organizations and significant sight-seeing spots in Linz and its surroundings.

Each group then presents their answer to the key question “How can we transform the world?” on the last day of the program. The method of presentation will be defined by the students and will invite their creative thinking: they might show present the outcome they have created during the hands-on workshops, share the answer through reciting a poem or performance a dance, showcase a video clip, or simply share their thoughts through a standard presentation.
The daily program is compiled of an inspirational and insightful talk by a high-level expert in the morning, followed by a joint working lunch. During these lunch sessions participants have the chance to meet regional & international artists, scientists, entrepreneurs and activists and discuss with them the progress of their transformative questions. The afternoons are defined by hands-on workshops or highlight excursions and lead the participant to the daily working group sessions with their dedicated facilitators.

WEEK 1 Aug. 30th — Sept. 5th > Online
_ Team formation and getting to know each other
_ Introduction to the program, speakers, team facilitators, and methodologies
_ Definition of challenge-focus
_ Participating in online talks, workshops and discussions
_ Developing the “creative research question”

WEEK 2 Sept. 6th — Sept. 12th > In Linz & online*
_ Participating in (online) talks, hands-on workshops, and team-discussions
_ Collecting relevant information
_ Meeting and learning from subject matter experts (artists, scientists, researchers etc.)
_ Attending the Ars Electronica Festival
_ Joining excursions

WEEK 3 Sept. 13th — Sept. 18th > In Linz & online
_ Participating in (online) talks, hands-on workshops and team-discussions
_ Joining excursions
_ Defining the transformation strategy and preparing the final presentation
_ Submission of presentation & trial run
_ Official closing event with presentations at the main square in Linz and online
_ Closing team dinner

Final presentation:

All teams are presenting their strategies on transformational change for global challenges of tomorrow on Friday, Sept. 17th, 2021, during a closing event hosted at the main square in Linz and online. The final team presentation will explore the following aspects:

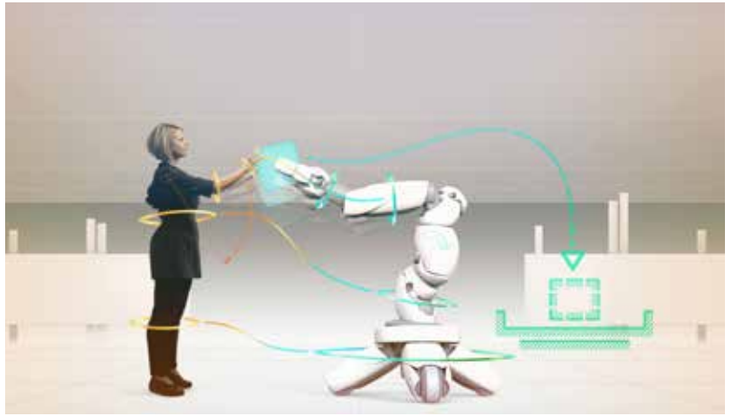
_ **Discuss, Negotiate, and Decide:**
What is the most urgent thing to be changed?
And why?

_ **Explore, Collect, and Get Inspired**
What skills and whose expertise are needed?

_ **Envision and Develop**
How does a new strategy for transformation and change look like?
How to deal with opposite positions?
How to negotiate a joint course of action?

Participants' experience:

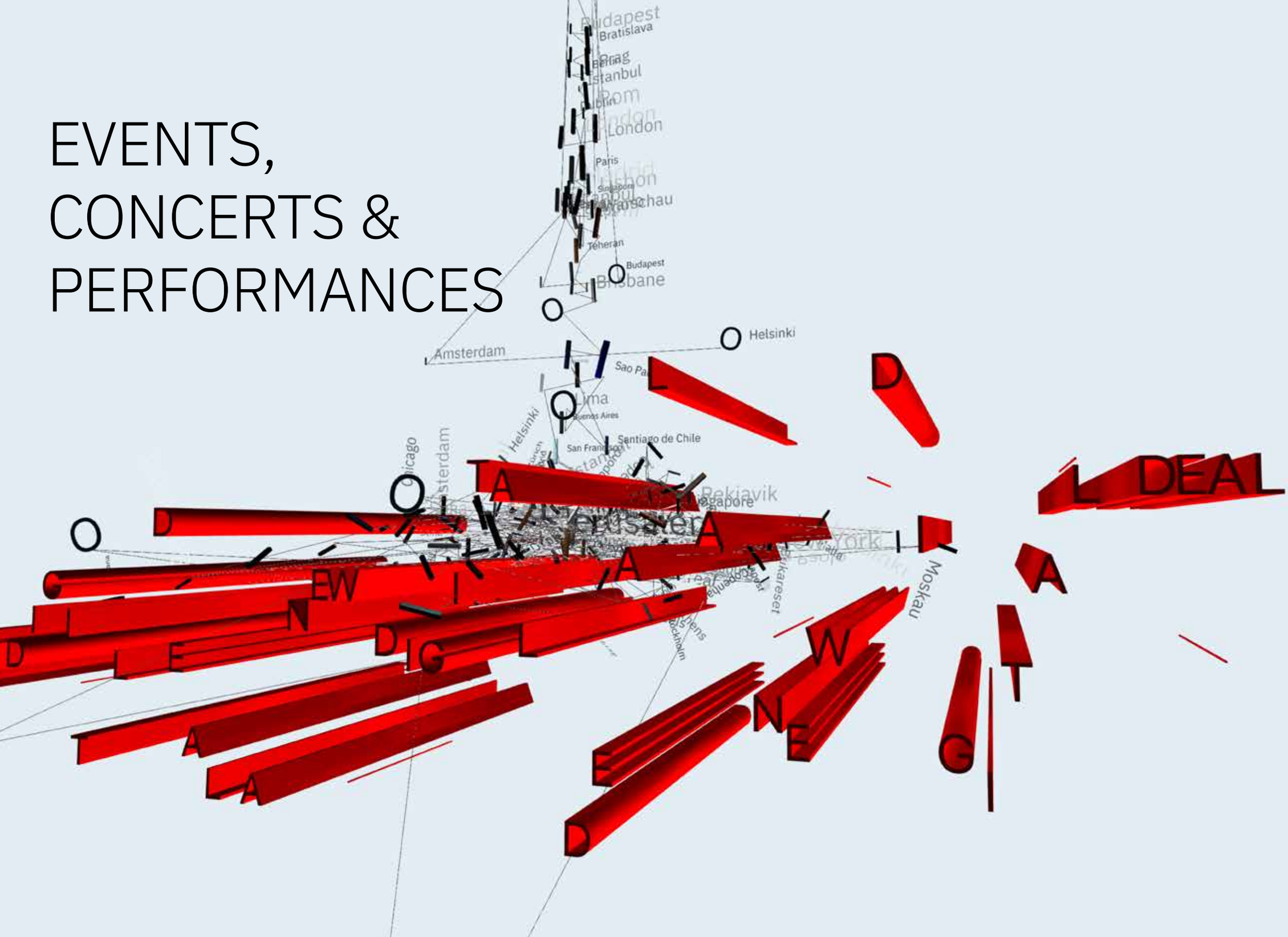
A crucial factor of transformation is collaboration and co-creation. Thus, the programming is focused on enabling a collaborative community spirit among the participants. All participants traveling to Linz are staying in the same venue.
Each group, consisting of up to 15 students, are assigned a dedicated facilitator who guide the participants through their journey.
Furthermore, we invite the students to capture their experience through videos and photos, which will then be shared with the broader public.



CoBot Studio—Research for harmonious teamwork between humans and robots / Photo: CoBot Studio

The Pangolin Scales / Thomas Feuerstein (AT), Harald Pretl (AT), Christoph Guger (AT), Anouk Wipprecht (NL) / Photo: Tom Mesic

EVENTS, CONCERTS & PERFORMANCES



THE BIG CONCERT NIGHT 2021

Sonitus aeternus — The Bruckner 9 Project

Once again, Ars Electronica's Big Concert Night goes on a grand voyage of discovery. After exploring the world of robotics and AI, encountering digital images and engaging with dance and theater, the focus this year is on the core of all music: the acoustic basis for sound and the space that sound can create. On the one hand, we examine the physical space that sound waves traverse and create, but of course we will also explore the metaphysical multidimensions that sound opens up in the process of becoming music.

What could be better suited for this than the music of Anton Bruckner played by the Bruckner Orchestra, which has accompanied Ars Electronica's musical and technological explorations since 2003? Anton Bruckner's 9th Symphony, conducted by Markus Poschner, will be the central piece of this evening and will be joined by the exceptional choral piece Lux Aeterna by György Ligeti, performed by the Company of Music under Johannes Hiemetsberger.

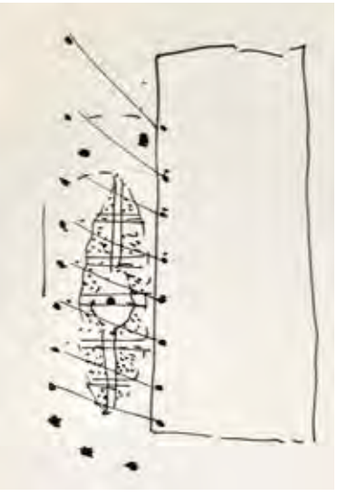
But this is only the beginning, because you will not only hear Bruckner's Ninth played by the orchestra: Bruckner's timbres and sound structures will also be picked up by a large number of microphones and handed over to the extraordinary sound artist and sound space virtuoso Andres Bosshard, who will project them into the scenic park of the JKU campus, around the new Keplerhall, via more than 20 sound channels and loudspeaker systems.

The special technical setup has been designed by Karl Schmidigner, Joschi Viteka and Hannes Franks. The orchestra plays in the Keplerhall, the audience sits and strolls in the park, the sounds move along mighty treetops, multiply our spatial perception and give the wandering listeners an inkling of infinity. Isolated moments of physical sound condense in it, illuminating the sky like a big bang creating space. This experience is completely in the spirit of Bruckner's music, with its physical power and its spiritual dimension.

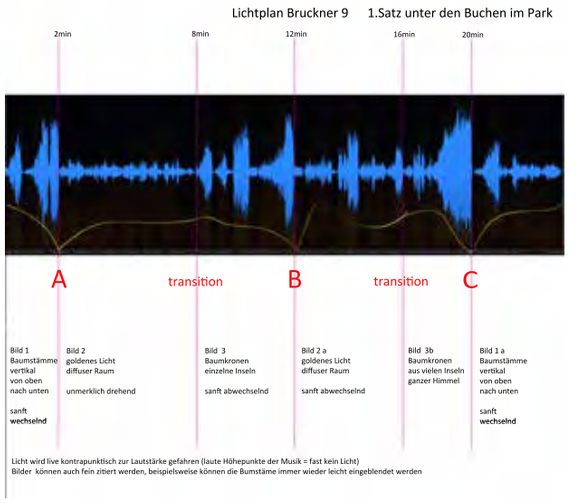
In a transition conceived by Poschner and Hiemetsberger, the Ninth meets Ligeti's Lux Aeterna, making a kind of leap through space and time — audible in a gathering mechanical thunderstorm of echo rolls and flashes of the afterglow of the end of the 19th century, the time of industrial machines, to the 1960s, the dawn of the computer age and the time of the first space expeditions — to assure us once again of the timelessness of musical visionary power.

A prelude and an intermezzo take us to choral pieces by Giacinto Scelsi and further into the sonic environments dedicated to different female pioneers of Sound Art curated by Elisabeth Schimana.

Sonitus Aeterna — the Bruckner 9 Project
Orchestra: Bruckner Orchestra Linz,
Principal conductor: Markus Poschner
Company of Music conducted by Johannes Hiemetsberger
Prelude: Elisabeth Schimana
Music from the IMA Archive selected by Elisabeth Schimana. Works for mechanical sound machines by Andrea Sodomka, Pia Palme and Gina Mattiello as well as tape pieces from the late 60s by Beatrice Ferreyra.
Sound admiral: Andres Bosshard
Videorecording: Julian P. Schmiederer, Gregor Franz, Thomas Guggenberger, Leo Breid, Armin Seidl
Sound and light: Joschi Viteka
Production: Hannes Franks, Alexandra Röck
RESCUE — Post-industrial Dynamics
Rupert Huber, Zahra Mani, Balázs Pándi, Mia Zabelka
Further musical contributions: Rubin Khodeli, Ali Nikrang and Rupert Huber



Sketch Big Concert Night, (c) Andres Bosshard



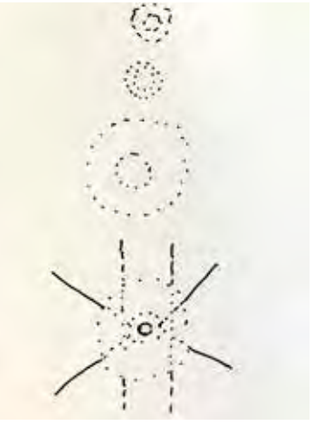
Sketch Big Concert Night, (c) Andres Bosshard

Andres Bosshard (CH)

LXk:m:BIX

Choreophonic Reflections of a Glass Quadrant.
A Sound Mobile in the Courtyard of the JKU Library.

The architecturally constructed echo reflection space of the library's inner courtyard becomes an acoustically transformed dreamspace for flying sound flags in a glass quadrant. Shadowy, recognizable reverberations from Bruckner's 9th and Lux Aeterna are reanimated by a virtual sound mobile into a fata morgana of timespace.



© Andres Bosshard

Rubin Kodheli

Juilliard-trained composer Rubin Kodheli is a celebrated, genre-transcending creative rebel. Rubin crafts rapturous sonic collages which stir the soul and senses. His compositions teem with contemplative invitation and nuance, providing the opportunity to listen repeatedly, each time ripe with the possibility of hearing something that previously went unnoticed.
The inspirational tapestry of his work is intentionally woven from blended threads of rock, jazz and classical influences, a stylistic trademark that has afforded Kodheli a career rich in its diversity of output. From his compositions appearing in feature films such as Precious (2009), to his original symphonic rock compositions, to his collaborations as a performer with genre defining artists — including Laurie Anderson, Philip Glass, Henry Threadgill, Christian McBride, Dennis Russell Davies, Meredith Monk, Joan Jett, Tom Harrell, and Snoop Dogg — Kodheli creates an intimate, masterful reimagining of the expressive capacity of his instrument.

© Mario Egger

Rupert Huber (AT), Zahra Mani (AT/PK/UK), Balázs Pándi (HU), Mia Zabelka (AT) Gavino Canu (IT)

RESCUE — post-industrial dynamics

RESCUE — regeneration of disused industrial sites through creativity in Europe is a cooperation project co-financed by the EU with partners from Italy, Slovenia, Germany and Austria. *RESCUE — post-industrial dynamics* by Rupert Huber, Zahra Mani, Balázs Pándi and Mia Zabelka is a premiere in the context of Rescue at Ars Electronica. The live performance is a musical expression of possible future perspectives for a post-industrial world. These future visions are ambivalent, hopeful and gloomy at the same time. New post-pandemic concepts of work, labour and survival clash with dystopian imaginings, spatial fragmentations, forced distancing. *RESCUE* gives voice to the unspeakable in the first collaborative sonic exchange between Huber, Mani, Pándi and Zabelka. Visuals by Italian artist Gavino Canu enhance the live performance. The piece will be broadcast on OE1 Radiokunst-Kunstradio on September 12, 2021, at 23:03 CET. In the ensuing days, Zahra Mani will create a sound installation out of the multi-channel recording for the Vaccari Factory in Santo Stefano di Magra, Liguria in the context of *RESCUE*.

RESCUE is co-funded by the Creative Europe program of the European Union. In collaboration with Klanghaus Untergreith. With the kind support of the BMKOES and Land Steiermark Kultur. In collaboration with ORF OE1 Radiokunst-Kunstradio.

CONCERTS & PERFORMANCES

Maki Namekawa — piano
Cori O'Lan — real time visualizations

Pianographique 2021

Piano music x digital images

Maki Namekawa has created a new program for this year's Ars Electronica, bringing music by György Ligeti, Chick Corea and, for the first time, Polish composer Hania Rani to the visual arena of the Deep Space venue.
She will be visually accompanied by Cori O'Lan, who will once again connect the Deep Space's high-end graphics cards with his real time visualization system to provide an immersive visual interpretation of Maki Namekawa's performance.
Chronologically, the program starts in the early 1950's with György Ligeti's ingenious Musica Ricercata of which Maki Namekawa has included pieces 1, 3, 4 ,5, 8 and 10 in this program. In a very literal sense, this music represents what the composer Ligeti, who was always inspired by the natural sciences, sought and found again and again in his ongoing artistic explorations.
Chick Corea's Children Songs are from the 1970s and 80s, a collection of musical ideas that, rhythmically, harmonically and atmospherically, as Corea himself put it, aim to convey "simplicity as beauty." ("To convey simplicity as beauty, as represented in the Spirit of a child") This is a perfect challenge for Maki Namekawa, who has long since earned an international reputation for her outstanding Philip Glass interpretations. With her interpretation of the Children Songs, she once again brings her fascinating "virtuosity of supposed simplicity" to bear and imbues the pieces with a new musical aura. She performs the songs 4, 6, 11, 14, 16, 18, 20.
The same can be said about her interpretation of the pieces by Hania Rani. The Polish composer is one of the stars of a musical direction that is often called neo-classical. Yet with her very authentic and open style as a composer, but also as a pianist and singer, she has often proven that she cannot be pigeonholed. The four pieces Maki Namekawa has included in her new program are Eden, Hawaii Oslo, Glass and Luca, all released in 2019.

Sound Park — auditory scenes

In a world dominated by visual stimuli, auditive perception can be a haven of tranquility. The sound park — situated in the Kepler Garden at the Johannes Kepler University Linz — offers a possibility to relax and engage in an active listening process. Visitors are invited to close their eyes and give rise to a sonic awareness of a space unknown to them. The location offers the possibility to exit the physical festival ground and take a rest in imagination through hearing.
Every day is heralded with the ambience of different soundscapes. Visitors shall wallow within the auspicious sounds of rainforests, glaciers and deserts, crashing waves on steep rocks or winds brushing through endless tundras before they reopen their eyes to find themselves perceiving their surroundings as if equipped with a new set of ears. Throughout the day the predominant topic is creating spaces and new ways of learning through hearing. On Saturday the Sound Park will be dedicated to a selection of sound works coming from the winners of the Prix Ars Electronica Digital Musics category. Visitors can immerse themselves in topoi created by a plethora of field-recording artists spatialized through a sixteen channel soundsystem.

© Ars Electronica

Frau Sammer

A very old lady with dementia, Ms. Sammer was born in Graz an der Mur in 2016. It's about everyday neighborhood conflicts, hipster cults and sometimes even love. With synth sounds, electric bass, two voices, rap and assi-sacral hymns — you could call the genre if necessary, circa Post-Spam-Pop — the four Sammers show themselves shrill and quiet, virtuosic and virtual, amateurish and absolutely professional.

Ladies and suckers!

© Stella Hoellerer

Werner Jauk (AT)

What is Music to... Emotional Closeness despite Physical Distance

After technical innovations and artistic avant-gardes, corona has given a boost to the digitally networked world. Information systems are booming and zooming into the distance, but the social, as an emotional “place” for physical action, is missing.
The epistemological media art that expands knowledge through bodily experience reflects on hearing and thus, on the avant-gardes of net-art in musical interaction. It considers the step into an auditory culture as a way of coping with life in post-digital cultures.

Implications of the separate as “ordered” life: working time and living time

The distinction of life into spheres, especially in separate places and times for work and family, is generally seen as cultivation of the sense of quality of life. What started in the feudal agrarian economy is dominantly an artefact of industrialisation. Generally, a differentiation into mechanistically rational and hedonically emotional domains occurred, which were then carried forward as gender-specific “role-plays” and power-distributing forms of life that defined the public and private spheres. Determined by the steering mechanisms of the new world of work in an information society; neoliberal, economically determined social systems place formal life before informal life, thus, norms from the sphere of work outshine life. Their diversity in postmodern cultures gives the individual the appearance of individuality and informalisation, broadly.
Business style determines neoliberal everyday life. The extensions of the body, clothing and language as medial forms of interaction, are taken from the field of work. The reduction of communication to information transfer is generally accepted, non-mechanistic as non-rational hedonic behaviour is only allowed if it produces more efficiency. These forms of digital cultures are mechanistically rational, hedonism only serves as a tool for success.
Derived from embodiments of mechanical interaction of the body with the environment, rules of living together are based on mechanistic ways of thinking. Social rules follow the modern idea of feasibility, including power. What appears as order is order and reduces informal self-structuring and thus, individual responsibility.
In the process, the needs of the body are excluded as hedonic regulation of life and relegated to privacy. Technical distance from the interaction of the body with the environment reinforces this; on the other hand, it makes the lack tangible and conscious: informal, and at the same time ethical, behaviour as determined by arousal, anchored as a natural basis in the arousal-based drive to prosocial behaviour as a survival force, are pushed back.
At the same time, the neoliberal world is a hedonic event culture, if through achievement or “aggredere”, which is linked to social aggression. Overcoming the human measure does not only lead to a hedonic experience (Pfaller2011), it leads to feasibility and power, with social power being better distributed in social media. The hedonism that results from overcoming nature overcomes hedonism as life with nature: a life regulated by the pursuit of the homeostasis of excitement between tension and resolution.
Beyond this normative arousal, cultural regulation is generally the suppression of emotion in favour of reason, whereas arousal naturally regulates all interaction.
It was popular cultures in the 20th century, as youth cultures, that brought the nature of the body into a body culture. This culture is a sonic

performative: it is dominated by the sound of popular music, and amplified being moved by arousal, which in turn amplified social/political movements.
It is theories of post-digital cultures today that necessarily bring the hedonic body into virtual worlds, because the mediatisation of the mechanical body made the body useless (Baudrillard, 1981), reduced space and time to the all-at-onceness of the auditory space (McLuhan, 1995), brought a transgression of the mechanistic paradigm (Jauk, 2003) and a cultural push towards the hedonic.
However, it took the life-threatening corona pandemic to generally recognise the value of excitement-based hedonic behaviour as a natural social regulator of life, in the experience of its absence.
Part of the means of production was the workplace. In the information society, this is ubiquitously no longer separate from life. This in turn, requires that it become a form of life, that networked information systems not only transmit information, but also enable the physical processing, the "hand"-ling of the negotiation of information in a collective action dynamic.
The home office of the future not only reintegrates work into life, but also returns working time to life, by limiting it to working out what life needs. Because working time is not the time that people need to sustain their lives. In capitalist systems, it includes surplus labour, which brings capital and leisure to the owner of the means of production. "In capitalist society, free time is produced for a class by transforming all the life-time of the masses into labour-time" (Marx, 1962, p. 552).
Though forced social distancing and "mere" physical distancing are necessary to fight corona, both are related in a physical world. On the basis of this knowledge of the body, mediatised life, as distanced from corporeality, needs emotionality as a regulative. Above all, the remote sense of hearing, and its formalisation through music, achieve this: the transmission of being e-moved through movement, since sound is nothing other than an artefact of movement that touches and moves people through the movement of air.

The nature of physical and emotional proximity and ethical/social implications.
Is the law's word the mediatisation of the body's arousal?

Being touched bodily is a natural part of arousal-based body-environment interaction as an exploratory behaviour to ensures survival. It determines not only interactions of the body with the material but also with the social environment, and so is always emotionally charged. It gives "primary meaning" (Wirth, 2007) to action as bodily meaning through arousal, plus some kind of meaning of an "indexical threshold zone" between "vegetative semiosis" and "animal semiosis" (Kull, 2009). Nevertheless, this has an ethical and emotional socialising effect on humans; with aesthetics as its perfect playing field. Hearing is the most arousing sense, even at a distance. An auditory culture brings corporeality into media cultures, and makes them human.
The results of the Milgram experiment in the aftermath of World War II were interpreted as a blind acceptance of authority; today, they can also be attributed to the mediatisation of bodily knowledge through external information. Well understood as information, this is implemented without tangible meaning for the body as its excitation, which regulates its action.
The meaning for the body consists in its being affected by information, that is, by any form of stimulus that arouses it to act. In contrast to the meaning-giving unmediated action of the body on the basis of its experienced arousal, mediatised negotiation is decoupled from this. This bodily meaning is also linked to the "nature of ethics", where mediatised behaviour is more likely to be decoupled from ethical action.
Milgram's subjects gave lethal electric shocks to people according to the instructions of the experiment directors.
However, when they heard the physical meaning of these for the person concerned, their willingness to do so was much lower.

Aggression, in the form of information about negative events, finds more distribution in the social media than information about positive events. Media politics takes advantage of this; populism, as a media presence of aggression, dominates media communication and becomes a general tone. Physical interaction is needed to live ethics as humanity.
Not only technical as mechanically instrumental interaction but also cultural mediatisation as legal regulation of social interaction needs corporeality to overcome its limitations.
Highly mediatised life distances itself from human life as long as it does not make these bodily correctives of interactions to be experienced. The efficiency-oriented industry has recognised this, and brings in human measures in wo-man-machine-interaction. This measure is no longer the measure of all things, where the mechanical body is extended through mechanical media, but of the hedonic body as the measure for the behaviour of all "things"; behaviour that is intentional as excitation-controlled, in its phylogenetically deep ground of perception as behavioural explorative intentional Body-Environment-Interaction / B-E-I (Gibson, 1982).
Formally regulated social life can be considered as mediatised life. Regulations become media for behaviour that are ultimately detached from their own responsibility, their bodily basis of meaning. Such mediatised behaviour runs the risk of just executing norms as laws and of being judged (by those in power) as "correct". Social behaviour is thus dominated by formal structures; informal structures are excluded as disruptive behaviour and considered politically incorrect.
Formal hierarchical structures in the world of work are legitimised by the possession of the means of production, in the information society by knowledge, or by knowledge about the organisation of external knowledge. In the process, it is, above all, the close relationship that is regulated and freed from physicality. Physically un-negotiated, purely legal equal treatment as mediated by physicality, does not lead to humanly neutral behaviour—should there be such a thing—but to inhuman distancing behaviour. As leadership behaviour in the workplace, this is sometimes medially aggressive. In neoliberal cultures, it increasingly dominates public behaviour. The behaviour of closeness is formally excluded and hushed up, it is a matter of separate life, of privacy.
The merging of the two fields of life in the home office, through the fusion of mediatised and real forms of life, could soften these diverging cultures of emotional roles, and tie public life back to corporeality as a lived ethic of emotional co-experience.
Negotiation, as the co-experiencing of "handling"-action apart from information, allows experience to take precedence over reason. In brief, moral ethical behaviour is basally determined by arousal, as is also the case for aesthetic behaviour. Both are primarily determined by arousal as a survival-relevant control of B-E-I according to its "affordance". One is necessary for survival, the other is the pleasurable play with it required to perfect it. Aesthetic behaviour can thus be considered a corrective of the information society towards a communication society: music as a formalisation of hearing, of primarily pre-cognitive perception and of the immediate collectivising movement, is an adequate paradigm for this, apart from the cognitive processing of what is seen formalised in visual art or symbolic mediatisations of bodily behaviour, formalised in language via literary artforms. Music is based on the production of sound through arousal, and the bodily process of the dynamics of tension. It is a solution emerging from the sound and causing the sound to be unmediated in reception. Making music plays with these embodiments; music formalises this natural force in the referring thought mediatised. Polyphony is the "objectivation of the we" (Adorno, 1947), a dynamic form of communication as an excitation-conditioned togetherness of the independent "I". Embodiments from hearing directly form from primarily excitation-conditioned bodily interactions, cognitions arising from this mediate these, and lead people to a respectfully humane togetherness.

It is not only our formal life that is regulated by legal norms; virtual forms of interaction are regulated by predetermined structures, by mechanistic ways of thinking and rational forms that mostly exclude hedonic interaction. Even though they are called social media of communication, they are ultimately information systems. They reduce social interaction to simple comments, their evaluation to simple emotional feelings. Under the social pressure to conform to socially desirable behaviour, these are accepted en masse. Negotiating becomes acting according to predetermined social choices.

Information can be unambiguously distributed through the media; communication is a process of negotiation, of physical action in situations. The meaning of this dynamic for the body is expressed by the body, regardless of the symbolic expression of states.

Information systems are to be enriched with this corporeality so that they can become communication systems. Instead of the specification of formal structures, informal structuring regulates social systems. This is connected with the cultural shift from the dominance of visually dominated thinking to auditory bodily experience. Embodied cognitions from vision are the measuring of the mechanical body in relation to the environment in states that the body has taken up through its movement. This measurement is formalised in geometry. As a generalisation of the body's own movement, the relation of the states as caused by "shocks and thrusts" (Lévy, 2000) is formalised in causal thinking. In this way of thinking, movement loses itself in reaching its goal as goal-directed motivation. Hearing, on the other hand, is the experience of the movement itself, of its internal excitatory power of potential shaping. This means leaving the idea of thinking and social systems rationally regulated in formal structures of states and turning to the dynamics of informal self-regulation by the excitement of bodily interactions; leading to an auditory-emotional culture, to a world that shapes itself close to nature according to the needs of the body.

The stimulation of worlds as auditory cultures

Tension is the intentional force of all body-environment interaction, while hearing is the most excitation-based behaviour that directly moves the body's state of excitement. Music is considered the aesthetic formalisation of hearing.

Physical tension shows itself directly in the sound of voice, the dynamic progression of the sound of the voice, generally in the sound-gesture, directly experienced and immediately emotionally contagious (Hatfield, 1994). Tension, determined by the intensity of what is perceived, cannot inform us about content, but it can inform us about its meaning for the body; it is formalised in music, and has been clothed in a system of thought through the coding of the sound-gesture for notation in Western cultures. What tension is for the body—solution through sounds—is now for thinking, referring to relational thinking (JAUK 2012, 2021).

Original music builds on this just as much as high-cultural music. Functional as dance, work and relaxation music, and popular as music of technically "amplified" acoustic driving effects (Harrer, 1975) are sonic performative musics. What is formalised in music is generally effective in the sonic.

But arousal is not the same as a feeling, it is a dimension of feelings that has an immediate activating effect and that can be experienced independently of this as evaluatively pleasing or not-pleasing. In cultural semiological systems, the corresponding experience is named by means of emotion categories. The experimental comparison of emotional behaviour provocation, according to dimensional and categorical form, shows that precognitive stimulation leads to body-like experience, whereas cognitive symbolically naming information is socially desirable as cultural behaviour (Jalen, Jauk)[1]. This confirms the more bodily stimulation of sound. Hearing is the most highly developed remote sense.

It does not perform information transmission, sound perception is abstractly (Carmiaux, 2011) arousing the body by giving the presence of being within any kind of interaction. The indexical character of sounds, the reference to their cause, only arises through the merging of cognitive information, from seeing, with hearing.

Sound is an artefact of movement that sets us in motion. Its modulation by propagation through the air is perceived as spatial movement around the body in a whole-body way, with the body being immersed within sound. The body is aroused and thus stimulated to move with it, even in micro-motions in social situations while "standing still" (Jensenius, 2017). Although culturally reinforced, this phenomenon has a natural basis. Arousal is primary meaning as a precognitive meaning of movement for the body, which sets it in motion to behave in a way that is relevant to survival. This describes the empirically supported phenomenon of "sound-gesture" (Godoy, 2010), the base of musical meaning and the paradigm of hedonic interaction (Jauk 2021). Furthermore, the resulting movement has an immediate communicative effect through imitation of the movement. The internalisation of this movement leads to emotional contagion (Hatfield, 1994). Sound thus has a direct emotional communicative effect that is collective and collectivising.

Sound thus performs the communication of movement as its pre-cognitive meaning for the body through arousal. Excitation-related movement of the body is stored as embodiment, as body knowledge. It can be triggered by similar stimuli.

Autonomous Sensory Meridian Response (ASMR) uses the amplification of proximity and thus the effect of sound as movement around the body as emotional proximity. At the same time, it couples the cognitive indexical character with vision.

ASMR describes the triggering of embodiments through the sound of touch as bodily perceived touch, as qualities of arousal that go hand in hand with the sound that is heard.

What is precognitively stimulated is cognitively contextually amplified and sold as sensual emotional proximity, goosebumps through hearing touch. Although not confirmed, it is sometimes experimentally found (Cytowic, 2009); the most plausible explanation assumed a remnant of the social grooming of primates (Huron, music psychologist), which however leads to a longer lasting immersive "relaxing" experience, in contrast to the shorter term reactions in the form of attentive behaviour as frisson evoked by sound (Dunbar, evolutionary psychologist) reports Sean T. Collins (2012), based on corresponding interviews. Even so, a close relation might exist to the experimentally affirmed effect of sound by its temporal structure as "acoustic driving effects" (Harrer, 1975). The attack-time and repetition of sound and, by this, its dynamic of intensity—the amplitude and frequency perceived as "sharpness" (Bismarck, 1974)—leads to almost synchronous physical arousal in the case of given "reagibility", the openness to "react", to experience.

In the interrelation of impression and expression, hearing sound is a stimulant of communication, of becoming together, a paradigm of emotional communication.

The task now is to transfer this touch to other sensory modalities, and thus to integrate the body multimodally into a multimedia environment of emotional touch that mutually forms itself in communication with other bodies into common human worlds of experience; that is, across physical distance, through medial physical proximity.

Multimodal stimulation of bodily closeness by the paradigm of sound-gesture

Now, it is necessary to extend this natural body-oriented stimulation of hearing movement and its physical arousal of emotional moods to the body as a "complete agent": sound-gesture serves as a paradigm for shaping other modal sensory impressions in order to produce arousal and, as a result, emotional proximity.

1 first results of a previously unpublished experiment testing e-motion of the sound-gesture by extracting patterns of playing-behaviour of „emotions" on air-guitar out of motion by motion tracking.

In general, embodiments from the different modal perceptions are stimulated.
As the most highly developed “lower” sense, hearing can be directly transferred to the experience of other sensory stimuli, mediated by the air. Hearing is the phylogenetic differentiation of tactile, olfactory and taste perception: it is the extension of corporeality into the “distance” of the environment.
Seeing is different, in that it is accompanied by physical movement of the body, the creation of visual fields in the direction of movement, and the cognitive designation of what is seen. Seeing overrides the lower senses in multimodal perception and gives secondary meaning to the primary meaning for the body: from indexical recognition, to iconic and finally symbolic designation, which is part of a dynamic process of semiosis as cultural process, as biosemiotics assumes.
It is a matter of doing cultural justice to seeing its originality in intentionality, in the sense of its pre-enlightenment meaning (Mauthner, 1923). With regard to its emotional qualities, the basis of all perceptions is intentionality as arousal due to the “affordance” of a stimulus (Gibson, 1982)—primarily through its intensity—in the environment. Hearing is the precognitive perception of this intentionality, of the arousal value of moving stimuli. Seeing has this kind of excitatory effect through movement in the space-time structure before the object of the movement is cognitively recognised and semiologically named.
It is now necessary to trigger such embodiments of explorative behaviour through corresponding movement in connection with their sound, in order to stimulate emotional proximity. The intensity of such stimulation will naturally provoke experiences of closeness, which emerges, with activation, as a dimension of feelings. The emotional evaluative dimension is related to the increasing activation in an inverted u-shaped relationship (Berlyne, 1974). The naming categorical quality is negatively determining given by the activity sensations; namely, which quality high or low arousal cannot be (Behne, 1982). Emotional closeness will not be aroused metaphorically with “empty words”, but abruptly, with medium intensity and—at the same time—high clarity of the stimulus: an embodiment from close perceptions. The breath of the voice pleasantly arouses the body.
Unlike word- and icon-based social media, TikTok was originally the physical video karaoke with the technical possibilities of the video studio as an app on the mobile phone (a form of merging art and life in video art today), for the individual re-creation of pop songs as the showing of oneself in the experience of its sound. It is a participatory performance of privacy made public, whereby the sonic is performatively transferred into visual form. Even if these collective and collectivising social mood-managing techniques are located in the popular realm of the experiential, as socially lived private culture after the net-arts and their general availability, the merging of public and private post-corona can build on this and bring emotional behaviour as human behaviour into business culture. Despite fashions, it is precisely the sound-dominated youth as popular culture that has brought essential thrusts to the informalisation of body cultures. Respect for the ethical, social and aesthetic self-regulation of life holds the chance that life post-corona is lived close to nature and the demand of art and life is redeemed in the nature of excitement-based interaction.
Finally, hearing is the phylogenetic optimisation of the effect of intentionality of body-environment interaction. The transfer of this component to any interaction, especially mediatised disembodied interaction, makes it human and, in this sense, “close”.
This enrichment of symbolic information, with its primary meaning for the body through hearing, transcends the age of information and leads digital culture into a post-digital culture, as a human culture of communication — as an auditory culture.

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EUROPEAN PLATFORM FOR DIGITAL HUMANISM

European Platform for Digital Humanism

Shaping the Digital Future

While it is true that digital technologies have merely accelerated processes already unfolding across the industrialized world, they have changed our world and our lives radically over the last four decades. Unease and uncertainty are also on the rise, leading the global tech industry into a crisis as we question the impact of new technologies (fake news, human downgrading, cyber-crime, trade in personal data, etc.) on the fabric of our daily lives and society. The worldwide backlash ("techlash") against the tech industry has now become a serious image problem for global internet platforms such as Facebook, Google and Co. Authoritarian-ruled countries use surveillance systems such as AI-based face recognition more and more openly to suppress human rights and maintain social control — a trend that has been exacerbated in some countries by the opportunities and requirements of a global pandemic.

Therefore, institutions and initiatives around the globe, including Ars Electronica, are calling for a Digital Humanism that acknowledges these omnipresent transformational processes and reflects on new pathways into a digital society. By initiating the European Platform for Digital Humanism, Ars Electronica and its partners take part in this urgent conversation focused on re-evaluating our relationship to the technologies we've created and how we use them — a conversation that is by no means confined to Europe but needs to be tackled on a global level. The goal is to leave the idea of a European humanism behind and to foster worldwide collaboration hosted by the European Platform for Digital Humanism. It is an invitation to organizations, artists and audiences all over the world to participate in the discussion and shape their own future. This calls for an approach to digital transformation that empowers and includes every citizen facing these global challenges by reflecting diverse perspectives. Could there be a digital society that steers clear of the "data capitalism" of IT monopolists and the "data totalitarianism" of authoritarian regimes? Could digital applications be more oriented towards human needs and based on cultural values that respect the autonomy of users over their data? Could software solutions build on the values of cultural diversity instead of infrastructural uniformity? Could digital tools be increasingly of benefit in cross-culture collaboration, international cultural relations, and mutual understanding?

With questions that are tackling societal rather than technological developments, Ars Electronica's European Platform for Digital Humanism focuses not on technologies themselves but on their impacts.

© Jürgen Grünwald

Doing Nothing with AI / Emanuel Gollob (AT)

© Tom Mesic

Machine in Flux — Wood / Sunjoo Lee (KR), Ko de Beer (NL)

Taking Action

The European Platform for Digital Humanism, initiated in 2019 and built on strong European cooperations and initiatives, encompasses various European projects and a network of partners from the fields of culture, research, arts and industries with a common focus on the intersection of technology and society, the urgency of addressing the rapidly progressing digital transformation and a shared drive to take responsibility. Renowned institutions including Bozar—Centre for Fine Arts (BE), Waag (NL), GLUON (BE), Onassis Stegi (GR), LABoral Centro de Arte y Creacion (ES), Kersnikova Institute / Kapelica Gallery (SI), Science Gallery Dublin / Trinity College Dublin (IE), MEET (IT), Birmingham City University (UK), University of Arts London: Central Saint Martins (UK), Aalto University (FI), Börsenverein des Deutschen Buchhandels—Frankfurter Buchmesse (DE), Quo Artis (ES), IMZ International Music + Media Centre (AT) and Leiden University (NL) collaborate on projects that identify and create new strategies for a digital society and increased digital literacy.

Besides providing a platform for ethics, fairness and trust in digital technologies, Ars Electronica aims to contribute to ongoing research and development and interdisciplinary experimentation with these technologies. Global events like the current pandemic demonstrate the potential of AI technologies and machine learning, for example in organizing the deliveries of the vaccines. However, this also calls for increased active experimentation, testing and interdisciplinary collaboration. What unites all these projects is the aim to connect arts, technology and sciences to profit and question each other's approaches. The exchange can take place in many different formats.

