

About the Author

Andreas J. Hirsch, born 1961 in Vienna, Austria, is a writer, art curator, and photographic artist. His manifold involvements in Ars Electronica as consultant, curator, juror, and artist began in 1996. They include the 2013 exhibition “HR Giger – The Art of Biomechanics” and the 2017 book *The Practice of Art and Science*, with co-editor Gerfried Stocker.



In 1979, long before anyone started speaking about a “digital revolution,” in the unlikely setting of the small industrial town of Linz in Upper Austria, close to the Iron Curtain, three men—the director of a television station, a musician, and a scientist, who also wrote science fiction—launched a visionary festival for art, technology and society, giving it the Latin name “**Ars Electronica.**”

Forty years on, Ars Electronica comprises the annual Festival with more than 100,000 visitors, the Prix Ars Electronica as a prestigious international award, the Ars Electronica Center as a Museum and School of the Future with 6,500 square meters of exhibition space, and the Ars Electronica Futurelab and Solutions—independent research and development facilities working in a global network of partnerships.

“**Creating the Future**” follows the history of Ars Electronica from the pioneering days of its inception through the turbulent times at the advent of the digital revolution up to the challenges facing an internationally active, fast growing organization with the imperative to constantly reinvent itself.

“**A Brief History of Ars Electronica**” tells the story of how technologies impact on societies and on all of our lives in ever new and challenging ways, how the collaboration of art and science can result in remarkable innovation, and how Ars Electronica is dedicated to preparing us for the future.

The history of Ars Electronica is the inside story of a unique organization and of the incredibly creative and immensely curious teams of artists, scientists, technologists, educators, and managers behind it.



Andreas J. Hirsch

Creating the Future
A Brief History of Ars Electronica 1979–2019

HATJE
CANTZ

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Creating the Future

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 **ARS ELECTRONICA**
Art, Technology & Society

HATJE
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Ars Electronica
Ars Electronica Straße 1
4040 Linz, Austria
Tel +43-732.7272-0
Fax +43-732.7272-2
info@ars.electronica.art
www.ars.electronica.art

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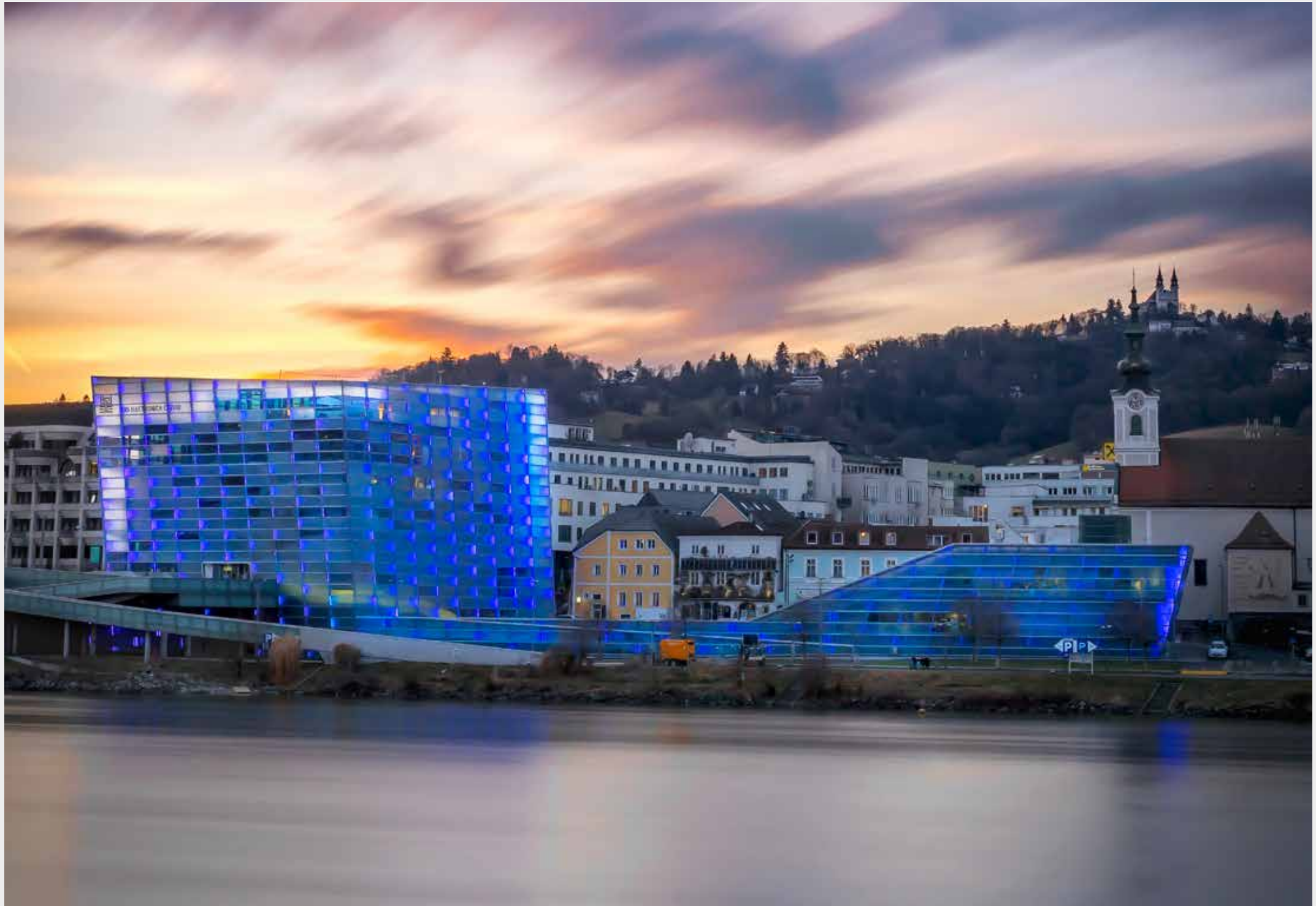
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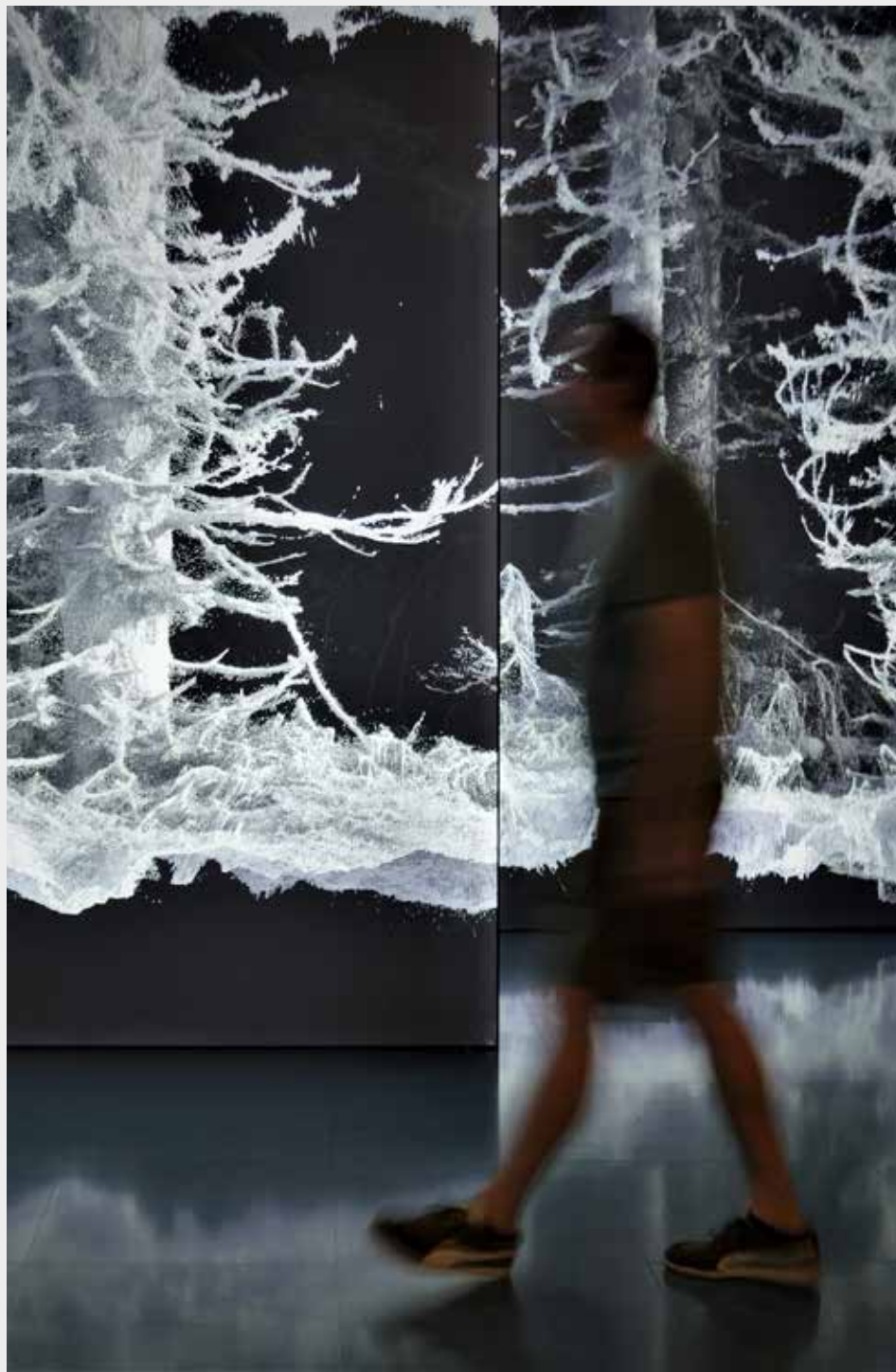


Ars Electronica Center Linz, 2019

CREATING THE FUTURE

After 40 years at the nexus of art, technology and society, Ars Electronica in 2019 is an internationally operating player in a field that it has been proactively creating. Ars Electronica today is part of a globalized world, which meanwhile finds itself massively defined by the effects of digitization and computer technology. Technologies ranging from artificial intelligence to biotechnology are bringing about a landslide of transformations affecting all areas of life, work, and societies. In this situation the original vision from the founders of Ars Electronica in 1979—to bring together artists and scientists and to offer the general public an informed encounter with the imminent future—has gained more relevance and urgency than ever before.