Topographie Digitale / DataPaulette (FR), © Tom Mesic

European Platform for Digital Humanism

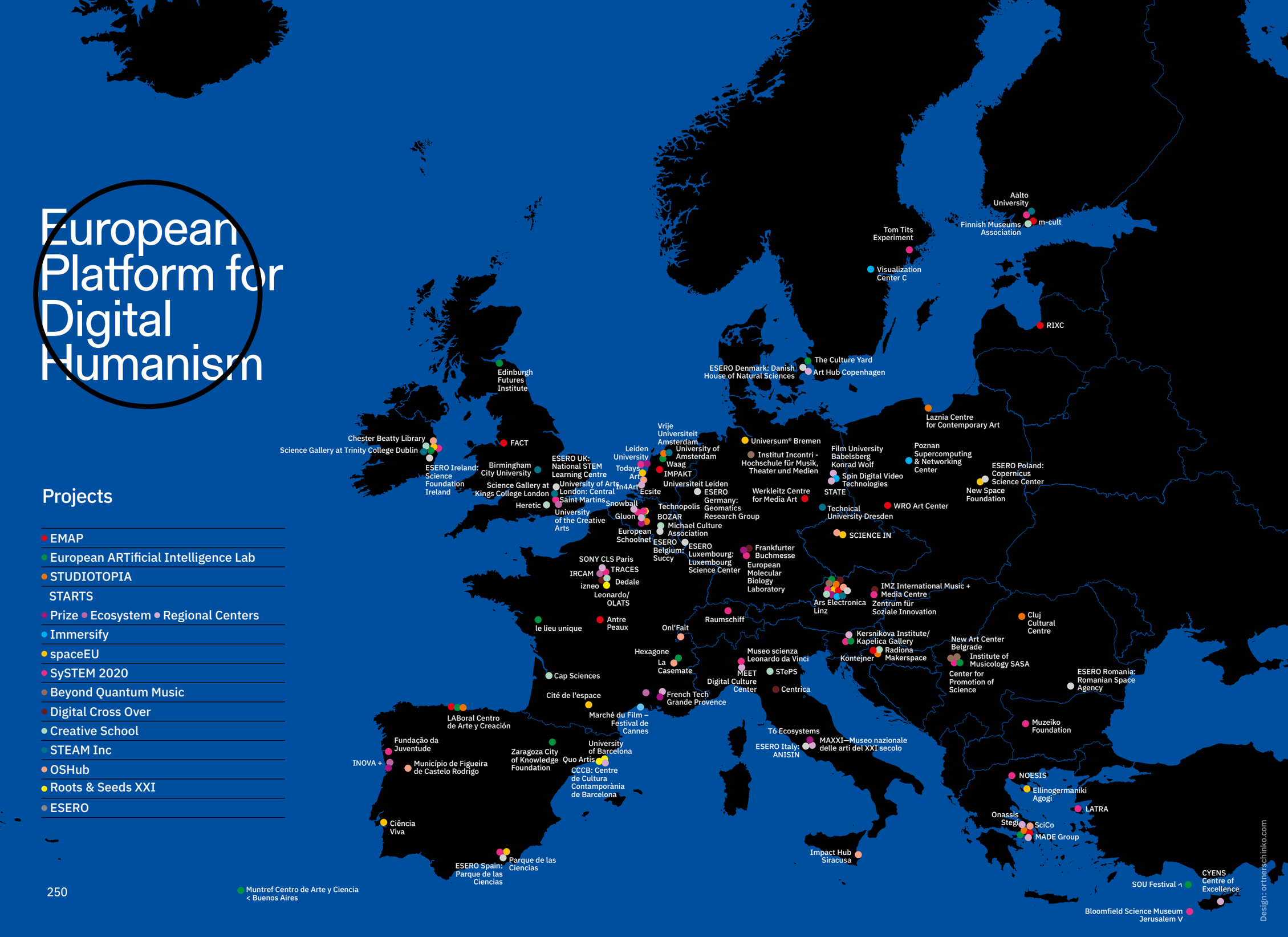
Projects

- EMAP
- European ARTificial Intelligence Lab
- STUDIOTOPIA

STARTS

- Prize
- Ecosystem
- Regional Centers

- Immersify
- spaceEU
- SySTEM 2020
- Beyond Quantum Music
- Digital Cross Over
- Creative School
- STEAM Inc
- OSHub
- Roots & Seeds XXI
- ESERO



European ARTificial Intelligence Lab

In addition to scientific, technological and economic aspects, the European ARTificial Intelligence Lab focuses strongly on legal, cultural, educational and ethical dimensions of Artificial Intelligence. This allows a holistic model that considers human values and elementary questions of what AI should or should not do, as well as how AI systems are developed, deployed, used and monitored, and by whom. From the perspective of 13 major cultural operators in Europe and led by Ars Electronica, the European ARTificial Intelligence Lab centers visions, expectations and fears that we associate with the conception of a future, all-encompassing artificial intelligence. While industries are pumping massive amounts of money into cutting-edge technologies to develop intelligent systems, we are connecting artists with research institutions and scientists to fill a gap in dealing with the social components and political questions arising from these enormous technological advances.

An extensive program of activities addressing different target groups at various experience levels was carried out and will be continued until the end of the project. In total, the project realizes 26 residencies, 64 educational programs for audiences, 9 theatre/interactive performances, 115 training and capacity building activities for artists and creative professionals as well as 22 exhibitions.

By addressing AI and its societal impacts through exhibitions and conferences, which target art and general audiences, while also fostering the knowledge of AI with educational and training activities, the AI LAB contributes to a critical and reflective society.

Partners: Ars Electronica (AT), Center for Promotion of Science (RS), Zaragoza City of Knowledge Foundation (ES), Laboral Centro de Arte y Creación Industrial (ES), Kersnikova Institute/Kapelica Gallery (SI), Science Gallery Dublin (IE), Onassis Stegi (GR), The Culture Yard (DK), GLUON (BE), Hexagone Scène Nationale Arts Sciences (FR), SOU Festival (GE), le lieu unique (FR), Waag (NL)

Participating gardens: Garden Athens, Garden Belgrade, Garden Dublin, Garden Slovenia, Garden Zaragoza

Funding Scheme: Creative Europe

Duration: 01.11.2018 — 31.12.2021

Website: https://ars.electronica.art/ailab/

The European ARTificial Intelligence Lab is co-funded by Creative Europe Programme of the European Union and the Austrian Federal Ministry for Arts, Culture, Civil Service and Sport.

© vog.photo

Simulative Emotional Expression Robot / Takayuki Todo (JP)

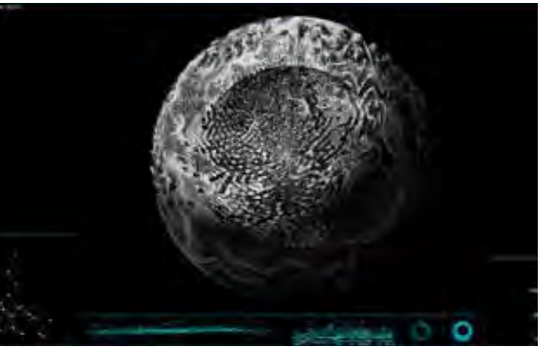
© Jürgen Grünwald

SHE BON / Sarah Petkus (US)

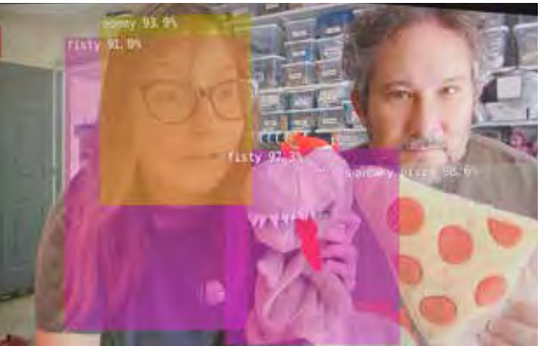
© Jürgen Grünwald

Expert Workshop on AIxCulture

AI isnt' Artificial but Human / Caroline Sinders (US) & Anna Ridler (UK)



CODEX VIRTUALIS / Interspecifics (INT), © Interspecifics



moonRabbit / Sarah Petkus & Mark Koch (US)

AI Lab Residencies

As part of this year's Ars Electronica Festival exhibition theme, "AI Lab," all four AI Lab lighthouse residency projects will be presented, three of which were developed over the course of 2020. The lighthouse residencies connected artists with cutting edge scientific research partner institutions that supported them in the development of their works. The different areas of expertise and research allowed the artists to explore A.I. from different angles. The first lighthouse residency at Ars Electronica in collaboration with Muntref in Buenos Aires was awarded to the artist duo slow immediate (CN/US), who are presenting their residency outcome *The wandering mind*. The winners of the collaborative residency with the Edinburgh Futures Institute were Anna Ridler (UK) and Caroline Sinders (US) with their project *AI isn't Artificial but Human*, tackling the call topic of "Entanglements — fair, moral and transparent". The third residency call led and organized by Ars Electronica in collaboration with Leiden Observatory ran under the topic "Astronomy x AI". The winners Sarah Petkus (US) and Mark J. Koch (US) are diving into the intersection of these two areas with their work *Moon Rabbit*, which will be developed during a residency at the Leiden Observatory and the Ars Electronica Futurelab in Linz.
The last and final residency is jointly organized by the SETI Institute in Mountain View, CA and Ars Electronica. The winners Interspecifics (INT), an independent artistic research studio founded in Mexico City, are exploring the SETI Institute's main research focus with their project *Codex Virtualis* through the lens of AI: the search for extraterrestrial life.

AI Lab Journeys

Last year's Ars Electronica Festival introduced a new format called Ars Electronica Journeys. Artists, researchers and creative producers were invited to prepare video journeys, providing interactive guided tours without the audience's physical presence. Beyond that, the journey guides invited the viewers into their "world" by not just offering exclusive insight into their fields of expertise and artistic practices, but also sharing surroundings relevant to their work — be it their labs, inspiring public places, or their favorite walking routes to mull over ideas. The European Artificial Intelligence Lab journeys put a spotlight on cutting-edge topics and developments in the realm of artificial intelligence. Some of the highlights of last year's journeys were "The bad weeds trip" by Rocio Berenguer (ES), "Deep Steward" by Theun Karelse (NL) and Ian Ingram (US) and "Artificial Intelligence and its false lies" by Mika Satomi (JP/AT). The AI Lab journeys are going into their second edition this year, with 10 new artists weaving stories around their practice and exploration of AI technologies.

The Bad Weeds Trips / Rocío Berenguer (ES/FR), © Rocío Berenguer

DeepSteward, © Theun Karelse Ian Ingram

From Glass to Glass to Glass, © Nye Thompson

EMAP

EMAP (European Media Arts Platform) annually awards residency grants to outstanding European media artists and supports research, production, presentation and distribution of media art in Europe and beyond. EMAP's program history goes back to 1995 and is the largest international platform of artistic exchange and residency projects for media artists in Europe. The basic purpose of the program is to enable European artists to collaborate on projects, creating closer bonds between European media organizations. EMAP offers an opportunity to work within these bounds, as defined by the individual artists, which enables the latter to develop their own projects within a new context, and thereby give something back, in turn, to their host organization. This process of encouraging artists' projects and building stronger links between media organizations is enhanced by the rapid development of network technologies and reflects the moves towards integration taking place throughout Europe.
The European Media Art Platform is a consortium of 11 leading European media art organizations specialized in Digital and Media Art, Bio Art and Robotic Art. The residencies are based on European intercultural knowledge exchange between the selected artists, the host organizations and various experts who join to consult, support, or train the artists. The last residency call within EMAP from 2019 covered two residency periods (2020 and 2021) with a total of 22 residency opportunities. At the Ars Electronica Festival 2021, Moritz Simon Geist (DE) will present his residency project "VIBRATIONS" and Kasia Molga (UK/PL) will present her project "How to Make an Ocean".

© vog.photo

Speculative Artificial Intelligence / Birk Schmithüsen (DE)

© Jürgen Grünwald

Online Culture Wars / DISNOVATION.ORG (FR/PL)

Partners: Ars Electronica (AT), Antre Peaux (FR), FACT — Foundation for Art and Creative Technology (UK), IMPAKT (NL), Kontejner (HR), LABoral Centro de Arte y Creación Industrial (ES), m-cult (FI) , Onassis Stegi (GR), RIXC (LV), WRO Art Center (PL), Werkleitz Centre for Media Art (DE)

Participating gardens: Garden Athens, Garden Utrecht, Garden Halle

Funding scheme: Creative Europe

Duration 01.01.2017 — 31.12.2021

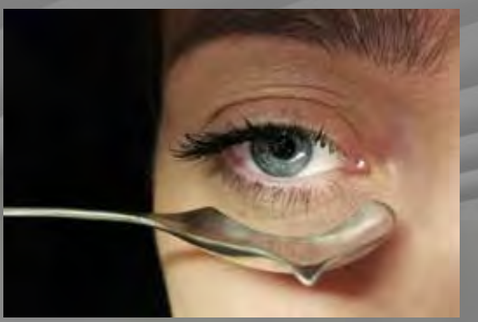
Website: http://www.emare.eu/

EMAP/EMARE is co-funded by the Creative Europe Programme of the European Union.

EMAP Residencies

VIBRATIONS, Moritz Simon Geist (DE)
How to make an Ocean, Kasia Molga (UK/PL)

Over the past year, Ars Electronica hosted two residencies in the framework of EMAP. Moritz Simon Geist was inspired by the "Vibraphone," a classic jazz instrument, to create the robotic instrument "Vibrations," which plays soothing, minimalist music in a futuristic way. The outcome of his EMAP residency is a set of compositions with a generative composition algorithm which the audience can experience at concerts and in an installation. Kasia Molga's EMAP residency took her on a very different journey: her work "How to make an Ocean" deals with the topic of grief after a devastating loss. As part of this art piece, Kasia Molga developed Moirologist Bot — an algorithm, trained on tens of thousands environmental news headlines, which can "assess a need to cry'" and, in an intimate setting, subject a viewer to one of 9 videos made by the artist in the hope of inducing some tears. Both works are on view in this year's theme exhibition at the Ars Electronica Festival.



© GOSIA SIWIEC

How to make an Ocean by Kasia Molga — Concept, Artwork, Art Direction: KASIA MOLGA, Music: ROBIN RIMBAUD, Tech Support: ERIK OVERMEIRE, Product Design: GOSIA SIWIEC, Video: IVAN MAREVICH Additional Support: DAVOR DELIJA

© Michel Klehm

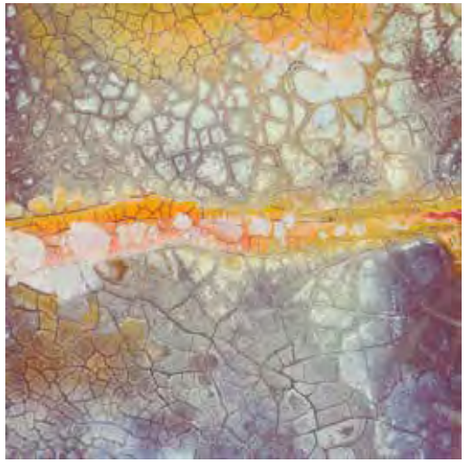
VIBRATIONS by Moritz Simon Geist is funded by: EON Visit Stipend, Gwaertler Arts Fund, Creative Europe in the Framework of European Media Artists Platform (EMAP), Ars Electronica, Amt für Kultur und Denkmalschutz der Stadt Dresden, Neutrik Components.

STUDIOTOPIA

International ambitions to stem the ecological crises we face are falling far short, with scientists arguing that many of the United Nations Sustainable Development Goals are on track for failure “because most SDGs have not adequately incorporated their interdependencies with other socio-economic factors.” It is in this setting that the artists and scientists participating in the STUDIOTOPIA Art & Science residency program have started their collaborations, in the hope that by working together and sharing their expertise they can help unravel these interdependencies, and further contribute to a mainstream understanding of the urgency of the crises that are intertwined with every aspect of our existence.

STUDIOTOPIA seeks to subvert a pervasive anthropocentric understanding of the world that disconnects the cultural from the natural. It is with such dichotomies that we unconsciously, and sadly sometimes consciously, absolve ourselves from the implications of our actions on the world we live in. STUDIOTOPIA explores how a sustainable existence necessitates that we recognize and understand that we are part of a vast interconnecting system.

In the 13 residencies within STUDIOTOPIA, teams of artists and scientists are examining the oceans and the Arctic, time and space, AI and animals and beyond. Ars Electronica implements two of these residencies. In the first residency, artist Kat Austen hosts scientists Indre Žliobaitė and Laurence Gill, together they are working on the project Palaeoplasticene. In the second residency, artist Maja Smrekar hosts scientist Jonas Jørgensen; they are collaborating on the project !brute force: Iteration of Memory, an aspect of which is included in this year’s exhibition with the work !Cartesian_Shell.



© Curioso Photography

Partners: BOZAR — Centre for Fine Arts (BE), GLUON (BE), Cluj Cultural Centre (RO), Laznia Centre for Contemporary Art (PL), Ars Electronica (AT), Onassis Stegi (GR), Vrije Universiteit Amsterdam (NL), LABoral Centro de Arte y Creación (ES)

Participating gardens: Garden Athens, Garden Amsterdam, Garden Gdańsk

Funding scheme: Creative Europe

Duration: 01.09.2019 — 30.08.2022

Website: https://www.studiotopia.eu/

Studiotopia is co-funded by the Creative Europe Programme of the European Union.

© Kat Austen

Kat Austen (UK/DE), Indre Žliobaitė (FI/LT), Laurence Gill (UK/IE)

Palaeoplasticene

Palaeoplasticene is a project co-developed by the artist Kat Austen and the scientists Indrė Žliobaitė and Laurence Gill as part of their Studiotopia residency. It explores the “plastisphere,” a term coined to denote the contemporary pervasive dispersal of artificial plastics around the globe. Designed to be durable and unreactive, plastic outlasts its surrounding flora and fauna, yet ecosystems are already adapting to this new material with microorganisms evolving to feed on plastic, and plants being shown to take microplastics into tissue. This new materiality raises questions about “Long Time” — timescales so big that they are beyond human experience. The project examines how we encounter timescales beyond our reach through the ramifications of plastics’ release in the environment, and also through geological processes such as weathering, rock formation, the hydrological and carbon cycles. What happens when plastic coincides with these processes?

Roots & Seeds XXI

Roots & Seeds XXI. Biodiversity Crisis and Plant Resistance is an international cooperation project between Ars Electronica (AT), Leonardo-OLATS (FR), University of Barcelona (ES) and Quo Artis (ES) as lead partner, and co-funded by the Creative Europe Programme of the European Union. With this project, we propose that we can get better action and behavioral commitments to sustainability by using Art & Science practices, approaches, techniques and aesthetics to develop passion and emotional connection for sustainable organizing and living, trying to promote habits that take care of our environment and specifically our plants, contributing to our botanical literacy. Roots & Seeds XXI activities (residencies, workshops, forums, talks and exhibitions) will serve the purpose of transnational circulation of cultural professionals, art production and research focused on the biodiversity crisis of the vegetal world. Roots & Seeds XXI aims to reflect on the biodiversity emergency, analyzing from different perspectives the transformation, adaptation and resilience of the plants, while promoting the intersection of Art and Science as the main platform to raise awareness of these issues. The project finished its open call in spring 2021, with Marit Miklepp being awarded the residency grant, and Posthuman Studies Lab and Laura Cinti receiving production awards.

© Ivan Perez

Partners: Quo Artis (ES), Ars Electronica (AT), Leonardo Olats (FR), University of Barcelona (ES)

Participating Gardens: Garden Barcelona

Funding scheme: Creative Europe

Duration: 01.10.2020 — 30.09.2022

Website: https://rootsandseedsxxi.eu/

Roots and Seeds XXI is co-funded by the Creative Europe Programme of the European Union.

Roots & Seeds XXI: Campus Cartographies

The *Campus Cartographies* are an exploration of plant diversity in and around the Kepler Gardens taking place during this year's Ars Electronica Festival in the framework of Roots & Seeds XXI. Together with host Veronika Krenn, the participants dive into one aspect that has a critical impact on our plant life: the soil that is its basis for growth. Over the course of two mornings, the campus of the Johannes Kepler University in Linz becomes the site of these expeditions: a location that brings together students, researchers, university staff and local residents, and where lively park areas as well as university and residential buildings encounter the wood- and farmland at the periphery of the city. The *Campus Cartographies* kick off on their first day with inspiration sessions by artists Masha Ru Studio, who are introducing their project *Museum of Edible Earth*, as well as Andreas Zingerle and Raphael Perret, whose work *Toxische Geschichten* investigates so called hyperaccumulators — plants that can grow on soil with high heavy metal content. These input sessions also include an introduction into the specific make up of plant diversity, biodiversity, and soil conditions in the area of Linz. The second day is dedicated to a walking tour through the campus and surroundings of the university, which will lead into the mapping and creation of cartographies of plant life by the workshop participants.

This event organized in the framework of Roots & Seeds XXI. Biodiversity Crisis and Plant Resistance is co-funded by the Creative Europe Programme of the European Union.

Digital Cross Over

Digital Cross Over is a cross sector project within the Creative Europe funding program of the European Commission. The aim of the project is to demonstrate and explore the current challenges facing the creative and cultural industries. Who pays for the content created by cultural and creative professionals? How do I reach my target group in the digital age and how can I learn from players in other industries who are or have been facing similar challenges? On this page, as well as at digital and on-site events, the project partners will present best practices and inspirations and exchange ideas with representatives and experts on how to successfully tackle the topics and questions that matter today.
These questions are even more important now, due to the situation created by Covid-19, which obliges players in the cultural and creative industries, public and private, to rethink their activities with different business models.

Partners: IMZ International Music + Media Centre (AT), Ars Electronica (AT), Börsenverein des Deutschen Buchhandels — Frankfurter Buchmesse (DE), Centrica (IT), izneo (FR)

Funding scheme: Creative Europe

Duration: 01.01.2020 — 30.06.2021

Website: https://www.buchmesse.de/en/highlights/theartsplus/digital-cross-over

Digital Cross Over is co-funded by the Creative Europe Programme of the European Union.

Final event: Promoting cross sector innovation across Europe

On June 15 2021, the final presentation of the Digital Cross Over project took place in an online format hosted by the IMZ International Music + Media Centre in cooperation with the Digital Cross Over consortium partners Ars Electronica, Börsenvereinsgruppe, Centrica and Izneo.
The event featured the results of the Digital Cross Over project including showcases of best practices in cross-sectoral collaboration, as well as discussions with key stakeholders regarding the needs of the creative industries to build bridges between sectors. Policymakers, key stakeholders of the creative and cultural industries, funders and entrepreneurs across different sectors met to discuss cross-sectoral development, collaboration, innovation and its opportunities and challenges. The panels featured a diverse set of participants including Martin Dawson, Deputy Head of Unit at European Commission DG CNECT, Mar Santamaria-Varas of 300.00 Km/s, Simone Dudt of the European Music Council and Jari-Pekka Kaleva of the European Games Developer Federation.

Beyond Quantum Music

Beyond Quantum Music is a direct continuation and expansion of the original Quantum Music project, co-funded by Creative Europe, which began in August 2015 and was successfully completed in May 2018. This highly original and innovative project managed to push boundaries and bring together the distant worlds of music and quantum physics.
The project leader, Institute of Musicology of the Serbian Academy of Sciences and Arts has formed a new consortium of partners and associate partners from Austria, The Netherlands, Serbia and Germany, with the purpose of broadening and developing production, educational and artistic aspects of the pilot project (not only with respect to music, but also to visual and digital arts). The primary goal of the new consortium is audience development, predominantly in the four partner countries, but also in the broader European context. The secondary goal is establishing a network of organization and individuals that would continue to perform and promote connections between quantum physics and art, thus securing the long-term sustainability of the project. All partners have previously collaborated on different occasions, and people from TodaysArt and Incontri Institute in Hannover have participated in the first Quantum Music conference in Belgrade. This is a firm foundation for a long-term and successful collaboration.

Partners: Institute of Musicology SASA (RS), New Art Center Belgrade (RS), Ars Electronica (AT), TodaysArt (NL), Institut Incontri, Hochschule für Musik, Theater und Medien (DE)

Funding Scheme: Creative Europe

Duration: 01.10.2019 — 30.06.2022

Website: http://quantummusic.org/

Beyond Quantum Music is co-funded by Creative Europe Programme of the European Union.

SySTEM 2020

Science and technology have transformed our lives dramatically, and they are continuing to evolve and shape our world. Supporting our future citizens to keep up with this pace will not only benefit the citizens themselves, but the whole society. 65% of children beginning school now will be working in jobs that currently do not exist. Therefore, making sure they are prepared and equipped with 21st century skills is crucial. SySTEM 2020, a European project that ran from May 2018 to June 2021, aimed to solve this challenge by tackling scientific literacy and STEAM (Science, Technology, Engineering, Art, Maths) education of children and teenagers across Europe.
Science learning initiatives outside the classroom are crucial in educating and forming Europe's next generation of researchers and innovators.
By gaining insights into these initiatives all around Europe, SySTEM 2020 helped in gaining a better understanding of the types and kinds of programs in operation, learning from each other and collaborating to be able to respond to the challenges ahead.
SySTEM 2020, coordinated by Science Gallery Dublin, approached this by mapping initiatives that encourage learning beyond the classroom across 19 countries. In 8 of these, in-depth studies were carried out to look at how children and teenagers between the ages of 9-20 years react to these types of environments. By including learners from minority, economically disadvantaged and migrant communities, this project looked not only at the organizations, but also the individual learners themselves.

Partners: Science Gallery Dublin / Trinity College Dublin (IE), Ars Electronica (AT), Waag Society (NL), Ecsite / European Network of Science Centres and Museums (BE), Aalto University (FL), Centre for Social Innovation (AT), Kersnikova Institute (SL), Bloomfield Science Museum (IL), LATRA (GE), Museo Nazionale Scienza e Tecnologia Leonardo da Vinci (IT), Centre for Promotion of Science (SB), Parque de las Ciencias (ES), NOESIS (GE), Technopolis (BE), TRACES (FR), Raumschiff (CH), European Molecular Biology Laboratory (EMBL) (DE), Tom Tits Experiment (SE), MUSEIKO (BG), Fundação da Juventude (PT)

Funding scheme: Horizon 2020

Duration: 01.05.2018 — 30.06.2021

Website: https://ars.electronica.art/system2020/, https://system2020.education/

SySTEM 2020 has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement no. 788317.

Tagtool Connect — Ars Library

Tagtool Connect — Ars Library

The STARTS Initiative

Funded by the European Commission, the S+T+ARTS initiative aims to bring artistic perspectives into the innovation process to address present challenges.
The history of art presents us with “epochs in which a certain art form aspires to effects which could only be fully obtained with a changed technical standard.” More than mere observers or critics of the social fabric, artists have often acted as catalysts for innovation, but have rarely been involved in its development.
A hundred years after the Bauhaus movement first combined aesthetics and everyday functions, the President of the European Commission, Ursula Von Der Leyen, vowed to set up a new European Bauhaus — an aesthetic that makes the challenges of our times visible. Moreover, the European Green Deal and UN’s Sustainable Development Goals require a concerted global effort to find new ways of acquiring knowledge and new actors to contribute to innovation.
The S+T+ARTS initiative responds to this call by setting up frameworks for scientists, technologists, and artists to work together towards more sustainable innovation. It proposes a new understanding of sustainability centered around humanity, a redefinition of the role of technology in society, as well as an acknowledgement that artistic practices can contribute to its development.
The initiative is made up of 6 pillars: the S+T+ARTS Prize, S+T+ARTS Residencies, S+T+ARTS Lighthouses, S+T+ARTS Academies, S+T+ARTS Regional Centers and the Digital Innovation Hubs.

STARTS Prize

The European Commission’s STARTS Prize highlights people and projects that have the potential to make a sustainable positive impact on Europe’s economic, technological, social, and ecological future. The competition seeks innovative projects at the nexus of science, technology, and the arts. The STARTS Prize celebrates 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. Plus, projects singled out for STARTS Prize recognition are featured in exhibitions and events that Ars Electronica, BOZAR, Frankfurter Buchmesse, INOVA+, La French Tech Grande Provence, T6 Ecosystems and Waag stage at partner institutions worldwide. The new continuation of the STARTS Prize is set to run until 2023 with an extended consortium of partners to widen its visibility and activities for the selected projects.

Partners: Ars Electronica (AT), Bozar (BE), Frankfurter Buchmesse (DE), Inova+ (PT), La French Tech Grande Provence (FR), T& Ecosystems (IT), Waag (NL)

Participating gardens: Garden Amsterdam

Funding Scheme: Horizon 2020

Duration: 01.01.2021 — 31.12.2023

Website: www.starts-prize.aec.at

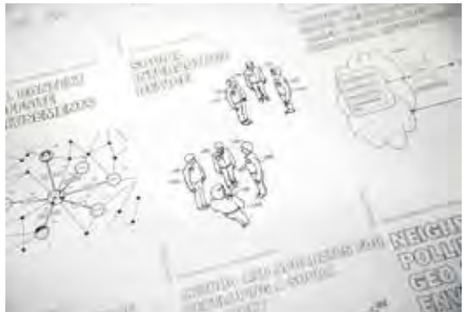
The STARTS Prize has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 956603.

Data Garden, © Grow Your Own Cloud

Design by decay 20, © Tom Mesic

Oceans in Transformation is a project by Territorial Agency commissioned by TBA21–Academy, © by Giulia Bruno 2021

Project Habitate, © Yuning Chan, Tom Hartley, Yishan Qin



Sociality, Paolo Cirio, © Tom Mesic

STARTS Exhibition, Kepler's Garden on the JKU Campus, © vog.photo

Repairing the Present — Regional STARTS Centers

For the next 18 months, 12 new Regional S+T+ARTS Centers from 11 different countries will work together on a common mission: Repairing the Present. To address the unintended consequences of steady technological development resulting in the European continent's current social, economic, and environmental challenges, the partners will propose ways of tapping into the potential of artists to act as catalysts for change and actively contribute to innovation. By creating the context for innovation processes at the nexus of science, technology, and the arts, the project encourages a critique of the present, the exploration beyond its current limitations, and the reimagination of other possible futures. The program is made up of S+T+ARTS Expert Meetings, S+T+ARTS Academies, S+T+ARTS Exhibitions and Prototyping Parks, and S+T+ARTS fellowship, and strives to create a collaborative, interdisciplinary, human-centered framework that draws attention to the role of art in making alternative futures visible, thus contributing to future-proof policymaking.
It explores the possibility of Repairing the Present through resource, urban, ICT & art-powered transformations at a regional level. While the challenges addressed are pan-European or global, the solutions require a focus on specific local problems. Thus, in Repairing the Present the partners think globally, but act locally by defining challenges that need to be urgently addressed within their localities.

Partners: Snowball (BE), MAXXI Museum (IT), Art Hub Copenhagen (DK), STATE (DE), Onassis Stegi (GR), In4Art (NL), MEET (IT), CCCB (ES), Ars Electronica (AT), SONY CSL LAB (FR), Kersnikova (SI), CYENS Centre of Excellence (CY)

Participating Gardens: Garden Slovenia, Garden Athens, Garden Milan

Funding Scheme: European Commission

Duration: 01.06. 2021- 31.12. 2022

Website: www.starts.eu /starts-regional-centres/

Repairing the Present — Regional STARTS Centers has received funding from the European Commission's Directorate-General for Communications Networks, Content and Technology under grant agreement LC01641664.

STARTS Ecosystem

Building and nurturing a successful community or platform requires the development of a strong, sustainable and long-term strategy. Since its start in early 2019, STARTS Ecosystem serves as a backbone to the S+T+ARTS (Science, Technology and Arts) movement in Europe by building on the results of past and ongoing endeavors of the STARTS initiative, such as the STARTS Residences (VERTIGO), WEAR Sustain and the STARTS Prize. STARTS Ecosystem's goal is to build on the communities of value, networks and tools created over the past five years all across the STARTS initiative and to use the knowledge, know-how and experience generated in these successful platforms for developing and animating a dynamic ecosystem of creators, artists and innovators. On the one hand, this has the purpose of engaging and supporting the most recent STARTS Lighthouse pilots Re-FREAM and MindSpaces, which focus respectively on the potential of urban manufacturing as a sustainable future model for fashion design, and the development of new modes of adaptive spatial design. On the other hand, there are broader aims to develop a solid toolkit for interdisciplinary collaboration, to enlarge the vibrant community of the artists and creators and expand the partner network of the STARTS initiative, and to support former participants of STARTS projects in taking their work to the next level through an acceleration and mentoring scheme. In short, STARTS Ecosystem strives towards the development of a new and sustainable ecosystem for the STARTS initiative that fosters collaborations and innovation between creators, artists, researchers and technologists to promote competitive business models, unconventional products and solutions which have the potential to contribute to an enhanced understanding of societal needs.

Partners: INOVA + (PT), Ars Electronica (AT), GLUON (BE), UCA (UK), IRCAM (FR), French Tech Grande Provence (FR)

Participating gardens: Garden UK

Funding Scheme: Horizon 2020

Duration: 01.04.2019 — 30.11.2021

Website: https://www.starts.eu/

'STARTS Ecosystem' has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824950.

Rethinking the Future of Cities at Sonar +D

In September 2020, STARTS Ecosystem hosted a panel organized by Ars Electronica and moderated by curator Manuel Cirauqui at Sonar +D. This discussion brought together creative technologist, HCI expert and technology strategist Mara Balestrini, architect and designer Andrea Ling and Joseph Klatt, responsible for business development and business tools at open-source platform Precious Plastic. Artists, scientists, researchers and technologists are increasingly engaged in urban planning processes, developing and questioning the future design of our cities and bringing in their artistic and creative approaches to problem-solving. In times of a global pandemic, applying these kinds of strategies becomes ever more urgent, as we face wide-reaching questions of how to rethink the design and application of technology in public spaces and urban areas to accommodate new requirements for health and safety of citizens. Based on their own practice, the panelists explored these questions together at Sonar +D.

Re-Thinking the Future of Cities Panel, © Leafhopper

Re-Thinking the Future of Cities Panel, © Leafhopper

Open Science Hub Network

The Open Science Hub Network (OSHub.Network) supports schools and local stakeholders to use research and innovation as a tool for tackling local challenges and contributing to sustainable community development. Local OSHubs work as mediators in each local community, positioning schools as active agents for collaboration between families, universities, research institutes, industry, enterprises, media, local governments, civil society organizations, and wider society, by engaging in real-life projects that meet societal needs.
Across the different OSHub locations, schools and their communities identify local relevant challenges, linked to the Sustainable Development Goals, which are then combined in shared global Open Schooling Missions, enabling real collaboration across communities. In each OSHub location, Open Schooling Missions are transformed into relevant research and innovation projects, led by students and teachers, in collaboration with local stakeholders. By supporting local schools and communities with the tools and network to tackle relevant challenges, OSHub.Network aims to create local impact while simultaneously promoting an active global citizenship attitude, thus contributing to community development, innovation and well-being. The OSHub at Ars Electronica is focused on creating an experimental space where young people can encounter new ideas and design new possibilities. It has been focused on developing and implementing create your world tours, a workshop program that is offered at various schools across Austria, bringing the contents and ideas of the Ars Electronica platform u19 — create your world — into everyday school life.

Partners: Ars Electronica (AT), Science Gallery Dublin / Trinity College Dublin (IE), Impact Hub Siracusa (IT), La Casemate (FR), Onl'Fait (Switzerland), SCIENCE IN (CZ), Município de Figueira de Castelo Rodrigo (PT), SciCo (GR)

Participating gardens: Garden Dublin

Funding Scheme: Horizon 2020

Duration: 01.10.2019 — 30.09.2022

Website: https://oshub.network/

The OSHub project has received funding from the European Union's Horizon 2020 Framework Programme for Research and Innovation under grant agreement No. 824531

The Night Sky: Unveiling What Only the Dark Reveals / Open Science Hub — Portugal, Municipality of Figueira de Castelo Rodrigo + PT

Michaela Schober (AT), L. Vanessa Gruber (AT)

(Kunst-)Stoff für Storytelling

This workshop was developed by Michaela Schober and L. Vanessa Gruber in the framework of OSHub for the create your world TOUR format, and weaves together storytelling techniques with questions that will be crucial to the younger generation's future. Why does social media encourage people to tell their own stories? What is storytelling and how does it work? How can you make your voice heard? And: How is this related to climate protection?
The workshop (Kunst)-Stoff für Storytelling: Dreh deine Geschichte zum Klimaschutz (En: create your own story about climate protection) encourages people to look at their own interests from the perspective of climate protection and to develop stories based on that. Guided by a team of experts, students work on the basics of storytelling against the backdrop of media literacy and turn their stories about climate protection into humorous, exciting, informative or artistic-visual short films. From cartoons and clay animation to TikTok-style dance and music videos, to great cinema: anything goes!

Anna Kaufmann (AT), Sonja Groiss (AT)

Generation Y

The Generation Y create your world TOUR was developed within the framework of OSHub by Sonja Groiss and Anna Kaufmann, and is based on their project "Generation Y," which was recognized in the Prix Ars Electronica U19 category in 2018. In their creative and interactive workshop, the topic of digitalization is presented in an informative and understandable way using the game "Generation Y." This was created by the workshop leaders and will be continuously developed. The game is played with the participants when the workshop takes place on site. In the online version, it provides the basis for working together to gain an overview of technological and social developments and to discuss opportunities and risks. Group work forms a basis for motivating students to continue to deal with the topic after the workshop. After all, we as a society ultimately decide whether future technologies will become established.

Generation Y online workshop

Creative School

The Covid-19 pandemic followed a global economic downturn that already had a damaging impact on youth and adult populations throughout Europe. The rise in unemployment and a lack of opportunities to develop and improve the skills of its citizens has been a major concern for the EU. The EU 2020 Strategy acknowledges that education and training can tackle these challenges, and the cultural sector is proving to be one of the key players in new forms of vocational tourism that could have a major impact on the economy of the European countries.
The Creative School is an Erasmus+ project that aims to use the creative and innovative methods and tools developed within the cultural sector and apply them to developing learning modules for children and schoolteachers.

Changes in society and technology have reshaped the way people access and use cultural information as well as share and collaborate in participatory platforms. In response, the project will also explore the possible mobilization of digital cultural heritage and engagement with models of maker spaces as tools for creating unusual and exciting learning opportunities. Here maker spaces are intended as community-operated workspaces, where people with common interests in technology, science, heritage and art can meet, socialize and collaborate.
Within the Creative School project, Ars Electronica is developing an open educational resource for schoolteachers that features lesson plans introducing concepts and issues around artificial intelligence.

Partners: Ars Electronica (AT), Dedale (FR), Cap Sciences (FR), Michael Culture Association (BE), STePS (IT), Radiona Makerspace (HR), Heretic (UK), Chester Beatty Library (Ireland), Finnish Museums Association (FI)

Participating gardens: Garden Zagreb

Funding Scheme: Erasmus+

Duration: 01.09.2019 — 31.08.2022

Website: www.creative-school.eu

Creative School has been funded with the support of the European Union and the French National Agency for the Erasmus+ Programme.

© Ars Electronica — Robert Bauernhansl

Virtual tour AI & You

STEAM INC

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STEAM / STEAMhouse, Birmingham City University (UK)

STEAM thinking is a process that promotes collaboration between the Arts, Science, Technology, Engineering and Math. Its direct relation, STEM thinking (prioritizing Science, Technology, Engineering and Math only), has typically been understood as a way of delivering the skills required for high-tech, high-value jobs, and so seen as critical to economic prosperity. Increasingly, this position has been expanded to incorporate the benefits that ”artistic” practice can provide. In particular, approaches that favor clear application of creativity and imagination to more typically understood STEM skills such as numeracy and analysis, are considered to be routes to deeper insight and more transformative innovation. Obviously, what constitutes creativity and imagination is a potentially contentious point, but an outlook that focuses on the areas of intersection between the arts and the sciences leads to certain tangible benefits, including: techniques for collaborating across disciplines; the ability to consider varied perspectives; and the identification of points of common ground between seemingly unrelated areas of thought. The resulting competencies are combinatorial in nature and, in a higher educational setting, find expression in courses such as design engineering, digital arts and data visualization.
The STEAM INC project seeks to address this, and the rising importance of STEAM in higher education, by way of three objectives: The first is to identify points of intersection across current European higher education approaches to STEAM and develop a collaborative definition of higher education STEAM.
The second objective is to produce methodologies for implementing STEAM thinking in HE education, policy and engagement. The final objective of the project is to create an evaluation framework for measuring the effectiveness of STEAM processes in HEIs and HE partner organizations.

Partners: Ars Electronica (AT), Science Gallery Dublin / Trinity College Dublin (IE), Birmingham City University (UK), University of Arts London: Central Saint Martins (UK), Aalto University (FI), Technical University Dresden (DE), University of Amsterdam (NL)

Participating gardens: Garden Birmingham, Garden Dublin, Garden Dresden, Garden Helsinki

Funding Scheme: Erasmus+

Duration: 01.10.2019 — 30.01.2023

Website: https://www.steaminnovation.org/

STEAM Inc. has been funded with the support of the European Union and the Erasmus+ Programme.