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for Navigating the Future**
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of the Swarm**
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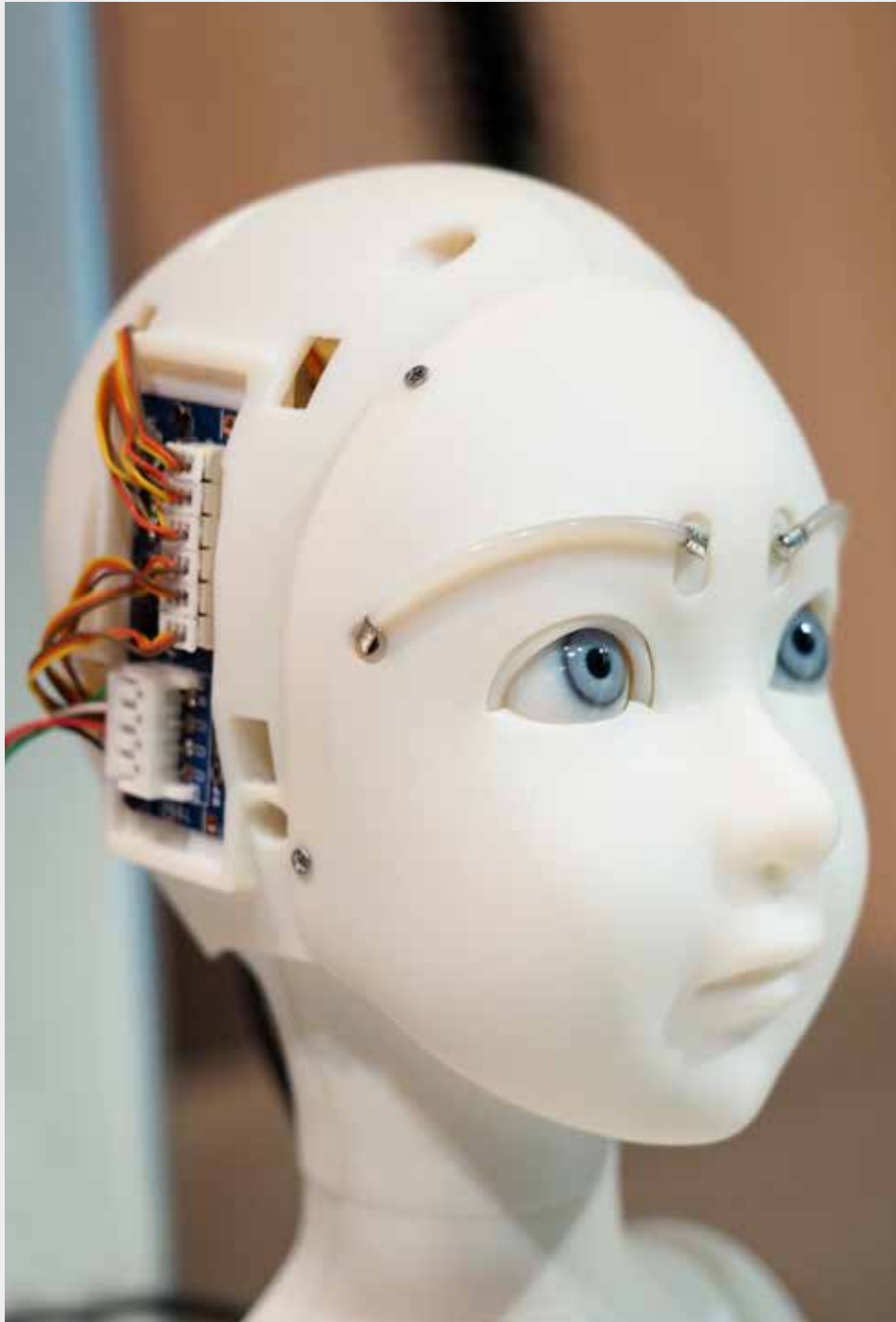


Remains by Italian artist Quayola, Ars Electronica Center, 2019

Ars Electronica Center Provides a Compass for Navigating the Future

The building sits on the banks of the Danube, its glass facade—glowing in changing colors—is reflected in the river. It is a warm evening in the early summer of 2019 in Linz, the provincial capital of Upper Austria. From the Main Square of the city, across the bridge, people are swarming towards the Ars Electronica Center. The air is filled with anticipation, as tonight the new exhibitions of the Museum of the Future will be unveiled. Invitations promised much more than an exhibition opening. A complete relaunch of the content of the Center is to be expected.

Ten years ago, the Ars Electronica Center had moved into its spacious landmark building with 3,500 square meters of exhibition space and a programmable LED facade, quite befitting an institution dedicated to an encounter with the future. The exhibitions, events, and educational programs of the Center had been attracting ever growing numbers of visitors, and the Center, which had originally opened in 1996 in a smaller building on the same site, had long become a key player in the cultural landscape of Linz. But Ars Electronica—which started as a Festival in 1979 and introduced an international award in 1987—was never an institution that rested upon its laurels. Instead it has always been dedicated to reflecting emerging trends at the nexus of art, technology, and society. Moreover, it had developed a culture of constantly reinventing itself—the themes as well as the formats.



SEER: Simulative Emotional Expression Robot by Japanese artist Takayuki Todo, Ars Electronica Center, 2019

The title of the new exhibition, *Compass — Navigating the Future*, indicates such an act of radical reinventing. This time it was to be nothing less than a transformation—from the proven role of the Ars Electronica Center as a “telescope” that allowed visitors to take a look at the future, into a “compass” that could enable visitors to navigate a future, which is—due to the accelerating speed of developments in technology and society—almost here. Gerfried Stocker, the artistic director of Ars Electronica, introduces the fresh overarching theme of the Center: Artificial Intelligence. You can feel that he is well used to giving speeches like this one and to explaining also the most complicated aspects of technology to the audience. Massive advances in technologies like machine learning, natural language processing, and neural networks have transformed Artificial Intelligence from the working field of a few technologists into something that has become omnipresent in our daily live—from online shopping and social media to intelligent personal assistants, from surveillance and face recognition in public transport systems to autonomous vehicles. Artificial Intelligence has always been a projection screen for many hopes, but increasingly also for numerous vague fears. People ask “Isn’t this dangerous?” and Stocker’s answer makes clear that this is not only the artistic director of the institution speaking, but also its chief advocate: “Yes, it can be dangerous, but therefore we need to get to know more about it and understand it.” This, he points out, is the main purpose of the new exhibitions and laboratories at the Ars Electronica Center.

The municipality of Linz is well aware of the value that Ars Electronica has for the city’s future-oriented image and consequently has been making extra budgets available for these new exhibitions. The opening words of both the Mayor of Linz, Klaus Luger, and the City Councilor of Culture, Doris Lang-Mayerhofer clearly convey how strongly the city government identifies with Ars Electronica and the topics it addresses. At the same time, a very different kind of politics is also present at the opening: “Fridays for Future,” the global student movement initiated by the Swedish climate activist Greta Thunberg in 2018, demands decisive action against global warming and



pinocchio – Puppet show by puppeteer Katharina Halus, re-played with industrial robots by Johannes Braumann and Amir Bastan, Art University Linz / Ars Electronica Futurelab, Ars Electronica Center, 2019

climate change from politicians worldwide. Ars Electronica has a long tradition of cooperation with different movements and forms of activism and shows a clear position towards a rational, humanistic, and open-minded approach to the world's problems.