ARS ELECTRONICA ANIMATION FESTIVAL 2021

Jürgen Hagler (AT)

Ars Electronica ANIMATION FESTIVAL 2021

in collaboration with the University of Applied Sciences Upper Austria, Hagenberg Campus

Based on the computer animation category of the Prix Ars Electronica international competition, animated pictorial worlds have been a cornerstone of the Ars Electronica media art festival and have been discussed and presented in various forms ever since. Since 2005, the Ars Electronica Animation Festival has been bringing together a multifaceted program at the intersections of animation, art and technology, with screenings at cinemas and public spaces, the Computer Animation Prix Forum, and presentations at the Ars Electronica Center's Deep Space 8K. Since 2013, the animation festival has been complemented by Expanded Animation, a symposium series organized in cooperation with the University of Applied Sciences Upper Austria, Hagenberg Campus. Here, experts from art, science and industry discuss current trends and provide insights into their artistic and scientific work. Since 2020, in collaboration with the University for the Creative Arts, Farnham, the symposium has been exploring *Synaesthetic Syntax: Seeing Sound/Hearing Vision*, which studies the interactions between animation and sound from a scientific perspective. Due to the COVID-19 pandemic, the Animation Festival will mainly take place in virtual space, as it already did in 2020. In addition to various online streamings, animation programs can also be seen on site with screenings on the festival grounds and the Ars Electronica Center.

Additionally, the winning projects of the Prix Ars Electronica, the Golden Nica *When the Sea Sends Forth a Forest* (2020, Guang Liu), the two recognitions *AIVA* (2020, Veneta Androva) and *OPERA* (2020, Erick Oh), as well as the two honorary mentions *Dirtscraper* (2020, Peter Burr) and *Vastum* (2020, L.A. Raeven) can be seen in the Cyberarts exhibition at OK im OÖ Kulturquartier. A number of experts will also be at hand in the Expanded Animation symposium, presenting their work in Deep Space 8K at the Ars Electronica Center and in the Studio at the Hagenberg Campus, the hub for the virtual conference. As every year, the basis for the screening program is provided by the many submissions in the Computer Animation category of the Prix Ars Electronica. With 870 submissions, there were slightly fewer in 2021 than in previous years. Here, too, the pandemic showed its effects. Many productions stalled, others were postponed or couldn't be completed on time. All submissions were reviewed in a pre-jury round by Victoria Absmann, Ferenc Hirt and Nana Thurner, with around 250 works prepared for the 3-day jury meeting. Once again, the jury members met virtually to determine the winners, the main prize, the Golden Nica, two Awards of Distinction and twelve Honorable Mentions. The top-class jury consisted of Juliane Götz (DE), Hsin-Chien Huang (TW), Randa Maroufi (MR/FR), Casey Reas (US) and Helen Starr (TT), all experts in the broad field of computer animation.

When the Sea Sends Forth a Forest; Guangli LIU (CN)

The category has significantly raised its profile over the last four decades and is in a permanent process of discussion. In recent years, the tendency has been towards an increasing dissolution of the boundaries between time-based and interactive works, and an increase in the thematization of AI, VR productions, installation works, large-scale projections, games, and interactive experiments. In addition to this, there is an increase in socio-critical themes, such as explorations of the consequences of the pandemic, political and social changes, environmental pollution, or the suppression of cultural memory. Due to limited screening opportunities, once again there will be a focus on the winning projects, which are grouped together in the Electronic Theatre screening program. Furthermore, in addition to *OPERA* (2020) by Erick Oh and *Dirtscraper* (2020) by Peter Burr, two works by the artist duo Imge and Sine Özbilge, *Mosaic* (2020) and *#21xoxo* (2019), as well as *#rachaelisnotreal* (2021), by Matthias Winckelmann, can be seen at Deep Space 8K. Finally, there is the Young Animations program, a selection put together by Sirikit Amann (OeAD) from the national competition *u19 create your world*, including short films, computer animations and stop-motion works using Lego or clay.

Electronic Theatre

The Electronic Theatre, which was launched as an open-air show at the start of Prix Ars Electronica in 1987, presents a selection of the best works chosen by the jury, and showcases current productions in terms of artistic content, as well as cultural and technological innovation. In the animated documentary film *When the Sea Sends Forth a Forest*, which won the Golden Nica, Guangli Liu tells the lost story of an ethnic group from Cambodia that was persecuted and expelled by the Khmer Rouge. Based on the propaganda videos of the Maoist nationalist guerrilla movement and the very few other documents available from that period, as well as on the disaster videos that spread around the world after the fall of the regime, the film explores the question of how to reconstruct collective memory. In the animated film *AIVA*, Bulgarian filmmaker Veneta Androva introduces us to a female AI artist designed by a male engineering team in a fictional documentary on her work. The film addresses the lack of a diversified perspective in the field of artificial intelligence, which, though mostly created by men, portrays women.

Erick Oh's *OPERA* is an 8K installation, an animated loop inspired by fresco paintings and tableaux by Dutch and Italian Renaissance artists. In a manifold ensemble of motion sequences, Oh stages a multi-layered reflection on human life. *OPERA* celebrated its world premiere at Ars Electronica 2020 and has since been presented and awarded several times at international festivals.

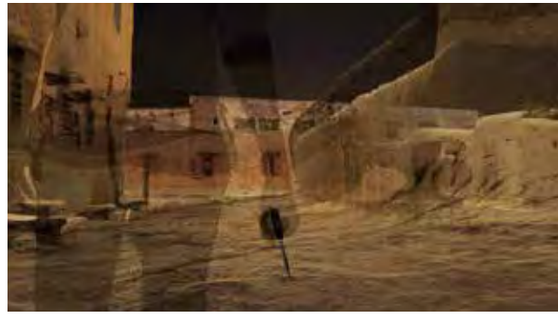
In addition to the Golden Nica and the two Awards of Distinction, a selection of honorary mentions is on view. Artist Paul Jacques Yves Guilbert stages and deconstructs a stage area, including stand and audience, in the experimental computer-animated short film *Chimes Era #1.2: The Seat in Judgment (Assessment Following the Sacrifices of CE #1.1: The Benching)* (2020). With chimes, singing, text, computer graphic montages and real footage, as well as visual effects involving fire and water, a self-reflexive confrontation is set into motion. In the short film *Mosaic* (2020), by siblings Imge and Sine Özbilge, we accompany three characters in a colorful Middle Eastern city that is suddenly attacked by a cat-like monster. The sisters, who hail from Turkey, already received an Honorary Mention in 2020 for their work *#21xoxo* (2019).

Two other Honorary Mentions with critical positions in the program are *$75,000* (2020), a short film by Malian-born artist Moïse Togo, and *TRUE NORTH* (2020, Eiji Han Shimizu). Togo's 14-minute animation, a collage of drawings, filmed elements and 3D scans, addresses the discrimination, mutilation and ritual crimes experienced by albinos in Africa. *TRUE NORTH* is a feature-length 3D animated film that tells the story of a family held captive in a brutal North Korean prison camp.

AIVA; Veneta Androva (BG)

Chimes Era #1.2 : the Seat in Judgment (Assessment following the sacrifices of CE #1.1 : the Benching, Paul Jacques Yves GUILBERT (FR)

OPERA; Erick Oh (US); © BANA



$75,000; Moïse Togo (ML)

Mosaic; Imge Özbilge and Sine Özbilge (TR)

TRUE NORTH; Eiji Han Shimizu (JP); © Sumimasen

Deep Space 8K

Erick Oh (US)

Opera (2020)

Opera is a cycle of a eight-minute animation created by the prize-winning filmmaker and artist Erick Oh. Each section is inextricably linked with the activities of the individual characters, ultimately enabling the viewer to enjoy the complex construction of a vibrant pyramid, regardless of which character they watch first.

http://erickoh.com/

© BANA

Imge Özbilge (TR), Sine Özbilge (TR)

#21xoxo (2019) & Mosaic (2020)

#21xoxo is an experimental animated short film that reflects on the influence of social media and mobile devices in relation to self-expression, intimacy, love and relationships. It features the adventures of a 21-year-old girl in a parallel digital universe. The recent film *Mosaic* (2020) tells the story of a Kurdish student, a Muslim musician and a Christian girl in a fictional Middle Eastern city. After a monster-like creature suddenly brings war to the city, the protagonists escape with the help of a moonfish.

https://sine.cargo.site/, http://www.imge.be/

Peter Burr (US)

Dirtscraper (2020)

Peter Burr's installation *Dirtscraper* is both a generative animation and a computer game, and has already been exhibited in various forms, such as a live stream or a multiple projection. Using text pop-ups and audiovisual grids, the artwork sketches a dystopian world in which the individual seemingly perishes in the struggle against given structures.

http://www.peterburr.org/

Matthias Winckelmann (GE)

#rachaelisnotreal (2021)

Rachael is the world's first fully automated autonomous 3D design influencer on Instagram. Since May 2020, Rachael has been posting one new image per day to the Instagram account @rachaellic. She will continue to post without any human intervention for as long as the computer she is running on is online. Her capabilities are especially designed to create "likeable" images representing popular visual languages on the platform.

https://www.mwinckelmann.com/

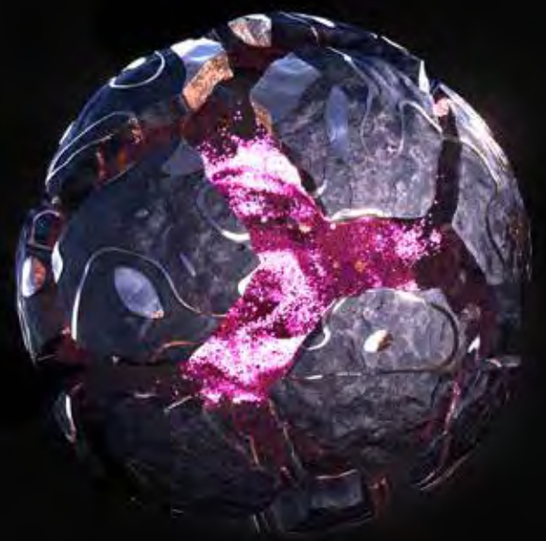
Expanded Animation 2021 — Tectonic Shift

September 10—12

The 9th edition of the Expanded Animation symposium series will once again focus on current and future trends at the intersection of animation, art and technology during the Ars Electronica media art festival (September 8-12). On the first two days, international artists, researchers and developers will discuss current processes of change in the expanded field of animation under the motto *Tectonic Shift*. The central question is: What fundamental changes in conception, production and reception are discernible, and how does the Covid19 pandemic fit into this context? In addition, the winners from the Computer Animation category will give insights into their work in the Prix Forum. On the third day, the *Synaesthetic Syntax* symposium, launched in 2020, will enter its second round. As in 2020, the Hagenberg campus of the University of Applied Sciences Upper Austria will be the hub for the 3-day virtual event.

Tectonic Shift

For 35 years now, the Prix Ars Electronica international competition has represented an up-to-date survey of media art. Since then, prizes have been awarded in 13 categories.
The Computer Animation category is one of the oldest, along with Computer Graphics (until 1994) and Computer Music. As the development of the media art competition shows, this is a dynamic process: new categories have emerged, some have merged, others have drifted apart or vanished. The thematic fields of animation, sound, interaction, digital communities, real-time, virtual reality, games or artificial intelligence collide and rub against each other, the boundaries are fragile and blurred. How do the different disciplines come together? Do they disappear into a diffuse unity, or is their special substance still recognizable?



Markus Raudaschl, Jakob Aigner, Martin Krischanitz

Are the individual disciplines drifting apart or is a "Pangaea," a primal category of media art, emerging? At the same time, the question arises as to what influence the Covid pandemic has and will have in the future. How is the current situation changing creative processes, workflows, community togetherness, and the way we experience animated worlds? Under the title *Tectonic Shift* the current territorial movements of time-based and interactive animation will be looked at and discussed by experts from science, art and industry from September 10—12.

Synaesthetic Syntax II: Sounding Animation/Visualizing Audio

What are the different sensory modalities built into the experience of animation, in particular the relationships between the auditory and the visual? This symposium is the second Expanded Animation event in cooperation with the University for the Creative Arts. A series of presentations from researchers and artists will examine the rules, principles, and processes that govern correlations between sound and animation from a range of critical and experimental perspectives.

Of particular interest is how embodied sensations might be explored, unpacked and reassembled through animation in an age of virtual communication intensified by COVID-19. Our Keynote Speaker is media artist, director and pioneer in the aesthetics of data and machine intelligence, Refik Anadol. His body of work locates creativity at the intersection of humans and machines. In taking the data that flows around us as the primary material and the neural network of a computerized mind as a collaborator, Anadol paints with a thinking brush, offering us radical visualizations of our digitized memories and expanding the possibilities of architecture, narrative, and the body in motion. Anadol's site-specific AI datasculptures, liveaudio/visual performances, and immersive installations take many forms, while encouraging us to rethink our engagement with the physical world, its temporal and spatial dimensions, and the creative potential of machines.

All lectures, panel discussions, and workshops are accessible and available to all interested (virtual) attendees: *https://expandedanimation.com/*

Speakers

Expanded Animation: Peter Burr (US) Nonny de la Peña (US), Entagma — Manuel Casasola Merkle (DE) / Moritz Schwind (DE) Jesper Juul (DK), Sabine Laimer (AT/NZ), Imge Özbilge (TR), Sine Özbilge (TR), Anegret Richter (DE), Philomena Schwab (CH), Tendril — Christopher Bahry (CA) / Ivelle Jargalyn (CA) / Mary Anne Ledesma (CA) / Alexandre Torres (CA), Tobias Trebeljahr (DE), Matthias Winckelmann (DE/UK)

Prix Forum: Veneta Androva (BG), Guang Liu (CN), Erick Oh (KR/US), Helen Starr (TT/UK)

Synaesthetic Syntax: Refik Anadol (TR/US), Alexandra Antonopoulou (UK), Jack Caven (UK), Michael Century (US), Eleanor Dare (UK), Dirk de Bruyn (AU), Juan Manuel Escalante (US), Eliane Gordeeff (PT), Jürgen Hagler (AT), Sarah Groff Hennigh-Palermo (DE), Birgitta Hosea (SW/UK), Lilly Husbands (US/UK), Shawn Lawson (US), Melody Loveless (US), Alberto Novello (IT), Kate Sicchio (US), Andrew Starkey (UK), Kate Steenhauer (UK), Harry Whalley (UK), Yin Yu (US)

Organization

Expanded Animation is produced jointly by the University of Applied Sciences Upper Austria, Hagenberg Campus and the Ars Electronica Festival in cooperation with University for the Creative Arts, Farnham, UK, and organized by Jeremiah Diephuis, Jürgen Hagler, Wolfgang Hochleitner, Michael Lankes, Patrick Proier, Huoston Rodrigues, Christoph Schaufler, Alexander Wilhelm / Upper Austria University of Applied Sciences' Hagenberg Campus / Department of Digital Media and Birgitta Hosea, Harry Whalley / Animation Research Centre / Audio Research Cluster, University for the Creative Arts, Farnham, UK.

http://www.expandedanimation.com
http://www.fh-ooe.at
https://www.uca.ac.uk/research/arc/
https://audio-research.com

DEEP SPACE 8K

The Ars Electronica Center offers its visitors something that cannot be found anywhere else in the world: 16 x 9 meters of wall and another 16 x 9 meters of floor projection, laser tracking and 3D-animations make the Deep Space 8K something very special indeed. Furthermore, Deep Space 8K presents challenging infrastructure to media artists. As they go about adapting existing works and, above all, designing installations custom-made for this space, they're entering artistic terra incognita. The position of visitors amidst the projection surface and participation by them call for a well-thought-out aesthetic composition and concepts for the resulting dynamics.

© vog.photo

Dr. Walter Schuster (AT), Ali Nikrang (AT)

Through the eyes of AI: Historical 3D pictures from Linz

We present photographs by Linz-based photographer Alois Schwarz (1882-1946) from around 1900. He used a special camera with two lenses, separated by a distance approximately equal to that between human eyes. The pictures show panoramic views, well-known buildings and everyday scenes in Linz and its surroundings at that time.
However, the original images are in black and white. We will show how AI technology can be used to identify the correct colors for each object in the image.
The challenges are obvious: a black and white image only holds the intensity value for each pixel in the image. Consequently, it does not contain enough information about the original color of the pixel. The AI system should therefore be able to autonomously make decisions about the correct color of each pixel, but this can only happen if the system has a basic understanding of the visual world and of how objects appear in it. While many real-world objects have similar colors regardless of region and time (e.g. trees, leaves, rivers), there are objects that can have a wide range of colors, such as clothing. We will take a closer look at the decision-making process of the AI and see how and why AI sometimes makes mistakes regarding the choice of color.

Archiv der Stadt Linz
Ali Nikrang (Ars Electronica Futurelab)
DeOldify project (https://github.com/jantic/DeOldify)

© Archiv der Stadt Linz, colorized by DeOldify project

Quayola (IT), Seta (IT)

Transient

Impermanent Paintings

Transient — Impermanent paintings is an audio-visual concert for two motorized pianos and two conductors in collaboration with generative algorithms. Hyper-realistic digital brushstrokes articulate endlessly on a large-scale projection as if on a real canvas. Each brushstroke is sonified with a piano note, creating polyphonic synesthetic landscapes. As veritable pictorial material, the algorithm becomes the real, tangible subject. Transient marks the beginning of a new direction in Quayola Studio, where experimentation extends to sound through unconventional generative systems. A new software has been developed ad hoc for this project, allowing images and sound to be seamlessly interconnected. The pianos, an emblem of musical tradition, synthesize technological and human features: by reproducing hand movements, they act as a link with the human realm, while at the same time performing non-human virtuosity. This project features Quayola's studio collaborator and musician Andrea Sanicchia, aka Seta. In Transient, he has fused his personal experience into the studio's research, contributing significantly to the development of new lines of enquiry.

Quayola (IT)/ Seta (IT)

© Skino Ricci

Mark Chavez (US/SG), Victoria Primus (AT), Ina Conradi (US/SG), Tate Chavez (US)

NOCTURNE

Nocturne is an artwork that recognizes the new post-global pandemic world while also acknowledging that other challenges lie ahead. It provides the audience with a contemporary artistic interpretation of the current state of affairs and a fresh breath of life in what would otherwise be a sad outlook. The large-scale, immersive installation uses interactive and audio-reactive visuals with emotive-abstraction animation, mapping emotions, and design with the real-time flow of a dance performance. It creates a tribute to ancient rites of spring by appealing to imagery, music and motion that recall the past, and signal hope for the future.

Nil

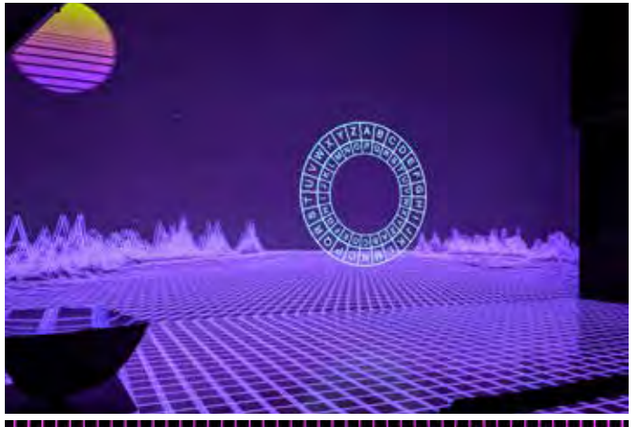
Resch Oliver (AT), Veith Florian (AT), Kronsteiner Philip (AT), Maureder Christoph (AT)

New Horizon

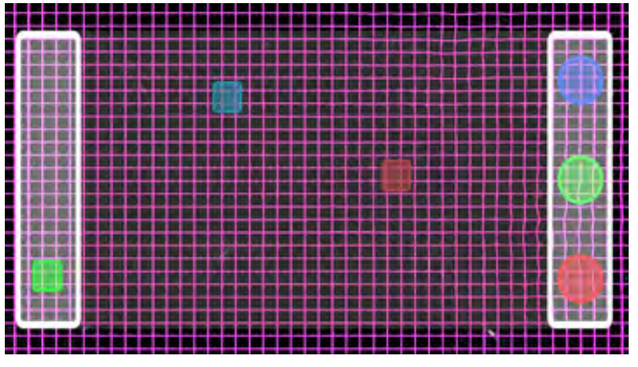
an AEC Deep Space VR Scenario

In the 21st century, the most prevalent way of communicating is determined by exchanging information using various messenger services. Our simulation in the AEC Deep Space shows the whole transfer of a message, which is selected by the participants, sent from one smartphone to another. A simplified encryption scheme (Caesar Cipher) is used to encode the information in a way that's understandable. Communication between the smartphones and the satellite is shown in an interactive manner through a minigame in which the audience can participate by moving data packages by laser tracking their position on the floor. The graphical representation is enhanced by providing the viewers with stereoscopic glasses to enable a 3D effect on both the wall and floor of Deep Space.

HTBLA Leonding, AEC FutureLab
Resch, Oliver; Veith, Florian; Kronsteiner, Philip; Maureder, Christoph



© Markus Haslinger



© Florian Veith

Cisco Italy s.r.l (IT); Logotel (IT)

NAKED AI

What happens when artificial intelligence (AI) and human creativity intersect? *Naked AI*, a research project created and launched by Cisco Italia and Logotel, looks at how this encounter can lead to an evolution of human relationships, in companies and in society at large. There have already been encounters, and confrontations, between human creativity and AI. It's no longer just about technology, but about results that must be understood, and questions that still call for answers. How will they work together? What shape will the interdisciplinary networks we'll design to share new knowledge take? How will we govern decision-making processes? People, organizations and communities already have access to new elements that are able to transform our idea of society. What are the responsibilities that will emerge from these scenarios? If AI is already helping us overcome some of our limitation, what will still remain unreachable?

A Cisco and Logotel Production
Directed by Massimo Leonardi (IT)
Written by Matteo Camurani (IT)
Strategist and Executive Producer Gianpaolo Barozzi (IT)
Strategist and Executive Producer Cristina Favini (IT)
Production Manager Anna Milani (IT)
Production Supervisor Antonella Castelli (IT)
Contributing Curator Susanna Legrenzi and Erica Petrillo (IT)
Production Supervisor Fabio Scamoni (IT)
Production Designer Valeria Crociata and Marco Basti (IT)
Director of Photography Danilo D'Ercole (IT)
Music by Massimo Leonardi (IT)
With
Pierre Baqué (CH)
Ivana Bartoletti (GB)
Sofia Crespo (DE)
Stephanie Dinkins (USA)
Mario Klingemann (DE)
Suzanne Livingston (GB)
Arthur I. Miller (GB)
Ali Nikrang (AU)
Obvious (FR)

Image in background: Neural Zoo by Sofia Crespo (DE)
Graphics: Valeria Crociata, Logotel (IT)

Dario Rodighiero (IT), Elian Carsenat (FR), Eveline Wandl-Vogt (AT), Garamantis (DE),
Ars Electronica Solutions (AT)
Ars Electronica Research Institute Knowledge for Humanity, k4h+ (AT),
exploration space / Austrian Academy of Sciences (AT)

3D Cartography of COVID-19 Research

The Extraordinary Work of Scientists During the Pandemic

The outbreak of the coronavirus in 2019 did not only impact society worldwide but also the research environment, as peopled by scientists and scholars. More than 600,000 scientific articles on the virus have been published to date, with most of them having been written since January 2020.
In order to grasp the magnitude of this literature and reveal the invisible (net-)work of scientists behind it, we made use of artificial intelligence to create a three-dimensional data visualization that displays all of these articles as luminescent spheres. These spheres are organized in space by similarity: the more they have in common, the greater their proximity. By rotating the data visualization, a time axis will appear to show the explosion of scientific literature that came with the pandemic.
Part of the Ars Electronica Garden Vienna . . . Knowledge for Humanity.

Ars Electronica Research Institute Knowledge for Humanity / k4h+ (AT)
Ars Electronica Solutions (AT)
Garamantis (DE)
exploration space / Austrian Academy of Sciences (AT)
Digital Research Infrastructure for the Arts and Humanities (DARIAH) (EU)
The Swiss National Science Foundation (SNSF) (CH)
metalab (at) Harvard (US)
NamSor (FR)

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© Ars Electronica — Robert Bauernhansl

Bruckmayr, Dorninger (AT)

Is it you, my dear AI or is it me?

Feedbacks, transformations, trained models, imitations, illusions, deceptive realities....

In *Is it you, my dear AI or is it me?* Wolfgang Dorninger works with small sound tools that he soldered himself, but also with autogenerative, software-based sound modules. These are tools he uses to trigger inspiration. The next step is to put a system of order over them. As soon as he suspects control, he presses the reset button.
During the performance he plays techno with circuits based on CMOS chips. Parallel to this, he plays highly complex electronic music with algorithmic sound generators. At one point there is analog chaos (factor light and voltage) and at another point digital chaos, because the parameters for sound generation are uncontrollable and partly outsourced to AI. The taming as a creative process, the schedule as a score and the reset button as a baton. Whenever things get too wild, Bruckmayr_Dorninger start to sing to appease the circuits.
Didi Bruckmayr dreams with the machines, which send messages to each other. As then he marches along a beam into the abstract landscapes of the “signed distance fields.” Sometimes he ”speaks in tongues” and all this in real time 3-D.

Emilien Leonhardt / HIROX EUROPE — JYFEL

Gigapixel 3D Scan of Vermeer's "Girl with a Pearl Earring"

Discover the Pearl in 3D, with Never-Before-Seen Microscopic Detail!

Johannes Vermeer's masterpiece *Girl with a Pearl Earring* is usually observed from a distance. Only a handful of people in the world have had the chance to be so close to it that you can almost touch it. It looks quite flat at first, but is it really? It seems to have only a few colors: yellow, blue, red and white; but how do individual pigments look? The painting is already 356 years old. Are there any cracks, imperfections, retouches made to it? The *Girl with a Pearl Earring* was examined before the public at the Mauritshuis using state-of-the-art imaging techniques, as part of the research project *The Girl in the Spotlight*.

Vermeer's painting techniques are revealed using XYZ stitched microphotographs made with the Hirox high-resolution 3D digital microscope at 4 & 1 µm/pixel. Discover the micro panorama of the full painting with a resolution so high you can print it the size of a building, and true color 3D modeling that gives you the feeling of holding the painting in your hands!

Gigapixel captured by Emilien Leonhardt & Vincent Sabatier from HIROX EUROPE / JYFEL, with Abbie Vandivere from the Mauritshuis (Girl in the Spotlight project).

Photo by Emilien Leonhardt and Vincent Sabatier

Gigapixel 3D Scan of Picasso's "Guernica"

Rethinking Guernica

In collaboration with the Museo Nacional Centro de Arte Reina Sofía Madrid, Ars Electronica, with the kind support of the Spanish Embassy in Vienna, will present a gigapixel image of Picasso's famous masterpiece, *Guernica*, as well as sketches created by photographers at the Reina Sofía. *Guernica* is one of Pablo Picasso's most famous paintings. It was painted in 1937 as a reaction to the destruction of the Spanish town of Guernica.
Today, the painting is housed together with an extensive collection of sketches in the Museo Nacional Centro de Arte Reina Sofía in Madrid. The presentation in Deep Space will be given by the great curators of the Picasso exhibition at the Reina Sofía, Mrs. Olga Sevillano (Digital Projects Reina Sofía) and Mr. Jorge Gómez-Tejedor (Restoration Department Reina Sofía). They will provide insights into the artist's craft and techniques. In addition to this, the outstanding Deputy Director of the Reina Sofía, Ms. Mabel Tapia, will give an introduce the current exhibition in Madrid.

The presentation will be streamed internationally once as part of this year's Ars Electronica Festival in Linz. This presentation, as part of the 2021 Festival, was realized in cooperation with the Museo Nacional Centro de Arte Reina Sofía and the Cultural Department of the Spanish Embassy in Vienna.

Screenshot of Rethinking Guernica Website

Cooperative Aesthetics

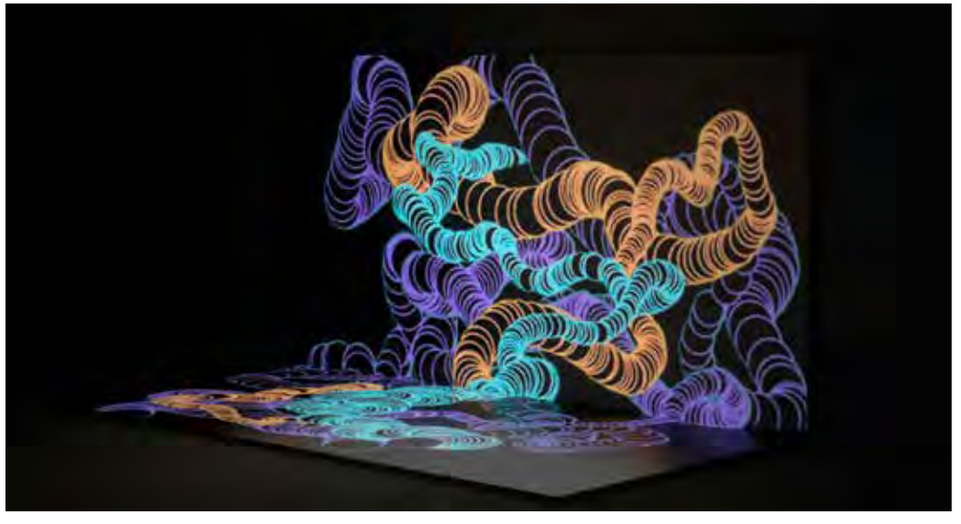
For the fourth time, new projects on Cooperative Aesthetics will be presented in Deep Space during the Ars Electronica Festival, to enable visitors to share an audiovisual aesthetic experience. This year, three works by students from Interface Culture, which were developed under the supervision of Univ.Prof. Gerhard Funk and Univ.Ass. Holunder Heiss (Department of Time-Based and Interactive Media Art at the University of Art and Design Linz) as part of the “AEC Deep Space” course, will be shown.

Juan Pablo Linares Ceballos (CO)

Quiet Gesture Towards

Quiet Gesture Towards is an interactive installation that explores images as gestures performed in space, and wonders at the experienced feeling that constantly shapes and constructs them from what remains in our memory and hopes, to push us towards shared and desirable collaborative futures.
A simple shape on the floor is drawn below each participant. As time passes, the circle slowly moves away from its original position and is replaced by a slightly bigger or smaller one, leaving a trail that disappears when it reaches the top of the projection. Eventually, a drawing of circles temporarily registers the gesture by which the participant engages with the space. One can decide to shape the drawing individually or can set out to collaboratively construct one with others.

Project by: Juan Pablo Linares Ceballos
Special thanks to Katharina Mayrhofer, Holunder Heiß and Gerhard Funk.

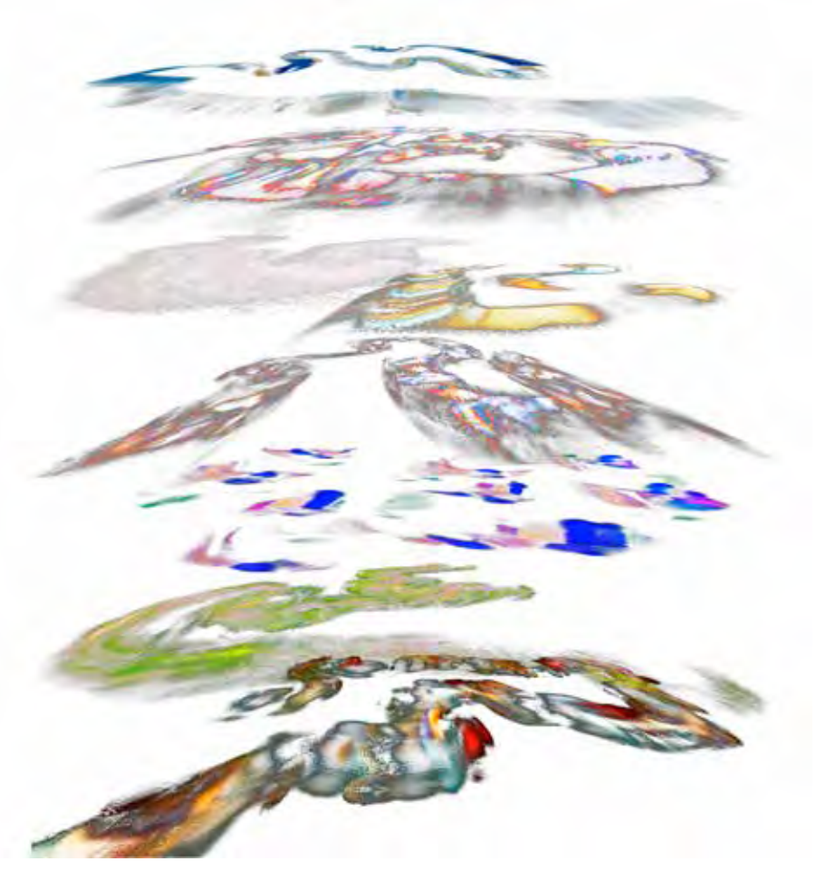


Tiio Suorsa (FI)

CacheDash

CacheDash is an interactive video installation that invites the visitors to release, walk and paint with their hidden memories. Cache is one of the most intimate parts of our devices, as concealed memories are to our minds. We leave traces, traces are left on us. Only when slowed down is one is able to see and hear the nebulous looping video memories while, in moving and meeting others, the memory becomes a pigment for the passage. *CacheDash* is part of an ongoing exploration on how to be human between virtual and actual realities.
The work consists of abstract video clips with original sounds from the artist’s own digital archive from the 90’s and 2019-2021, manipulated and coded into very short loops. Each person is attached to one random memory, something we tend to keep hidden, like unsent letters.

With assistance by Gerhard Funk and Holunder Heiß



Smirna Kulenovic (BA) & TAZ 22 (IR, DE, PL, USA/GR, RS, CZ),
Indiara Di Benedetto (IT)

Post-Dervish Chant

Interactive Transdisciplinary Performance

A transdisciplinary performance situated as a contemporary interactive audiovisual and performative research of traditional Dervish dance methods. The process of repetitive whirling in traditional Dervish dance allows the performers to enter a trance state which extends into an experimental, novel and spontaneous movement vocabulary that attempts to embody the relationship between diffraction, memory and vulnerability in post-pandemic, human and non-human materialities. The interactive, laser-tracking system of Deep Space helps unfold new layers of meaning–allowing for the exploration of psychological representations of the inner personal processes of the performers in real time, as they experience trance-inducing states of mind. The processual employment of dance, movement, vocalization or dance-like movement becomes a form of inquiry, rooted in personal documentary approaches done by each participating artist.

Directed by Smirna Kulenovic (BA) — Director,
Art Director, Dervish Dance Method Workshops,
Improvisation Choreography
Stage—based Interaction Designer: Indiara Di Benedetto (IT)
Performers: Ariathney Coyne (GR/USA) — Movement
Research Danica Golic (RS) — Contemporary Dance
Daniela Hanelová (CZ) — Movement Research
Anna Jurek (PL) — Contemporary Dance
Musicians: Aron Hollinger (DE) — Composition, Drums
Odysseas Manidakis (GR) — Composition, Laouto
Danial Moazeni (IR) — Composition, Tar
Vahid Qaderi (IR) — Composition, Electronic Audio Design,
Audio Manipulation
Production Support: Anton Bruckner Private University

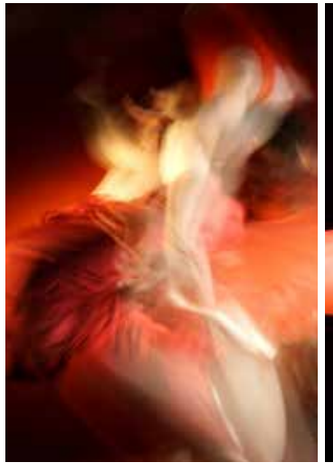
Smirna Kulenovic (BA)

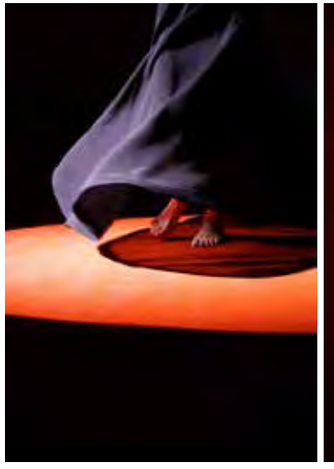
Post-Dervish Chant: WORKSHOP

Dervish Dance / Active Meditation in 8K

Post-Dervish Dance Method Workshop offers the participants a chance to experience a contemporary approach to the ancient methodology of Dervish Dance as an active meditation form, while immersed in the visualization of their movement in Deep Space 8K Studio. This form aims to improve one's physical, emotional and psychological awareness by introducing trance states of interconnectedness with the environment and oneself As participants learn how to continuously whirl for an extended period of time, they gain a novel perception of what is transpiring as they are whirling. For both dancers and people without previous movement experience, this workshop encourages to follow intuitive and instinctual movement and vocalization, without any expectations of the outcome. The processual employment of whirling evolves into spontaneous dance, movement or dance-like movement, becoming a form of inquiry, a research tool, practice, or mode of doing research.

Smirna Kulenovic (BIH) — Director, Art Director, Dervish Dance Method Workshops, Improvisation Choreography





Generative Arts

Deep Space in the Ars Electronica Center is not solely a venue for showing artistic and educational content, but also an active laboratory for experiments in interaction and perception. Three student works from the Hagenberg Campus of the University of Applied Sciences Upper Austria were developed within this student lab context over the past year. Each work facilitates an immersive, reactive audiovisual experience that draws the audience in and captivates them with engaging sound and dynamic animation. From the simplest shapes to particle flow and even burning trees, each project aims to transform Deep Space into an environment of stimulated reflection.

Eric Thalhammer (AT), Julian Salhofer (AT)

Burning Trees

Burning Trees is an interactive art installation developed for Deep Space that models the relationship between humans and nature. The core element of the experience is the music, which reacts to how people move in the room. The visualization on the wall, in turn, responds to the waveform of the music. At the beginning of the experience, players find themselves far away from the forest projected on the wall of the room. Once they set foot on the laser-tracked floor area, music will start to play, which initially is very calm and organic. However, the more they push back nature, the crazier and more artificial the music and visualization become, to a point where it starts destroying the forest.

Julian Salhofer, Eric Thalhammer / Digital Media, Campus Hagenberg

Eric Thalhammer

Anna Moser (AT)

Circles

Circles is an audiovisual experience developed for the Ars Electronica Center's Deep Space. The generative art installation utilizes simple shapes and coordinated movements to animate the environment and create a series of visual effects. The project aims to captivate and gradually relax the audience as they watch how the circles form numerous shapes. The accompanying music encourages participants to become calm, listen, and let themselves be fully drawn into the magic of the moving circles.

Anna Moser / Digital Arts, Campus Hagenberg

Anna Moser

Asma Lamiri (AT)

Reactive || Interactive Particle Waves

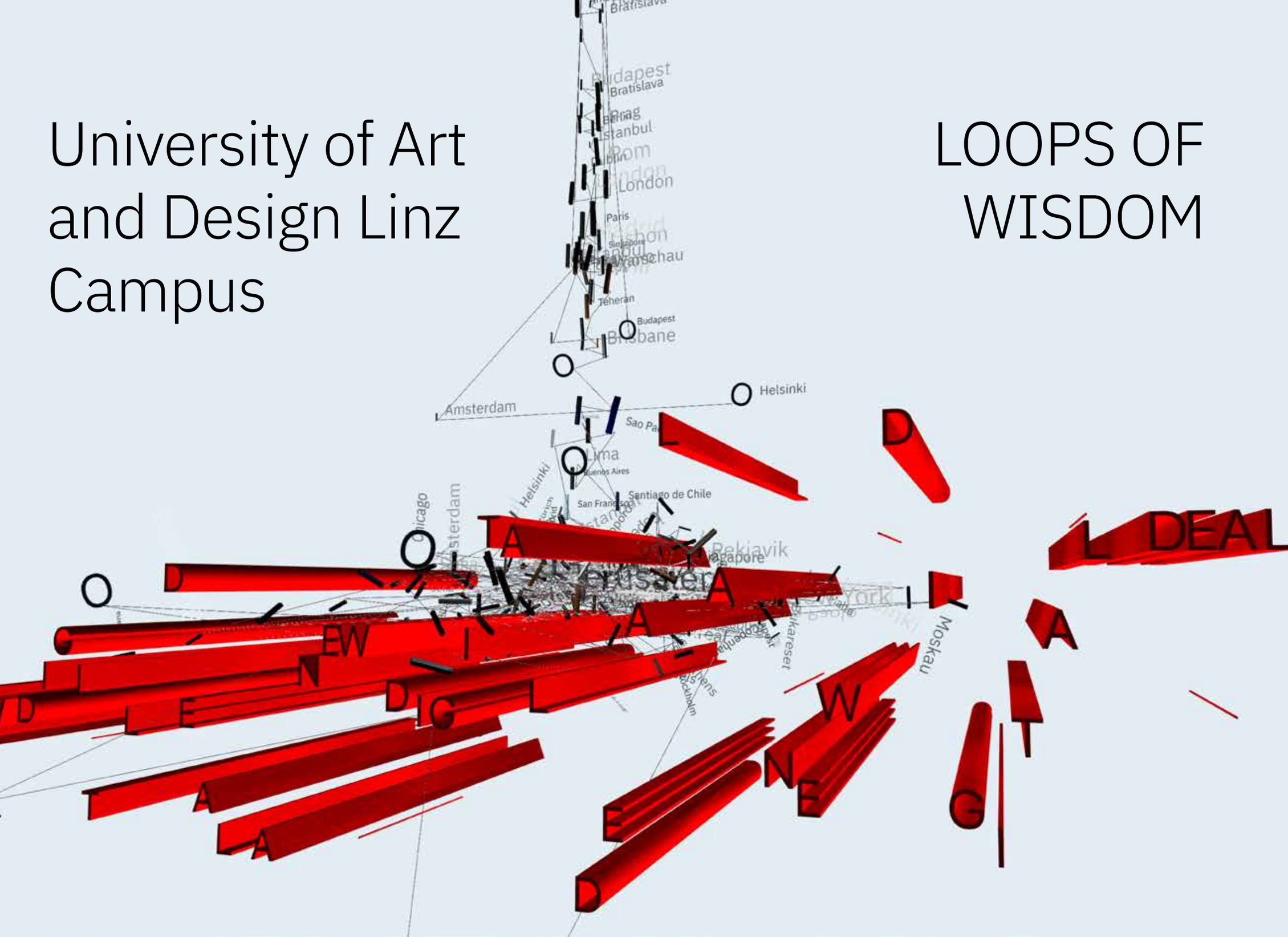
Reactive || Interactive Particle Waves is an immersive experience that allows the audience to observe the creation and changes of particles that are constantly adapting and moving throughout the room. The project was developed specifically for the Ars Electronica Center's Deep Space and can be perceived as both a stationary audiovisual experience or be walked around, through and between as a dynamic, audioreactive particle garden. The music serves both as a basis for the particle generation and as a relaxing emotional grounding for the overall experience.

Asma Lamiri / Digital Arts, Campus Hagenberg

Asma Lamiri

University of Art and Design Linz Campus

LOOPS OF WISDOM



LOOPS OF WISDOM

Kunstuniversität Linz Campus at Ars Electronica Festival

ausstellungen.ufg.at/loopsofwisdom

"Understand well as I may, my comprehension can only be an infinitesimal fraction of all I want to understand."
Ada Lovelace

"The fact that the decisive shrinkage of the earth was the consequence of the invention of the airplane, that is, of leaving the surface of the earth altogether, is like a symbol for the general phenomenon that any decrease of terrestrial distance can be won only at the price of putting a decisive distance between man and earth, of alienating man from his immediate earthly surroundings."
Hannah Arendt

"I believe you are very good-natured." „So I am, (said the monster,) but then, besides my ugliness, I have no sense; I know very well that I am a poor, silly, stupid creature." "'This no sign of folly to think so, (replied Beauty,) for never did fool know this, or had so humble a conceit of his own understanding."
Jeanne-Marie Leprince de Beaumont

We see it, we feel it and we hear it: our world is changing. And we are changing with it. We see the urgency with which the future of our planet — as we know it — rests on our shoulders. But how do we manage to become active here and create space to move forward? What do we need to do so that we can leave behind fear and, with it, frightened rigidity, so that we can confidently and respectfully take the next steps towards a benevolent society and support the healthy functioning of the Earth's ecosystems?
LOOPS OF WISDOM is not a solution but a possible guide to action: a well-conceived set of inspiring exhibitions, presentations, performances, interventions, workshops and lab settings and a discursive platform, all by students and faculty of the University of Art and Design Linz on the occasion of the Ars Electronica Festival 2021.
The exhibition project *LOOPS OF WISDOM* questions how knowledge is generated, and what this means for wisdom. We're collecting actions, thoughts and, especially, ideas based on our own experimentation. Practice-based knowledge is by no means alien to artistic fields of research. On the contrary, the tools and materials used are diverse, the methods tried and tested, and the approach to them highly playful and experimental.
However, we focus not only on tools, materials and methods, but above all on the thinking that underlies knowledge about our world. We ask how technical thinking determines our lives, describes them, measures them, makes them comparable, standardizes and controls them; always with the deeply human goal of generating more and better knowledge of ourselves. But knowledge does not equal wisdom, and as more and more knowledge is accumulated, the question arises: how does it become wisdom? The fact that this does not require thinking alone, but that wisdom develops primarily in connection with actions and their corresponding behavior, leads us to the assumption that wisdom cannot be created, only cultivated.
If knowledge is the surface of the water, wisdom is the riverbed, slow and full of sediments from past times. Its cultivation takes time, because every sand grain of wisdom is turned over and over again. And this looping motion is found everywhere: the fractal patterns of romanesco broccoli, algorithms that loop through code, pendulums and musical loops. But artistic and academic practice also works in a similar way: through repetitive experiments and citations, paradigms are reevaluated and problems redefined. Connections to the past in the form of theories, experiments, but also rituals or songs, are omnipresent. And like a harmonograph that slowly changes its pattern over time, the loops of wisdom are not closed, but break out of the old ones in slow, divergent movements. Thus, cultivating wisdom implies looping through and applying knowledge, questioning and doubting, and being willing to learn from it all. It implies people, their knowledge, and their responsible, wise actions.
Last but not least, all this learning, reflecting and repeated practicing requires a corresponding attitude and openness towards what is to come: what one does not yet know and cannot yet see. In *LOOPS OF WISDOM,* we describe how to walk together, how to recognize important deviations and, less so, how to arrive at the destination. We also want to encourage that we have to find ways to distance ourselves from ourselves to be able to recognize ourselves in the world. We see the fact that technological achievements can help us distance ourselves as an advantage. However, the reflection on distancing can only be done by people, together, who can recognize the complex interweaving of past and future, experiences, wishes and dreams. *LOOPS OF WISDOM* is therefore a winding path that is never recognizable in its entirety. There is no orientation in left or right, in above or below, in inside or outside. There is only the path with its spontaneously occurring twists and deviations, and the question of how we want to transform it together.

Text: Manuela Naveau, Julia Nüsslein
Loops of Wisdom Program Team: Manuela Naveau, Julia Nüsslein, Sylvia Leitner, Giacomo Piazzi
Text Editorial Team: Andrea Hörndler, Stefanie Rasouli

Interface Cult

Department of Interface Cultures

Faculty: Christa Sommerer, Laurent Mignonneau, Manuela Naveau, Fabricio Lamoncha, Davide Bevilacqua, Gertrude Hörlesberger

Contemporary artists, designers and inventors are creating new connections and systems, exploring how silicon, organic and even speculatively alien forms of life are entangling, mutating, evolving. What can these new entities and relationships look like? Are they friendships and collaboration, or competitions and conflict? For these new exchanges we need new languages: programmable, aesthetic, interspecies, non-human and post-scientific. The emerging hybrid and cyborg entities join and celebrate shamanistic and nonverbal traditions, hidden cultures, with magical symbols, energies and fictions. A culture or even a cult of symbiosis is required, a fusion between old and new ways of dealing with reality. We call to disrupt and disengage from destructive profit-oriented technologies and systems which are based on oppression, manipulation and quantification. For our survival and the future viability of life on our Goldilocks Zone planet, we believe that less anthropocentric knowledge systems must arise, and that more caring technologies are required.

Observing how contemporary tools often contain the traces of past traditions and knowledge, we wonder what has happened to the wisdom that was left behind. The logic of the all-encompassing scientific method, upon which most contemporary technologies are grounded, overshadows non-scientific, non-quantifiable, hybrid or alien expertise and skills from non-dominant cultures. As a consequence, the ancient, folkloric, pre-industrial strategies to enhance and foster life and to confront the challenges of the future, do not find enough space in the modern cultures of a faultless digitalization.

As AI becomes ubiquitous and more than just a buzzword, it starts to affect our daily lives and artistic practices. We need to have a forensic look at the beliefs behind the new tools and creative techniques engendered by the cults of technology. One approach is to fully embrace and test the aesthetic capabilities of quasi-unlimited combinations and database driven creations. Another is to investigate and measure their social impact, and to interrogate the role we assign to our technology and to creativity as a whole.

Creative thinkers and artists want to look behind the curtain and unveil what is hidden beneath the layers of AI, machine learning, automation and surveillance technologies. Like detectives or inspectors, they question the “black box” to discover how and why these intelligent systems make certain decisions, what these decisions mean and for whom they are fundamentally being made. Students of Interface Cultures have developed works which combine current technologies with ancient, humanistic and esoteric practices, delving into topics such as, divination, twirlings, the subconscious/unconscious, secrets, rituals, leisures, energies, contemplation, as well as cults, both old and new.

Production/Design Team: Kevin Blackistone, Sara Koniarek, Iosune Sarasate Azcona, Indiara Di Benedetto, Juan Pablo Linares, Kevan Croton

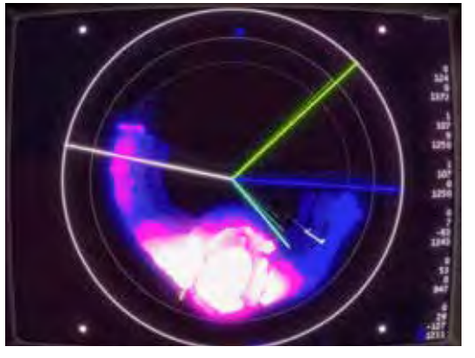
Funda Zeynep Ayguler (TR)

A_____MANIFESTO

A collection of manifestos, dating from the 17th century until today, has been transformed into 3D shapes by using text mining techniques that reconstruct linguistic contexts of words from raw text. Mycelium fungus is used to create an organic living sculpture out of this digital hybridization. The AR experience is based on the points of the data cloud, in which every dot represents a word of the raw text. Inside an abstract vector space derived from real-world language corpora, words become points in a n-dimensional space, where algebraic calculations operate on the syntactic and semantic creation of language. Grounded on Donna Haraway's work, a combination of transformer-based architectures is used to generate a new manifesto that mimics human-written text.

Kevin Blackistone (US)

[2m]



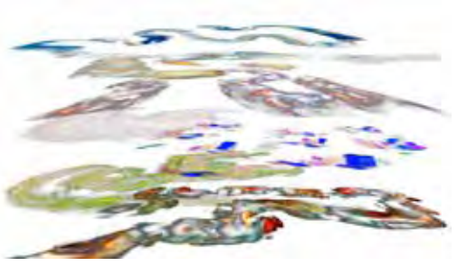
What distances do we keep between ourselves and others? How do we vary our movements in response to them? What dimensional requirements do we maintain in our personal environment?

These questions have become strangely and newly manifest throughout the past year’s safety protocols and lockdowns. Here, they are condensed into a form of radial rotary music box responding to the distances of those entering, while sonically expanding their presence to occupy an acoustic space larger than their physical forms.

Tiio Suorsa (FI)

CacheDash

The cache is one of the most intimate parts of our devices. It resembles our subconscious mind with looping memories in the background while meeting other human species. The project *CacheDash* is part of an exploration of how to be a human navigating between virtual and actual realities. Developed for the Ars Electronica Deep Space, it invites visitors to release and paint their hidden thoughts.



Smirna Kulenović (BA) & TAZ 22, Indiara Di Benedetto (IT)

Post-Dervish Chant

A transdisciplinary performance situated as a contemporary research of traditional Dervish Dance methods.

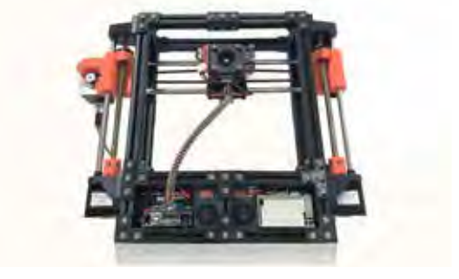
© Daniel Bierdumpfl

The process of repetitive whirling in traditional Dervish Dance extends into an experimental, novel and spontaneous movement vocabulary that attempts to embody the relationship between diffraction, memory and vulnerability in human-non-human materialities. The processual employment of dance, vocalisation or dance-like movement becomes a form of inquiry, rooted in personal documentary approaches done by each participating artist.

Hess Jeon (KR) & Seo Son (KR)

CNC Punch Needle Machine MK-1

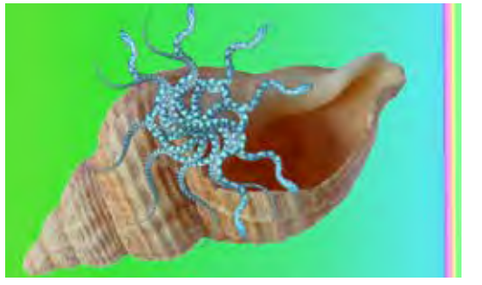
This embroidery machine, similar to those that already exist in mass manufacturing warehouses, is here presented as an artwork, redirecting the artist's questions from "results" to "processes", from "means of production" to "reason", emphasizing the artists' ideas and intentions in the use of open-source technologies. All components in this project originate from other existing open-source projects, therefore, this artwork is not solely a product of the artist's creativity, but an example of collective construction. The *CNC Punch Needle Machine* dreams of collective evolution over individual enlightenment. It "punches" a thread into a stretched canvas, and, dot by dot, it "prints out" its own messages.



Daphne Xanthopoulou (GR)

Sonic Utopias

Sound has always been associated to divination practices. In a time when the imagination is rendered short by a prevalent fixation on dystopian futures, we tune into the resistant voices that create an outside to this totalized world by nurturing structures of individual and communal resistance. *Sonic Utopias* is a sonic fiction series of utopian narratives and tales of subversion from a (not so) distant earth. Five seashells contain another narrative about the future, while the sand refers to the childlike practice of building sandcastles; a metaphor for the necessity of world-building in frail times.



Sonic Utopias is a collaborative series of sonic fiction hosted by Movement Radio — Onassis Stegi (ATH, GR) in 2021.

Anaïs Lossouarn (FR)

Ear to Ear

Ear to Ear plays a collection of secret stories told in many languages by people of different nationalities. Ceramic ears punctuate the space, dots of color crossing the walls. As we approach them, we can hear voices telling these intimate stories. Lend an ear to the wall and you will share their secret lives. In a more secluded place, the "confessional", you are invited to share your own secrets, fragments of your story, that will be included in the installation and played through the ears in the exhibition space.

Barbara Jazbec (SI)

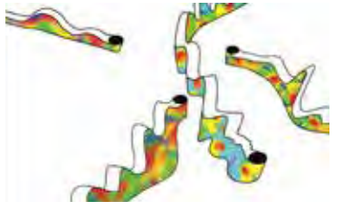
Eerie Me

Eerie Me is a creature based on the symbiosis of memories and imagination of a Furby and the artist herself. Happy and traumatic memories create a memento that spectators can relate to. At its time of commercialization, the interactive toy "Furby" was original and technologically advanced, and fascinating not only for kids, but as the cultural artifact that is still recognizable today. The artist explores personal ways to hack the toy and expand its identity by including parts of her body and personality in a hybrid creation and transcending her life into a new existence.

Jo Caimo (BE)

Exciting Research

Via an ear clip, the MOODY® device measures excitement, while a light indicates its color/level. The scale goes from blue (low excitement) to red (high excitement). With the data of people's excitations and mutual distances, algorithms are developed to visualize and even stimulate the "energies between people". At the workshop, devices can be built, algorithms upgraded and tested, and the jewel embodied as we interact



with others. Topics on the device manual can be added, and user policies discussed.

Kristina Tica (RS)

FUTUREFALSEPOSITIVE

FUTUREFALSEPOSITIVE is based on StyleGAN and object recognition algorithms applied to the ritual of Turkish coffee mug reading. 15,000 real-life and generated images are morphing into an animation and train the algorithm to recognize objects out of the random shapes created by the coffee stains and generated noise. The algorithm performs this continuous object recognition process in real time — reading the mug — while producing new visual narratives in a loop. In this process the relation between false positives in computer vision and psychological phenomena of pareidolia and apophenia was established. The interplay between prediction as a false positive

and prophecy as apophenia — the tendency to perceive meaningful connections between seemingly unrelated things — does not only focus on absurdity but on possibilities of creative interpretation when trying to understand the technical processes behind it.

Razieh Kooshki (IR), Vahid Qaderi (IR)

In Between Nodes

"The only reality is existence." Doubts about the reality of the world we live in have existed since time immemorial. Is it real, just a dream, or a designed virtual space? Even if someone were to come and lead us to the real world by offering the famous red pill, we would still question that world too. Is that one real, or is it another designed space? And what if we designed reality? What if we designed a reality within a virtual reality, that is inside another virtual reality...? How many designed worlds do we need to cross to finally reach reality? In this VR project, the

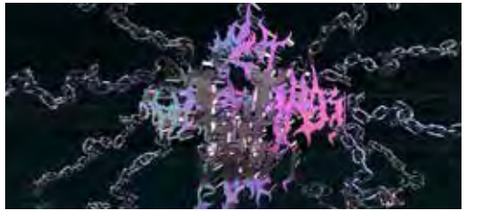
artists designed parallel virtual spaces. The users can move into any scene, interact with objects and sounds, using the virtual VR headset located in each scene, to discover a new world.

Bálint Budai (HU)

Injected Sounds Referring to Dissolution

Post-lockdown sounds exhibited in virtual space. Step by step, we are getting back to "normal". Layer by layer, we are getting closer to earning back our free space. This 3D garden represents our unity through sound compositions that are communicating with each other.

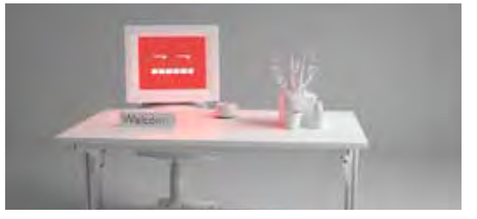
Contributing sound artists: Alejandro Quiñones Roa (CO), Bálint Budai (HU), Błażej Kotowski (PL), Daphne Xanthopoulou (GR), Polina Khatsenka (BY), Rozi Mákó (HU), Vahid Qaderi (IR)



Iosune Sarasate Azcona (ES)

PHC (Painfully Human Chatbot)

Painfully Human Chatbot deals with the pressure to be constantly available. The aim beyond this effect is to provoke a reflection on the human assimilation of mechanical processes and capabilities, and whether the constant and increasing use of technology has created new social values out of behaviour that were once only previously expected of machines. In this way, and as a contrast, the project presents a chatbot that also assimilates human attitudes. Although the main function of this application is to be constantly



available, *PHC* will try to keep a work schedule, and tiredness and laziness will be implanted in its code.

Qian Xu (CN)

Private Garden

The pandemic has greatly changed our daily life. The artist noticed that during quarantine, many people, herself included, were spending more and more time in their beds. The bed became an intimate and versatile place to do a lot of things, among them eating, resting and recovering from the chaotic situation. She found the resemblance between beds and gardens in terms of the spiritual healing they offered and so formed the idea for *Private Garden*. With images from traditional Chinese gardens, a machine-learning algorithm projects a virtual garden onto

a bed. Visitors can lie down and interact with the visuals and ambient sound through their body movements, having an intimate and mimetic experience of resting in one's private garden.

Noor Stenfert Kroese (NL)

RHIZA

The interspecies connector invites you to plant your bare feet on its mycelium. Through the skin, the biggest organ to sense the outer world, you can connect with the mycelium's electrical communication. *Rhiza* emerged as an aspiration to enable human beings to transgress their own species and connect with otherness in multiple ways. This complex network, with its subtle blend of conflict and cooperation, can be seen as an example of how we relate to each other, and with our environmental systems. As with human society, this growing interspecies society is characterized by variety, with its capacity to help and hinder, to cooperate and to exploit. Nature is built on connections, and so are we.

Nomi Sasaki Otani (PE/JP)

SenriAn

This peep media installation explores the phenomenon of reminiscence by displaying AI-generated images from a dataset composed of the artist's Chinese ink paintings and childhood family photographs. Can these digitally generated images reveal the mutable nature of memories? Inside a box, the artist aims to reconstruct *SenriAn*, her grandparents' Japanese tea house, by using a personal dataset to unfold her faint memories through AI-generated images. These images are revealed only when two spectators peep together, referring to the nature of memories, which revive with each transmission.

Parisa Ayati (IR), Mahnaz Rastgoumoghaddam (IR)

Tara's Diary

In recent decades, the Internet has become an inseparable part of daily life. It has shifted from a possibility to a necessity. Its impact on society, politics and ecology has grown so much that we can no longer neglect it. *Tara's Diary* is an AR book that tells the personal stories of a 29-year-old woman living in 2052. Through the illustrated book, combined with AR, the reader engages with different aspects of her daily life, influenced by a speculative evolution of the internet for that time. This project uses science fiction writing and design thinking techniques to speculate about the future internet. Staying away from mere dystopian or utopian mindsets, the book's stories span undesirable futures and potential areas for improvement.

Lea Schnell (AT)

Technology Is...

The touch-sensitive interface of the installation consists of letters made of copper-coated circuit board which form the sentence, "Technology is not neutral". The material used is a basic component of common electronic devices. The installation refers to the technological production processes by bringing this normally invisible material to the forefront. When users touch the words composing the sentence, sound recordings of discourses about science and media will be activated, triggering a polyphonic cascade of voices, fragments of statements and controversial points of view on technology. In this way, the users can find their own path in "listening" to the sentence.

Sara Koniarek (AT)

Tele_Code

For centuries cryptography was used to ensure information secrecy and safe communication. Historically, queer people have had to use various codes and signals to indicate their sexual orientation to each other without being put in danger. *Tele_Code* aims to shine a light on these hidden parts of history. Inspired by Anne Lister, who used a substitution cypher to write about her relationships with women within her almost 5 million word diaries, the single-player video game takes the player into a maze full of encoded teletext pages, where they must find hints that reveal parts of the cypher and unlock the secret last page.

Infinite Nows

Zurich University of the Arts (ZHdK), Interaction Design Department (IAD)

Faculty: Karmen Franinovic, Erika Marthins

Infinite Nows is showcasing student projects of the Interaction Design department (IAD) at the Zurich University of the Arts (ZHdK). Probing alternative presents through investigative, speculative and experimental practices, *Infinite Nows'* projects reflect the values and approaches of IAD that have been shaped over its 20-year existence. Interaction design is, above all, about the relationality and entanglement of human and non-human actions. *Infinite Nows* proposes a variety of ways of taking action that allow us the space to be with and learn from the other.
The exhibition looks at a range of topics including cross-species interaction, self-perception in deepfakes, inclusive voting systems, antisocial media platforms and other interactive technologies that produce moments of sharing, presence and care.

Andreas Bütler (CH), Fabian Frey (CH)

Dialoguing with Ecologies

Exploring Forms of Dialogue with the Ecology of Bark in an Interspecies Design Process

The *Dialoguing with Ecologies* group created several tools for various forms of dialoguing with the ecology of living bark, to start a long term dialogue with the organism that evolves over time. At the end stands the Organic Gate, it offers the possibility of a human-nature dialogue by transmitting questions to the ecology through a digital interface.

Lilian Lopez (CH), Sonjoi Nielsen (CH), Yangzom Sharlhey (CH)

Personendepot

Personendepot is a social anti-social media platform without likes, comments and followers, yet it is the most personal platform. It enables a feeling of connection without actually being connected.

Duy Bui (CH)

On Souls and Soil

On Souls and Soil investigates landscapes of colonialism, capitalism and displacement, and sheds light on soil's entanglements with history, culture, politics and science.

Paulina Zybinska (CH)

Faketual Reality

Faketual Reality is an audiovisual installation, which investigates the understanding of "fake" and "real" in correlation with the growing ability of synthetic media. In the participatory and individualised experience, the audience encounters themselves with a twisted version of their own persona.

Marcial Koch (CH)

Hearo

While our auditory system provides us with cues to perceive our surroundings, this ability stays rather passive to protect us from overstimulation. *Hearo* provides tools to actively explore our acoustic perception of space.

Daniel Holler (CH), Vinzenz Leutenegger (CH)

Votetandem.org

The social platform *Votetandem.org* aims to promote inclusive voting by giving the disenfranchised in the Swiss population an opportunity to have a political say.

Aurelian Ammon (CH), Carlo Natter (CH)

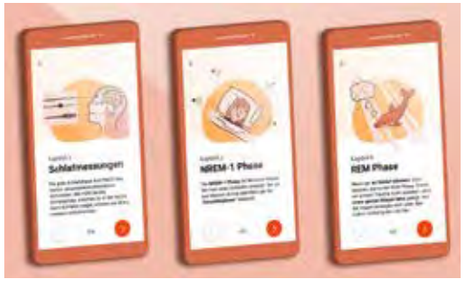
Tales of Arid'Nu

The project aims to reimagine the potential of machines as independently performing agents, and to stimulate a new methodology for the design of artificial life.

Claudia Buck (CH), Randy Chen (CH)

Journey to Recovery

Journey to Recovery is a therapeutic companion app that helps children use a sleeping device with AR and keeps them engaged by means of a captivating and informative story.



Jennifer Duarte (CH)

Tongue Interactions

Myofunctional therapy is a proven treatment for sleep apnea and snoring. In this project a novel tongue interface allows users to perform a gamified therapy to increase the perception of the tongue movement and to keep them motivated during treatment.

Martin Dušek (CH), Jannic Mascello (CH)

Amt für Kleinstdelikte

This project presents a series of speculative objects that allow us to easily adjudicate and punish micro-offenses. It questions if we want to live in a society where inconsequential offenses are punished, and asks who should do the policing.

Marco Ehrenmann (CH),
Thomas Schertenleib (CH)

The Affordance of Cattle

Investigating the transformation process from animal to meat led to three speculative devices. They suggest alternative killing methods, and thus promote a more conscientious meat consumption.

Colin Lüönd (CH), Fabrice Spahn (CH)

T-kit

A series of interactive objects represent a discourse of noise, communication and sense of time in the workspace. Through a playful and tangible experience, the workplace is reinterpreted.

Gian Klainguti (CH)

Holiday Hacks

A future where intelligent VR systems turn homes into convincingly real mixed-reality destinations that cater to all of our senses is envisioned. Exploring remote locations in the past, present and future, answers are sought around the nature of reality, yet more questions are raised.

Florian Bruggisser (CH)

Deep Vision

The work examines machine vision and its translation into visualisations, the interface between artificial and human perception. The audience is given the opportunity to not only understand the inner workings of the machine but also to reflect upon the constantly evolving interdependence between the user and technology.

Erika Marthins (SE), Stella Speziali (CH), Juan García (CO/CH)

Taste Lab

A multi-sensory experiment involving taste, sound and touch. This experiment uses VR as a medium to trick our brain and explore the roles played by our senses while eating.

Silvan Zurbrügg (CH), Collaboration partner: etoy

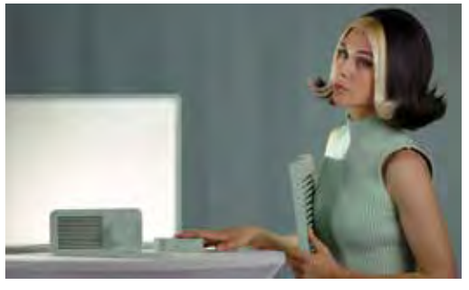
Mission Eternity Tamatar

Tamatar investigates the principles of self-organization applied to autonomous physical objects for the purpose of communication. Equipped with the ability to communicate with each other, it shall be possible for the objects to act as a collective and react to the others' impulses.

Nadine Cocina (CH)

Rare Necessities

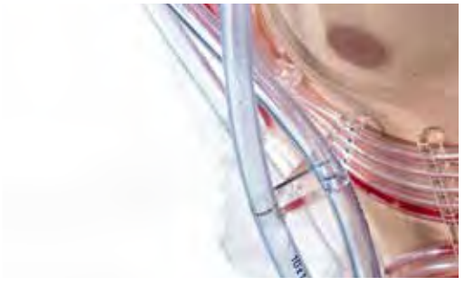
By exploring the growing intimacy outside of the typical purpose and functionality of technologies, this work manifests itself as a speculative short film, allowing us to reimagine our technological experiences and their broader impact.



Andrin Gorgi (CH), Marcial Koch (CH), Shaën Reinhart (CH)

Wearalab

We live in our body and yet we know almost nothing about it. *Wearalab* refers to the most important database of human beings, the blood, and embodies the values of life.



LOOPS OF WISDOM
University of Art and Design Linz
Department of Time-based and Interactive Media Arts

Alice Hulan (AT)

GRAMMOPHON — Unerhörtes — Zitate von 1924–2018

By turning the handle, recorded historical and current political quotes become audible, including dehumanizing statements that were and are used as demagogic means to degrade and objectify people.

Daniel Fischer (AT)

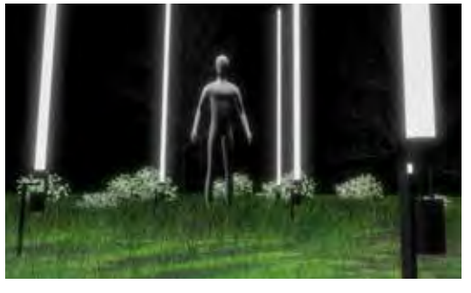
watermap

Water is life. Without it, nothing organic exists. *watermap* symbolically shows how rain brings the whole world to life by visualizing data in a tangible way and representing rain through real water drops.

Jan Pos (CZ)

Gust (Lights)

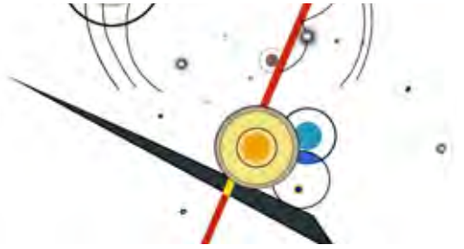
The weather-simulating object is directly influenced by its environment. One can take a gust of wind to strike a balance between the natural and technological worlds. The instability and variability of the object, both visually and content-wise, is essential.



Joann Lee (KR)

Sound of Kandinsky

Wassily Kandinsky was a synaesthete who heard sound in color and form, and painted accordingly. *Sound of Kandinsky* explores the artists' interpretation of this working process.



Deepa Antony (AT)

Familiar Impressions

Familiar Impressions is an AR animation project about the artist's Indian roots, showing scenes from an everyday life in India.

Edin Turalic (AT)

Lichtpendel

Lichtpendel deals with the relationship between humans and building. Motion and audio sensors placed in the building provide data that is sent to a pendulum, which causes it to swing in different ways according to the recorded data.

Joachim Iseni (AT)

Nach dem Guten suchen

As an interactive video controlled by eye movements, a screen shows several short videos of daily routines, which only change as soon as the eyes actively search for new details, raising the sense of one's own physical and mental control.

Thomas Guggenberger (AT)

STRANGE_FACES

As an interactive installation, *STRANGE_FACES* follows the faces of its users, playing with their images and their perception. What happens when one always sees another person in one's own mirror?

Chiara Matschnig (AT)

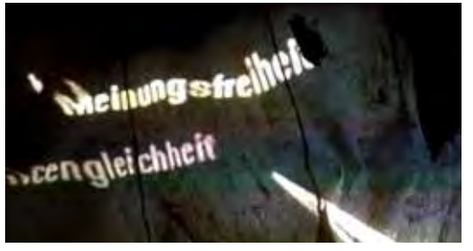
FLOATING

At *FLOATING*, changing moods of spheric sounds move through space and make the unstable relation of perception and truth tangible, while visuals create a palpable sense of floating.

Lisa Patscheider (AT)

Freedom of Conscience

In the midst of value hegemony, political skin is caught between empathy and idealism; points of orientation are projected onto the latex as opposite conceptual pairs, with the political compass's needle moving steadily and indecisively among them.



Vojka Laurenz (AT)

DREAM WAVE GROUP

Dream Wave Group is an RPG Lite/Chillout video game in which you enter the dreams of random people to subconsciously help them cope with their troubles in life.

Winkler Felix (AT)

Quarinsane

Quarinsane [quarantine and insane] is an interactive visual novel that deals with the subconscious side of the quarantine in the pandemic as a first person game.

Reinhard Reisenzahn (AT)

CVG/CVF

Pulse and body movement influence the electrode-wired modular synthesizer and, vice versa, electrical impulses control muscle activity. An experiment between synchronization, symbiosis and control.

Department of Fashion & Technology

Julia Moser (AT)

Yearning for Colour. Pigment-Producing Bacteria fulfilling Fashionable Desires

Humans' desire to express through colour dates to prehistoric times. Colours serve as a means of communication and expression, directly triggering feelings of relaxation, as well as tense and intense emotions. An unconscious use of colours and dyes, however, harms the environment tremendously and can be seen in rivers that shimmer in all imaginable colours. Toxic and polluted, they destroy the habitat of living creatures that depend on clean water. But not all coloured waters result from this devastating use. Under certain conditions, bacteria produce pigments that turn entire lakes into brilliant colours. The bacteria of these waters are isolated and the „living pigments" they produce are explored, alongside their potential to dye textiles.

The result is a sustainable dyeing method using bacteria from naturally coloured waters, which requires hardly any water and makes the hidden colours of our environment visible.

Magdalena Neuburger (AT)

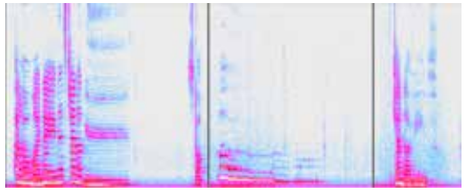
Dress Codes & Dance Codes

Approaches from the underground are evaluated for their relevance to fashion, and applied at different stages of the digital design and production process. The results are visualizations of recorded traces of movement in various materials surrounding the digital body. They reveal an inherent coherence between the disciplines of fashion and dance. As a communication tool and an identity-building medium, both fields can visually represent individuality and cultural belonging. Freed from physical limitations, the digital designs express these aspects more deeply. Using African and Hispanic diasporic dances as inspiration, the project reflects on the central position of historically privileged Western movements and approaches in the context of fashion, and their destabilization. The artist is aware of her privileged position in being heard and welcomed to spaces that others are rejected from.

Genevieve Howard (IE)

From Voice to Voltage/From Sound to Shape

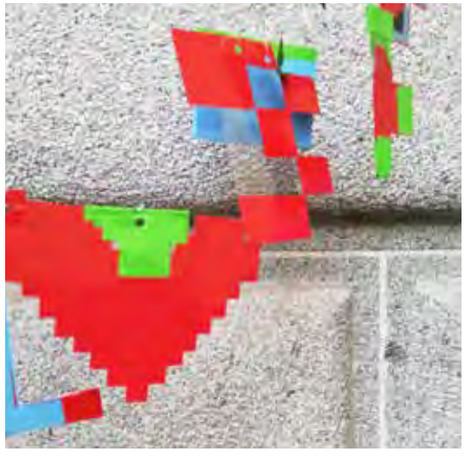
The objects we choose to adorn our bodies with are personal expressions of ourselves, and can act as extensions of our identity. Our voice is fundamental when it comes to our identity. It is the sonic medium which allows us to express ourselves and it conveys our emotions in real time. The work aims to connect the autobiographical and personal relations that wearable objects mediate with the unique qualities of our individual voices. A digital system was created to remap the frequencies of the human voice in real time while speaking or singing into electrical voltages. These voltages can then directly change the colour of reactive metals such as titanium. The voice is used as a generative tool in the design process to directly influence the colour and shape of a material. The result is a unique representation of the human voice in the form of a tangible wearable object.



Department of Art Education

PLAY WITH PIXELS

While modern technology cannot replace the analog world's haptic experience, it can complement it perfectly. *Play with Pixels* is an interactive open lab about the smallest part of a digital raster graphic. We zoom into the pixel world to enlarge, illuminate, recombine and make the world of digital images more tangible. At the same time, we playfully explore the translation possibilities between the analog and digital, embarking on a search for a world of images where pixels and graphic gestures meet. In this way, visitors are invited to engage with the diverse dimensions of a pixel with the help of various materials. Visitors are invited to create their own pixel postcards on site and to send pixelated greetings from downtown to the Open Lab at Kepler's Garden. Via the pixel phone, short daily glimpses of what is being created in the open lab are offered, enabling parallel analog and digital communication and combining the advantages of both worlds.



Team: Anna Oelsch (DE), Gerda Lechner (AT) and Maria Binder (AT), students of Visual Education and Media Design as part of course "BE goes AEC", by Gerda Martínez López (DE) and Lisa Wieder (AT)

Department of Design & Technology

Crafting Futures Lab

The *Crafting Futures Lab* is a platform for active investigations of the future of craft, the craft of the future and the crafting of futures. It researches and practices materials, techniques and tools as processes and means to generate and diversify knowledge and engage diverse audiences in thinking and acting towards alternative futures. Active questioning, learning, and sharing are core premises to the inquiries undertaken at the intersection of traditional crafts, digital technologies and education.

The *Crafting Futures Lab* has been newly established at the University of Art and Design Linz to focus on teaching, learning and practice concerning the integration of technological development into the fields of art and craft, and the social, cultural, technical and aesthetic implications thereof. It seeks cooperations with schools, cultural organizations, practitioners and policy makers. As a part of *Loops of Wisdom*, the Lab will open its activities to the public for the first time pursuing exchange by showcasing current developments, and previewing ongoing investigations and upcoming collaborations. The Labs open-source infrastructure displays toolkits designed by master students of the teacher training program *Design:tech.tex*, and work and tools intersecting traditional crafts and digital technologies, and participatory interventions. The Lab involves faculty, visiting artists and researchers, as well as students.

Participants: Irene Posch (AT), Monja Hirscher (DE/AT), Ingrid Hackl (AT), Teresa Almeida (PT/SE), Giulia Tomasello (IT), Robert Angerer (AT), Yara Bartel (AT), Lisa-Marie Gmeindl (AT), Michaela Haager (AT), Ramona Kogler (AT), Sofie Lüftinger (AT)

Department of Media Design

Reinhard Zach (AT)

Topografische Video Installation

209,000 photos on a bicycle tour of Moscow: for 2 weeks, the camera is automatically activated every 20 meters. The surrounding topography becomes visible in real time. The perception of distances has changed since people started using motorized vehicles. Distances within a city are perceived as greater, while modern transportation systems seem to shorten distances between cities. The video installation follows the route at a continuous speed of 18 km/h, and reflects not only on the size of our continent, but also on the world beyond the expressways.

Michael Kramer (AT)

Voices Diversity

Seven artists of ClickCollectiv (collective for FLINTA* musicians) perform acoustically through one loudspeaker, each of which is integrated in a circle at head height. Through conversation, discussion, pleading, soliloquy, singing, or exploration of the limits of the human sound spectrum, charged, coherent and dissonant harmonies and statements emerge.

Michael Kramer (AT)

Digital Ritual

An LCD panel is used to modify a discarded overhead projector into a digital projector. The projection shows the old teaching practice with an overhead projector. The work deals with slow shifts within fast technical changes and confronts the human being as a creature of habit faced with constant changes.

Rosa Schwarz (AT)

Ich möchte heute einen Wasserfall anziehen

The work translated the functions of a ritual, protection and security to the body and its adornment. From the meaning to its visualization in daily life, from the superficial to the profound, the body and its environment become a projection surface. Feelings and places of desire are projected in a time of isolation. From waterfall to “no-signal”, that’s how I felt.

Vera Dittenberger (AT), Susanne Hinterberger (AT), Alexandra Loitfellner (AT), Joel Teodoro (AT), Judith Zdesar (AT)

Generation:Transformation:Film

A Super 8 clip is the starting point of a cinematographic metamorphosis, followed by VHS, MiniDV, and HD video. At each step of the process, the clip is projected and subsequently filmed with a different format/medium. In the process, the clip keeps changing its character, its content, its “look”, its quality. With each generation, information is lost, and a new perspective gained. In this metamorphosis, all steps are projected side by side and make the process visible in the change in materiality, the loss of objective quality and stylistic form.

Bertram Verdezoto Galeas (AT)

ähnlich

ähnlich refers to the transformation processes of (private) media practices and allows a look at analog techniques of the recent past. These reveal a drastic change in mediality within a generation, and make a media imprint that evokes certain subjective memories visible.

Alexandra Loitfellner (AT)

The Sound of Braille

Texts by deaf-blind writer Helen Keller are translated into Braille. The Braille-notation serves as “MIDI notes”, which are holes punched in a paper strip and played on a mechanical music box. The *Sound of Braille* makes literature haptically and melodically tangible. The initial text completes its transformation from written word, via Braille, to a melody.

Hasan Ulukisa (AT)

Blind Spot

“Since I first visited the Bosnian ‘horror camp’ Vučjak, where refugees were violently held up—only 224 km away from Austria — with the SOS Balkan Route initiative in 2019, the suffering of the people there has never left me. The fight against the normalization of those ugly images, the empathy and helpfulness of many people, formed the foundation of my work.”