The Eye of the Machine

When approaching the exhibitions on the Maindeck of the Ars Electronica Center, visitors are greeted—and watched—by a huge blinking eye next to a surveillance camera. As they proceed further down the staircase, numerous flickering images of visitors including themselves come into sight. This installation by the Japanese artist Hideaki Ogawa brings you right into the middle of the exhibition dedicated to Understanding Artificial Intelligence. Ogawa, who is a Key Researcher at the Ars Electronica Futurelab, sees his art project *What A Ghost Dreams Of* as an invitation to visitors to begin to better understand their position in a smart environment—in fact in a massively changed world. After this initial encounter with the “eye of the machine,”— understanding “machine” as an artificial intelligence system—visitors may soon also encounter the “face of the machine.” It is the tiny face of a humanoid robot, who is designed and trained to read your facial expressions and to react to them, thus giving you the impression of an actual emotional exchange. The project *SEER: Simulative Emotional Expression Robot* by Japanese artist and researcher Takayuki Todo has the ability to draw people into a playful as well as emotional entanglement with the tiny robot, offering insight into the structure of one's own emotional reading of facial expressions.

Already in the lobby of the Ars Electronica Center, visitors come across a small exhibition area, which may seem unspectacular at first sight: a series of plain text panels on the walls, a tablet computer, and an old Bible in a display case in the middle. But the topic here in fact is more than spectacular, if not profoundly unsettling. The texts on display here were all generated by

GPT-2, a model for the autonomous generation of texts, which needs only a few sample sentences from a human author in order to create longer texts that are hard to distinguish from the original. GPT-2 was published in the spring of 2019 by OpenAI, a non-profit organization researching artificial intelligence, which at the same time warned about the dangers of a misuse of such a system for any kinds of fake texts and deceit. On the tablet, visitors can try out the system with their own input, thus confronting themselves with “words of the machine” positioned right next to the Bible, which contains the Word of God for believers.

The advances of artificial intelligence systems in many different areas of application become more breathtaking the closer you look. For “Obama Deep Fake”—those eerily realistic, forged video statements of former US president Barack Obama by the American actor and director Jordan Peele—the system required training with numerous existing videos of Obama. At the Ars Electronica Center we can now encounter one of the best-known persons in the world speaking: a young woman, who lived half a millennium ago and whom we know only by the name of “Mona Lisa.” The video was made by researchers from Samsung AI lab and Skolkovo Institute of Science and Technology and is based only on the painting that the Renaissance artist Leonardo da Vinci finished around 1506.

Not far from the talking Mona Lisa, two marionettes are performing a little scene, played by robots that were trained by a human puppeteer. In unison they attempt to escape from the exhibition, but at the last moment they back off from the abyss opening before them. Visitors however, are encouraged not to back off from what they may consider an abyss of potential misuse and adverse effects of technology, but to further explore the world of artificial intelligence. They may do this on their own or with the ready help from the special Ars Electronica Center guides, the Infotrainers. Here they can actually “watch” autonomous systems at work, see how they “see” the world, how they can be trained, and what kinds of biases may result from

this. It is only with a certain depth of understanding, Gerfried Stocker explains, that we can realistically form our own opinions about the potentials and dangers of a technology and about what we deem desirable to do with it.

A New Manual for Spaceship Earth

And then we enter the forest. The forest has a strangely poetic feeling and Gerfried Stocker reminds us about the many connotations of the forest from the mythological and the romantic to those related to early ecological writers like Henry David Thoreau. Here at the Ars Electronica Center, the forest is not like any other forest, it is formed by a few huge images of ghost-like trees in shimmering white against a black background. Only a very close look reveals that the trees seem to consist of depictions of numerous white dots like little balls of Styrofoam. The art project *Remains* was created by the Italian artist Quayola, who uses high-precision laser scanners to capture natural landscapes at vast resolutions. Right behind the trees, an area opens up that seems somehow like a control room for “Spaceship Earth,” a term popularized by Richard Buckminster Fuller in his 1968 book *Operating Manual for Spaceship Earth*.

This part of Ars Electronica Center, which is now called Global Shift, gives an impression of how a modern version of such an operating manual would look. The various large screens and installations provide us with information about the world we live in, real-time information that can only be gained and made ready for interpretation by using digital technology. Large panoramic screens show planet Earth as seen from the International Space Station (ISS), slowly moving in real time as the ISS circles the Earth in about 92 minutes. Next to it are less meditative screens, providing us with ample information about the state of the planet, the infrastructure, and the problem zones we humans have created: large refugee cities in many parts of the world, natural resources like the Aral Sea in Central Asia drying up, or the constant flow of containers moving across the planet and the melting of



Prima Materia by Turkish studio NOHlab, Deep Space 8K, Ars Electronica Center, 2017

glaciers in the Austrian alps. All of these data can be filtered and presented in different ways that best allow us to understand their meaning.

Deeper understanding comes not from absorbing information alone, but also from actually doing something yourself. This is where joyful experimentation and even personal Eureka moments may take place. Therefore, providing opportunities for first-hand experience has been a key element of the Ars Electronica Center from the very beginning. The different new Labs of the Center are specifically designed for that purpose and serve as the settings for a rich program of workshops for all age groups. Among those laboratories, the Bio Lab presumably provides the most eye-opening experiences: workshop participants work with the gene splicer CRISPR/Cas9 on samples of their own genetic material and thus find themselves right in the middle of many ethical questions about genetic engineering, confronted with scenarios between hopes to cure diseases or children genetically modified according to their parent's wishes.

Diving into the Ars Electronica Labs also means to expose oneself to different knowledge cultures. The Material Lab lets us encounter incredible new materials and, at the same time, reflect the need for sustainable and socially responsible production methods that can improve the working conditions for many people and produce less waste. The Citizen Lab—looking a little like a miniature version of the control room for “Spaceship Earth”—invites visitors to find out for themselves what they personally might do about the numerous problems in the world around them. Here they can also learn more about critical investigative journalism platforms like Bellingcat, a winner of Prix Ars Electronica in the category Digital Communities in 2018, which attracted wide public attention with their critical research on passenger flight MH17 that was shot down over Eastern Ukraine on July 17, 2014. The young climate activists of the Friday for Future movement or the participants of Bellingcat serve as inspirations here.



Animaker – interactive installation at Kids' Research Laboratory, Ars Electronica Center, 2019

Virtual environments for kids have been popular at the Ars Electronica Center since 1996. Now at the new Kid's Research Laboratory, children themselves become the researchers and dive into experiences such as composing music, playfully programming robots, or making creatures from Lego and then bringing them to life with artificial intelligence in a virtual environment. Back at the Main Gallery at the Machine Learning Studio, small racecars are transformed into autonomous vehicles, using Do-It-Yourself components and Raspberry Pi single-board computers. With full concentration, visitors of all generations are training—instead of programming—the little autonomous racecars for optimum performance on the racetrack. The so-called “Tech Trainers” not only support workshop participants at the Machine Learning Studio, but also carry out—a bit like chefs cooking in front of the guests in a show kitchen—live repairs on the various robots and other machines in the Center.

Artificial Intelligence Meets Music

The Bösendorfer grand piano stands silently in the dimly lit room. No pianist is present, but suddenly the opening of Maurice Ravel's suite *Ma mère l'Oye* emanates from the instrument, whose keys and pedals are moving. We hear this work for four hands, written in 1910, exactly as performed by pianist Maki Namekawa and Dennis Russell Davies just a few weeks before. The instrument, however, is an unusual one. The Bösendorfer 290 Imperial CEUS computer grand, developed by the experts of the Bösendorfer piano manufacturers in cooperation with the Vienna University of Technology, uses special software to precisely reproduce any nuances in the music played on this piano. While the system GPT-2 in the lobby is busy creating new texts that are about to challenge the notion of human creativity—in this case in literature—the exhibition Artificial Intelligence meets Music is exploring the same topic with regard to music. As shown with many music making machines from different ages and open to exploration in the Open Sound Studio, the encounter between artificial

intelligence and music is special, as music has an immediate emotional impact and at the same time displays strong links to mathematics.

“Technology is culture,” Gerfried Stocker explains when we drift through the space of “Mirages & Miracles,” which at first glance seems to be a pretty conventional exhibition of static drawings on the walls and some stones on the tables. Nothing you would expect at the Ars Electronica Center in 2019. But as soon as you pick up one of the tablet computers or headsets, everything here comes to life, little creatures start wandering across the stones. Entire worlds open up around the physical objects in the room. Mirages & Miracles is an Augmented Reality exhibition by the French artists duo Adrien M & Claire B, who work along the boundaries of reality and virtuality and focus on the experience and not the technology. “Technology is culture,” Stocker says, and he adds with a smile “but culture shapes technology.”

Ars Electronica Futurelab Cultivates the Wisdom of the Swarm

Outside the window the Danube is flowing past. Horst Hörtnner is pointing to the parking lot, slightly downstream from us on the banks of the river, where the swarm of drones later called the “Spaxels” had taken off on their spectacular maiden flight seven years ago. It is the afternoon before the opening of the Center’s new exhibitions and the air is filled with a kind of excited anticipation. We are sitting over a cup of coffee at Horst Hörtnner’s corner office in the Ars Electronica Futurelab and speak about the advances in swarm intelligence which have taken place since the Spaxels had their premiere at a special *Klangwolke*, which was created by Ars Electronica in 2012.

Hörtnner, who is co-founder and director of the Ars Electronica Futurelab since 1996, also oversees the work of the Spaxels Research Initiative, which has meanwhile published “SwarmOS” as a tool for intelligent swarms of autonomous vehicles in flight or on the ground. In a cooperation with the Japanese telecommunications company NTT, the experiences from the Spaxels flow into projects like *Sky Compass* and *Swarm Compass*. The cooperation strives to use different kinds of autonomous vehicles for tasks like public signage and traffic facilitation, and ultimately for an enhanced audience experience at the 2020 Tokyo Summer Olympics. Such swarm robotics are inspired by biological systems like colonies of ants, schools of



Drone 100 / Intel – Guinness World Record for the “most unmanned aerial vehicles airborne simultaneously” by Intel Corp. engineers and Ars Electronica Futurelab, Tornesch, Germany, Nov. 4, 2015 – Photo: Intel Corporation

fish and—of course—flocks of birds. The swarm intelligence that can be seen in action here, is an application of the collective behavior of decentralized self-organized systems, in this case drones and ground display bots. The project *Swarm Arena*, which is in preparation for the Olympic Games in Tokyo, designs the swarms of autonomous robots in order to provide a big data enhanced analysis of the athletic events to an audience positioned far from the athletes. *Swarm Arena* is bound to be a major step in the application of swarm robotics, in fact much more sophisticated than such truly spectacular events like the Spaxels flying in formation and painting the Star Fleet logo from Star Trek into the skies next to Tower Bridge in London. “The Spaxels were an important step in creating smart objects and in making the transition from automation towards autonomization,” Hörtner explains. For him, this work was not merely about creating “cool shows,” but about the idea of the swarm becoming reality.

Cross-disciplinary Work Guided by an Artist’s Spirit

Horst Hörtner speaks with proud enthusiasm about the work of his team and the achievements of the Ars Electronica Futurelab. He has the friendly aura of an older brother when emphasizing the team-oriented culture at the Futurelab. His words make notions of “swarm intelligence” seem like more than just another research topic, but rather a metaphor for what has been taking place in terms of cross-disciplinary collaboration at the Futurelab since its inception almost a quarter of a century ago. The Futurelab is not only an artistic-scientific think tank, a meeting place of engineers and artists, its work and endeavors are guided by an artist’s spirit. This begins with Hörtner himself being a media artist, and many from his core team having a similar background combining art and technology.

For many people who come to Ars Electronica as visitors, science is a kind of black box. “If science gets accessible, it will most likely be through the arts,” Hörtner highlights the mission of the Futurelab. Hörtner

works together with his co-directors—Christopher Lindinger, who joined the Futurelab as early as 1997 and is Director of Research and Innovation, and Roland Haring, who joined in 2003 and serves as Technical Director. They are surrounded by key researchers, developers, and producers, among them the Japanese artist Hideaki Ogawa, who is also director of Ars Electronica Japan, and the Australian artist Matthew Gardiner, the creator of “Oribotics.”

The Research and Development Motor of Ars Electronica

Generally, it is the Futurelab that gets the overall credit for numerous projects that can be seen at the Ars Electronica Center and at the Festival, thus applying a kind of collective authorship, while always listing a project’s collaborators. Of course there are issues of visibility and ownership that come with such a culture of collective creation. The physical location of the Futurelab seems to symbolize this somehow. To visit Horst Hörtner at his office this afternoon required walking downstream first, past the Ars Electronica Center and a kind of amphitheater with rows of stairs, towards a low wing underneath those stairs, to find the inconspicuous and well-secured entrance to the ateliers and labs of the Futurelab. This wing seems low against the towering structure of the Center, while in fact it is a fully integrated part of the same building, connected by the huge underground structure that houses, among other things, the Main Gallery of the Center’s exhibition areas. As the research and development motor of Ars Electronica, the Futurelab is one of the divisions of the organization and, in fact, one of its profit centers. Since 2012, its activities have been complemented by the organization Ars Electronica Solutions, which covers the commercial application of interactive products and services, and is located across the river at the *Tabakfabrik*.

As frequently as he mentions members of the Futurelab’s team and also international artists, who have joined them as artists-in-residence, Horst

Hörtner also speaks about the international network of research partners from academic institutions as well as from industry. Over the years, the Futurelab has been active in numerous areas of research, from Virtual Reality to Augmented Reality, from Human Computer Interfaces to Swarm Computing. And it has developed the software and technical solutions for the key attractions of the Ars Electronica Center, prominent among them the “Deep Space 8K” simulation environment, which in 2009 followed up on the CAVE Virtual Reality space. Immersive media have been the golden thread that runs through the history of the Futurelab. So, as Horst Hörtner explains, it seems logical that they are part of the EU-funded initiative Immersify, which strives to bring immersive media to a next level, examples of which we will see when visiting the Deep Space 8K. And then, when it is time to get going to attend the opening of the new Center’s exhibitions, Horst Hörtner stops for a moment to sum up our conversation about the Futurelab: “It makes a lot of sense to let media artists think about solutions to a problem.”

Ars Electronica Festival Celebrates the Midlife Crisis of the Digital Revolution

The vast concrete hall is empty and stretches as far as the eye can reach. There are truck tire tracks on the floor and the walls show signs from many years of heavy usage. Somewhere in the distance, a man on a bicycle is approaching. Martin Honzik knows the space inside out, all 100,000 square meters of it. Honzik, director of Ars Electronica Festival, Prix and Export since 2006, clearly likes the space of the POSTCITY, the former logistics center of the Austrian Postal Service. Since 2015 he has been preparing the Ars Electronica Festival here in this “city within the city,” thus turning it into a platform that can integrate and hold many different kinds of contributions and attracts around 100,000 visitors each year in September. “This is part of Ars Electronica’s cultural imperative,” Honzik says, “that we ‘impose’ the questions raised by the digital revolution on the population and: they seem to like it.” In fact, Ars Electronica at the POSTCITY has seen an increase in the numbers of participating artists, initiatives, and visitors every year.

Even the “short” tour of the compound takes quite a while, first bringing us to the building’s roof overlooking the rails of the city’s main train station next to it. The former postal logistics center is a piece of industrial architecture from the 1990s and was in use for a mere two decades, built at a time when letters and parcels still travelled mainly by rail. So it has its own indoor train station and loading dock for the incoming trains, the huge,



in the rain by Japanese artists Yuki Anai and Hideaki Takahashi, Ars Electronica Festival, 2018

240 meter long “Gleishalle,” which now serves as the Festival’s concert hall. The summer’s heat has risen to new heights, but deeper down it is getting cooler, as we descend to the bunkers, which were created for the event of nuclear warfare. Now these rooms are temporarily transformed into truly special spaces which no museum could offer for installations of media art. As we go along, Martin Honzik’s words paint the still empty spaces with vivid previews of what will be there in a few weeks’ time. The Festival will again have the character of a “global village” under one huge roof, with its spacious “indoor public spaces” for Ars Electronica’s numerous cooperation partners, as well as for food from organic farmers from the region, and a conference space for a series of talks and lectures. Since 2017, Ars Electronica Festival has also opened up to the art market and created the “Ars Electronica Gallery Spaces” for galleries who present media art.

While the building still lies empty before us, there is a former office area where the corridors are already brimming with activity. The entire Festival team—including Martin Honzik, financial director Veronika Liebl, and the Festival’s technical director, Karl Schmidinger—have all moved here for the summer in order to be able to direct the final preparations for the Festival on site. Soon more and more temporary team members and technicians will flock in, ready to welcome the artists and the guests from partnering institutions, followed by the event crews shortly before the festival and then, finally, the public. Honzik has his own special style of leadership in guiding his loyal and highly efficient crew—in a friendly manner, granting a lot of autonomy and at the same time keeping a sharp seasoned producer’s eye on the whole thing.

The Ars Electronica Festival is, in fact, the oldest part of Ars Electronica, as everything started in 1979 with the Festival, which was founded by Hannes Leopoldseder, Herbert W. Franke, and Hubert Bognermayr, and in the beginning included the open-air sound event, the *Klangwolke*. Since then the Festival has gone through several phases of evolutionary development regarding its

event format. This makes the platform character it has assumed at the POSTCITY since 2015 only the most recent of many transformations, albeit a significant one, since with it Ars Electronica reached another level in its relationship with the local population. Martin Honzik sees the opportunity to discuss the impact of the digital revolution with many different kinds of people, from organic farmers to firefighters at the Festival, as one of the highlights of his work. In 2019 the annual topic of the Festival is “Out of the Box – The Midlife Crisis of the Digital Revolution.” It is also an anniversary edition of the Festival, which this time stages more events than ever at the POSTCITY. Also the Prix Ars Electronica Gala, traditionally located at the Brucknerhaus, takes place at the Train Hall of the POSTCITY as part of the Ars Electronica Special, and the Ars Electronica Animation Festival moves from a former cinema in the city center to the Festival’s main venue. And as if all this does not seem to be enough for one festival, one day is spent at the monastery of St. Florian. This surely is a special thing not only for the visitors, but also for Martin Honzik, who had produced a similar day of “going to the country” at that monastery in 2006, his first year as director of the Festival. So evidently, neither the Festival itself nor the entire Ars Electronica after 40 years seem to display signs of such a “midlife crisis.” But there will be change, as the Post City will be torn down and replaced by urban development after the 2019 Festival. The 2020 Ars Electronica Festival looks forward to another transformation and the exploration of new urban spaces in Linz.