Jennifer Eder (AT) & Robert Starzer (AT) (music by Indorsia)

HYDRA

HYDRA leads into the cellar of the Art University, while the title recalls the mythical multi-headed monster that can only be defeated by using all of one’s strength and cunning. Photos of the cellar are combined with animated images from the Gurlitt Collection. Through the fast, collage-like arrangement, hand camera aesthetics and a metalcore soundtrack, the oppressive atmosphere of the cellar emerges with relation to the building’s NS past, and recalls Gurlitt’s trade of looted art.

Shari Keplinger (AT)

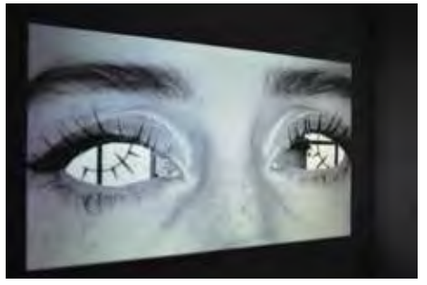
Escape

Escape is a very personal artwork; it shows an outbreak from a feeling, from an emptiness. “It’s an installation about a period in life, about hurting and loving.“ The artist developed the installation from a journal she kept some time ago.

Shari Keplinger (AT)

Ich habe keine Träume mehr gehabt

What can be read from people's gazes? Can photos of eyes tell us what they once saw? *Ich habe keine Träume mehr gehabt* is one of many survivors' descriptions of their time in the Gusen concentration camp. While the eyeless mask remains lifeless and without eye contact, the footage of the memorial seems to look for orientation and support.



Susanne Hinterberger (AT)

Tape Walk

A magnetic tape is removed from its cassette and applied onto the wall. Furthermore, a Walkman was hacked to expose its reader. The magnetic tape contains a self-composed track with noises from daily life, and other elements. The hacked Walkman allows users to touch the surface and listen directly. A metamorphosis of the audio experience is created, where the "work" of playing is done manually instead of by a device, to create a unique output.

Melanie Steinhuber (AT)

MIDI-Code

MIDI-Code presents a transformation in various layers. Five visually created codes from midi notes show different images, while the sound is created from the visual design of the notation. The graphic is embedded in a QR code and, when scanned, reproduces both the image and the sound generated by the notation.

Reinhard Zach & Lukas Jakob Löcker (AT)

3Drio Transformation

Wait, listen, react; 3D printer, cello and synthesizer as a chamber music trio and "interface". As the rhythm of the printer, the deus ex machina sets the repetition of the interface which gets picked up, counteracted and evolved by two persons with different instruments. The improvisation is a form of communication between human and machine, a sonic experiment to connect and transform different medialities.

Department of Visual Communication

Daniel Huber (AT)

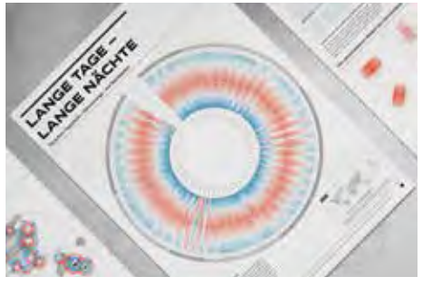
2.0 — Diskurse aus der digitalen Welt

2.0 is an intermedia journal for digital world discourses, with the first edition devoted to virtuality and un-mortality. Through interactive elements and virtual layers, the traditional print medium becomes an analog-digital hybrid medium. The aim of the publication is to explore the rapidly changing social and societal realities and abysses.

Bettina Mörz (DE)

Die Vielfalt des Sonnenlichts

"How can the diversity of sunlight be visually represented in terms of temporal and geographical aspects?" is this project's starting point. It is structured through three different themes and media: see, research and experience. In this exhibition, the topic of "research" is shown via data visualizations.



Nadine Schütz (AT)

My Grow Biome

There are trillions of microorganisms living on and inside our body which are essential to our health and happiness. A better understanding of human-microbe interactions could prevent many health issues. This work aims to translate microbial processes into visually perceivable experiences. The shown display enables microorganisms to create individual shapes. The viewer witnesses microbial creation in real time.

Vasilisa Aristarkhova (RU)

Planet B

Planet B explores colonial patterns in both space exploration and visual communication and aims to broaden the discussion in these spheres. Within the installation, Aristarkhova tries to imagine what happens if nothing changes and the world is not closer to decolonialisation than it is now, as well as to answer the question of how the colonial past can influence and shape our future. The project gives a new perspective on the issue, and allows us to look at our biases from a different point of view — from the year 2050.

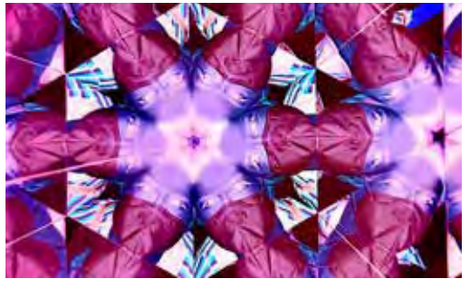
Department of Visual Communication

post-covid fictions

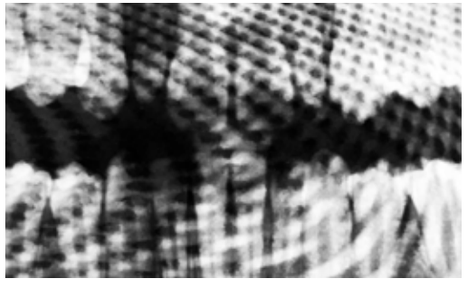
A Design Fiction Project with Augmented Print

The Covid-19 setting has made it challenging to speculate about alternative futures. Corona narratives and preventive measures dominate the discourse. The feeling of uncertainty fuels adversarial reactions and resistance, leading to conspiracy hypotheses and social control. In this climate of dystopian surveillance and the lockdown of feelings and interactions, we are looking for a more nuanced vocabulary and a more colourful range of possibilities for action. What are the ways out of a shocked society paralysed by order instructions during a pandemic? We create speculative design objects through which to track down the moods, fears, needs and desires in contemporary urban situations. By using augmented print objects in different scenarios, viewers can experience a range of possibilities for alternative realities that stimulate interaction. post-covid fictions are visual interventions in the city space to contrast dystopian realities with “smartness”, resilience, alternative images and colourful calls to action through speculative design.

Curator: Barbara von Rechbach (AT)



Valerie Danzer (AT)
post-covid story 001: Instructions for the Future



Iska Alena Gebhard (AT)
post-covid story 002: Wiggle Room in a Pandemic

Stefanie Hoffmann (AT)
post-covid story 003: Back to Normal?

selim eins (AT)
post-covid story 004: Countdown

Department of Industrial Design

Maria Fröhlich (AT)

Haptic Play

The effects of physically-deficient environments in daily life have an impact on us all, but are yet more dramatic for children. Touch is obvious and ordinary to our everyday experience, insofar as it is perceived as almost meaningless, but it is crucial to our existence. Everything that needs to grow must not only be nourished, but sufficiently physically stimulated, too. In a world in which a global pandemic has pushed us to rethink every touch interaction and proximity factor in our daily interactions, there is even greater urgency around this topic. This sensory music toy uses natural materials with different haptic characteristics to create sounds. *Haptic Play* aims to encourage children to spend more time exploring their

senses, especially touch, as they navigate the haptic characteristics and spatial relationships between the objects on its surface.

Aleksandra Radlak (PL)

Bo.by

Worldwide, about 15 million babies are born prematurely each year. Born with a developmental deficit, they are often taken away from their parents after birth and assigned to the Neonatal Intensive Care Unit. Left alone in incubators without a real chance to experience skin-to-skin bonding with their parents, they are deprived of touch and physical contact, which places immense stress on their sensory and central nervous system. Also, for parents, bonding reduces stress and builds attachment *Bo.by* is a solution that enables remote contact between parents and infants in the incubator. A device for parents, and a mattress for an infant, are connected and collect, send and receive data such as touch, breast

movement and vibration, heartbeat, body heat or smell. This two-way communication, enriched with senses, offers the possibility to experience a natural, prolonged skin-to-skin bond.

FLUT Freiluft-Kunstuniversität Linz

Department of Architecture | Urban Studies

FLUT is a 1:1 project at the Urfahranermarkt Linz, a largely fallow area next to the Danube that is only briefly used twice a year for a fair. After a year of digital teaching, students went to the market area and developed parts of it according to their wishes. The area became a free zone, an experimental field for new architectures, a laboratory for artistic productions, a testing ground for new urban practices and a better usability of the city. As the pandemic has shown, the city needs open, freely accessible and consumption-free spaces and infrastructures. . The aim of *FLUT* was to strengthen the role of future architects by fomenting their sense of agency. Like a flood that briefly comes over a site, fallow urban space was briefly activated and intensively used. As *FLUT* demonstrated, space, thus also public space, can be changed even beyond conventional planning and development models. While *FLUT* was only temporarily tolerated, some of its projects were re-installed in the courtyards of the University of Art and Design Linz.

STAGE creates an open platform that invites people to use the space performatively or to simplychill out. URBAN LIVING ROOM consists of a series of living room-like spaces with fragile wall elements, curtains and furnishings. It quotes the private sphere, but translates it into a new, urban form. CATWALK is a linear structure, offering different heights to be used as bench, table, viewing platform or bicycle parkour. GREEN MACHINE is a delicate steel construction that invites the visitors to enjoy a refreshing experience in under a plant ceiling. www.flut.jetzt

Project management FLUT: Sara Hammer, Frank Schwenk und Sabine Pollak
Artists URBAN LIVING ROOM: Nadia Raza (AT), Magda Kremsreiter (DE), Johannes Gasteiner (AT), Architecture students at the University of Art and Design Linz
Artists STAGE: Lea Dagonneau (FR), Katharina Mertens (DE), Amaia Urkiola (ES), Erasmus students at University of Art and Design Linz
Artists CATWALK: Friedrich Aichhorn (DE), Pauline Gleichner (DE), Ayoub Msijeh (FR)

Post-it to Post It: 2020–2030

Department of space&designstrategies

Faculty: Xian Zheng (CN)

In April 2020, when Austria first began its lockdown due to the pandemic and the university immediately switched to distance learning, Xian Zheng created the *Post-it to Post It* workshop. Every Friday in April, students submit five post-it-sized diary drawings, which are uploaded to an online gallery on Pinterest. The mini-sized drawing paper recycles daily waste paper and distracts from the trouble of not being able to go shopping. The process of drawing forms a dialogue and meditation with oneself, and establishes communication with others via the online window. Changes can be seen in the weekly drawings, which capture the course of the pandemic and people's lives. The workshop was held again in April 2021, resulting in more than 1,000 diary drawings by more than 70 students over the past two years, forming a precious documentation of the changes in people's lives during Covid-19. The *Post-it to Post It* workshop will continue to be held every Friday in April until 2030. Beginning with the trivial things in daily life, we are looking forward to building an 11-year drawing archive to observe the specific changes of life in the pandemic and post-pandemic eras.

Akademie der Gedanken (Academy of Thoughts)

Department of Interface Cultures

A courtyard, a tree, a fountain and lots of pens and paper: this is the setting in which we are reflecting, together with invited partners. We sit around a tree and think, we sketch out ideas, scribble futures and write, together, on a critical image of our time. Topics such as Infinite Nows (Zurich University of the Arts), Critical Data (Interface Cultures, CYENS Centre of Excellence Cyprus, Technical University of Vienna), and Climate-modern Futures (Interface Cultures in collaboration with Leonardo Laser Talks will be addressed via talks, discussions and open workshops. Dedicated sound interventions and performances in the Academy of Thought will round off the programme and provide space for an inspiring, inner-city festival hotspot setting.

Hosts: Manuela Naveau and
César Escudero Andaluz

LEONARDO LASER LINZ — Die Gartenlaube/Garden Gazebo

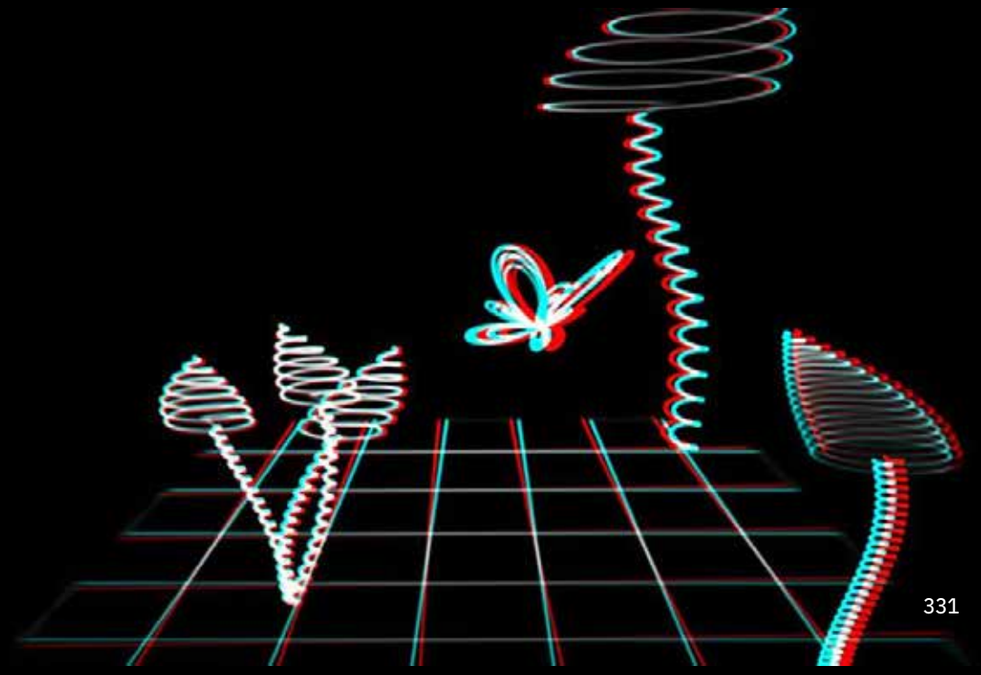
In September 2021, Linz is joining the Leonardo Art & Science Evening Rendezvous (LASER) network. This international program brings together artists, scientists, scholars and the general public for inspiring presentations and conversations. The *LEONARDO LASER LINZ*, hosted by the Interface Cultures department at the University of Art and Design Linz, will be held during the Ars Electronica 2021 Festival. For the *LASER* launch event, more sustainable ways of living, local and global environmental protection and artistic and scientific developments for a "climate-modern" future will be given a special interdisciplinary focus. In a modernized "Gartenlaube", themes such as Climate-Care, Climate-Digital and Climate-Social (as proposed by Christoph Thun-Hohenstein) will be debated and discussed. Other specific topics will be presented, including Interspecies Collaboration, The Mind of Plants, Herbal Pedagogy and, finally, an exploration and celebration of artistic and folk wisdom, to bring us all together for a "Gartenlaube Waltz".

Hosts: Christa Sommerer and Fabricio Lamoncha

Sound Campus

Sound Campus opens a possibility for students and researchers of the University of Art and Design Linz to present new forms of sonic arts to the great audience at the Ars Electronica Festival. This year's program resonates with the revival of "Reclaim The City" sensibilities grown after lockdown periods. Mini-raves, organized by youngsters on the Danube's shores, are boosted by battery-powered bluetooth speakers and delimited only by towels and picnic blankets. In parallel, their parents re-discovered city benches and museum staircases for gathering with friends and neighbours. Will this reconquest of public space continue after the pandemic? Will we forge a critical approach, or is it simply public space appropriation?
Sound Campus will be presented around the courtyards of the University of Art and Design Linz: experimental music, headphone concerts, laser musical visualisations, soundscape and DJ sessions, plus open bluetooth speaker encounters. A social space to take one's time and listen to innovative music.

Curators: Enrique Tomás, Julia del Río; Text: Enrique Tomás; Production: Julia del Río
Live Performance Program — University of Art and Design Linz (Hauptplatz 8)
Artists: Patricia Cadavid (CO) and Paola Torres Núñez del Prado (PE), RGBastler (Andreea Vladut (RO) and Florine Mougel (FR)), Oscilloscope Music (Hansi Raber and Jerobeam Fenderson) (AT), Polina Khatsenka (BY), Julian Umhaller (AT), Stefan Tiefengraber (AT), Teodor Dumitrache (RO), DJ3XXICA (ES), ✧*:•˚✧sch4tzi✧*:•˚✧ (AT), MARAws (AT), Sun Li Lian Obwegeser (AT), Reinhard Zach & Lukas Jakob Löcker (AT), Reinhard Reisenzahn (AT) and Co.Lab Acoustic Ecologies University of Art and Design Linz.



GUEST PROJECTS

Simon Lehner (AT), Flavia Mazzanti (IT/AT), Michaela Putz (AT)

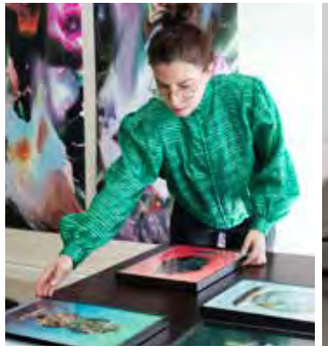
Hosted by Bildraum Vienna and Ars Electronica at Salzamt Linz

Simon Lehner's works are closely linked to an autobiographical core. In the attempt to (re)construct violent experiences suffered in the tension between conscious and subconsciousness, his art alternates between remembered and situationally perceived reality. The artist, nominated for this year's Kardinal König art prize, uses a variety of media at the Salzamt, most of which revolve around the iterations of a photographic process. Artist and architect Flavia Mazzanti uses experimental film and immersive media to explore socio-spatial contexts in dialogue with philosophical themes of New Materialism and post-anthropocentrism. As a member of the artistic-technological development team for the *Neuro-Traces* project, she combines Brain Computer Interfaces (EEG) and VR to create an installation that can be interactively experienced in the exhibition. The artist Michaela Putz deals with the implications of a society reduced to the surfaces of digital communication technologies. Using photography, painting and digital post-processing, she investigates the influence of increasing digitalization on the perception of intimate relationships and our immediate environment. For the presentation at Salzamt, she translates her art into an expansive intervention.

The exhibition at Salzamt Linz includes a selection of video works, photographs, preliminary studies and sketches curated for the Ars Electronica Festival theme, a spatial intervention, and a VR installation.

Zukunftsrat Demokratie, Constitutional Innovation Hub Graz (Universität Graz), Munich Center of Technology in Society & Institute for History and Ethics of Medicine (Technische Universität München),
Bayrisches Forschungsinstitut für Digitale Transformation, European Public Sphere, Open Innovation in Science Center (Ludwig Boltzmann Gesellschaft)

Flavia Mazzanti
Photo: Manuel Bonell



Michaela Putz | Photo: Michèle Yves Pauty
© Bildrecht Wien

Simon Lehner | Photo: Eva Kelety, © Bildrecht

BIO AUSTRIA (AT)

BIO AUSTRIA

BIO AUSTRIA Farmers' Market: Organic grows on the best soil. Organic farmers from *BIO AUSTRIA* know the value of soil, because it is the basis for the production of our daily food. Plants, animals and humans benefit from healthy soil. Therefore, organic farms care for the soil — for the benefit of all.

Soil is a storehouse of nutrients and home to numerous living things. In a handful of organic soil there are more small creatures than there are people in the world.

© BIO AUSTRIA

Bio Ernte Steiermark

These billions of soil organisms are responsible for soil fertility and plant growth. But fertile soils not only provide valuable food, they also do much more: Healthy soil ensures clean water because it filters impurities. It can also better absorb large amounts of water and in many cases can cope better with periods of drought. Soils also have a strong influence on the climate because they are large CO2 reservoirs. The healthier the soil, the higher the quality of the products — a good reason to buy organic. On September 11th, *BIO AUSTRIA* farmers will be presenting their unique regional products at the JKU campus in Linz. Festival-goers can sample, taste, enjoy and talk to the organic producers. Information about organic farming and the services organic farmers provide to the soil, climate and environment round out the *BIO AUSTRIA* Farmers' Market.

BIO Austria Shop: With one click to your organic product directly from the local organic producer! The *BIO AUSTRIA* online shop is the only Austria-wide web shop for organic products in farmers' hands. More and more *BIO AUSTRIA* farms also offer their products for shipping, so nothing stands in the way of "boundless enjoyment"!

BIO AUSTRIA is the network of Austrian organic farmers. As the largest organic association in Europe, *BIO AUSTRIA* represents Austrian organic agriculture and the interests of organic farmers — with 13,500 members and more than 430 partner companies in the economy.

www.shop.bio-austria.at

Ahmed Alshenoudy (EG), Nikolaus Hofer (AT), Alexander Maletzky (AT),
Bernhard Schenkenfelder (AT), Stefan Thumfart (AT) — all working at RISC Software GmbH

Crash me if you can

Manipulate Traffic Signs to fool AI-controlled Slot Cars

Current vehicles use artificial intelligence (AI) to recognize traffic signs in order to inform drivers or adjust the speed of the vehicle. We often blindly trust these systems — but what are the limits of machine perception? In *Crash Me If You Can* we playfully get to the bottom of this question. Visitors have the opportunity to manipulate traffic signs in such a way that they are no longer correctly recognized by the AI. If a speed limit on the miniature racetrack is recognized incorrectly, the racing car flies out of the curve. RISC Software GmbH is dealing with these and other issues relating to traffic sign recognition by AI in the ”SafeSign” research project. This is being funded by the Austrian Research Promotion Agency (FFG) as part of the Ideas Lab 4.0 program. The AI research is supported by funds from the strategic economic and research program ”Innovative Upper Austria 2020” organized by the state of Upper Austria.

The research project “SafeSign” is funded by the FFG as part of the Ideas Lab 4.0 program. The AI research is supported by funds from the strategic economic and research program ”Innovative Upper Austria 2020” from the state of Upper Austria. We thank our project partners in SafeSign, ASFINAG and JKU.

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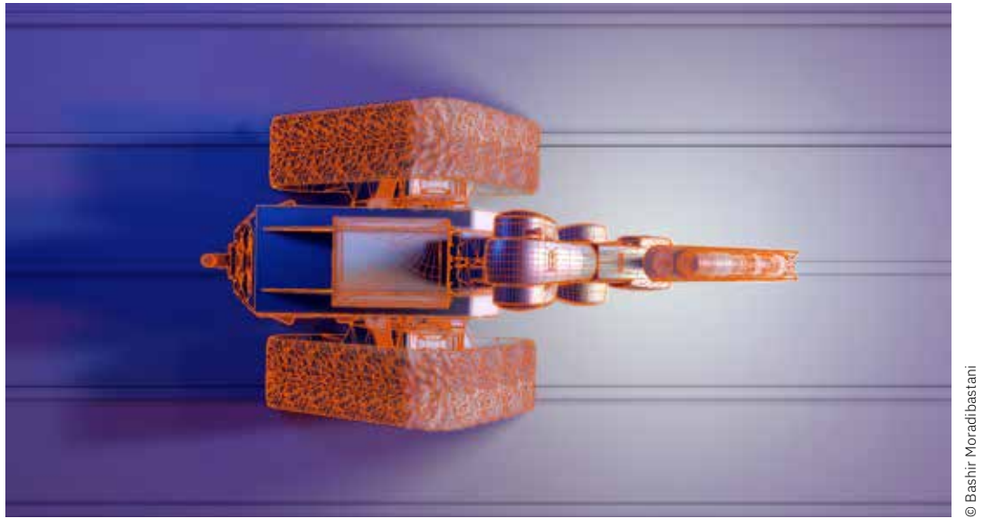


© Bashir Moradibastani

Johannes Braumann (AT) — Creative Robotics (UfG Linz), Gabriel Gruber (AT) — MHC, Stephan Hölzl (AT) — MHC, Martin Krčma (CZ) — TU Brno, Sebastian Lämmermann (AT) — IPPE (JKU), Bashir Moradibastani (IR) — Creative Robotics (UfG Linz), Martin Reiter (AT) — IPPE (JKU), Martin Schwab (AT) — Creative Robotics (UfG Linz), Karl Singline (AU) — Creative Robotics (UfG Linz)

Wandering Factory

Prototyping the Future of Local, Cyclic Manufacturing

It is clear that the future of production has to be local and must be built around a circular economy. *The Wandering Factory* project pushes that goal a step further and relocates production directly to where it is needed, by equipping a robotic arm with an industrial 3D printer and mounting it onto an electric, tracked unmanned rover. Once there, it can autonomously fabricate objects using recycled materials, having adapted individually to the environment and the constraints of the chosen site. The system is the result of a two-month interdisciplinary collaboration among institutions, with the goal of creating a proof-of-concept for the future local fabrication.

By using only products that are presently commercially available, brought together in a minimum amount of time, we showcase that the technology to make production mobile, urban, and flexible already exists — it just has to be used.

The project is part of the FabCity Initiative Linz Developed by Creative Robotics (UfG Linz), IPPE (JKU Linz) and the MHC furniture and timber construction cluster. It received funding through “Leitinitiative Digitalisierung” (Land Oberösterreich) and “DigitalWerk” (BMBWF) Robotics: KUKA Robotics CEE — KUKA KR10R1100-2 robot with KRC5 micro eMobility: Mattro GmbH — Mattro ROVO 2 Extrusion: Noztek Ltd. — Noztek Touch Material: Wood K plus

Zukunftsrat Demokratie (AT), Constitutional Innovation Hub Graz (AT),
Open Innovation in Science Center (AT)

European Public Sphere

All parts of society should be able to participate in the development and deployment of innovative technologies. Technology is not something that just “happens”: It is actively made and can and should be actively modelled to serve societies’ needs.
The *European Public Sphere* is a space where people are free to enter, discuss, listen and leave. Because of its architecture, discourse can penetrate to the outside, including everyone that wants to contribute to solutions, has an opinion to share or just wants to listen.
To ensure that technologies address the actual needs of their societies, we foster a bottom-up approach towards innovative and collaborative technology regulation and design. We propose visitors take part in a world café in a moderated participative format to experience dynamic facilitation of creative communication and democratic engagement processes, focused on developments in robotics and artificial intelligence in healthcare.

Zukunftsrat Demokratie, Constitutional Innovation Hub Graz (Universität Graz), Munich Center of Technology in Society & Institute for History and Ethics of Medicine (Technische Universität München), Bayrisches Forschungsinstitut für Digitale Transformation, European Public Sphere, Open Innovation in Science Center (Ludwig Boltzmann Gesellschaft)

OÖ Kulturquartier (AT), Energie AG (AT)

Höhenrausch

LIGHT SOURCES & SCATTERINGS

The successful cooperation between Energie AG and the OÖ Kulturquartier will be continued this year. This time, sources of light and radiation are the thematic brackets for the outpost of *HÖHENRAUSCH — Wie im Paradies (As in Paradise)*. The headquarters of Energie AG Oberösterreich will be used as an exhibition space by three Upper Austrian artists. While Raphaela Riepl’s light bodies draw themselves, sign-like, through the foyer of the PowerTower, Anton Kehrer captures the radiated energy of light photographically. Audio artist Wolfgang Dorninger transforms the roof and stairwell into a bird’s paradise, using sunlight as an energy source.
Raphaela Riepl’s installation makes reference to the space it occupues, which is characterized by transparency and the shiny surfaces of the foyer. Neon elements and fabrics float in the foyer like drawings made out of light. The salmon-pink and blue reflections on the floor are reminiscent of underwater worlds, like coral reefs. The light box, which is usually used for advertising, is deconstructed by the artist and used as a pure light object.
Light sources of the public space, but also light installations by other artists, serve Anton Kehrer as photographic motif, as with the 4-part photo series which was created in 2018 and shows details of a neon work by Raphaela Riepl. The works conceived for the light boxes, whereby colored glass plates are layered on top of each other on a light table and photographed, were created in the studio. The resulting reduced pictorial solutions oscillate between photography and painting. The glass walls facing the inner courtyard of the building are incorporated into the color and space concept and covered with colored foils.

A 12-channel sound installation with artificial birds by Wolfgang Dorninger leads across the entire 20 floors of the stairwell and high up to the roof. Once there, he presents a sound installation together with Ralf Schreiber, Uwe Schüler and the apprentice workshop. The apprentices made solar bobs from electronic components, which react to sunlight and make the Power Tower emit sound.

Curated by Reinhard Gattinger, Genoveva Rückert und Maria Venzl.
raphaelariepl.com
antonkehrer.com
dorninger.servus.at

© Reinhard Gattinger

Anton Kehrer, Light Flow, 2014-2021,
Photo © Otto Saxinger

Franz Ablinger (AT), Mitch Altman (US), Isabella Auer (AT), Günther Friesinger (AT), Johannes Grenzfurthner (AT), Kathrin Hunze (DE), David Kapl (AT), Mascha Illich (UA), Thomas Kranabetter (AT), Sara Mlakar (SI), monochrom (AT), Kaname “Kenny” Muroya (JP), Thomas Preindl (AT), Tom De Roeck (BE), Walter “Schalter” Stadler (AT), Reinhard Sprung (AT), Martin “Zwax” Zwinz (AT)

Roboexotica Linz

Roboexotica is a festival for cocktail robotics that has been taking place since 1999. Artists, researchers, technicians and hobbyists from all over the world come together once a year to present robots and apparatuses that can mix or serve cocktails. The festival is organised by the monochrom group in cooperation with Shifz. The cultural association DH5 in Herrenstraße is inviting *Roboexotica* to Linz for the first time from 9-12 September during Ars Electronica. The premise, “robots mixing cocktails,” is an ironically fractured statement. In addition to the practical presentation of machines, the event also deals on a philosophical level with technology hypes, science credulity, the sociology of technology and historical changes in the presentation and marketing of technology. V. Vale described *Roboexotica* as an “ironic attempt to critique techno-triumphalism and dissect technological hypes”.

monochrom, Shift, DH5

Amalettomat, © Pia Streicher

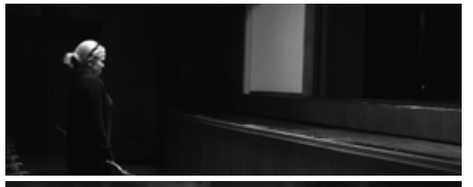
Shot from above, © Pia Streicher

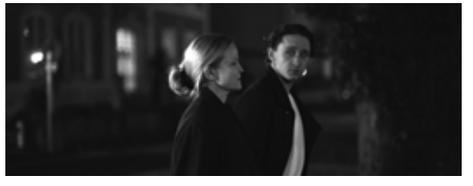
Julian Pixel Schmiederer, Gregor Franz, Lara Rabtisch, Johannes Rass, Arthur Göttlich, Aaron Friesz, Ruth Steinhäusler, Michou Friesz

Drama.

Drama. is a short film developed, produced and realized by ambitious young filmmakers as a graduation project of the Ortweinschule Graz.
A drama off stage, between perfectionism and megalomania.
Drama. tells the story of the young actor Arthur, who breaks completely under the pressure of his perfectionism and that of the director Ruth during his first big theater production. The filmmakers give a first insight into parts of the film and provide an exclusive look behind the scenes of the film shoot at the Altes Theater in Steyr.

Regie – Buch: Julian Pixel Schmiederer
Bildgestaltung: Gregor Franz
Szenenbild: Lara Rabtisch
Montage: Johannes Rass
Main Cast: Arthur Göttlich, Aaron Friesz, Ruth Steinhäusler, Michou Friesz
Supported by Altes Theater Steyr





© Drama. / Picture 1: Aaron Friesz, Philip Warmuth, Helena May Heber, Irem Gökçen, Uschi Nocchieri, Sabine Halbwirth, Otmar Pils, Lukas Coleselli; Picture 2: Michou Friesz; Picture 3: Aaron Friesz, Michou Friesz

© Jakob Gosch / Picture 1: foreground: Julian Pixel Schmiederer, Michou Friesz, Aaron Friesz, Lukas Coleselli, Otmar Pils; background: Sarah Steinhäusler, Johannes Rass, Leo Breid, Gregor Franz; Picture 2: Cast and Crew; Picture 3: Johannes Rass, Gregor Franz

Project for Next Cultural Producer Incubation Program

Agency for Cultural Affairs of the Government of Japan & Ars Electronica

In 2021, the Agency for Cultural Affairs of the Government of Japan and Ars Electronica start a very special training program in Linz, Austria. During a six-month residency, the participant will have the opportunity to experience the many facets of Ars Electronica.
How can we educate future cultural producers who can transcend existing frameworks, encourage people to discuss and create new frameworks with vision?
Taking advantage of the fact that Ars Electronica is a rare institute with its own creative ecosystem, the participant will move back and forth across the following four different divisions to learn about the impact of art on society, education, technology, science, industry, and citizenship. Whether through the renowned media art competition Prix Ars Electronica, the Ars Electronica Center as Museum of the Future, the in-house research laboratory Ars Electronica Futurelab or the international Ars Electronica Festival–in each of these areas, art meets science, education and business, interlinking and complementing each other to create new impulse-giving synergies.
The residency is therefore much more than just a look behind the scenes of organization, research and production. Here, skills for the next generation of curators and cultural producers will be imparted. The main focus will be on trying out new concepts for interdisciplinary collaboration. The 2021 participant Maaya Makino provides an online hybrid workshop for Japanese junior high school students with the support of the team in the Ars Electronica Center.

© Emiko Ogawa

Fumi Yamazaki, Niantic (JP)

Niantic Lightship ARDK preview and showcase

Niantic Lightship Augmented Reality Developer Kit (ARDK) is a robust set of tools that enable developers to create multiplayer experiences and bring them to life with depth, physics, occlusions, and semantic segmentation. ARDK is made for developing AR experiences for both Android and iOS mobile platforms — and integrates directly within Unity. We welcome developers and creators to sign up at Niantic.dev to join the private beta of the *Niantic Lightship ARDK*! In this talk, we will give you an overview of what ARDK is, and showcase some examples of projects that our Beta developers have worked on.

Niantic, Inc.

© Niantic, Inc.

Allison Costa (US), Ana Prendes (GB), Christiana Kazakou (GB), Cui Yin Mok (SG), Hyash Tanmoy (IN), Illya Szilak (US), Ilona Puskas (HU), Justin Berry (US), Kavita Gonsalves (AU), Kazz Morohashi (GB), Kofi Oduro (CA), Komal Jain (IN), Lizzie Crouch (GB), Madhushree Kamak (IN), Maria Kuzmina (RU), Mark Bolotin (AU), Matt Gingold (AU), Nicholas Medvescek (US), Ravin Raori (GB), Robin Reid (US), Viviana Quea (AT), Zeynep Birsel (NL)

A Manifesto for Creative Producing

As interdisciplinary collaboration emerges as a vital linchpin in an increasingly interconnected world, the role of Creative Producer is coming to the fore. We appear across industries and sectors, and can broadly be identified by a common commitment to collaborative process, relationship building, and creative problem solving. For many, having self-defined and developed our practice independently, we are now looking for community and collective professional identity.
Over six weeks, 22 creative producers across ten countries and four continents will gather to critically reflect on our role and the impact it has on the New Digital Deal, and co-author a manifesto for Creative Producing. With a clearer definition of the role, its approaches and values, and the establishment of a community, we aim to have a greater impact as Creative Producers.

“Void” by abysmal, Photo © Ars Electronica / Robert Bauernhansl

Stadtwerkstatt (AT)

STWST48x7 OUT OF MATTER

48 Hours absolutely OOM

With *OUT OF MATTER* Stadtwerkstatt will be having the 7th edition of its annual non-stop 48-hour-long showcase extravaganza in September.
Totalitarianism, dystopia, disorientation and dissolution: STWST is working on even further dematerialization.
With *OUT OF MATTER* we are engaging with unbounded electromagnetic space, diffuse spheres, dissolved entities and de-confined systems. We send and darken, glow and grow. We have light, antennas, microbiomes and an underground. We invite model positions to handle oppositional energy.
Following the total crash of media art and the totalizing capitalist marketplace, we are reassessing some coordinates for art and technology, information and nature, material and abstraction. We deconstruct and reconstruct to show unmediated art — in the name of the ever-not-answering OOM! Our intentions are basic needs and matters to keep the systems open. What are our materials? What are our resources? What are our matters?
With *OUT OF MATTER*, we convert separate positions into collective situations — for a NEW CONNECTING, EVERYTHING DISSOLVED. Between past, present and future layers: now only lasts 3 seconds — one for before, one for after and one for the moment we are in.

STWST48x7.STWST.AT
STWST 48x7 OUT OF MATTER curators=artists=writers=workers=critical producers=core: Shu Lea Cheang, Tanja Brandmayr, Franz Xaver, Jan-Nahuel Jenny, taro, Jakob Breitwieser, Claus Harringer, Felix Vierlinger, Jörg Parnreiter, Julia Arzt, Michael Aschauer, and many more. Visit stwst48x7.stwst.at Stadtwerkstatt, Linz/Austria, https://stwst.at

© STWST

© STWST

Franz Xaver (AT), STWST (AT)

The Digital Intellect / Image Noise of the Universe

Image Gallery in Electromagnetic Space

The digital world demands a new digital intellect from artists in order to position themselves. It is not easy for critical producers to assert themselves in the information society. Global digital communication promotes one-dimensional social development, one that is purpose-oriented and characterized by economic thinking.
STWST works with differently conceived, non-protocol, parallel communication structures and the abstraction of nature and its information systems. From the ship Eleonore, an energetically self-sufficient site on the water, we transmit into electromagnetic space via three beacon transmitters in different frequency ranges. This unlimited space enables free communication and a basis for free thinking.

We are currently transmitting some pictures from STWST's past catalogue. One of these pictures shows an antenna receiving hydrogen radiation from the universe. This points to a new intellect that has to set its reference points as far outside as possible. The picture is transmitted in the shortwave range at 7 Mhz with Whisper technology, and in the 10 Ghz range via the satellite Es'Hail QO100. Both frequencies fall within the amateur radio range. Its callsign is OE5FXC. Via satellite receivers and network interfaces, the images can be visually retrieved at fixed times visually, or picked up as an acoustic transmission process. They are transmitted in the 150 year-old fax format, which is still used by news and weather services.

Tanja Brandmayr (AT), Astrid Benzer (AT)

Afterglow / Counterworld Cinema

Quantum Cinema at STWST / Video, 6 min

Nachleuchten / Gegenwelt-Kino is research and reflection in which visual content consisting of light, rhythmization and image fragments is projected onto an afterglow surface. Motion sequences and text are explored as prototypical cinema with afterglow properties.
Projection surfaces, interior and exterior relations, questions of consciousness, materiality and media are thematized. This project is about screen, light and content in phosphorescent cinema mode. Phosphorescence describes a quantum physical effect in the excitation of light. In the interaction of its components, a quantum cinema is created, in which the light surfaces in high-energy mode change back to a low-energy level by emitting the photons they had previously absorbed. With and in this afterglow, short scenes of bodily presences are shown in obfuscation, through inversion, or as an early chronophotography image quotation.
At stake in the digital paradigm shift are fundamental questions about what kinds of form/content even transition into what is often designated as “immersive” in a technology context. But what does actual immersion mean? With postglow cinema, we’re making the auratic technology shine, favouring diffusivity over hyperreality.

Nachtleuchten / Gegenwelt-Kino, Tanja Brandmayr, Astrid Benzer

taro klemens knop (AT)

particula influxus

biomonitors at STWST

be aware of your (invisible) environment
-STREAMING material content
-COLLECTING/STORING momentary samples of airborne particles
-MONITORING/VISUALIZING/GROWING the LOCAL MICROBIOME[X]...
by means of an ELECTROSTATIC PARTICLE STREAMER/SAMPLER[Y] and several BIO-MONITORS[Z]

[X] microbiome definition re-visited: old concepts and new challenges (2020):
the microbiome is defined as a characteristic microbial community occupying a reasonably well-defined habitat (...) the microbiome not only refers to the microorganisms involved but also encompasses their theatre of activity (...) the microbiome forms a dynamic and interactive micro-ecosystem prone to change in time and scale.

[Y] = DIY: ventilator (as streamer) + high voltage circuit (to create an electrostatic surface) + controller

[Z] = petri dishes filled with M(alt)E(xtract)A(gar): plain MEA to show the totality of (local)microbial life + antibiotic MEA to focus on our (local) fungal cohabitants

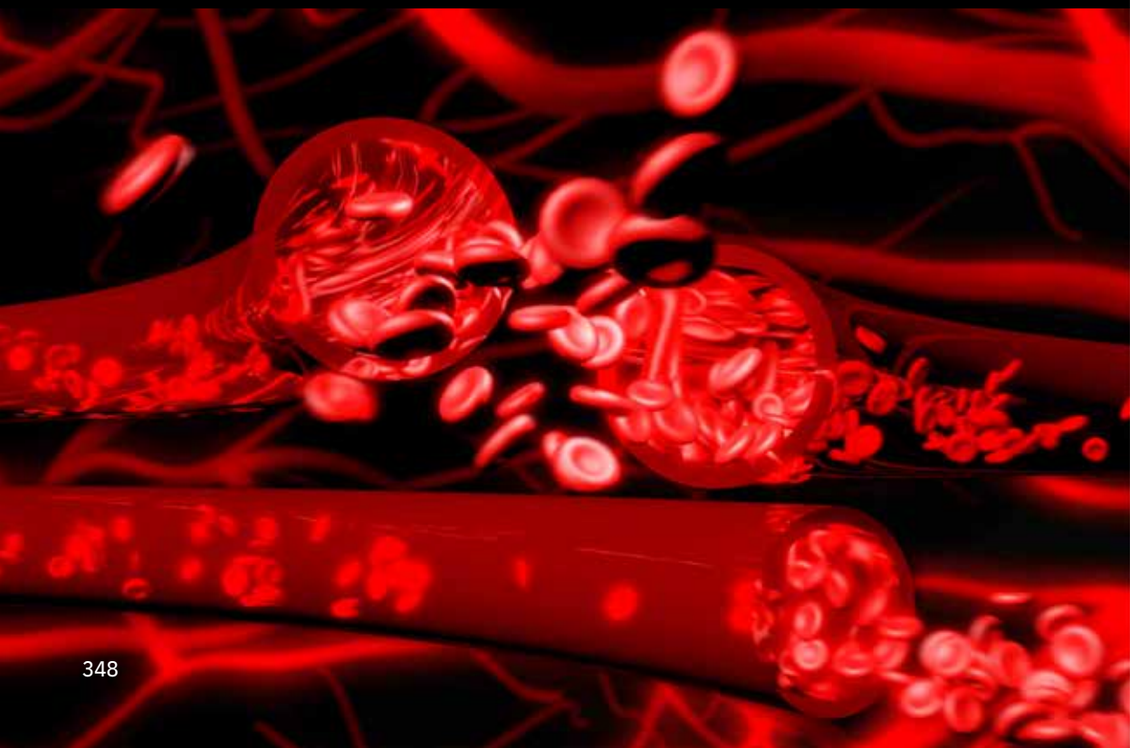
particula influxus, taro klemens knop

Shu Lea Cheang (US) & STWST (AT)

BLOODY SUNDAY

Welcome to the BioNet / Your body infiltrated / Your microbe compromised / Your red blood micro-computes / Your red blood codes DNA / Your red blood is your current currency / Shove me with your bloody money / G for Giblings / Giblings for giving / Giving for forgiving / Shake me hands / Hold me tight / I want your wet data / Make me a red pill / Swallow the red pill / SenSexual AutoInduction / Your pleasure our business / You and I don't live the same viral reality.

On the occasion of STWST and PunkAustria. at's release of the 2021 edition of Bloody Giblings, designed by Shu Lea Cheang, we propose a *BLOODY SUNDAY* trans-(wo)manifestation. Emerging from a year of lockdown, we step out to greet each other, attempting an awkward embrace, a bodily contact. Are we fine? Are you fine? We gather as a community, a collective body seeking recovery and regeneration. Bringing together Linz' local communities including housing collectives, environmental activists, self-help and mutual-help groups who focus on art and on social affairs, migrant women and sex workers, we recount strategies and tactics on managing viral conditions during state or self-imposed isolation. With bloody food, bloody drinks, bloody infusion, transfusions and confusion on a bloody Sunday afternoon, we reboot our corporeal selves, settling in with antibodies among us.



Organized by Shu Lea Cheang (US), Adriana Knouf, Franz Xaver (AT)

MAKE ME A SIGNAL — Prelude to a RADIOTOPIA

in preparation for Radiotopia, a RadioNet summit at STUBNITZ, Hamburg, July 13-17, 2022

Since 2009, the Messschiff Eleonore, once a survey vessel, has been docked at the Danube harbor in Linz, powered by solar energy, equipped with radio components and modified to host artists in residency as part of Stadwerkstatt's InfoLab activities. The radio beacons of Eleonore operate two transmitters,a 7 Mhz short-wave sending through WSPRnet, and the geostationary satellite rising star Es'hail QO100. Both transmitters operate in different frequency ranges, connecting invisible electromagnetic space directly to the haptic world only via antennas.

Cyberhacking, pandemic living, a desire for autonomy from cyber-hegemony—the Hertzian waves of the electromagnetic spectrum manifest potentials to swerve away from centralized life. Tied to the electro-dynamics of the earth-sky-solar-galactic nexus, radio transceiving can use simple circuits that engender wide-ranging effects. To prepare ourselves for times to come when our fragile digital networks may no longer function properly and the EM spectrum becomes our primary channel to signal each other, the durational radio program *MAKE ME A SIGNAL — Prelude to a RADIOTOPIA* materializes an experimental set of approaches on the wideband radio spectrum that make artistic concepts real and that may, in turn, become new ways of being in our possible futures.

This prelude radio transmission launches the planning for a RadioNet summit scheduled for July 2022 at the Motorship Stubnitz (stubnitz.com) that is currently docked in Hamburg and that has functioned as a moving platform for cultural research and exchange since 1992.

more less flag eleonore 2020, stwst © tanjab

ARS ELECTRONICA

Besides the annual Festival and the Prix Ars Electronica numerous projects and activities are conducted throughout the year by the different departments and teams of Ars Electronica.

Ars Electronica Center

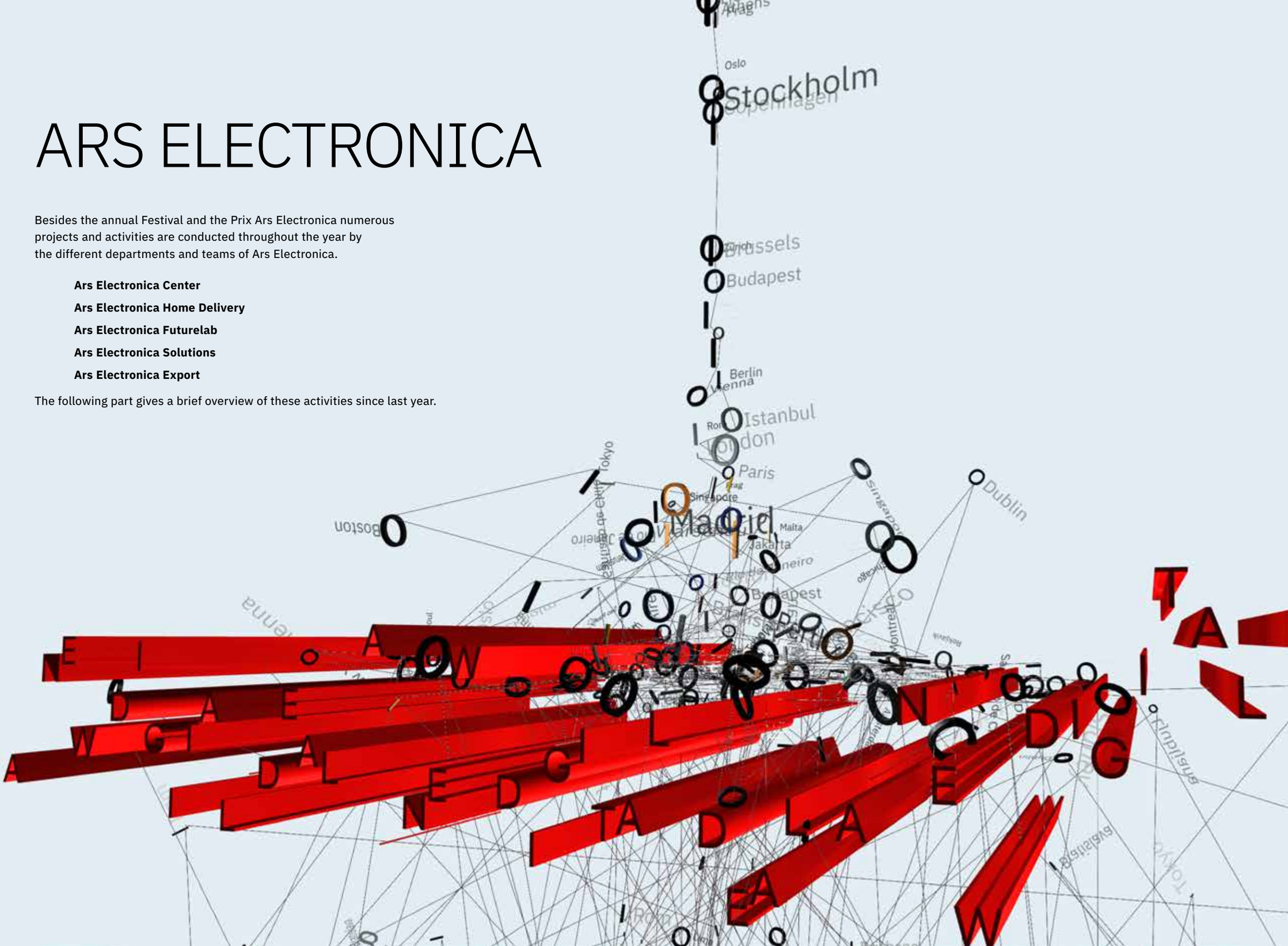
Ars Electronica Home Delivery

Ars Electronica Futurelab

Ars Electronica Solutions

Ars Electronica Export

The following part gives a brief overview of these activities since last year.



ARS ELECTRONICA CENTER

With interactive installations, unique works of media art, in-depth research projects, and large-scale projections in unprecedented 8K resolution, the Ars Electronica Center has been a node for art, science, and society since its inception in 1996. And being part of a platform for the future and innovation, it does not rest on its laurels — on the contrary: With two major redesigns in 2009 and 2019 it has been continuously adapting to the social and technological developments of the 21st century and expanding its focus to artificial intelligence and neurobionics, autonomous systems and robotics, and genetic engineering and biotechnology. Furthermore, 2021 brought about two new temporary exhibitions that put the pressing and compelling issues of both work and the impending climate crisis into the spotlight.

Current Exhibitions

Understanding Artificial Intelligence

Artificial intelligence versus natural intelligence—what are the differences and what do they have in common? How do machines "think," how do they learn, and what distinguishes us humans from machines? Artificial intelligence in all its complexity is a central focus of the new Ars Electronica Center and the exhibition views the field from various angles by providing visitors with insights and explanations, offering opportunities to train neural networks, and showcasing artists who use artificial intelligence as a medium.

© vog.photo

Neural Network Training / Ars Electronica Futurelab (AT)

Global Shift

What does the new geography of the digital age look like? How do populations and their structures develop? What will our world look like in the future? Anthropocene—that is what we call the age in which human actions have become the most significant factor for biological, geological, and atmospheric changes. Global Shift shows a representative sample of the current conditions of the world we live in.

© vog.photo

Glacier Retreat / Ars Electronica Solutions (AT), DLR (DE)

Neuro-Bionics

© vog.photo

Open Worm / OpenWorm Foundation (INT)

The findings of the neurosciences have long been an inspiration for artificial intelligence research, and many models of machine learning are vaguely derived from human physiology. The results of this research offer hope for decisive breakthroughs in artificial intelligence, but even as we make rapid progress in neurology and machine intelligence inspired by biology, the human brain as a whole will remain many times more powerful than its machine counterparts for a long time to come.

Ars Electronica Labs

© Ars Electronica / Robert Bauernhansl

ORI*lab / Matthew Gardiner, Hideaki Ogawa, Rachel Hanlon, Erwin Reitböck, Roland Aigner. Ars Electronica Futurelab

The idea of the laboratory far removed from everyday life, where scientific results are produced in detachment from the world, is out of date. Instead, the laboratory should be understood in a broader sense as a hub for creativity, technology, society, and science. The Ars Electronica Labs are a multifaceted place that allows us to discover and design the world and reach our full potential through interdisciplinary cooperation.

Machine Learning Studio

Working with our Techtrainers, visitors can build and train self-driving model cars here, program robots with facial recognition, and gain insights into how they can teach these devices a wide variety of activities. It is also a place where prototypes and objects are maintained or repaired by the technicians, and where museum procedures are revealed that are usually kept behind the scenes.

© vog.photo

Supply chain building blocks / Hansi Raber (AT)

AI x Music

© vog.photo

The Instrument That Plays by Itself / Banū Mūsā ibn Shākir, Liang Zhipeng (CN), ZKM | Zentrum für Kunst und Medien (DE)

Music might be the most emotional of all art forms, but it is also deeply connected to mathematics, to the physics of sound production, and to the craftsmanship of instrument makers. The exhibition takes a look at the cultural and technological history of mechanical music players, bridges the gap between them and the new developments in machine learning and artificial intelligence, and shows that they raise fundamental questions about the relationship between human and machine.

Kids’ Research Laboratory

With the Ars Electronica Kids’ Research Laboratory, a versatile playing field has been created that gives children time and space to play and discover our world, the digital as well as the analog, the natural as well as the artificial world. For children, the whole world is a laboratory in which experiments and research journeys are constantly taking place.

© vog.photo

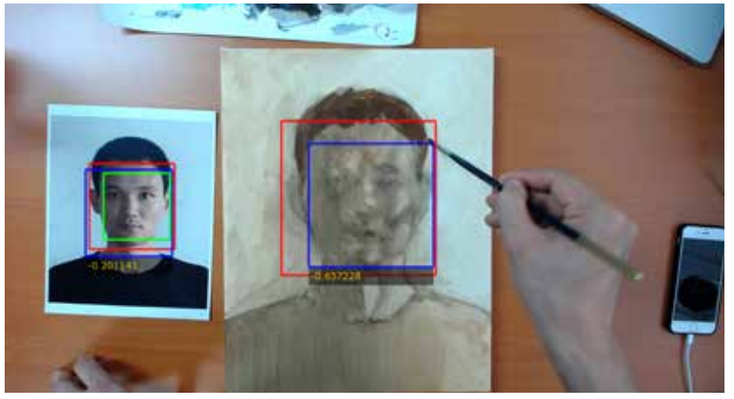
Robo-Spielplatz

Deep Space 8K

© Ars Electronica / Christopher Sonnleitner

Deep Space Music / NOHlab (TR)

The Ars Electronica Center offers its visitors something that is unique in the world: 16 x 9 meters of wall projection and an equal area of floor projection. With a resolution of 8,192 × 4,320 pixels in 120 Hz and stereo 3D, even the tiniest details of an image can be displayed and discovered. Experience unique Deep Space 8K gigapixel images, videos, films, and 3D animations in razor-sharp brilliance and color. Unlike any other cinema, Deep Space 8K allows you to sit or stand right inside the picture or move through impressive 3D virtual worlds, thanks to our floor-projection system.

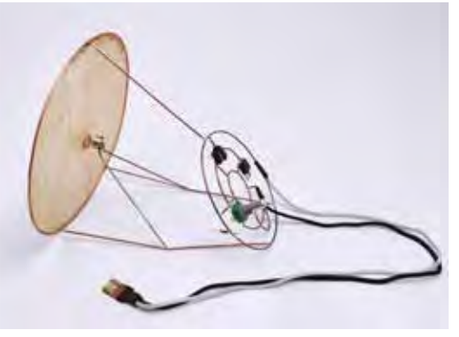


Nonfacial Portrait / Shinseungback Kimyonghun (KR)

Supply chain building blocks / Hansi Raber (AT),
Photo: Ars Electronica / Robert Bauernhansl

Growing Patterns. Living Pigments. / Julia Moser (AT)

APeel – Biomaterial Innovation / Youyang Song (CH),
Photo: Ars Electronica / Robert Bauernhansl



The Sound of Tea / Robert Angerer (AT)

MyCera / Julian Jauk, Hana Vašatko,
Lukas Gosch (Institute of Architecture
and Media, TU Graz)

Marinero – Tailored by weather / Jef Montes (NL), Photo: Ars Electronica / Robert Bauernhansl

AI Oracle / Collective no:topia –International art collective.
Photo: Ars Electronica / Robert Bauernhansl

Working in and on the future

In cooperation with Arbeiterkammer Oberösterreich

If we were to ask a hundred people what work actually is and what it means to them, we would almost certainly get a hundred more or less different answers — astonishing for such an everyday thing that billions of people do every day. But our understanding of work is like a complex web made up of the most diverse factors and experiences. General circumstances such as cultural, economic and social conditions are reflected in it as are personal life situations, goals, hopes and, last but not least, ideas about what it means to contribute to society. However it is defined, a good job contributes significantly to stability in our lives and places us in a social context.

Work is an essential aspect by which we define ourselves as human beings, so it's not surprising that major upheavals such as the digital transformation pose a communal challenge. It impacts us on many levels: From concrete changes that are directly felt in our own work environment to general, ethical questions.

So what might work look like in the future? And how can we work together on the future to make it as fair as possible for everyone?

© Ars Electronica / Robert Bauernhansl

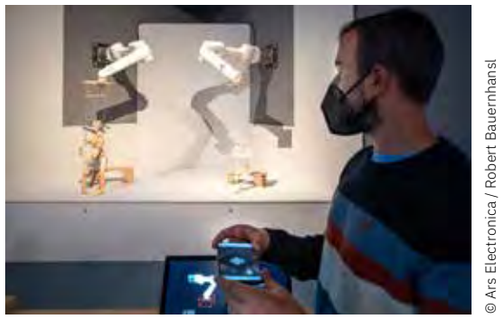
Impression from the exhibition "Working in and on the Future"

© Ars Electronica / Robert Bauernhansl

Under pressure / ::vtol::

© Ars Electronica / Robert Bauernhansl

Impression from the exhibition "Working in and on the Future"



© Ars Electronica / Robert Bauernhansl

Pinocchio / Ars Electronica Future Lab (AT) & CREATIVE ROBOTICS, Kunstuniversitat Linz: Johannes Braumann & Amir Bastan

Artworks:

AI Oracle / Collective no:topia (INT), *Under pressure* / ::vtol:: (RU), *End of Life Care Machine* / Dan K Chen (TW/US), *Queen B* / LONK (NL), *Pinocchio* / Ars Electronica Future Lab (AT) & CREATIVE ROBOTICS, Kunstuniversität Linz: Johannes Braumann & Amir Bastan, *AI truth machine* / LIT Law Lab, Johannes Kepler Universität (JKU), *Anatomy of an AI* / Vladan Joler (RS) & Kate Crawford (AU), Project Alias / Bjørn Karmann (DK) & Tore Knudsen (DK), *Supply chain building blocks* / Hansi Raber (AT), *GPT-2: Sprachfelder* / Ars Electronica Future Lab (AT): Ali Nikrang & Florian Berger, *Cray X* / German Bionic Systems (DE), *Marinero — Tailored by weather* / Jef Montes (NL), *Exoskelette für die Industrie* / AWB (AT), *Grow Whole Garments* / Miriam Eichinger & Emanuel Gollob, Fashion & Robotics (AT), *Computational Music Perception* / Institute of Computational Perception (AT), Johannes Kepler University Linz (JKU), TOC ONE / Moritz Simon Geist (DE)

Collective no:topia — international art collective
Funders and representatives: Shirley Ogolla (DE) and Piera Riccio (IT)

AI Oracle

AI (Artificial Intelligence) ORACLE is an interactive art installation where visitors are immersed in a futuristic structure. A robotic voice welcomes them into a dystopian reality in which an AI scans them, analyzes a long list of personal data and decides their job for the future. The scanning and data analysis processes are simulated through voices, sounds and light games. In the same way as our ancestors would trust magicians and oracles for predicting their future, our installation metaphorically proposes an AI as something humanity trusts to make predictions. By touching the personal life of visitors so closely, the installation aims to invite them to reflect on the ethical risks related to potential discriminations due to AI algorithms, which are already massively utilized in the workplace context.

© Vincenzo Werner

Goethe Institute Australia, German Federal Ministry of Education and Research

::vtol:: (RU)

under pressure

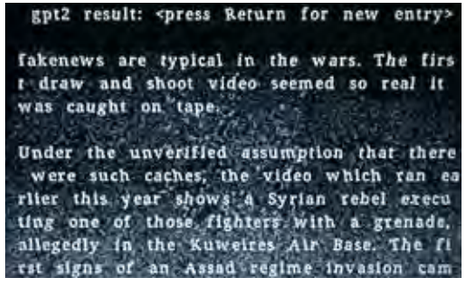
If we are under stress at work, we look for little diversions to compensate — who hasn't sometimes indulged in pointless tasks during the workday to clear their head? Currently we perceive robots as a steady workforce that never needs a break, but what if intelligent robots in the future start to mimic our behavior? Would we accept robots that want to take a break or perform seemingly pointless tasks for leisure? Or will we even program robots to perform such tasks for our amusement? In these turbulent times, everyone is lacking the usual rituals and actions that allow for a certain balance. Many people enjoy popping bubble wrap. Under pressure is a mechanism that does this automatically: a useless machine whose only function is to pop the bubbles in bubble wrap. Maybe, in the end, this "pastime" is not as useless as we might think?

Project was commissioned for HEK Basel.

Ars Electronica Future Lab (AT): Ali Nikrang & Florian Berger

GPT-2: Sprachfelder

The ability to produce and understand language is often considered a uniquely human characteristic. However, AI research is making progress in this area, too. GPT-2 is a machine learning model that has been trained to complete English-language texts on its own. Released by OpenAI in 2019, it is part of a larger goal: general artificial intelligence that is not limited to specific tasks. GPT-2 is trained with 40 gigabytes of text from a wide variety of fields and can formulate a few sentences in response to any text input. The installation GPT-2: Sprachfelder gives you the opportunity to try out the program and discover the limits of its comprehension. Humans are still in the lead. We can draw logical conclusions from a few words and relate the larger contexts of texts to each other. Language is an abstract mirror of the human world; to really understand it, artificial systems would also have to be able to comprehend all its intricacies. But the question remains: How will sectors such as journalism, and our writing style in general, change if they are increasingly supported by AI?



OpenAI: GPT-2

LONK (NL)

Queen B

'Perform at your best in the ultimate data-driven office?'

What will our future look like when we equip our daily environments with smart AI technologies? In the media, techno-optimists and critics are battling over whether we are heading towards a future in which our cities, homes and offices become so "smart" that they can adapt to each individual. Is this a future we want? Rather than discussing, dreading, or dreaming about this scenario, Studio LONK has built the speculative interior Queen B for people to experience today. *Queen B* is a workspace and experimental AI service that collects your data and steers you throug the day, by sending personalized voice messages ("You look a bit tired, I suggest you grab a coffee," "I've gathered that you are a morning person; start the day in the focus zone." etc.). By suggesting particular actions and movements, *Queen B* supports you to be at your most productive. Is this a convenient service that helps us to be the best we can be, or a daunting scenario, undermining our privacy and autonomy?

Concept & design: studio LONK
Location partner: Coworking space B. Amsterdam
Collaboration: Ditt. Officemakers (co-initiator)
Tech partners: IBM, Locatify, Nexton|Blubrick
Photography: Barbara Kieboom
Audiovisual: JHB visuals
Thanks to: Shari Klein (Queen B voice), Ingo Valente (coding assistant), Labor Lab sponsors: Stimuleringsfonds Creatieve Industrie, Annexum, Big Brands, Timeless Investments, Alvero

© Barbara Kieboom

Raindrop, artwork and photo: Alistair McClymont

There Is No Planet B

Global Warming and Human Responsibility

In cooperation with Klima- und Energiefonds

Energy is the foundation of life. The smallest of organisms need it just as we humans do. But it's not just our bodies that must be supplied with energy — it's our entire society, including our electrical appliances, our means of transportation, and our industries. And where does the energy come from? In the past few centuries, we have primarily relied on energy sources such as coal, natural gas, and petroleum to meet our increasing needs. These resources are not available in unlimited supply, however, and their use is harmful to our planet's climate. We now know that the way in which we produce and use energy significantly contributes to global warming. It leads to extreme weather events, periods of drought, floods, and many other dire consequences. To ensure a green future offering a high quality of life, we must therefore take action as a global community to drastically reduce our ecological footprint on this planet. Stopping global warming is no easy task and includes many technological, social and political aspects. This is why the energy of everyone is necessary: of individuals as well as of public institutions, the business world, and international policy-makers. The exhibition "There Is No Planet B" not only illustrates the urgency of the situation; it also points out that there are potential solutions and a growing social commitment to dealing with the crisis.

Artworks:

Asunder / Tega Brain (AU), Julian Oliver (NZ) & Bengt Sjölén (SE), *Life Support System* Ecosystem Services Estimation Experiment / DISNOVATION.ORG (FR/PL/CA), *Raindrop* / Alistair McClymont, *The Museum of Edible Earth* / masharu (RU/NL), SolarVille / Space 10, *A Genealogy of Man-made Earthquakes* / Sissel Marie Tonn (DK) and Jonathan Reus (US), *Derotation* / Thomas Schwarz (AT)

Alistair McClymont (UK)

Raindrop

Alistair McClymont's artwork is a continuing process of discovery and experimentation, ranging across a variety of materials and practices. Each piece follows the last in a continual journey of investigation into cultural and physical phenomena. *Raindrop* is a drop of water in freefall: inspired by a 1970s experiment by Saunders and Wong, a machine creates a vertical flow of air, shaped to capture a drop of water, allowing an audience to stand beside a falling raindrop.

"*Raindrop* comprises a machine built to allow a drop of water to hover in mid-air. Viewing this translucent, jewel-like object instils a very bodily sense of unease. Arrested in free-fall, its form mechanically maintained in a seeming repudiation of basic physics, the stationary raindrop throws us off balance, making us feel as though we were plummeting to the ground in its place."
Tom Morton

Tega Brain (AU), Julian Oliver (NZ), and Bengt Sjölén (SE)

Asunder

Asunder responds to a growing interest in the application of AI to critical environmental challenges by situating this approach as a literal proposition, combining state of the art climate and environmental simulation technology, a 144 CPU super-computer and machine learning image-making techniques. The result is a fictional "environmental manager" that proposes and simulates future alterations to the planet to keep it safely within planetary boundaries. *Asunder* questions assumptions of computational neutrality, our increasingly desperate reach for techno-solutionist fixes to planetary challenges, and the broader ideological framing of the environment as a system.
The work is structured into discrete simulations for different regions, positioning ecosystem as computational surface. As cities are relocated, nations combined, coastlines straightened or rivers moved, the work shifts from humorous to preposterous, from uncannily eco-fetishistic to tediously bureaucratic.

Asunder was commissioned by the MAK for the VIENNA BIENNALE 2019. Exhibition views from the The Eternal Network, transmediale 2020.

Luca Girardini, CC NC-SA 4.0

DISNOVATION.ORG (FR/PL/CA)

Life Support System

Ecosystem Services Estimation Experiment

This artistic provocation seeks to estimate the orders of magnitude of critical ecosystem services fundamental to all planetary life processes.
It is common to use economic metaphors, which entail specific understandings of value, to describe our relationships with society, the world, and the biosphere. Today's prevailing economic conventions are unable to recognize the intrinsic value of the ecosystems on which all life depends. In cultures overdetermined by concepts from economics, we are left without adequate discursive instruments to socially or politically address the importance of ecosystem contribution to life on Earth.
This experiment consists of 1 square meter of wheat, cultivated in a closed environment. Critical inputs such as water, light, heat, and nutrients are measured, monitored, and displayed for the public. This procedure makes palpable the immense scale of ecosystem contributions and provides a speculative reference for a reckoning of the undervalued and over-exploited "work of the biosphere."

Life Support System, artwork and photo: DISNOVATION.ORG

SPACE10 (DK)

SolarVille

A Vision for a Clean Energy Future

SolarVille is a working prototype of a miniature neighborhood completely powered by solar energy. Some households generate their own renewable energy using solar panels, while others automatically purchase the excess electricity generated in the community from the producer — using blockchain technology to do so. The result is a self-sufficient microgrid, where people trade renewable, affordable energy according to their individual needs. About 3.5 billion people around the world still have little or no access to electricity, and it is an almost impossibly expensive task to reach these people using the electricity distribution system of today. Meanwhile, the remaining 6.2 billion people — who do have access to electricity — consume, for the most part, energy from unsustainable sources. If the world is serious about meeting its climate targets, renewable energy sources need to become the norm by mid-century. Against this backdrop, SPACE10 launched *SolarVille*: a playful research project exploring how we can rethink our entire energy system to democratize sustainable energy using solar power and blockchain technology.

Blockchain Labs for Open Collaboration (BLOC), WeMoveIdeas India, Blocktech, Temporal, SachsNottveit

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The Museum of Edible Earth / masharu (RU/NL)

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Derotation / Thomas Schwarz (AT)

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A Genealogy of Man-made Earthquakes / Sissel Marie Tonn (DK) and Jonathan Reus (US)

Ars Electronica Home Delivery Services

How will we learn and work in the future? What does it mean to be a digital citizen? And how can we use digitization to shape our living environment ecologically? The new Ars Electronica Home Delivery Services are virtual and interactive programs and services that make Ars Electronica's expertise available online, harnessing the creative and innovative potential artists can bring to education, events, innovation and artistic endeavors. They target customers whose industries are in a state of upheaval, help them understand what these technology-driven changes mean for our society and their target demographics, and support them in working on the questions that are crucial for their future. The virtual workshops, talks, break-out sessions, tours, exhibits and concerts are developed and conducted by experts from all areas of Ars Electronica: from the infotrainers at the Ars Electronica Center, to the curators of the Ars Electronica Festival and the Prix Ars Electronica, to the artists and researchers at the Ars Electronica Futurelab and the developers of Ars Electronica Solutions. In addition, numerous creatives from the international network of the Linz-based platform for art, technology and society also contribute their talents.

Ars Electronica Home Delivery Services are provided in four categories:

Education
for schools and universities

Innovation
for companies, public organizations and individuals

Events
for companies and public institutions

Art
for artists/designers, curators, museums, cultural institutions

Future Insights: Artificial Intelligence, Photo: Ars Electronica / Robert Bauernhansl

Rosenbauer RTs Launch Event

Clouds of fog, spotlights streaking through the evening sky and a pulsating LED façade: There was a lot going on in front of and inside the Ars Electronica Center during the launch event of the Rosenbauer RT fire engine, which was impressively staged by Ars Electronica Solutions and broadcast as an innovative hybrid event on-site and online. This was not a classic “unveiling show” but the experience of the RTs on the move through their future “natural” environment, the urban space. The evening’s program, consisting of interactive presentations in the Deep Space 8K, live camera feeds from a motorcycle and from the RT cockpits, footage of two camera drones, light show and RT choreography on the Ars Electronica Center’s Main Deck, was shown as a live stream on YouTube and Facebook.

© Ars Electronica


© Ars Electronica / Robert Bauernhansl

#eachnamematters

On May 5, 1945, the former concentration camp Mauthausen was liberated by the US Army. Under the title #eachnamematters, the names of the 90,000 people killed in the former Mauthausen concentration camp were projected and read out on the camp walls from May 4 to 6 as part of an impressive video projection. 16.6 million pixels covered the 120-meter-long outer wall and transformed it into a digital projection surface. With a thematic focus and the video installation, the Mauthausen Memorial gave the thousands of victims a face and contrasted the mere number of 90,000 with concrete names and individual life stories. The projection, which was also viewable via livestream in cooperation with Ars Electronica Home Delivery, was accompanied by a social media campaign under the hashtag #eachnamematters.

Ars Electronica Home Delivery Services for Education

Would you like to visit the Olympus of modern astronomy, where you can take a look at the “Very Large Telescope” and talk shop with the ESO staff? Or would you prefer a trip that sheds light on the black box of artificial Intelligence, which is smarter than any human on earth but also hopelessly inferior to a toddler? Or perhaps a visit to the children’s research lab, where Tardi the tardigrade is already waiting to set off and playfully explore which technologies and tools we will all be using on a daily basis tomorrow.

To ensure that access to new ideas, inspirations and approaches is possible even in turbulent times, the Ars Electronica Center has developed a series of digital services and formats that bring the museum of the future virtually into the classroom and even make it part of individual distance learning. Ars Electronica Home Delivery for schools uses digital and analogue tools and proven didactic methods to allow students to engage with the issues that concern us and is an ideal complement to remote teaching.

Digi Tour, Photo: Ars Electronica / Robert Bauernhansl

Future Insights for apprentices: Artificial Intelligence, Photo: Ars Electronica / Robert Bauernhansl

Future Thinking School

The digital revolution leaves no stone unturned. It brings forth new technologies and business models; it changes the way we live. To actively shape this revolution, we need people who understand change and can analyze complex concepts, develop new strategies, and define the future roadmap for their organization. And this is where the Future Thinking School by Ars Electronica comes in. Through Future Thinking School we invite you to work together with artists, developers, technologists, and scientists to answer the questions that will be central to your company’s future. Building upon the expertise Ars Electronica has built since its inception in 1979, we have created innovative and interactive educational programs for professionals from private and public sector organizations as well as entrepreneurs.

Ars Electronica Home Delivery Concerts

Ars Electronica Home Delivery brought concerts from the Ars Electronica Center directly to your living room, to the kitchen while you're chopping onions, or to your balcony to relax. Maki Namekawa and Dennis Russell Davies performed breathtakingly beautiful piano pieces in collaboration with Cori O'Lan, MAMMA FATALE celebrated life — and their album release — with joyful and danceable avant-garde pop/jazz, Elektro Guzzi returned to their roots of techno created in the moment, equipped only with guitar, bass and drums, and Marco Kleebauer built playful new sounds with a wide variety of instruments, weird effects, visuals and costumes, and a familiar circle of good friends accompanying him. All of these performers, and many more, made sure that culture and music were never lacking from our lives, no matter the restrictions imposed by outside circumstances.

Node.Linz

In recognition of his many years of artistic activity — he was once again jointly responsible for the idea, concept and artistic direction of Sounding Linz, the Linzer Klangwolke 2020 — the city of Linz awarded an honorary art prize to Wolfgang Dorninger. Also known as Fadi Dorninger, he started his musical career in 1983 and founded several bands, and after his first tour his musical style took a different direction. Besides his artistic work he teaches at the University of Art in Linz in the field of sound production and sound design. In his artistic work, Dorninger is mostly active in public spaces, where he works with ephemeral media or uses the sound of these spaces as an instrument. As part of Home Delivery Dorninger delivered a special concert at Deep Space 8K. Not only current pieces, but also timeless works from the late 80s and 2001 were brought to the venue by Fadi together with other musical and visual performers.

ARS ELECTRONICA FUTURELAB

Photo: Robert Bauernhansl

Alchemists of the Future

text by Bernadette Geißler

In 1996, the Ars Electronica Futurelab was founded to develop and implement installations for the new Ars Electronica Center. But what exactly is the lab today? Ask five people involved in this one-of-a-kind laboratory, and you'll get as many different answers, if not more: think-and-do-tank, artistic playground, high-tech forge, international hub, commercial partner...

So what is the essence of the Ars Electronica Futurelab? The answer lies in the very same people you find researching, programming, dreaming and experimenting there: the foundation of the lab are its diverse alchemists, who are not trying to find a definite answer to what the future will look like, but cooking up their very own prototypes of the future. They are trying to detect threads of what might be, and spin them by translating these visions artistically, making them accessible to a broad public. These modern alchemists work collaboratively. Often described as an experimental jazz band, with creative collisions on the way. Fostering this environment that allows for misunderstandings and resolve, for failure and new beginnings, is one of the basic principles of the team.

The Ars Electronica Futurelab celebrates its work and its 25th anniversary with the *Alchemists of the Future* book, as well as with the corresponding web experience: ars.electronica.art/fl25. Both will be launched and presented at the Ars Electronica Festival 2021. Now, the Ars Electronica Futurelab's alchemists are once again expanding their reach. Looking towards a future from within the pandemic raises questions about our global societies and what we have in common. All of us will have to focus on deep issues such as climate change, migration and digital transformation more intensely. Asking the question: interconnected by history and humanity's constant desire for progress, might technology specifically designed for the people steer us toward a positive future for all humankind?

A conversation with the Ars Electronica Futurelab's Managing Director Horst Hörtner, Director Hideaki Ogawa and Technical Director Roland Haring.

The Ars Electronica Futurelab's motives vary greatly, from Virtual Worlds to Poetic Systems, from Creative Intelligence to Art Thinking, from Robots to Swarms and Bots. What does the artistic perspective in all of them offer? Why is an artist's look at the future so valuable?

Horst Hörtner: Art can express the core of very complex context to try to bring it to a point that is accessible for a general audience; an "untrained audience". There are many scientific disciplines with fantastic outcomes, but how to transport the meaning of the embedded perspectives to our society, to a broader audience, is the question. This is the simple reason why you need art in our context: because it can touch you, because it can reach out to everybody with the same impact, regardless of whether they are a trained or an untrained individual.

Roland Haring: In traditional science, you try to be as objective as possible, which means you try to delete the person of the researcher completely to create a very abstract meaning for things. With art, it's exactly the other way around: it's only about the personal, subjective view of one person looking at a phenomenon in our world. This is a quality that needs to be preserved and that can create a lot of meaning that is otherwise lost.

Hideaki Ogawa: Science can create scientific questions, but art can shift these into social questions. And I think art has very interesting elements as a catalyst and a compass, to give us direction from so many possibilities. Also, art as journalism can convey different concerns to the public. So art has a very powerful role and force.

You've worked with people from all over the world and from completely different backgrounds, from artists to coders to participants in business programs. What have you learned from this experience and what does this diversity mean for the Futurelab's work?

Haring: Although Linz is not an international hub, we are quite used to diversity here at the Ars Electronica. It is very important for the DNA of the Futurelab.

Hörtner: From the very beginning, it was intended to work across disciplines and involve a lot of different perspectives. What we've learned is that the more holistic your perspective, the more each input from each discipline makes sense and is enriching. This is probably even more true for cultures. When opening up your research to this holistic approach, all of a sudden things grow on their own. The trick is to ask the questions that are somehow outside disciplines. This is where the soil for innovation is born. Everything that you can contribute can resonate in another discipline or in another person, on a very subjective level, to generate reactions.

Ogawa: This is a very strong part of the Futurelab. The most difficult thing is to explain myself to other people: then we will know each other. So it is all about open innovation, open processes. For example, for me the word "interesting" might be different than it is for you. I'm sometimes translated as "Hide said No". This is just a simple example, but the variety in errors or misunderstandings is because of these encounters with different backgrounds. And Ars Electronica, as well as the Futurelab, is a place to work through trial and error, to celebrate this manner of collaboration, to exchange ideas.

Hörtner: That is a very important point that has grown over the years within the entire Ars Electronica: to be failure resilient, and really taking failures as a chance for improvement. What you said is very true: all too often, it is through misunderstanding and creative collisions that new meanings arise that none of the participants would have expected.

Ogawa: I like the "creative collisions" metaphor. Because in this case, we are not talking about a compromise between A and B, or across areas, but rather observing the phenomena that take place after this crash. This is a hint of innovation — not just finding the common things. But through these creative collisions, we can find out: Oh, this is quite interesting!

Hörtner: The entire organization needs to allow for that, and needs to have the freedom to ...well, not to accept failure, so much as to see failure as a next step that, ideally, takes you forward. The question is: can you openly say, "This was a failure"? Can you openly express that in the community that you're surrounded by? And that's an organizational and cultural phenomenon which it is very important to foster.

Haring: A few days ago, Horst wrote an e-mail asking for my opinion, and I replied "interesting". And he asked: "Austrian or Japanese interesting?" So having this multicultural communication adds nuance to the words and the terms that you are using, and it also enriches the way that you're thinking.

Ogawa: Yes, we are lucky here. Because we can encounter totally different types of people across industries, artists, creators, entrepreneurs, scientists, researchers. Here at Ars Electronica, given such a creative ecosystem, we can learn. And not just by listening: we are exchanging, collaborating. We are lucky.

In what ways — artistically, technologically or socially speaking — has the Futurelab evolved over the years? And what will the Futurelab look and feel like in 25 years? What do you want it to become?

Hörtner: I think it has developed and evolved in all three areas in a, positively speaking, very unstable way. We have kind of managed to re-innovate the form of the organization, trying to adapt to the field that we felt would be important for the coming time. And also for the practical momentum, because our environment, our constraints, have been changing constantly over the years. I would hope that in 25 years the Futurelab is still a place coping with changes, able to adapt to new circumstances.

Haring: With the experience of the past 25 years, we have now found a model for how to run the Futurelab sustainably. On the one hand, this is very good, because this gives it stability as an institution. On the other hand, we have to be careful to not just continue to follow the model because it works, but to keep improving it and risking something by changing it and rethinking it. And one main topic for me, for the next 25 years, is how to hand over what we are doing to the next generation, to young people, as to basically keep this wheel of innovation turning.

Hörtner: If something is very successful, then naturally humans will stick to those already proven strategies. But that's totally mistaken if you think about inspiration, flexibility and innovation. This is also where the allowance for failure comes in. I'm not saying that we want to produce failures, but we are trying to not repeat ourselves, actively trying not to repeat the same strategies over and over again, even if they were successful. It's quite a challenge, I have to admit!

Ogawa: For me as an artist, as an individual, I'm always thinking what the differences between my individual work and the work in the Ars Electronica Futurelab are. Perhaps we can envision intergenerational innovation. Because, in my life, what I can achieve, is maybe A. But the next generation is doing B. Then, afterwards, it will be C. But a vision and a dream can be much longer. Can we have such long, durational projects that go on for decades? The environmental crisis, immigration and digital transformation: I think these are definitely topics that could benefit from such a framing. That kind of initiative might be very interesting. Also, what I can imagine, is that in 25 years the system that is needed for society will not be just us. We will need more, in a way, labs — not just a lab, but labs.