In the meantime, Ars Electronica is busy bringing their exhibitions and projects to international venues from Berlin to Tokyo, from Beijing to Mumbai. Since 2004 Ars Electronica has its own department for “Export,” headed by the artist and researcher Manuela Naveau. Since then the number of international events and the overall outreach of Ars Electronica have multiplied. Manuela Naveau, who teaches at the Art University in Linz, sees her curatorial work also in appropriating new kinds of spaces, be it a shopping mall in Japan or a former church in Mexico.

Prix Ars Electronica Takes an Evolutionary Step Towards Artificial Intelligence and Life Art

People are drifting into the room and hang out in little groups, slowly and casually the seats at the dinner tables are filling up. Some here seem to be old acquaintances, some presumably do not know a single person in the room. Dusk is falling and the remains of a soft evening light are reflected from the buildings of the city center of Linz on the other bank of the Danube. The Sky Loft on the top floor of the Ars Electronica Center is the location of this special gathering in the spring of 2019. Actually, this event has been taking place every year since 1987 and it is special every time around. It is the night before the jury meetings of Prix Ars Electronica begin, a traditional welcome dinner held for the jurors of all the categories together. The guests come from many different countries and from a number of different backgrounds—artists, curators, scientists, managers, and journalists.

Ars Electronica Generations at Work

Then Gerfried Stocker takes a microphone and begins his welcome, which quickly turns into a briefing for the jury meetings ahead. He is joined by Hannes Leopoldseder und Christine Schöpf, who developed the Prix in 1987 and have been involved in it ever since. They can share useful pieces of wisdom from so many years of jury work, especially with those who are



ArchaeaBot by British artists Anna Dumitriu and Alex May, Ars Electronica Festival, 2018

new to Ars Electronica and to the Prix. Then they hand over the microphone to Martin Honzik and to Emiko Ogawa, who has been responsible for the Prix since 2013 in Honzik's team. Emiko Ogawa, who was born in 1979, the year in which Ars Electronica started, explains the Prix's development in terms of submissions and their geographical and gender distribution. When seeing the speakers together and listening to their words, you get a feeling of the—meanwhile—three generations directing the path of Ars Electronica.

From the very beginning, the Prix was an international award with expert juries and the Golden Nica, endowed with significant prize money. It was created to complement the Ars Electronica Festival and to put on the radar the latest developments in areas, in which electronics and later digital technology were used by artists. Over time, the system of its categories has been adapted to the changing landscape of the digital revolution, adding new areas or modifying and renaming existing ones. This made the Prix a living organism, mirroring the changes in art, technology, and society over the years. What has evidently not changed is the high standard of the juries, which keep it fresh and which shape the buzz of interesting encounters and inspiring conversations at this dinner.

This year, a new category is introduced: Artificial Intelligence and Life Art. As Gerfried Stocker explains, this category is not—as the name might suggest—looking for projects combining both areas. Artificial Intelligence and Life Art should rather be seen as two distinct areas of artistic research with the shared perspective of pushing further important questions about our understanding of what it means to be human. This puts the new category at the forefront of what many activities of Ars Electronica in previous years have been about, thinking about Festival topics on “Human Nature” or “Artificial Intelligence.” Forging such a kind of dual category that is looking at two different areas together somehow follows up on previous “dual” categories like “Net Art” and “Net Vision,” and at the same time contains an element of experimentation that is quite typical for Ars Electronica.



Cinematic Rendering at the Deep Space 8K, Ars Electronica Center, 2019

Immersing in the Future of Learning at the Deep Space and Beyond

Planet Earth is hovering in mid-space, close enough to be almost touched with our hands and mighty enough to fill us with awe. We embark on a journey through our galaxy and further into outer space, a journey at the speed of light and far beyond, a journey back in time to the moment of the Big Bang. As they appeared in a past, which is a mere two millennia ago, the streets of ancient Rome shimmer through the landscape of ruins that presents itself today. The ground is transparent and we pass through it at ease to explore the catacombs underneath the Via Appia, seeing secret temples and the site of ancient cults.

Like the underground cavities of Rome, a human body opens up to us in full detail. We follow the blood vessels and inspect the organs, we see the skeleton and the layers of muscles and the nervous system in three-dimensional precision from all sides and in a view that surely neither *Grey's Anatomy* nor a full autopsy could offer. And then there is the *Tower of Babel*, painted by Pieter Bruegel the Elder in 1563, full of little scenes that usually evade the eye when regarding the painting—which measures a mere 114 cm × 155 cm—hanging at the Museum of Fine Arts in Vienna. We zoom into the painting and pan across the ramp going up the tower, revealing ever more scenes and details as we go along.

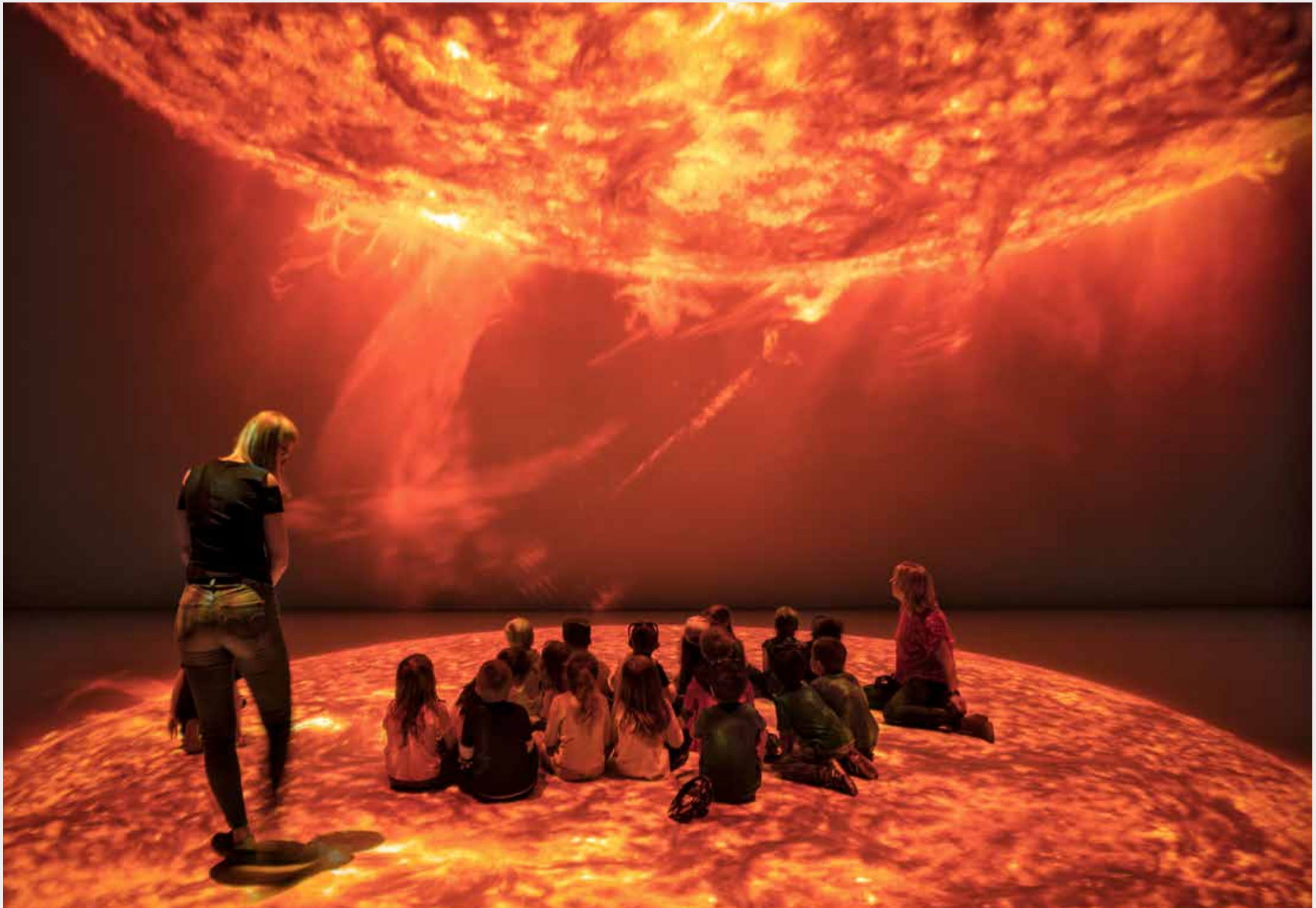
All of this takes place in the Deep Space 8K at the Ars Electronica Center, the 3D simulation space with a 16 x 9 meters projection wall with 8K resolution and the same size of projection on the floor. The Deep Space was created in 2009 as part of the new Center and upgraded to 8K projection technology in 2015. Its programs range from interactive art projects and music visualizations to knowledge-oriented simulations, interactive games and ultra-high-resolution gigapixel images of pieces of cultural heritage.