Let's look into the future of society: what can we expect in the next 25 years? Are there technologies on the horizon that may transform our everyday life as much as, for example, mobile phones have?

Hörtner: Looking at it from a technological perspective, even the very rapid development of technology is very seldom radical or revolutionary in itself. It is always the use. Society uses technology in a way or the other, and that is what transforms it into a revolution.

Haring: One phenomenon we see is that the speed of technological and sociological change is accelerating. This will have a lot of implications for individuals within the next 25 years. One of the most obvious things would be that, more and more, your physical body will become an attachment of your digital identities. What you can already see today, when people lose their mobile phone, is they get nervous and become completely lost. But when you lose your digital identity in 25 years then, more or less, you as a person will be gone.

Hörtner: I think the expected crises that we are running into, like digital transformation, climate change, migration flow, already exist. We will need to learn how to innovate technologies that are part of solving challenges and not, as it sometimes feels, constantly becoming a part of those challenges. In the past, technologies very often had in common, that once they came to the mass market, they created challenges we weren't prepared for. We should allow ourselves to think about what technologies we will need a few years from now, when the disaster has already happened. We are pretty sure there is no "going back to normal" any more. So how can we outlive our own stubbornness? We have to let ourselves talk about that perspective as well. I'm not saying I'm giving up! But we need to start now, innovating those technologies, forms of organizations, processes, that help us co-exist with the already unavoidable consequences.

How do you think this can be accomplished? And how can the Ars Electronica Futurelab help with these questions?

Hörtner: The Futurelab tries to contribute to understanding the way in which we — as individuals, societies, and communities — form our future. With every decision we make, we create future, constantly. And the accumulation of all these decisions is what we earn. So it just isn't fundamentally understood enough, that there is no alternative to the adoption of constant change. The Futurelab is contributing, through its history, to that perspective: that we, humankind, have the right to create the future — but that it's also a duty. So to make that more clear and tangible on a broader level is already an important contribution.

Let's conclude with a look at this year's Ars Electronica Festival and its topic. What are your ideas for the New Digital Deal?

Hörtner: That's a huge topic, a huge cloud. But I see one portion of it that is very relevant to the Ars Electronica Futurelab, and also to society: the way we deal with this ever-augmenting technosphere that we are embedded in and almost ready to replace our extant environment with — the biosphere for the technosphere. The technosphere, unlike say our urban environment, is not handled as carefully when it comes to creation. Good architecture is supposed to create an environment that contributes to our society on many levels: socially, aesthetically, ethically.... and sure, it also needs to function and be affordable. But system architecture is understood and taught as a field of engineering, solely. Designing systems such that they fulfill functionality on a technological level comes first; profit comes second. But no social questions are taken into consideration, very few — if any — ethical and aesthetic questions are addressed, either. What I think our education system, and all of us, need to understand, is that system architecture isn't a matter for technical engineering only. Don't we need systems that incorporate and address social, ethical and aesthetic questions by design as well?

Ogawa: I'm also considering the context of the Ars Electronica Festival topic. I think in the history of the Festival, it's the first time "digital" is in the title. And to me this is a very important point, I feel a responsibility to reconsider the role we play in our society carefully. So it is a very unique situation; the challenge is, how to shift the notion of art itself. Is technology just a style or a fashion — or can technology be culture? What do we say a new digital deal is? We are asking the question to the public, right? So it's not just artists, but all members, who need to think of the defined levels of digital transformation and the digital new deal. We don't know if typical systems like nations might change completely, concerning trust, for instance. Will we trust such communities, societies? What will be commons in the 21st century? What are we sharing, what are we caring about? So the question is very broad, but very important.

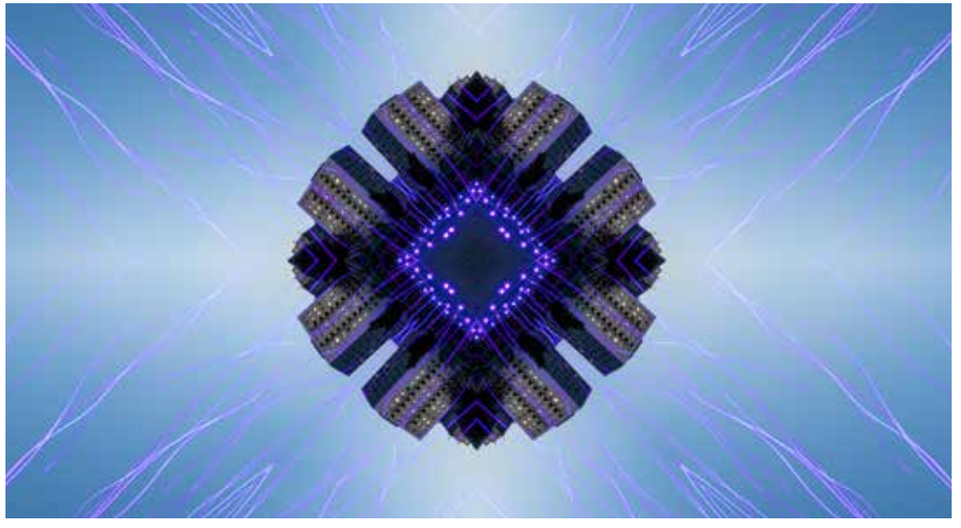
Hörtner: It's exactly what you said, it's a culture of technology that we are confronted with, that has been there since the last millennium. But now it's becoming so urgent, or so omnipresent, that you can't avoid being part of that digital culture, of this technosphere we're living in. And the question is: who is building the technosphere? Who is contributing, who is forming that culture?

Haring: It's also very important to ask about what part or role every individual plays in this whole digital transformation, because somehow we still subscribe to humanistic ideals that are like 300, 400 years old. And in many cases, we try to shape the digital world around them, and sometimes I feel that this is very similar to standing in the middle of a river and trying to redirect the water with your bare hands.
So this is something that also must fundamentally questioned or, at least, rethought: how to integrate the human being in this digital world, and how this impacts our definition of what's human, and human and personal rights. What your individual role is in society, or can be.
These are very fundamental topics and discussions. With the increased speed of digitalisation or technological change, it becomes more and more necessary to have yet more fundamental thoughts about these topics. Let's see what the festival will bring this year. A lot of interesting discussions are possible, in many directions. And it will be very interesting to see what other ideas are.

Ogawa: To be honest, I am very optimistic about September, and after. After vaccination, I am expecting there will definitely be a strong counterculture. Looking back at history, people just came back after something like this. A super interesting creative time is coming!

25th Year's Anniversary Special Project

To commemorate its 25th anniversary, the Ars Electronica Futurelab has conducted various initiatives. The book *Alchemists of the Future — Ars Electronica Futurelab. The First 25 years and Beyond* is a collection of seven episodes that summarize our activities to date and our vision for the future. Deep Virtual, a new visual experience system using the Deep Space, turns the book into a three-dimensional story, while *Alchemists of the Future — The Journey*, is an exhibition that makes use of various locations in the Ars Electronica Center to take visitors on a journey through old and new prototypes of the future developed by the Futurelab. During the festival, a special event called Futurelab Day will be held, where Futurelab's future questions will be discussed with partners from around the world, and the next 25 years will be envisioned and shared through hybrid online/physical workshops, live performances, and networking sessions. All these efforts will also be published on the website ars.electronica.art/fl25



Florian Voggeneder, Kerstin Blätterbinder, Ars Electronica Futurelab

© Denise Hirtenfelder

Deep Virtual

text by Roland Haring

With the development of *Deep Virtual*, the Ars Electronica Futurelab has set a milestone in the fledgling history of Ars Electronica Home Delivery. The revolutionary concept for live video productions in Deep Space 8K takes the broadcasting of illusions in virtual space another decisive step forward: Deep Virtual is a completely new system for video productions in Deep Space 8K that combines the projection's perspective with the camera's point of view by use of position tracking. In the course of producing seven episodes of the Anniversary Series, which the Lab is creating to celebrate its 25th anniversary, the system has been tested and developed step by step in recent months. Virtual production systems originally come from Hollywood film studios. They are used to enhance TV broadcast or film productions with additional layers of information and visual content. By using software to combine live video footage with computer graphics in real time, customized and state-of-the-art virtual production workflows can be successfully used for broadcast or augmented video productions. A pipeline in Deep Space 8K can combine images in a real-time sandbox. The principle is based on position tracking of cameras and actors, and perspective matches the projected environment with the resulting footage. It also enables the addition of, and interaction with, virtually-placed content. In a real-time stream, the material is merged for a live broadcast or possible post-production.

Deep Virtual places the protagonists in an immersive environment that provides an appropriate backdrop for the future alchemists of the Ars Electronica Futurelab. Conceived to produce hybrid media formats, it also allows viewers a joint immersion within a new dimension of virtual worlds, and thus represents a step into the future of Deep Space 8K and Ars Electronica Home Delivery.

Alchemists of the Future — The Journey

text by Hideaki Ogawa and Maria Pfeifer

Since it first began in 1996, the Ars Electronica Futurelab's mission is to create opportunities for people to engage in dialogue through the creation of tangible prototypes of the future. This year, the Futurelab is celebrating its 25th anniversary, at a time when we are facing a pandemic and its cascading social changes, while the effects of the climate crisis are being felt ever more drastically. A global experience of instability, fueled by the rapid development of (dis)information and media technologies, calls for positive creativity and concrete actions to invent the future. Comprised of artists, designers, scientists, engineers, architects, sociologists, and other professionals from different backgrounds, the Futurelab tries to answer this call with its own form of "alchemy", understood as a practice that brings together different elements to create something new. In this exhibition, visitors are invited to go on a journey through a variety of different projects developed by Ars Electronica Futurelab, spread throughout the Ars Electronica Center.

A Journey to Your Future

The journey starts at *Hands For the Future*, where you can set an intention for the journey you are about to take: 2000 e-Ink displays form a slow-media-wall that shows a different statement every day. You can engage with this piece by scanning your hand and, by doing so, becoming part of tomorrow's mission.
Deep Space 8K is a long-term R&D project undergoing constant updates and makeovers. But it is not only a working prototype that lets you interact with breathtaking 3D pictures and videos, it is also a place that offers the possibility to take a trip to virtual worlds and future moments. In contrast to these shared future visions, *Memo Futurum* invites you to imagine and reflect on your personal future 25 years from now. At *AI Ink*, you can compose music together with an AI system that turns your emotional rollercoaster ride of the past 12 months into a collective new version of "The Blue Danube" waltz.

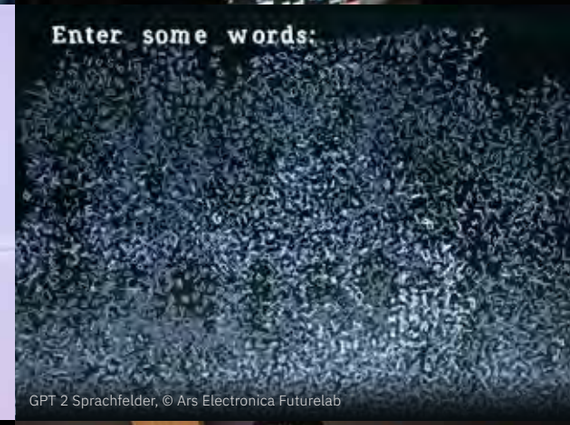
A Journey to the Future of Technology

What a Ghost Dreams Of grapples with a "ghost" of our time: digital surveillance. Everyone who passes by is fed, by computer vision, directly into a "ghost" that creates new digital faces of people who do not exist in the real world.
For the exhibition "Understanding AI" at the Ars Electronica Center, the Ars Electronica Futurelab designed a variety of installations that explain how artificial intelligence works. The aim is to take a glimpse into the black box of this technology, expose it, and discuss how we can make informed decisions about their future application. *Neural Network Training* explains and demystifies the buzzword AI and shows it for what it is: algorithms that are trained by people — without consciousness, without intelligence in any real sense. *Vector Space: Prix Ars Electronica Universe* and *Comment AI* use several AI technologies from the field of image and text analysis to examine and categorize– and show that the content evaluation depends strongly on the people who assess it.


Deep Space 8K , © Magdalena Sick-Leitner


Vector Space: Prix Ars Electronica Universe , © vog.photo

Memo Futurum, © Susanne Kiesenhofer



GPT 2 Sprachfelder, © Ars Electronica Futurelab


What a Ghost Dreams Of , © Ars Electronica / Martin Hieslmair


Glow, © Robert Bauernhansl


Neural Network Training, © vog.photo


Pix2Pix: GANgadse , © Robert Bauernhansl

A Journey to the Future of Collaboration

Reflecting on the quality of creative collaboration between humans and AI systems, several pieces let you interact with Generative Adversarial Networks. In *Glow*, certain external features of people can be manipulated using a controller. At *Pix2Pix: GANgadse*, free sketches can be drawn, which are then converted into cat images, while *ShadowGAN* recognizes people's silhouettes, and then fills them in with generated pictures of mountains. *Pinocchio* lets the classic game with marionettes meet modern industrial robots, and human and machine create a symbolic choreography between creation and creator. This part of the journey raises not only the question of how humans invent creative technologies, but of how they create technology culture through these inventions.

The *AI-generated Piano Improvisation* on the Bösendorfer 290 Imperial CEUS, an automatic piano that plays music composed by different Deep Neural Networks that can create musical compositions, and *Ricercar*, an interactive AI-based music composition system, investigate the creative potential of AI. So does the *Sounding Letters* project, which uses the initial letters of Ars Eletronica Futurelab and Ars Electronica Center to co-create a piece of music with AI.

Another collaborative musical experience is *Hybrid Space*. On site and tele-present visitors, as well as visitors on the website, interact in this test scenario to investigate the roles and functions that can be accessed from different locations on and off site in a collaborative event. In *GPT-2: Sprachfelder*, visitors explore the possibilities and challenges of AI-generated text creation. How will fields such as journalism, and our writing styles, change when they are supported by AI?

A Journey to the Future of Code

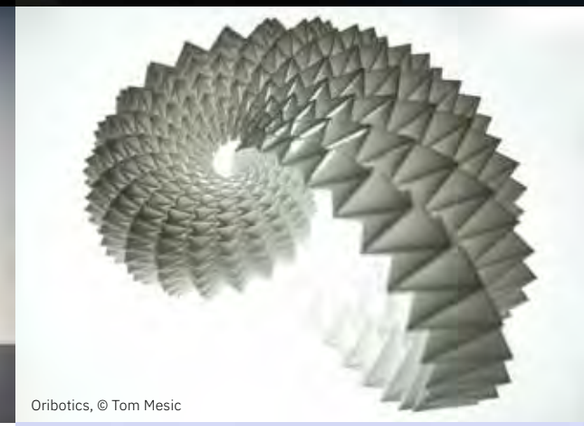
Origami is an artistic technique imitating nature through aesthetic and mathematical means. *Oribotics* explores connections between nature, origami and robotics. You can follow the tracks of artistic research projects that take computation beyond the level of data and into smart and living matter. The *Bio Ink* project explores the relationship between nature and technology: visitors can produce "living messages" slowly formed by bacteria in a petri dish.

Alchemists of the Future — The Journey does not have a sequential route, but encourages the visitors to find their own path among the experiences. How will we face the dramatic changes ahead? How will we find our way? How will we inhabit this new future?


ShadowGAN, © Ars Electronica / Martin Hieslmair

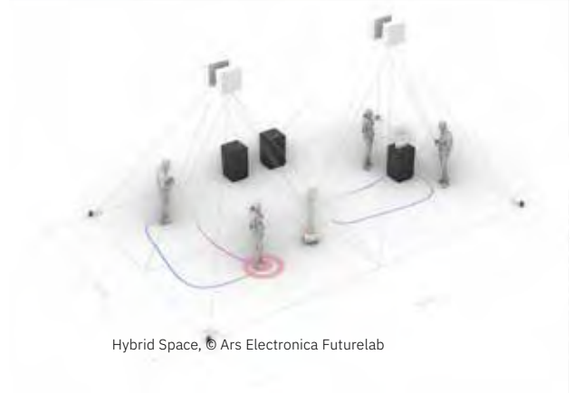

AI-generated Piano Improvisation, © vog.photo


Pinocchio, © Ars Electronica / Martin Hieslmair


Oribotics, © Tom Mesic

OutReach, © Raphael Schaumburg-Lippe


Bio Ink, © Yoko Shimizu

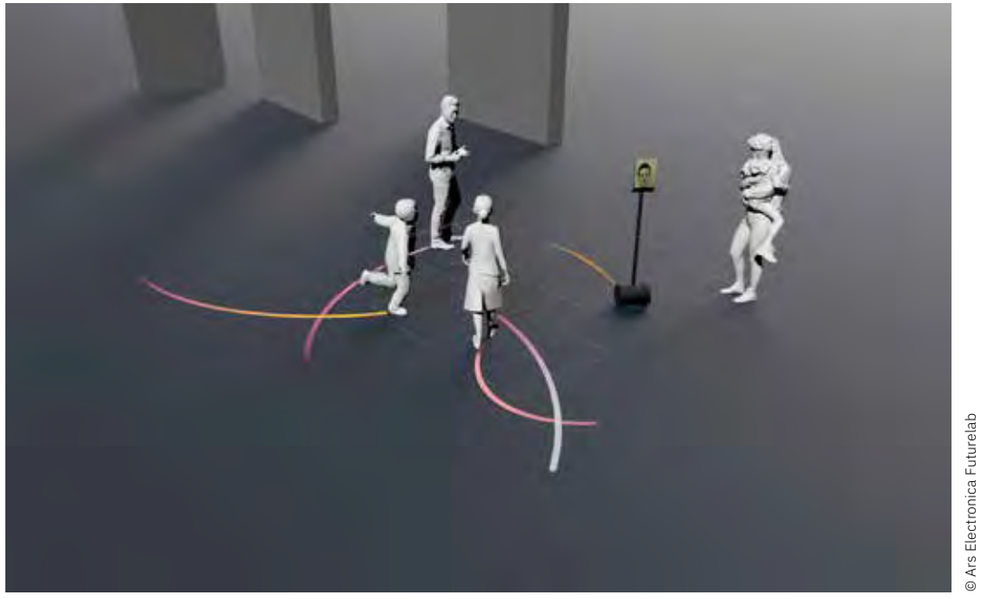

Hybrid Space, © Ars Electronica Futurelab


Ricercar, © Yazdan Zand

Hands for the Future

text by Hideaki Ogawa

Hands for the Future is a participatory media installation that serves as a call to action for the various deep issues that humanity needs to address immediately. The world is now facing a pandemic and its cascading changes. How can we transform the conventional framework, that has become fatigued, into a better social system? Where will people live in the 21st century, and how will they cope with limited resources and environmental crises?
At the entrance to the Ars Electronica Center, a media wall made up of 2,000 E-ink displays slowly shows the things we need to act on now. If you look closely at the words, you will notice that the messages were created by combining hand scans. As visitors raise their hands to take action in the installation, their hands will be captured and become part of the larger message. The E-ink displays used in this work were destined to be discarded due to minor scratches and other flaws. So how can we use such materials to think about the deep issues surrounding us?
Hands for the Future will continue to ask what actions we should take as responsible citizens.



Hybrid Space

text by Peter Freudling

Over the years, the Ars Electronica Futurelab has done a lot of research on various forms of reality and their types of presence or interaction. In the wake of the pandemic forcing us all into virtual video spaces, the lab is dedicating its 25th anniversary to the collective exploration of the boundaries and intersections between different (physical) spaces through the *Hybrid Space* project. The installation provides an interactive space in the Ars Electronica Center where museum visitors can meet and interact with online visitors. Online visitors can interact in real time in the physical space of the museum by using a drawing board on the FL25 website, or by taking control of a telepresence robot from home. The robot will "embody" them, giving them a presence at the museum in Linz.
Collective music-making serves as a form of interaction. Here, the tracks of different visitors from the various "spaces" intersect, contributing to the overall composition.
Another feature in *Hybrid Space* is the integration of OutReach, one of the winning projects of the Lab's internal "Ideas Exploration." OutReach seeks to remove the limits on possibilities for action offered by telepresence in real space. It is dedicated to equalizing/democratizing the different forms of attendance.

Birgit Cakir

Futurelab Ideas Expedition 2021

text by Horst Hörtner

Visions for a society of tomorrow are what the Ars Electronica Futurelab is all about. Starting in 2020, an internal search for ideas — the Ideas Expedition — mobilizes the entire team to create an explosion of unconventional thoughts. And that's a good thing. Because only the best ideas become inventions that shape the world of tomorrow.

We work every day to discover, promote and challenge existing talents. Our team must be allowed to expand beyond itself and, to do that, it needs freedom and inspiration. As in the previous year, the Ideas Expedition shone a spotlight on well-known and new talents who will also be presenting their visions of the future during the Ars Electronica Festival, including Susanne Kiesenhofer (*Memo Futurum*), Ali Nikrang (*Ricercar; Sounding Letters*), Yoko Shimizu (*Biomaterial Art Lab*), Manuel Dobusch and Simon Schmid (*Magellan Robot & OutReach*).

Focal points for 2021 included various topics, such as how to conduct social life during a pandemic. How can we make onsite infrastructure accessible online, from exhibitions to events? Social relevance was also a key issue: Futurelab visionaries explored and continue to explore how digital transformation tools can contribute to solutions for major global challenges. Last but not least, the Ideas Expedition 2021 honored our 25th anniversary. You can experience the ideas that have seen the light of day in the associated exhibition at the Ars Electronica Center.

OutReach

Manuel Dobusch and Simon Schmid

Telepresence is a great tool that gives people the ability to be in faraway places without needing to travel. Telepresence robots, like Double Robot, are great tools for communication. However, they usually lack ways to interact physically with their environment. This reduces the autonomy and freedom of movement of robot users. In this way, teleprecence is limited to "movement through the remote location", lacking the impression of a physical presence. *OutReach* as "the art of being there" is challenging this limitation.

OutReach is a solution that plays to the strengths of telepresence robots. By adding remotely controlled actuators to light switches, elevator buttons, or any other controls in a given environment, *OutReach* provides a way to interact with the remote environment.

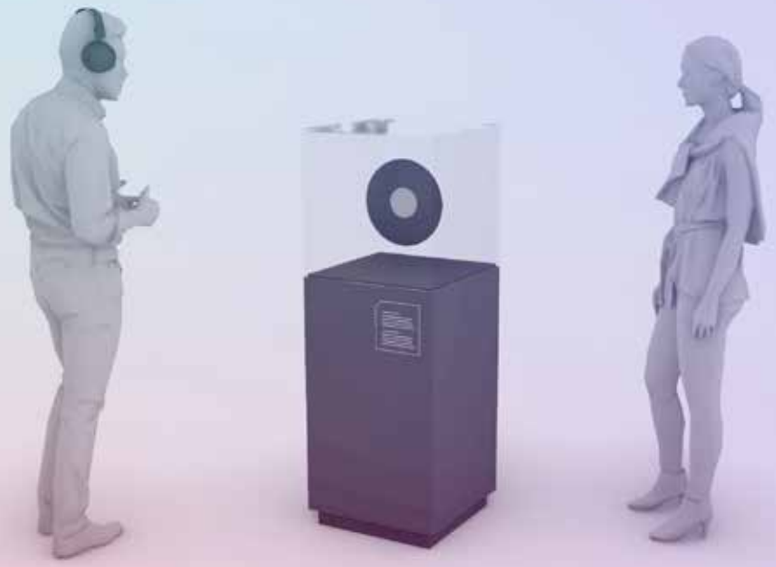
The telepresence robot serves as a relay between the online user and the physical actuators so that only close-by actuators (activating real, physical, already existing buttons, sliders, switches...) can be used. That makes it easier for robot users to find the controls that are important to them. It also keeps the robot environment secure from attacks, because the actuators don't need to be exposed to the internet.

© Raphael Schaumburg-Lippe

Memo Futurum

Susanne Kiesenhofer

How we imagine our future has a big impact on how we live and act in the present. *Memo Futurum* is a call to engage with these visions, and tries to capture our personal and collective ideas of the future. Participants are guided to envision their personal future 25 years from now, and then asked to share their thoughts in the form of a voice memo. Everyone is invited to contribute a memo or listen to other people's. At the end of 2021, the voices will fall silent. The memos will be transferred to vinyl records which will be stored safely in a glass case for 25 years.
Every 25 years, the cycle starts anew. People will be asked again how they see themselves in 25 years, new memos will be recorded and added to the existing ones. By comparing past and present memos, we will be able to reflect on how the way we talk and think about the future has changed. *Memo Futurum* is intended to become a ritual, repeated and expanded every 25 years.



Sounding Letters

Ali Nikrang

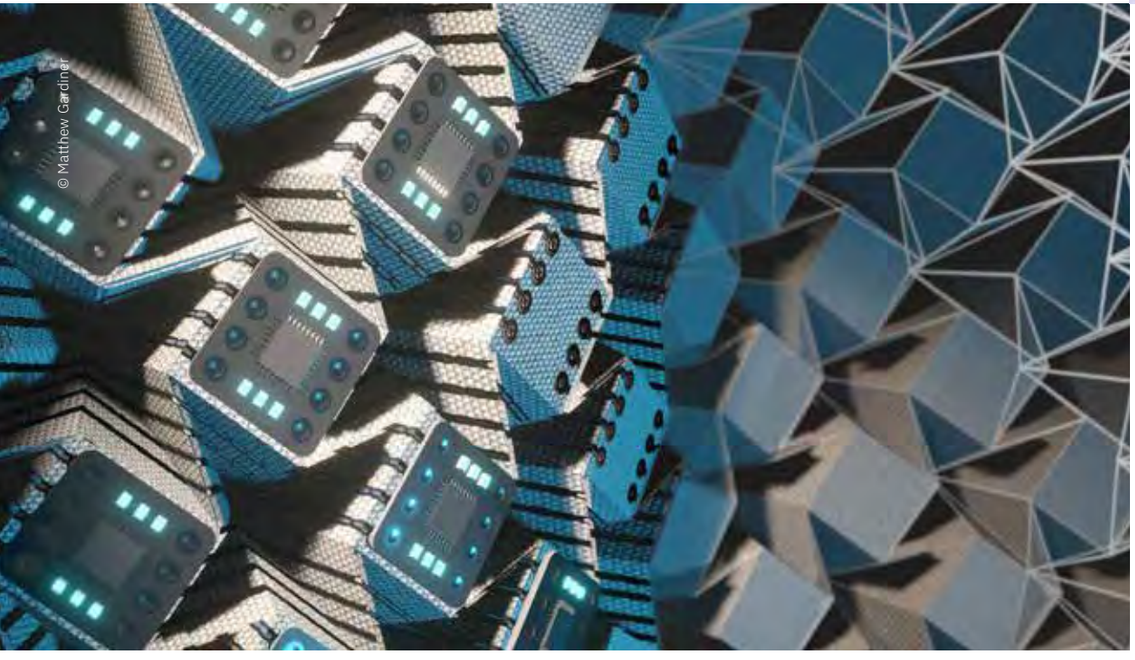
As this year marks the 25th anniversary for both the Ars Electronica Futurelab and the Ars Electronica Center, we are celebrating by using the initials AEF and AEC as a musical theme, with each letter corresponding to a note. Based on this representation, we have co-created a piece of music with AI.
There are several historical examples of composers using notation to "encrypt" a message in their music. We fed the musical theme into Ricercar, an AI-based music composition system being developed at the Ars Electronica Futurelab by Ali Nikrang, and used it to compose several pieces of music. We selected one of them to be performed at the Ars Electronica Festival 2021.
Musicians from a diverse range of styles will compose or improvise to the AI output as a baseline, using both acoustic and electronic as well as hybrid instruments, such as self-playing musical devices. Repeated several times, the musical outcome is always different, thanks to the human creative input.

Origami Robotics: Programming and Self-Aware Origami

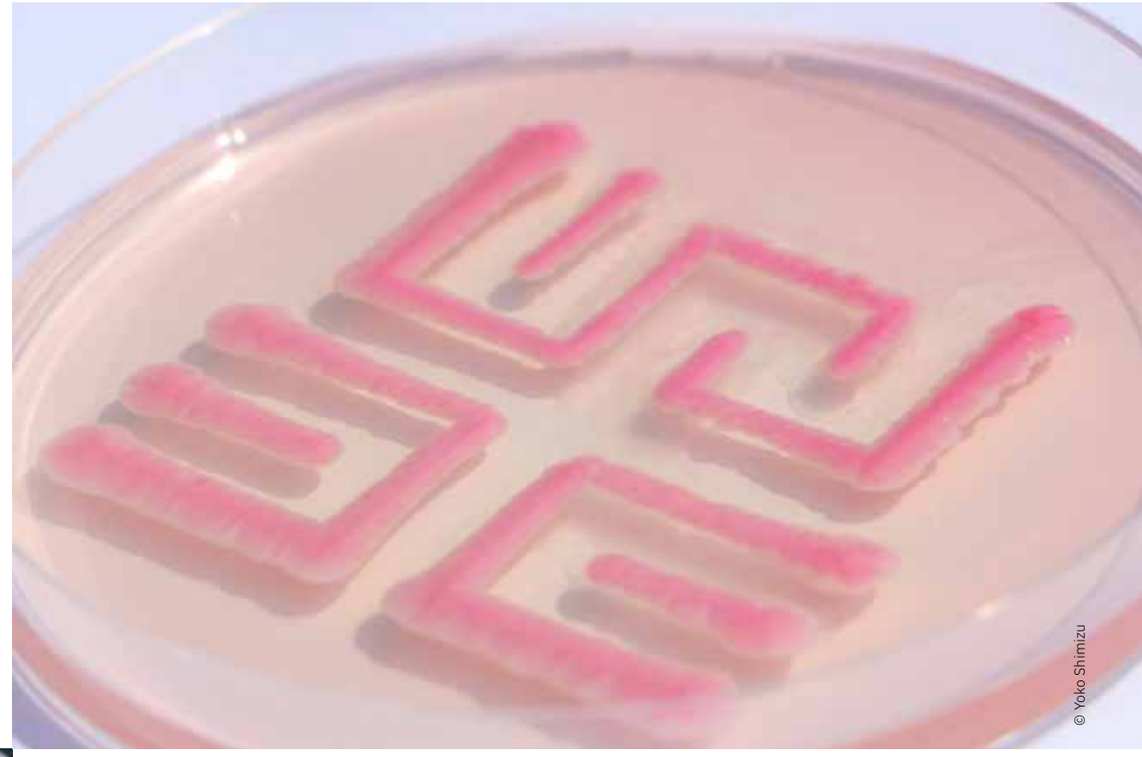
Matthew Gardiner
Ars Electronica Futurelab (AT), Johannes Kepler University Linz Soft Matter Physics Division (AT)

The Ars Electronica Futurelab's exploration of origami robotics (oribotics) invites many fundamental questions in the areas of programming (form and function of folded structures), transformation (kinetic actuation) and sensing (fold self-awareness). We reconstruct the history and influence of folding technology and align it with natural folding patterns, thus framing essential aspects of form and function in a digestible format for the origami programmer. The patterns, including the straight pleat, Yoshimura, Miura, Resch, Waterbomb, Kresling and Flasher, are presented with applications as diverse as bellows, Japanese fans, coffee-can patterns, map designs, heart stents, robotic blossoms, microsurgical tools, lightweight super-strong origami material composites and deployable solar panel arrays. We also present oribokit, an artistic home-delivered art-science origami robotics kit, and Ori*cordion, our first experimental prototype of a refined electronic origami instrument. Our festival contribution will feature performances from our workshop on self-aware origami musical instruments.

Funded through the FWF Austrian Science Fund, PEEK Program



© Matthew Gardiner



© Yoko Shimizu

Bio Ink

Wacom Co., Ltd. (JP), Ars Electronica Futurelab (AT)
text by Yoko Shimizu

In the *Bio Ink* research, we go beyond digital and human-centric technologies by exploring the concept of living ink that grows freely, in a creative symbiosis with nature and other organisms. In the research, biological inks comprised of various microorganisms are created in the bio lab. The drawing robot holding a bio pen/brush in the lab receives the drawings and messages, created with a digital pen/tablet, on a computer. The robot takes the ink and draws on the nutrient agar plate or pad.

The artworks are incubated in a controlled environment to allow the living ink to grow. The microscopic organisms are invisible in the beginning, but they gradually multiply and form colonies that are visible to the naked eye, morphing into beautiful patterns beyond our input. In nature, we co-exist and interact with many organisms. Working with them helps us better understand other beings and ourselves.

AI Ink: The Collective Blue Danube

Wacom Co., Ltd. (JP), Ars Electronica Futurelab (AT)
text by Yoko Shimizu

In the *AI Ink* research, we explore the soul of how we compose music with artificial intelligence under the theme of "AI and Noise." Why does music touch our souls? Is the soul in the data, the signal, the music, or ourselves? Noise is an important element in the creativity of artificial intelligence. In order to understand the relationship between noise and the "soul" in a machine, we use temperature and human interaction as noise. Temperature is a parameter in machine learning that originates with the physical concept of entropy. Greater temperature means greater entropy, randomness, and freedom. In the human body, temperature is also associated to our emotions.

In the research, participants use a digital pen tablet to express how they felt this year with a temperature line that generates music. A section of music, capturing the emotion of each participant, will be collected to create one large piece of music representing our year as a society during the pandemic. AI carries and connects our souls, opening up new possibilities for co-creation between humans and machines.

© Nicolas Naveau

Futurelab Day

text by Hideaki Ogawa

On September 9th 2021, during the Ars Electronica Festival, the Ars Electronica Futurelab will be celebrating its 25th anniversary with a full day of events at the lab, the Center and online. The Futurelab Day will feature lectures, workshops, demos, inspirational tours, and performances on deep issues that need to be addressed right now. In addition to the current members of the Futurelab, former members from around the world, artists, researchers, as well as government and corporate partners will offer participating innovators a special program for transforming the future.

How do we envision and act on the next 25 years as responsible creators and researchers? Participants can experience the Ars Electronica Futurelab as a community and do-tank for the future.

© Vanessa Graf

The Experts of the Future

text by Denise Hirtenfelder

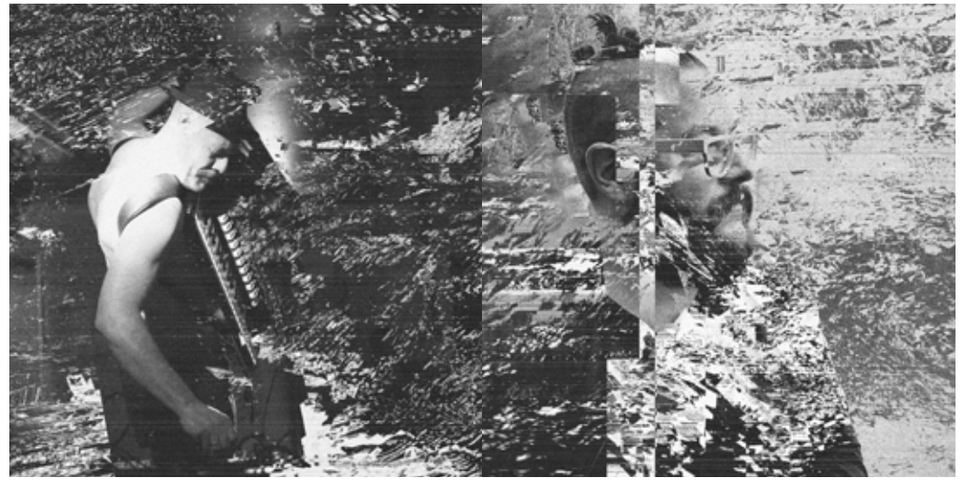
For its 25th anniversary, the young members who have been part of the lab for less than 25 months had the goal to collect opinions from internationally renowned futurologists to collaboratively speculate about possible future narratives in the next 25 years. Their journey to the future even ventured outside of our hemisphere to undiscovered planets. As a group, they explored cultural diversity, future mobility, and even sent messages and wishes to inhabitants from outer space. What is special about the experts for the future whom we interviewed? On average, they are seven years old. Ars Electronica Futurelab organized a prototype workshop with the team members' own kids and guided them into the future in a three-step journey. After the workshop, an international outreach to our partner-gardens followed, to collect statements from young experts all over the world, to come up with a collaborative compass of future narratives.

© Birgit Cakir

11°22'4''142°35'5''

Johannes Pöll and Stephan Mittlböck-Jungwirth-Fohringer

11°22'4''142°35'5'' locates the Challenger Deep at 10,994 meters as the deepest point of the Mariana Trench in the western Pacific Ocean. Coded as two series of numbers consisting of degrees, minutes and seconds in the coordinate system, these correspond to a fringe location in our world. The noise performance project of the same name by the artists Stefan Mittlböck-Jungwirth-Fohringer and Johannes Poell attempts to explore such fringe locations audiovisually. The duo creates a bridge between analog acoustic and digitally discrete frequency ranges. Mutated accordion tone sequences wander through filter cascades, moving away from their origin to form alienated noise levels. Deconstruction and construction of tones, as well as the addition of modular synthesis, creates a physically experienceable world.
Johannes Poell creates generative frequency worlds. Modular building blocks are his acoustic and visual tools for exploring these liminal places. In his accordion-noise performance, Stefan Mittlböck-Jungwirth-Fohringer draws on many years of experience and scientific results from his artistic research with honeybees (Apis mellifera carnica).



© Project 11°22'4''142°35'5'', 2021

2021 Cinematic Rendering, © Robert Bauernhansl

Ars Electronica Futurelab Projects

Based on its research, the Ars Electronica Futurelab executes projects for the public, together with various cooperation partners from the fields of business, culture, research, and education. Putting the human being and its interaction with technology at the center of its research, all of the Ars Electronica Futurelab's projects are, in a sense, a mirror of society's future trends. This approach allows for a constant change in and reflection around a wide variety of topics.

Deck 50

Natural History Museum Vienny (AT), INSEQ Design (AT), Ars Electronica Futurelab (AT)
text by Marianne Eisl

Science or big knowledge bubbles are all around us in different intensities, and unconsciously influencing our daily lives. Despite this, the research priorities behind that knowledge are often built on the input and feedback of a select group of people, and not really on the empirical values of those most affected by it. One of the main reasons for this is that scientific publications often require previous knowledge and a scientific background, which makes it complicated, and even impossible, for the general public to follow up and take part in them. How can we overcome this difficulty in proper information transfer, and bring science and society closer together?
In close collaboration with the Natural History Museum Vienna (NHM), we attempted to answer this question by designing and developing new ways of involving the public in internal research processes. To that effect, we jointly implemented a concept room dedicated to science communication and public involvement called *Deck 50*. This physical space gives visitors the opportunity to generate new knowledge, to anchor it sustainably through participatory formats, and to let it flow into scientific questions. With that, a novel, flexible framework was created, in which visitors are able to dive deeper into research contents, position themselves in relation to the issues and find a moment in which they, too, can contribute in a substantial way.
To reach people beyond those who can be found inside a first district museum, a mobile installation was built. With the cargo bike "NHM on Tour", the museum is now able to bring its contents to a broader range of society, and thus enables a diverse audience to share stories and experiences on different kinds of topics.
With the help of these tools, we can encourage the public to actively partake in shaping our future.

Deck 50 © Birgit Cakir

Virtual Anatomy

Johannes Kepler University (AT), Siemens Healthineers (DE/US), Ars Electronica Futurelab (AT)
text by Roland Haring

In searching for an immersive environment for illustrations of human anatomy, the Ars Electronica Futurelab, in collaboration with researchers at Siemens Healthineers, developed a completely new form of visualizing anatomic measurement data. The result was *Virtual Anatomy*, a project so successful that in 2021, another milestone was set: students at Kepler University in Linz are now able to experience *Virtual Anatomy* full-time at the new JKU medSPACE.

It all began with artists and researchers looking for ways to transfer the power of animation from the world of cinema to that of medicine. Image-based Illumination Calculation, a new method that made it possible to transform CT and MRI measurement data into a plastic, photorealistic representation, caused this revolution.

The impressive results exhibited their full potential in Ars Electronica's Deep Space 8K in 2015. A broad public was now able to experience the three-dimensional anatomic world in a 16 x 9 meters 8K environment. From there, the program expanded drastically: from regular lectures for university students to a new communication platform for top physicians, as well as livestreams of surgeries.

The program in all its forms was so successful that Johannes Kepler University decided to extend it even further, by building its very own projection room based on the dimensions of the Deep Space 8K. And so, the JKU medSPACE, a globally unique way to experience anatomy at the university, opened its doors. There, medical students can explore and walk through different parts of the human body as three-dimensional objects in razor-sharp resolution, zoomable and viewable from any angle. The JKU medSPACE is an example of how expertise in different fields, artistic input, curiosity and openness can create a breeding ground for important innovation. It is a starting point for a generation of physicians who will be accustomed to operating alongside robots, to working with AI systems for diagnostics, and to learn and teach in virtual environments.