As spectacular as the different programs are, their main point lies in the immersive qualities and 3D detail that allows for a much deeper experience. Deep Space 8K is also a platform for numerous cooperations with scientific institutions and organizations. The Deep Space serves both as a versatile machine for cutting-edge simulations for science and education as well as a stage for ever new works of media art and visualized music performances.

Ars Electronica at 40 – Exploring the Future of the Legacy

In the science fiction novel *Solaris*, written by Stanisław Lem in 1961, the psychologist Kris Kelvin visits the library at the heart of the scientific research station hovering above the oceans of planet Solaris in order to find answers about the unexpected occurrences aboard the station. The library contains the results from a century of research about Solaris and holds an interesting finding for Kelvin. With its rows of printed books, the library seems astonishingly “analog” for a science fiction novel set in a distant future.

Descending the stairs to the concrete bunkers of the Ars Electronica Archive in the year 2019, one might expect to find basically a server farm down there. Instead long rows of books, videotapes, photographic negatives, and prints await the visitor in a climatized series of rooms. A large portion of the 40 years of Ars Electronica’s history since 1979 of course belongs to pre-digital times. Photographs in those years were made on film and then printed in a darkroom on photographic paper. Moving image and sound were recorded and stored on different formats of tape. Texts were published in printed books and magazines. Then, from a certain point onward, the archival materials became digital or were digitized and the physical archive migrated into a database. But Ars Electronica—despite, or maybe because of, its dedication to the digital revolution—stayed true



The Sun by Michael König, Deep Space 8K, Ars Electronica Center, 2018

to its culture of publishing printed books up to the present day. So looking into the history of 40 years of Ars Electronica means not only conducting a database search, but also diving into the boxes full of physical material and consulting the rows of books in the Ars Electronica Archive. As with Solaris, the library is bound to hold interesting findings for the patient researcher. 40 years is a long time, in fact a span of at least two generations, but still short enough to grant the privilege to meet in person two of the founders and many others who helped shape the course of Ars Electronica during these four decades of history. These conversations weave into a rich fabric of memories and viewpoints that complements what the archival materials may reveal.

Many of the things that constitute the 2019 Ars Electronica in fact have their own history of development reaching far back into those 40 years and even beyond that point. Even the topics of the present day and the issues connected with them are not excluded from this: artificial intelligence and robotics, bio art and genetic engineering, digital networks and virtual communities. Ars Electronica did not jump on the bandwagon of trends of the day, but throughout its history has taken an interested and critical approach towards new technologies, emerging art forms, and developments in societies early on. This alone is a good reason to look more deeply into those four decades and to start by traveling back to the late 1970s, when it all began.



Kids' Research Laboratory, Ars Electronica Center, 2019



THE FOUNDING YEARS OF A NEW FESTIVAL 1979–1986

Guided by the keen vision to prepare ourselves for a future in which collaborations of art, technology, and society would play key roles, the Ars Electronica Festival was created in 1979 in the small industrial city of Linz. In those first formative years of Ars Electronica, international pioneers in the use of computers and microelectronics for music, art, and design came together in Linz while the local population got actively involved in spectacular large-scale events in public space.

**07 Put Your Radio in the Window: A Festival Emerges
From a Cloud of Sound**

**08 The Birth of Ars Electronica from the Spirit
of Computer Music and Computer Graphics**

**09 Castor and Pollux in the Skies of a 24-Hour World
of Telecommunications**

**10 Computer Culture Meets Avantgarde Art
and Experimental Television**



“Sound Cloud” with *Symphony No. 4 in E-flat major* by Anton Bruckner (1824–1896).
Concept by Walter Haupt for Ars Electronica 1980.

"Within the computer
artist, the scientist
meets the artist."

Hannes Leopoldseder

Hannes Leopoldseder, Foreword, in: Druckrey, Timothy, Ars Electronica (Eds.): *Ars Electronica: Facing the Future – A Survey of Two Decades*, The MIT Press, Cambridge, Massachusetts, and London, England, 1999, p. 7.

Put Your Radio in the Window: A Festival Emerges From a Cloud of Sound

Ars Electronica's entrance into the world was no less than grand. On the evening of September 18, 1979 a crowd of around 100,000 people—approximately half of the city's population—had gathered in the park on the banks of the Danube in front of the city's concert hall, the Brucknerhaus. It was a mild evening after a mostly sunny early autumn day. The opening event had been the talk of the day. Traffic collapsed since nobody had expected such a huge crowd to turn up. At five minutes past eight, the first movement (Allegro Moderato) of Anton Bruckner's *Symphony No. 8 in C minor* commenced flowing along the river. The event had been announced as a "cloud of sound" that would eventually cover the entire city of Linz. This was to be achieved via a massive sound system at the Danube park (Donaupark) and on the opposite bank of the river, as well as additional speaker systems at four remote, elevated positions in the city and—maybe most importantly—via regional radio.

On the day before the opening, Monday, September 17, 1979, a very unusual "special guest" had arrived at the airport of Linz: The mayor of Linz, Franz Hillinger, had come to the red carpet rolled out at the city's small airport to officially welcome "SPA 12," a robot that had flown in from New Jersey, USA. SPA 12 looked very much like the robots familiar from science fiction movies and spoke with a somewhat squeaky, metallic voice. He graciously greeted the population of Linz and held the opening speech at Ars Electronica on September 18. He even mingled with the crowds on the city's main shopping street (Landstraße), responded to questions from

people phoning in to a live radio broadcast, and was the star of a late night TV discussion show *Club 2*. As this was late 1970s robot technology, SPA 12's movements were, of course, remote controlled and his quick-witted answers came from a human companion not far away. But the message that Ars Electronica sent out was nonetheless clear: Linz welcomed this emissary from the future with open arms.

Those two events marking the inception of the first Ars Electronica Festival—the massive “Cloud of Sound” (Klangwolke) and the arrival of the robot SPA 12—were in fact well-planned parts of a bold and visionary concept. When the composer Hubert Bognermayr—a pioneer of electronic music and founder of the rock band Eela Craig—approached Hannes Leopoldseder, regional director of the Austrian Broadcasting Corporation ORF, to cooperate in an event of electronic music, it immediately sparked his interest. But Leopoldseder quickly advocated a grander design: It should not merely be a concert plus a small symposium, but also a large-scale event in public space. And the project should not limit itself to electronic music alone, but expand to other areas of creativity where microelectronics were beginning to be applied in artistic creation.

The symphonic open-air performance on the banks of the Danube was based on a quadrophonic recording of Bruckner's last completed symphony by the Concertgebouw-Orchestra conducted by Bernhard Haitink. Music producer Ulli A. Rützel negotiated the rights for this unusual use of the recording. Bruckner's music was to be accompanied by a laser show focusing on a huge balloon covered with shimmering hearts. The composer and sound-architect Walter Haupt had been brought in from Munich to conceptualize this open-air event due to his previous experience with filling large outdoor spaces with floating sound. However, the organizers' plans were affected by some unexpected factors: The huge crowd somewhat reduced the audibility of the music in some parts of the Donaupark and during the concert the balloon was pulled down to the ground by members



Preparation of the helium-filled balloon for the Klangwolke (Sound Cloud).
Concept by Walter Haupt, 1979

First “Sound Cloud” with Anton Bruckner's *Symphony No. 8 in C minor*, 1979



“Calling upon people to do something totally different with their radios—to use them not just as a receiver but as a transceiver to relay what they pick up and to propagate it into the public sphere—epitomizes the actual mission of the Klangwolke (Sound Cloud) and its quality as a project. (...) Thus, the Klangwolke is part of Ars Electronica’s DNA, since, ultimately, the only way to fulfill the mission of this festival—to function as a platform for art, technology and society—is through the intentional interplay of experimental and popular approaches.”

Gerfried Stocker

Gerfried Stocker, “The Cloud in the Web,” voestalpine Klangwolke 2012, in: Leopoldseder, Hannes, Christine Schöpf, Gerfried Stocker (Eds.): *The Big Picture – New Concepts for a New World*, Ars Electronica Festival 2012, Hatje Cantz Verlag, Ostfildern, 2012, p. 202.

of the audience, who grabbed the shimmering hearts. The German chemist and photographer Manfred P. Kage provided another kind of visualization of Bruckner’s music by transferring the sound waves from a loudspeaker to liquids and a diffusing screen—an analog precursor of future digital media art concepts.

In the days preceding the opening event of this first Ars Electronica Festival, the population of Linz had been encouraged to participate in this “musical Bruckner experiment”: People were asked to turn on their radios at the time of the event and place them in their open windows, thus helping spread the “cloud of sound” across the city. Most of them did not even have to switch radio channels, since that evening Bruckner’s symphonic work was broadcast on the highly popular regional program, which usually featured folk music. The taxi drivers of Linz followed the call to turn on their car radios, tune into the program, and drive with their windows open. So on that memorable evening, the city came to life with numerous sources of the same sound of Bruckner’s music, some of them in the facades of the buildings, some of them cruising through the streets of Linz.

Hannes Leopoldseder was the youngest ORF regional director when he was appointed to the position in Linz in 1974 at the age of 34. He enjoyed a humanistic school education and studied German philology and English language studies. He had trained his strategic mind as a political journalist in the early years of the social democratic government led by Bruno Kreisky, a leading figure in Austrian post-war politics, who carried out reforms to transform Austrian society into a more modern and democratically minded one in the 1970s. The ORF at that time was a powerful public broadcasting corporation with no private competitors, many years before that sector in Austria was deregulated and private radio and television stations sprang up. The director general of the ORF, the conservative Gerd Bacher, encouraged Leopoldseder to let his regional studio play an active role in the cultural scene of Linz and the entire region of Upper Austria. Linz was situated between two

of Austria's cultural hotspots: the capital Vienna to the east—with the Vienna State Opera, the Musikverein concert hall, and most of the country's large art museums—and Salzburg to the west—with the internationally acclaimed Salzburg Festival for music, opera, and theater. Consequently, Linz at that time was struggling to find its place in the cultural landscape of Austria. Building a modern concert hall designed by Finnish architect Heikki Sirén on the banks of the Danube in 1974, naming it “Brucknerhaus” after the region's most prominent composer, Anton Bruckner, and starting an annual musical festival, the Brucknerfest, were early cultural landmarks.

Around the same time, the city of Linz was beginning to try and cast off the image of a “steel city” that had been attached to it since the founding of a steel plant by Nazi Germany in 1938. The Reichswerke Hermann Göring, which became the state-owned VOEST company after the end of World War II, covered an area that was almost the size of a third of the city. Pollution from those heavy industries affected the quality of life in Linz for many years and steel industries in general started running into problems after the end of the post-war upswing. Aspects of the “steel city” would remain relevant also in the cultural life in Linz for a long time, but the search was on for new areas of excellence that could help redefine the city.

Hannes Leopoldseder had a vision that would clearly lead away from traditional culture and old-style heavy industries: He wanted to put the focus on upcoming new technologies—then summed up as “microelectronics”—and their cultural implications as well as their impact on societies. He wanted to let activities relating to the future shape the new image of Linz: “From the beginning, Ars Electronica has been open to signals from the future, open to experiments. This openness is based on the idea that in conjunction with the computer, the basic technology of microelectronics is changing our work, our economy, our thinking, and ultimately our culture, more than almost any other technology before.”¹



Robot SPA 12 participating in the late night live TV discussion series *Club 2* at the Austrian Broadcasting Company's (ORF) Regional Studio in Linz during Ars Electronica 1979.

Leopoldseder was also impressed by figures like Hilmar Hoffman, who served as city councilor for culture in Frankfurt and was the author of the book *Culture for All*. Hoffmann applied the emancipatory spirit of the youth revolts of 1968 and social democrat ideals to cultural policies and advocated a culture of participation and inclusion. Inspired by Hoffmann's ideas, Leopoldseder came up with the idea of an impressive large-scale event in public space, that would not only convince the city government of the importance of his vision of “Ars Electronica,” but at the same time involve the local population with opportunities for audience participation. His regional ORF studio produced both radio and television and he was familiar with Bertolt Brecht's influential text on “Radio as an Apparatus of Communication.” The playwright and poet Brecht, who had adopted Marxist

philosophy in the 1920s, had given this speech in 1932, the year before Hitler came to power in Germany and the terror regime of the National Socialists started and radio was used as a key element of propaganda. In opposition to these looming developments, Brecht—who went into exile immediately after Hitler came to power—had asked for the broadcasting service to change its function from a means of distribution to a means of communication.

For the public broadcasting corporation ORF to be encouraging the population of Linz in 1979 to participate in the “cloud of sound” via their radios can be seen as an act of reverence to Brecht as well as a visionary first step towards transforming mass media into a means of communication. In 2012 Gerfried Stocker reflected on the conceptual implications of the first Klangwolke and its role for Ars Electronica: “Calling upon people to do something totally different with their radios—to use them not just as a receiver but as a transceiver to relay what they pick up and to propagate it into the public sphere—epitomizes the actual mission of the Klangwolke and its quality as a project. (...) Thus, the Klangwolke is part of Ars Electronica’s DNA, since, ultimately, the only way to fulfill the mission of this festival—to function as a platform for art, technology and society—is through the intentional interplay of experimental and popular approaches.”²

While the robot SPA 12 immediately won the hearts of the audience, the Klangwolke and the symposium met with mixed reactions. Some became supporters from the very beginning: Computer scientist Gustav Pomberger (*1949), at that time assistant at the Johannes Kepler University in Linz, had—being interested in all areas of innovation—driven out to the airport to join the group welcoming the robot SPA 12. On the evening of the Klangwolke he was strolling down to the city from Schlossberg (Castle Hill) together with a visitor from Berlin, who did not seem to be too impressed by the event. However, Pomberger enjoyed slowly descending into the cloud of sound and embraced the inventive spirit of Ars Electronica, an organization he would actively be involved in some years later. The event

on the banks of the Danube must have generally appealed to the audience, since the Klangwolke evolved into an institution in the following years and is attended by huge crowds up to this day. Some conservative lovers of classical music fiercely opposed the way that Bruckner’s symphony was used as a Klangwolke and conductor Eugen Jochum even refused to perform in Linz out of protest to such concepts. Also, talks and exhibits of the pioneering “computer art” that was still largely unknown to a general cultural audience, received outspoken ridicule from art institutions and critics. In retrospect, such responses reveal certain similarities to the hostile reactions by many visual artists and art institutions in the 19th century towards the new medium of photography. It took more than a century for photography to be accepted as art and in the case of media art the process was also difficult, but took a significantly shorter period of time.

Hannes Leopoldseder was unfazed by all of this: “Openness has become a fundamental characteristic of the festival: open to new trends, open to the interactions between art and technology, open to that which is yet unfinished, open to contradictions, open to new territories, but especially open to the encounters between artists, scientists, and those who are involved in discussing our future.”³ He stayed true to his original vision and—supported by the large audience turnout and massive local and international media coverage—was able to convince the political decision makers of the relevance of Ars Electronica for Linz and the region. He also forged an alliance between the regional studio of ORF, which he headed, and the city-owned LIVA, the powerful cultural organization behind the Brucknerhaus—an alliance that would contribute to the great success of the new festival for many years to come, in fact until the mid 1990s.

"Ars Electronica is not the bottom line behind a past development but a sign for new ones and for the discussions that will hopefully ensue before the chances for any kind of intervention are missed."

Herbert W. Franke

Herbert W. Franke: Prologue, in: Druckrey, Timothy, *Ars Electronica* (Eds.): *Ars Electronica: Facing the Future – A Survey of Two Decades*, The MIT Press, Cambridge, Massachusetts, and London, England, 1999, p. 23.

The Birth of Ars Electronica from the Spirit of Computer Music and Computer Graphics

When Hannes Leopoldseder—inspired by the artistic impulse of musician Hubert Bognermayer—plotted out his ideas of a festival dedicated to art, technology, and society, he immediately went on to look for someone to bring in the necessary expertise in the field of microelectronics and art. So he went to Vienna and did some research on the topic in the Austrian National Library, situated in the compound of the former Royal Palace of the Habsburgs. Spending the day in the historical ambience of the old reading room of the National Library, he worked himself through his two main findings. Those were books by the Austrian scientist Herbert W. Franke (*1927), both a specialist on computer graphics as well as a writer of science fiction novels. Franke turned out to be pioneering in the still young encounters of microelectronics and art and could also provide the theoretical foundations required. Franke had summarized his artistic work in computer graphics so far as "Ars Ex Machina." When later driving to visit Franke at his home near Munich, Leopoldseder came up with a name for the new festival he was preparing: *Ars Electronica*.

There can be little doubt that Leopoldseder's humanistic education and his familiarity with the languages and cultures of classical antiquity informed this choice of name for the new festival. Young Hannes Leopoldseder had attended a private Catholic secondary school—the Petrinum in Linz Urfahr—that was regarded as an elite institution. The curriculum included nine years of Latin and six years of ancient Greek. The Petrinum, which also has its own observatory, is housed in an impressive historical build-

ing residing on the slopes of the Pöstlingberg hill above Linz. From there it is a mere 15-minute downhill stroll to the site of the first Ars Electronica Center, where some four decades later Hannes Leopoldseder's vision would become reality.

When pondering the term “Ars Electronica” we may recall the “seven liberal arts” (artes liberales) which included the four ‘scientific’ disciplines—music, arithmetic, geometry and astronomy. In ancient Greece as well as in Roman antiquity these “arts” were considered to be essential elements of any higher education. Today we have reason to think of the different areas of expertise and the various skills involved in “Ars Electronica” as essential to prepare us for the future and enable us to actively shape this future. Such references to historical concepts, in this case from classical antiquity, are also typical for Leopoldseder's way of thinking, which combines a strong focus on the future with a profound knowledge of our cultural heritage.

Leopoldseder wrote his PhD thesis in 1973 on the topic “Grotesque World: A Contribution to the History of the Development of the Nocturne in Romanticism.” The choice of 19th century composer Anton Bruckner, a Romantic, for the first Klangwolke might not only suggest a logical strategic decision for the most prominent composer from the province of Upper Austria; it could also be seen as inspired by Leopoldseder's broad range of cultural topics of interest.