© Robert Bauernhansl

© Robert Bauernhansl

CoBot Studio

LIT Robopsychology Lab, Johannes Kepler Universität Linz (AT); Center for Human-Computer Interaction, Universität Salzburg (AT); Joanneum Robotics JOANNEUM RESEARCH Forschungsgesellschaft mbH (AT); Polycular OG (AT); Österr. Forschungsinstitut für Artificial Intelligence OFAI (AT); Blue Danube Robotics GmbH (AT); Ars Electronica Futurelab (AT)
text by Roland Haring and Birgit Cakir

When humans and robots work side by side, it's not always easy: widespread skepticism and a lack of communication paradigms will create new challenges in future work environments. How can trust and acceptance be established in the workplace of the future? How can human-robot work environments be designed? In *CoBot Studio* — a collaborative research project funded by the program Ideen Lab 4.0 of the FFG — researchers from Ars Electronica Futurelab, LIT Robopsychology Lab (JKU Linz), Centre for Human-Computer-Interaction (Universität Salzburg), Johanneum Robotics (JOHANNEUM RESEARCH), Polycular OG, Austrian Research Institute for Artificial Intelligence (OFAI) and Blue Danube Robotics are developing new standards for successful teamwork between humans and robots. Deep Space 8K will be used to create a unique, mixed-reality environment that simulates future forms of collaboration. From robotics to psychology and virtual reality, to methods of nonverbal communication, the research project will draw on a wide variety of disciplines. The research takes place at the interface between psychology and technology. It creates new knowledge as a basis for improved communication between humans and CoBots — robots that can work together with humans in confined spaces without endangering their safety. Non-verbal communication and intention signals that facilitate the assessment of the interaction partner's intention are being investigated. A virtual reality research environment was first used to investigate the relationship between signal intelligibility and trust. In Deep Space 8K, subjects will now encounter a real CoBot in the virtual environment and attempt to interpret its signals. The answers expected from this research project should provide important information for the development of future CoBots. The teamwork between man and machine can benefit greatly from the knowledge gained. *CoBot Studio* is therefore another important step towards reforming the working world of the future in the interests of people.

This project is funded by the program Ideen Lab 4.0 of the FFG.

© Bernhard Pusch

Temazcal (Javier Álvarez, 1984) — Performed and Produced by Elliott Gaston-Ross

text by Elliot Gaston-Ross and Florian Berger

Temazcal is a contemporary piece of percussion music composed in 1984 by the renowned Mexican composer Javier Álvarez. It was the first piece ever written which requires the performer to play traditional Venezuelan maracas as a soloist in a contemporary western music setting.
Award winning percussionist Elliott Gaston-Ross teamed up with Ars Electronica Futurelab key researcher Florian Berger to create a unique representation of *Temazcal*. The result was an immersive acoustic, digital and visual experience in the Deep Space 8K of the Ars Electronica Center.
Álvarez created a score for the maracas part which requires the player to largely improvise to a set backing track created using an electroacoustic soundscape, to ensure no two performances of the piece are the same. With this in mind, the idea of making a video recording in Deep Space, accompanied by visual effects designed specifically for this unique interpretation of the piece, was born.
Since the title of the work comes from a Nahuatl (ancient Aztec) word meaning "water that burns", Elliott felt it fitting to include scenes of nature, moved by the elements. Thus, the opening scene depicts thunder clouds and lightning over the mountain tops, while the finale shows ocean waves and psychedelic colours.
The Deep Space 8K provided an ideal setup for filming the performance. Its vast dimension made it possible to create immersive shots placing the performer directly in the scene. The software runs on a Futurelab in-house-developed engine (FLEngine) written mainly in C++ (OpenGL). Ray-marched distance fields enable rendering the complex global illumination lighting scenes of a thunderstorm, while a very flexible particle system provides a basic main theme which is easily directed to follow certain pathways, form shapes or move freely. It also provides many possibilities to react to changes or tension in the music, as well as shaping completely different scenes all at once, such as a giant ocean wave.

Ars Electronica Japan

text by Hideaki Ogawa

Ars Electronica Japan is a cultural co-creation initiative that connects Ars Electronica and Japan. Even in the midst of a long history of deep and rich collaborations with Japanese artists, cultural and governmental institutions and corporations, the pandemic has made physical exchanges difficult. On the other hand, new creative activities have begun, seeing this difficulty as a new opportunity. As part of the "The Project to Support Emerging Media Arts Creators", the Agency for Cultural Affairs in Japan and Ars Electronica have established a residence program that aims to cultivate a wide range of innovators who will play an active role as curators and cultural producers for the next generation. With Keio University SFC, we designed a class called "Artistic Journalism" completely remotely, and conducted classes and discussions while experiencing various exhibits of the Ars Electronica Center live.
At Matsudo's International Science and Art Festival, Ars Electronica members did not visit the site, but worked remotely with the young creators of Matsudo City to realize a festival on the theme of the "Garden of Creativity", transforming an old Japanese garden and house into a unique discussion space where art and science, innovation and tradition, intersect. In addition, the results of the joint research on 8K technology that we have been conducting with NHK (Japan Broadcasting Corporation) since 2018 were presented as the exhibition *Resonant Media — Possibilities of 8K Visualization* at Plus Cross in Shibuya, Tokyo. On the Ars Electronica Linz side, a conference was held at Deep Space 8K, where Japanese partners and Futurelab creators gave shape to a new event format for this era.
Ars Electronica's unique cultural service was also implemented in an attempt to support corporate innovation. Ars Electronica and Hakuhodo, with which it has been collaborating on innovation-inspiring programs since 2014, have launched an online human resource development program for companies called *Art Thinking School*. Art Thinking, where each individual creates her or his own compass and practices various trial and error through artistic exploration, proposes a new form of collaboration between art and industry in an unstable and unpredictable world.
We have also conducted various research and development projects with WACOM, known for its digital pens, on the theme of the ink of the future since the start of our collaboration in 2020. At the Ars Electronica Festival and WACOM's strategic event, "Connected Ink", we will present ideas for future inks such as Space Ink, Bio Ink, and AI Ink.
With Japanese telecom company NTT, we are exploring Swarms Art, combining their cutting-edge communication technology with Futurelab's Swarm technology. The result of this research, *STREAM OF HOPE*, was also presented at the performance event of the "NTT presents Tokyo 2020 Olympic Torch Relay Celebration", where countless robots equipped with displays greeted the torchbearers.
Ars Electronica Japan will make the most of the cultural infrastructure aspect of Ars Electronica and the cutting-edge artistic creativity of Futurelab to provide a tangible future for the cultural, educational, policy and business domains of Japanese society.

Stream of Hope

NTT (Nippon Telegraph and Telephone Corporation) Human Informatics Laboratories, Ars Electronica Futurelab (AT)
text by Peter Holzkorn

In 2017, early on in a joint research initiative between NTT and the Ars Electronica Futurelab, a small swarm of drones showed visions of future robot-human interaction for playful navigation and information at NTT's research forum. By 2019, the vision had transformed into a swarm of 39 ground vehicles with hexagonal LED displays that, like the Spaxels seven years earlier, invented a new language of visual expression in the form of fluid mosaics in physical space. These Fluxels first performed at a special exhibition on "*Sports Viewing Re-Imagined*" in Tokyo's Miraikan Museum two years ago.

This event was the precursor of a much more challenging mission: *Stream of Hope*, a Swarm Art performance of the Fluxels at an iconic cultural moment, "NTT Presents Tokyo 2020 Olympic Torch Relay Celebration". Even as it is based on NTT's cutting-edge communication technology and the Futurelab's feature-rich SwarmOS, the precise control of a large bot swarm in an outdoor environment required the international team to push boundaries in satellite navigation, wireless communication and swarm operations.

When, in early 2020, many public events were postponed for a year, only weeks before the planned presentation of *Stream of Hope*, the team gained development time, but had to change an integral part of their collaboration. With the Futurelab developers unable to travel to Japan due to the pandemic, NTT's researchers expanded their roles and the project team adapted to experimental robotics development across timezones and language barriers via conference calls, live video feeds and countless TeamViewer sessions. Technical approaches changed, goals shifted, timelines and event modalities kept transforming in an unpredictable period — but, a year later, in 2021, when the event finally took place, the robot swarm was there, illuminating the moment with a beautiful visual celebration of progress, hope and perseverance.

© Kaori Nishida

© Wacom / Ars Electronica Futurelab

Future Ink Project

Wacom Co., Ltd. (JP), Ars Electronica Futurelab (AT)
text by Yoko Shimizu

The *Future Ink Project* is a collaborative research project between Wacom and Ars Electronica Futurelab to explore the future of creativity from all aspects of ink. As a global leader in pen tablets, interactive pen displays, and digital interface technologies, Wacom brings people and technology closer together through natural, intuitive interface solutions. Wacom supports creative communities across the globe in making this world a more creative place.

The project started in 2020 with one creative question — Where is My Soul? When we experience the performance of artists as they pour their life, emotion, energy and passion into that one special moment, we are deeply moved and inspired in ways that we cannot explain. What moves our soul? How is the soul expressed and received?

In the current digital society, we use various digital tools to express ourselves creatively. When we use these tools, a lot of data is filtered and removed as noise, and only part of the data is used as the input signal. However, infinite things are occurring during a creative exchange in the real, physical, and natural world. Are we losing important information through digitization? How do we define signal and noise? Can noise be art? And, in the natural world, is the human the noise? This year we continue our journey to find the soul under the concept of "noise" from three diverse perspectives. In *Space and Noise*, we co-create with drones as equal partners, inspiring and interacting with each other. In *AI and Noise*, we explore the soul in how we compose music with artificial intelligence. In *Biology and Noise*, we go beyond the digital to create artworks with living ink that grows freely, in creative symbiosis with other organisms and nature. The objective of the project is not to find a specific answer, but to continue to ask questions and conduct innovative and experimental research that is crucial to envisioning the future of creativity.

© Ars Electronica Futurelab

Art Thinking Program

Hakuhodo Inc. (JP), Ars Electronica Futurelab (AT)
text by Yoko Shimizu

Art Thinking Program (ATP) is a joint consulting program between Hakuhodo and Ars Electronica Futurelab to incorporate the method of Art Thinking into the management and R&D of companies, research institutions, and government organizations. Hakuhodo is a leading communication design and marketing solutions company in Japan, with its core philosophy centered on People Thinking. Since 2014, Hakuhodo and Ars Electronica Futurelab have worked together to introduce the Art Thinking method in Japan.

In the Art Thinking Program, organizations and individuals learn how to create their compass and envision the future through artistic inspiration and creative questions. The program is comprised of three elements: *Art Thinking Tour*, *Art Thinking School*, and *Art Thinking Project*. Since the pandemic in 2020, the joint team of Hakuhodo and Ars Electronica Futurelab has also invented new online formats to bring society together. For example, Creative Question Challenge (CQC) is a talk format in which speakers and audience explore creative questions and ideas in a 30-minute dialogue based on the Art Thinking concept.

In 2021, the joint team launched the new *Art Thinking School* in a hybrid format with comprehensive lectures, inspirational festival tours, and tools both online and onsite to help the participants ideate, conceptualize and envision the future, thus creating a foundation for the development of tangible projects.

In the *Art Thinking Tour* during the Ars Electronica Festival 2021, a new online experience called *GhostDive* invites the viewers to dive into the live cam on the helmet of the Ars Electronica experts, to experience the festival in a more interactive and dynamic way.

Through these initiatives, Hakuhodo and Ars Electronica Futurelab are continuously building a creative ecosystem of Art Thinking. Talks, lectures, and events are held in Japan and in Linz to envision the future together as a global society.

The Future is Coded

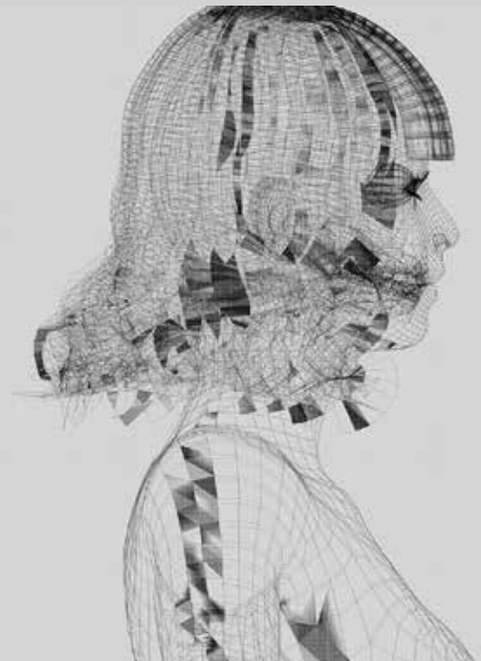
Residency by Fanny Zaman

The social impact of technology on our reality and ecology is the common thread in Zaman's work. Her project, *THE FUTURE IS CODED* refers to the idea that past, present and future exist simultaneously, and that noise and randomness (chance) are used as media to forecast the future. Those methods relate to the tendency that human narrative is stimulated by reading and interpreting forms and choreographies such as clouds, sand, tea leaves, etc. Our brain searches for coherence, consistency, patterns, and associative elements from the chaos of the reality surrounding us. The central question the project revolves around is: what is and will be the current and future status of noise in an era of ever-growing optimization? Is there still space for noise, for messiness, for inspiration, and which form will it take?

During the online residency at Ars Electronica Futurelab a small group worked together to reflect on this question. Parallel to this discursive approach, Zaman developed a video game, set up for the contemplation of these very topics.

Pragma, the character featured in the videogame *THE FUTURE IS CODED*, is a multiple, meaning there are several versions of her simultaneously. The Pragma character forms a small group with herself, and navigates in correlation with the player. Elements of gameplay are loosely integrated as a part of distraction, not as goals to achieve or scores to be made to invite the players. The player experiences what singular action becomes, if it is executed as a group. The scenography is a playful, noisy environment that serves as a trigger for the player to recognize possible remnants of a future space: a cuneiform script that you cannot read, remains of a building complex, a petrified forest of an imagined future...In this way the scenery serves as an actuator for the story to evolve. Narrators serve as guiding voices for ongoing interpretation and reflection. Part of the storytelling was generated during online workshops, and through interacting with an automated text-generating AI.

This project is funded by the Flemish Ministry of Culture, Youth and Media



© Fanny Zaman

ARS ELECTRONICA SOLUTIONS

Ars Electronica Solutions conceives, creates and implements interactive and multisensory worlds of experience. We develop creative, individualized solutions in the form of interactive products and services for exhibitions, brand lands, trade shows, events, and in the urban development field. Whatever your needs — consultancy, workshops, single touch applications or an entire exhibition, leasing reliable products or creating a bold prototype; whatever the occasion — advice for future strategies, corporate or public events, a trade fair, a showroom or a whole museum — Ars Electronica Solutions has the expertise and experience it takes to do a superb job!

INNOVATION & CREATIVITY

© Ars Electronica Solutions

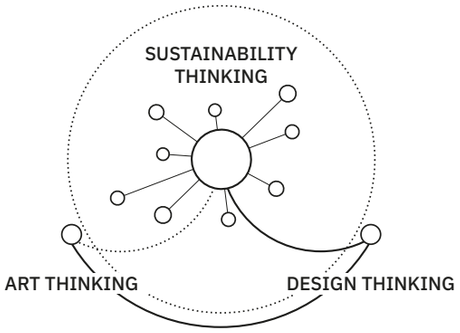
We scrutinize and tinker, think and create, design and test — sometimes with such outstanding success that we can see right away that the results are suited to many different applications. That's how prototype development can lead to solutions and products that can be customized to a client's specific needs. And that closes the process chain from idea and vision to prototype development and ultimately to an innovative solution. The various interfaces we build into our productions are intentionally futuristic — direct communication between the human brain and a computer, interweaving real and virtual scenarios, and creative artificial intelligences. We use Ars Electronica's decades of experience with technologies, as well as the spirit and creativity of Ars Electronica Solutions, to create custom-tailored solutions depending on the client's target groups and environment. Thanks to this balanced mix of cutting-edge and traditional technologies, our work boasts intuitive interfaces and creative storytelling.

SAMURAI MUSEUM BERLIN

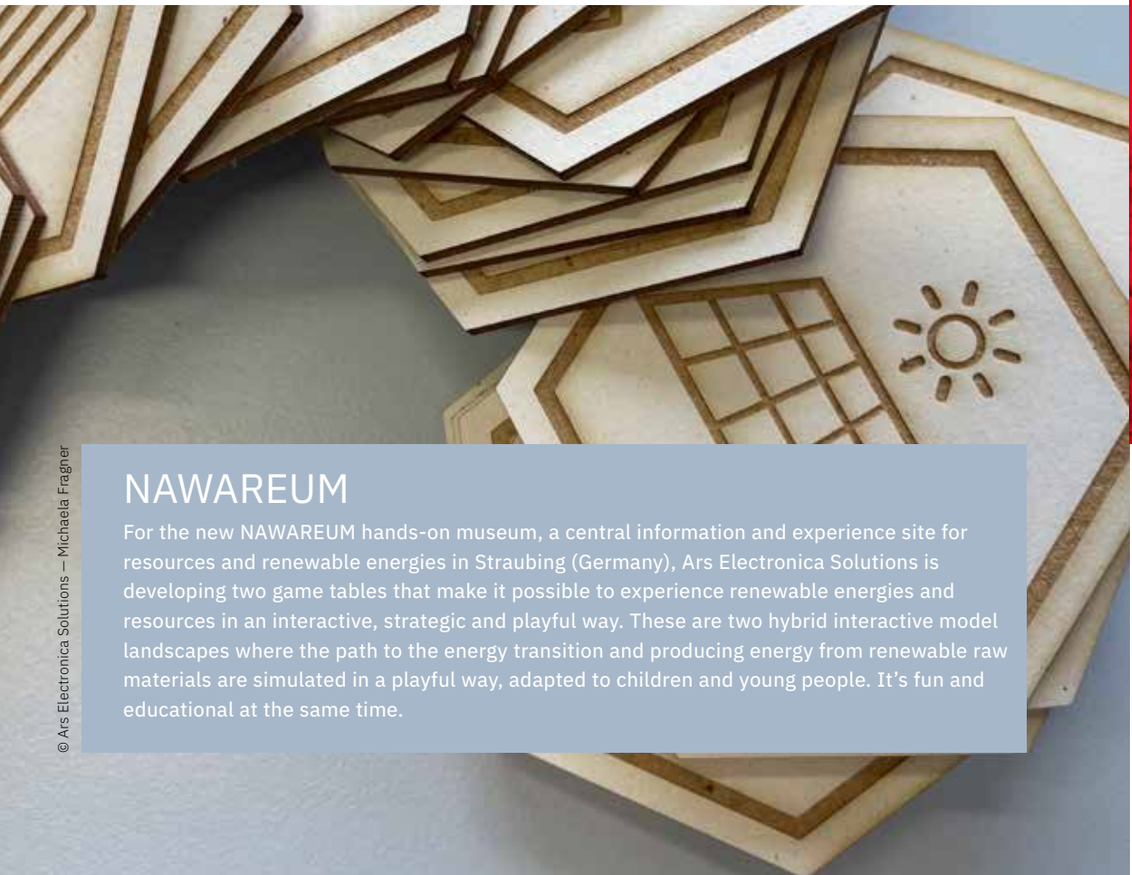
© Fraunhofer — CultArm 3D

As a symbol of "Connecting Culture," Berlin is getting a museum on the myth of the samurai. The future meets the past — the permanent exhibition planned and conceived by Ars Electronica Solutions will use new and spectacular technologies, interactive concepts and staging to take visitors on a breathtaking journey through time from the emergence of the samurai as a warrior caste to modern-day Japan.
In the permanent exhibition, which can be experienced with all the senses, spectacular objects, mysterious creatures and legendary deeds from the world of the samurai are placed in a new museum context. On a total of 1,800 sqm, the museum shows a multitude of unique and rare exhibits from the holdings of the Peter Janssen Collection, which has been built up over 30 years, and which are presented in a forward-looking, multimedia and interactive way using innovative technology.

SUSTAINABILITY THINKING



Sustainability and neo-ecology are the megatrends of our time and run through a number of past and current projects of Ars Electronica Solutions. Our longstanding collaboration with the European Space Agency (ESA) is a strong support and the core of our related activities. Over the course of a variety of projects, we've been working on satellite data from ESA's climate research and considering how to make it accessible to all target groups. Artistic thinking can be used to break down traditional ways of thinking. Provocative artistic approaches, a lot of experience in interactive didactics and interface conception led to us becoming more and more specialized in communicating on the topics of sustainability and climate change.



© Ars Electronica Solutions — Michaela Fragner

NAWAREUM

For the new NAWAREUM hands-on museum, a central information and experience site for resources and renewable energies in Straubing (Germany), Ars Electronica Solutions is developing two game tables that make it possible to experience renewable energies and resources in an interactive, strategic and playful way. These are two hybrid interactive model landscapes where the path to the energy transition and producing energy from renewable raw materials are simulated in a playful way, adapted to children and young people. It's fun and educational at the same time.

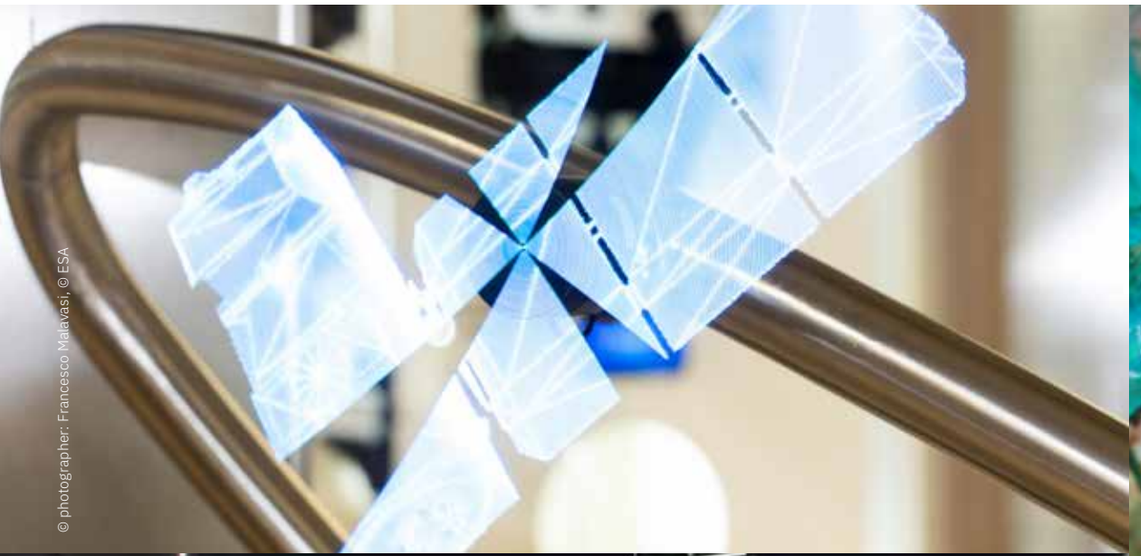
© Ars Electronica — Robert Bauernhansl

Rosenbauer

For the RT (Revolutionary Technology — Hybrid municipal vehicles) the developers at Rosenbauer didn't just improve what was already there, instead they reconsidered the entire fire truck concept. The RT is mainly electric and therefore emission-free in short-range operation. Ars Electronica Solutions developed a concept as well as the technical and theatrical aspects of the launch event for the Rosenbauer RT fire truck, which was impressively staged as an international resource-saving hybrid event. This was not a classic "reveal" but rather an experience of the RTs on the move through their future "natural" environment, the urban space.

ESA

Over the last seven years, Ars Electronica Solutions has been working with the European Space Agency (ESA) and the German Aerospace Center (DLR) on several Earth observation exhibitions. In 2018, the Φ-Experience, an interactive exhibition, was created for ESA's Earth Observation headquarter in Frascati, Italy. This new center presents ESA's vision and missions in a way that is understandable to the general public. A new exhibition "Memorabilia" was opened and Ars Electronica Solutions contributed several essential parts of the exhibition. The small exhibition gives an overview of the development of space flight in Europe and shows digital documents as well as memorabilia from more than 40 years of space flight.
Ars Electronica Solutions developed a mobile "Half Dome Globe" (permanent installation inside the Φ-Experience) showing the latest impressive satellite images and contexts at the so-called Futurelab at the Goodwood Festival of Speed.



© photographer: Francesco Malavasi, © ESA

Amy shore photography and CatAgouti

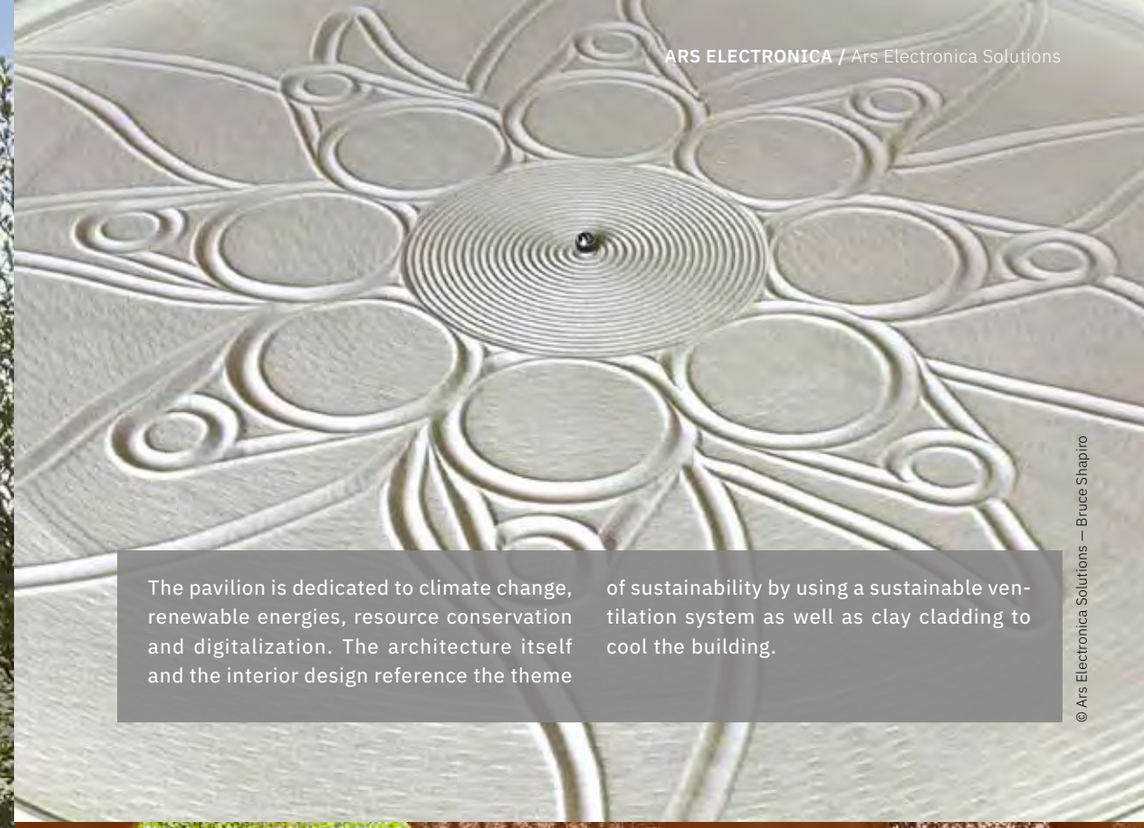
Bregenz — Global Shift

Together with the cultural department of the state capital of Bregenz, an exhibition was held there for the second time that takes the pulse of the times. Ars Electronica Solutions conceived and realized the exhibition based on the new "Compass — Navigating the Future" exhibition at the Ars Electronica Center, with current satellite images from the European Space Agency (ESA) and in intensive collaboration and exchange with the Stakeholders in Bregenz. Along with the accompanying program, it is dedicated to the most important issues of our time: climate change, scarcity of resources, digitalization, sustainability, consumption, energy efficiency, globalization and much more. Special attention was paid to local conditions, such as regional climate phenomena in and around Vorarlberg.

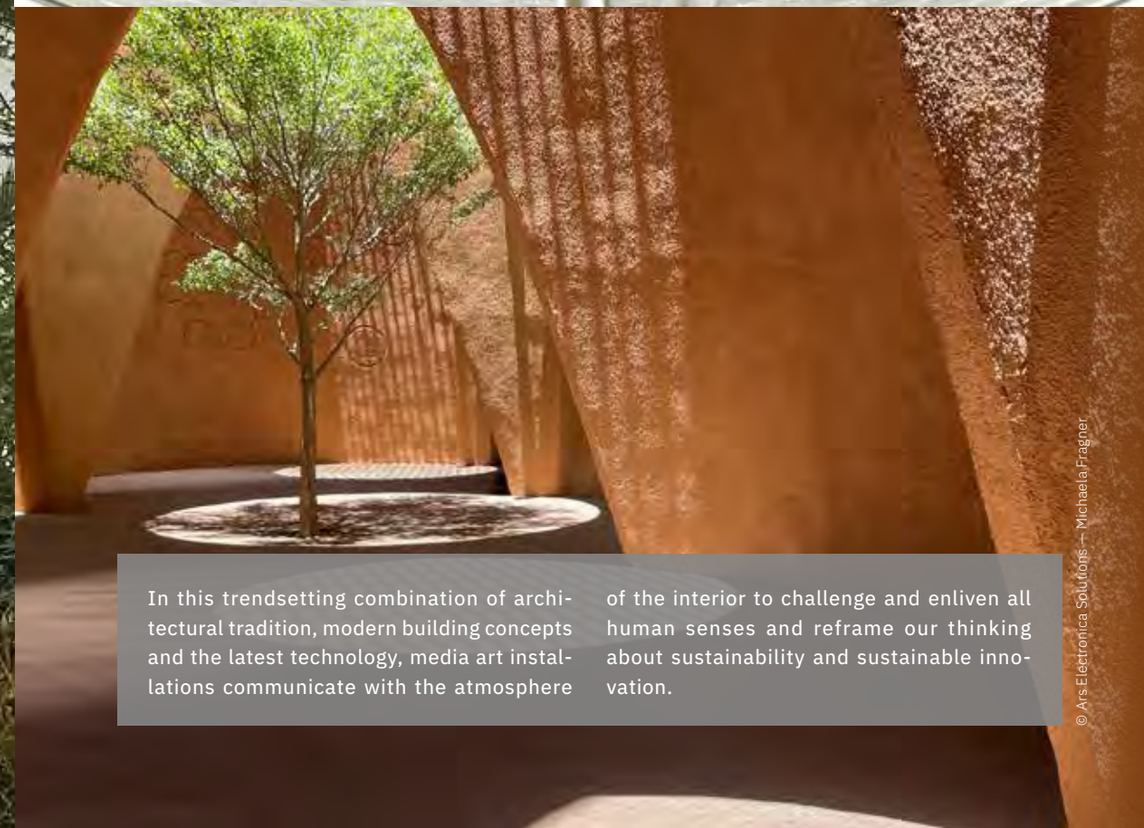
© Ars Electronica — Martin Hieslmair

AUSTRIA@EXPO DUBAI:
The Austrian Pavilion

The first world exhibition in an Arab country starts in October 2021. On 438 hectares between Dubai and Abu Dhabi, three pavilions will be built to represent the themes of sustainability, mobility and opportunity. Among the 192 participating nations, Austria will be represented with the motto “Austria Makes Sense.” Together with querkraft, bleed and büro wien, Ars Electronica Solutions was responsible for the concept of the event spaces and has developed and realized all the media installations in the pavilion.



The pavilion is dedicated to climate change, renewable energies, resource conservation and digitalization. The architecture itself and the interior design reference the theme of sustainability by using a sustainable ventilation system as well as clay cladding to cool the building.



In this trendsetting combination of architectural tradition, modern building concepts and the latest technology, media art installations communicate with the atmosphere of the interior to challenge and enliven all human senses and reframe our thinking about sustainability and sustainable innovation.

AWARD & PROJECTS

Ars Electronica Solutions wins Austrian Export Award in Gold

© Andreas Röbl

The Cubo Negro at the Sinaloa Science Center in Mexico, a Deep Space 8K much like the original in Linz, was implemented by Ars Electronica Solutions. For this Ars Electronica Solutions received the prestigious Austrian Export Award in Gold in the Tourism and Leisure Industry category. It confirms our understanding and our claim not to focus on technology, but always on people.

Multiplexity in Timisoara

For the multicultural center that is planned in Timisoara under the umbrella of the European Capital of Culture 2021, Ars Electronica Solutions worked with stakeholders on the organizational and strategic concept. A variation on Deep Space 8K will be an important part of the center for art, technology and experiment.

© anuala.ro

City of Oulu

© mediapankki.ouka.fi

The Finnish city of Oulu will be the European Capital of Culture in 2026 around the concept of “Cultural Climate Change.” An important role in this will be played by the planned enhancements at the Museum and Science Center Luppi, turning Oulu into an ArTech city to connect technology and science with art and creativity. A Deep Space 8K variation is planned to be an important part inside the renewed building.

AK Salzburg

“Smart Home — Sweet Home? is an exhibition by the Salzburg Chamber of Labour and Ars Electronica Solutions on the subject of smart homes and working from home. The effects of the ever-increasing digitalization on our everyday lives and the different aspects of smart home technologies will be examined in five exhibition areas by informative, interactive installations. The smart home of the future promises greater quality of life, more security and leisure time. On the other hand, there is the fear of the loss of privacy, the “glass household” and dependence on energy and Internet service providers.

© Ars Electronica Solutions/ My Trinh Müller-Gardiner

Structural Inspection

© STRUCINSPECT

The iLab of the Austrian Pavilion at Expo 2020 (from October 2021) in Dubai is a place of innovation, inspiration, information and interaction. As one of these innovative companies, STRUCINSPECT — the world’s first collaboration hub for digital inspections and lifecycle management — presents itself through an exciting, attention-grabbing holographic animation, which shows the revolutionary maintenance process of bridges and tunnels using a combination of drones, multispectral sensor technology, artificial intelligence and three-dimensional data processing.

BMEIA

Since the 2014 national holiday, an interactive installation by Ars Electronica Solutions at the Federal Ministry for European and International Affairs has been informing visitors about the BMEIA’s global representative offices and their networking. As part of an update, the station, which is popular for communicating the ministry’s diverse activities, has been brought up to the latest technical standards and has been expanded to include additional options for presenting the BMEIA’s areas of activity flexibly and dynamically in different contexts.

© BMEIA

Myriad (Tulips), Anna Ridler (UK), (c) vog.photo

ARS ELECTRONICA EXPORT 2021

Ars Electronica Export: the name speaks for itself. The Ars Electronica expertise and knowledge travels the world through exhibitions and events, mentoring and residencies, talks and workshops.

40+ years working at the intersection of art and science gives us a unique perspective and expertise. It allowed us to build a wide network of brilliant minds in at the intersection of art, technology and society. Now, this network supports us in critically reflecting on challenges and contextualizing, as well as analyzing, current tendencies. Cultural practitioners, as well as businesses and universities, are amongst our Export partners. Together, we implement a wide range of interventions all around the world.

Due to the corona pandemic, Ars Electronica Export also had to rethink some of its strategies. We are particularly pleased that we were able to process almost all inquiries. In addition, we focused on mediation and consultancy. We are convinced that we can use these experiences for our partners' upcoming activities — whether it is consulting, conceiving or producing exhibitions, screenings or performances, setting into motion new forms of residencies and competitions, or generally developing new formats.

ArtScience Residency enabled by Deutsche Telekom

Mentorship/Exhibition/Festival

The ArtScience Residency aims to foster an interdisciplinary exchange between artists and researchers, between Western and Eastern Europe, and between industry and cultural practitioners. Kyriaki Goni became the winner of this first iteration and joined the virtual mentorship hosted by Prof. Martina Mara at the JKU Robopsychology Lab. Followed by a focused production period, Kyriaki's art piece, inspired by this exchange, will be presented at this year's theme exhibition in Kepler's Garden Linz.

Data Garden solo show at Onassis Stegi, © Kyriaki Goni

Esch2022 — European Capital of Culture

Workshop/Consulting/Exhibition

Esch-sur-Alzette,, the cross-border area in the south of Luxembourg, is in transformation: a former metalworking industry area will develop into a center for future-oriented knowledge and fresh creativity. For the Cultural Capital program in 2022, Ars Electronica Export was invited to become part of this transformation by curating an exhibition in the Möllerei. The exhibition invites us to explore art as a tool for humans to understand and envision the future.

© Eric Chenal

K-Arts Ars Electronica Academy

Mentorship/Workshop/Festival

For one semester, Ars Electronica joins the Art Collider Lab of the Korean National University of Arts (K-ARTS), with inspirational talks and mentoring sessions. This program for emerging artists builds on the existing curriculum in expanded animation and immersive performance. It allows students to work on their own pieces, which will be later presented in the K-Arts Garden at the Ars Electronica Festival 2021.

Seiichi Saito (JP), Miwa Matreyek (US), Jürgen Hagler (AT), Jeremiah Diephuis (US), Arno Deutschbauer (AT), Johannes Pöll (AT), Martin Honzik (AT), Christl Baur (DE) and Laura Welzenbach (AT) were the mentors and experts of the program.

Humor for the Future Community Course Poster, © K-Arts

Matsudo International Science and Art Festival — Garden of Creativity

Matsudo City (JP), Ars Electronica Futurelab (AT)

Matsudo International Science Art Festival is an annual festival held in Matsudo City, Japan. Innovative artists, scientists, and researchers from around the world come together to present their latest projects at the event. The festival aims to connect art, science, and nature, and is held in the historic architecture and landscape of Tojo-tei, and Tojogaoka Historical Park. The festival started with a small creative community in Matsudo City, and the seeds planted in that first year sprouted in the second year, and the in the third year, so that the festival has grown into a creative garden that spreads all throughout the city. The legacy of innovation that began in the historic garden of Tojo, designed with cutting-edge technology at the time, has been passed down to the modern-day creators of the city. The theme of this year's festival was Garden of Creativity. The global pandemic has drastically changed our lives and society. We were forced to rethink our way of life, our society, and our relationship with nature. Artists and researchers around the world are working creatively on global questions and issues. Through exhibitions, workshops, and talks, we explored new ways of interacting with nature and discussed ideas for the future of education and society under the theme of Garden of Creativity.

Matsudo International Science Art Festival, © Hajime Kato

NHK + Resonant Media, © Otome Kaita

Resonant Media — Possibilities of 8K Visualization

NHK (JP), Ars Electronica Futurelab (AT)

Since 2018, NHK and Ars Electronica Futurelab have been collaborating on the possibilities of 8K technology and its social and cultural impact. Under the theme *8K Future Projects*, we have created new media for social togetherness in *8K Platz*, new scales of media content with *8K Life Scale*, and new possibilities for viewing experiences through *8K Cascade*. *Resonant Media — Possibilities of 8K Visualization* takes a scientific and artistic approach to exploring the new possibilities of 8K from diverse perspectives. By using the ultra-high resolution and realism of 8K technology, it is now possible to visualize new details, provide new knowledge and insight, and create expressions that generate empathy. Scientists and artists on the cutting-edge are using this technology to visualize data and explore various visual experiences. These activities provide new information and raise awareness of important topics and issues occurring in the world today. Furthermore, experiencing nature, the environment, people's memories and stories in the very realistic world of 8K creates a powerful emotional connection, as if we were sharing a space. The 8K Future Project aims to go beyond existing frames to bring 8K to the public in innovative ways.

Future in a Nutshell with Greiner TI

Inspiration/Lectures

The curated lecture series *Future in a Nutshell* brings art, science and the future to your company. Ars Electronica curates a customized program where experts and artists from various fields share their future visions exclusively with your team and address topics of your particular interest. With our partner Greiner-TI, we invited various experts to Upper Austria, to share their knowledge on the most important developments and technological trends of the next ten years. Guests included artist Helene Steiner, who talked about open science and material research; computer scientist Sepp Hochreiter, who gave a lecture on artificial intelligence, and Johannes Braumann, who spoke on the subject of creative robotics.

Robot, Doing Nothing/Emanuel Gollob (AT) and Johannes Braumann (AT) © vog.photo

A New Digital Deal

How the Digital World Could Work

New deals are being called for everywhere these days, which speaks to a growing awareness of the inevitability of change. However, it is probably also a sign of our longing for easy solutions, of the ultimately naive hope that a few negotiations and agreements will be enough to put things back in balance. So what might a new deal look like, and what do we mean by "deal" in this context? Nothing will come of the new digital deal if we see it only as a quick horse-trading exercise, if we are only out to negotiate a few benefits for ourselves. Nor is it a deal that anyone can negotiate for us, because a crucial aspect of the "New Digital Deal" is the question of "how are we going to deal with it?"—in other words, the question of options for action and the ability to act.

ars.electronica.art/newdigitaldeal

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