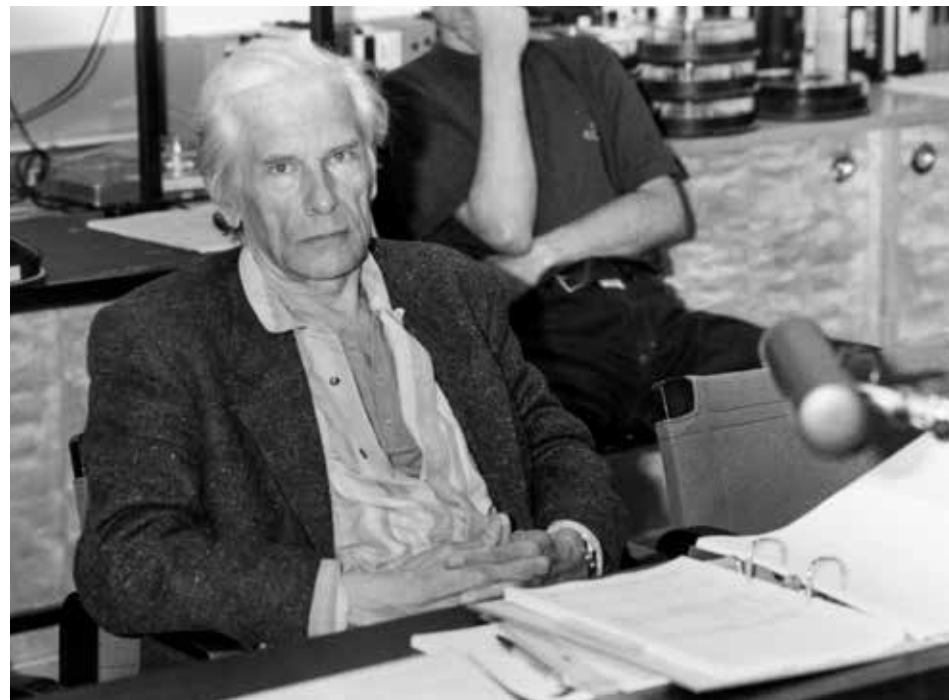
When approached by Leopoldseder, Herbert W. Franke—who was 52 at that time—not only agreed to collaborate but also swiftly helped define an exhibition and a symposium and thus create important constitutive elements of the first Ars Electronica. Franke is a polymath, who had dedicated himself to a diverse field of studies from physics, mathematics, and chemistry to psychology and philosophy, and he obtained his PhD in physics from the University of Vienna in 1950. In 1968 he had joined the “group parallel,” formed by artists and scientists who considered science, technology, society,



Hannes Leopoldseder and the Austrian artist and researcher **Peter Weibel** (*1944) in 1984, when he first got involved as an artist

and art as phenomena linked together in feedback loops. Since 1973 he had been teaching courses on “cybernetic aesthetics” at LMU Munich. His work in the field of computer graphics can be found today in art collections like the one in the Abteiberg Museum in the German city of Mönchengladbach. So Leopoldseder, who had come across Franke's books on ‘computer art’ and ‘apparative art’ at the National Library, clearly had identified the right person to share his vision of a festival at the crossroads of art, technology, science, and society.

Since Franke is also an eminent writer of science fiction novels, Leopoldseder had prepared himself for his first encounter with Franke by reading some of his science fiction, including such highly popular titles like *The Mind Net*, Franke's first science fiction novel, published in 1961. Despite the general orientation of his work towards innovation and the visionary, Franke always strictly denied a connection of his work in science and in computer art with his oeuvre as a writer of science fiction.



Herbert W. Franke at jury meetings in the Computer Graphics category of Prix Ars Electronica 1990

Herbert W. Franke proposed the outline for a two-day conference presenting four areas in which electronics and computers were being used for artistic creation. He named those four emerging areas: computer music, programmed graphics, cybernetic art, and audio-visual electronics. The final symposium directly addressed Ars Electronica's founding ideas under the title "Modulated Man. Interdependencies between Electronics, Society, Media, Technology, Medicine and Art." And it was here that the Austrian computer pioneer Heinz Zemanek, who had led the development of the legendary "Mailüfterl," the first transistorized computer in Europe, spoke about "Power and Impotence of the Information Society" and the Austrian writer Robert Jungk, one of the first futurologists, contributed "Aesthetic Guidelines for Technology." These were critical and controversial topics that would not only remain important for Ars Electronica in the years to come, they would, in fact, become increasingly relevant.

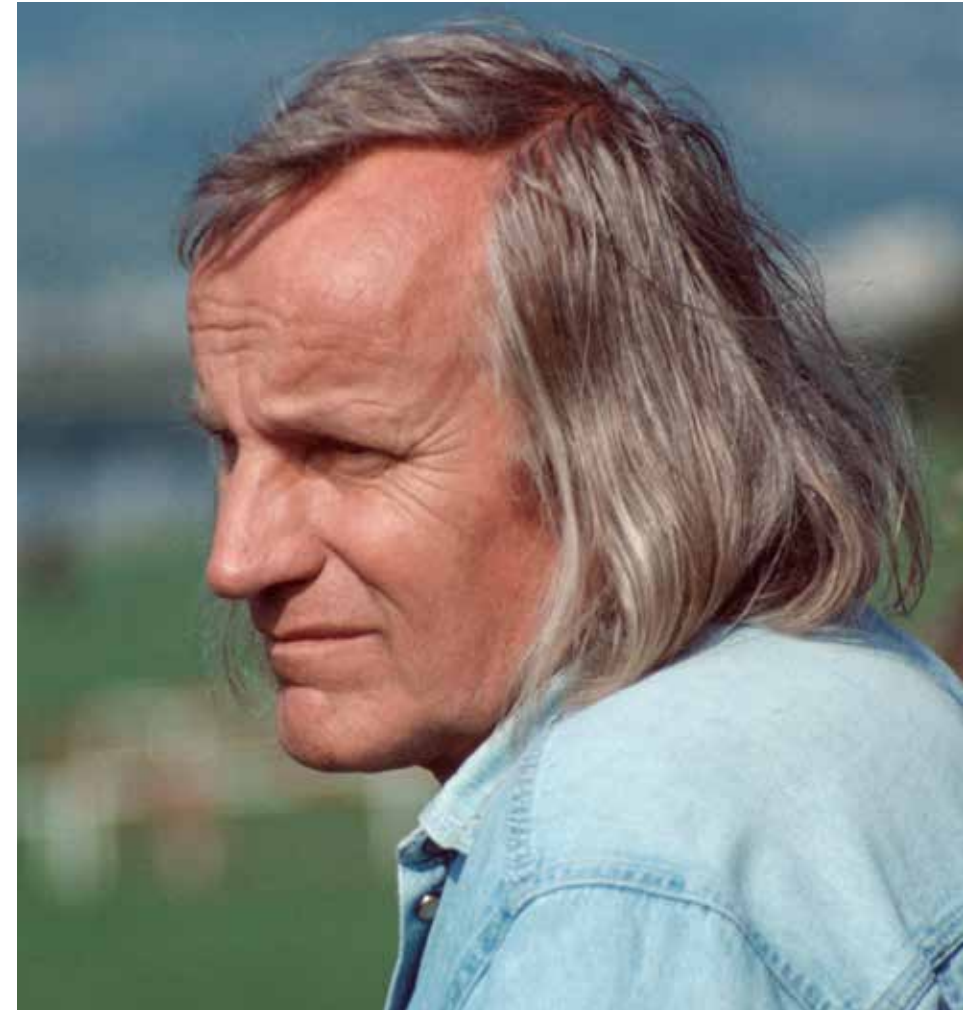
For the festival's focus and activities, which in a pioneering spirit boldly entered new and widely unknown territory, Franke also provided a theoretical foundation. So he defined what "Ars Electronica" could realistically mean in 1979: "The term 'electronic art' denotes here that young stage of development in which electronics was used for the purpose of design in its widest sense, whereby the surprising result was its unexpectedly close relationship to aesthetic questions. Thus it was that typical characteristics of generative electronics showed up exactly where the aims were artistic ones".⁴ With the inception of Ars Electronica, the bridging of art, technology, and society had found a home in Linz and would remain a valid guiding principle in the various activities and the different stages of development of the institution up to this day. Herbert W. Franke would speak words of warning early on: "Ars Electronica is not the bottom line behind a past development but a sign for new ones and for the discussions that will hopefully ensue before the chances for any kind of intervention are missed."⁵

Creating Ars Electronica at exactly this point in time—in the year 1979—seems quite logical, at least in retrospect. Although Ars Electronica—considering the many reserved reactions it met with in its early years—always seemed to be ahead of its time, nonetheless the time was ripe for it to appear. Gustav Pomberger recalls: "1979 offered a unique constellation of factors for the founding of Ars Electronica. It was like one of those rare planetary configurations we see in astronomy."⁶ With regard to the festival's guests from abroad and its coverage in international media, Ars Electronica was an international stage from the very beginning.

The advent of personal computers during the years around the inception of Ars Electronica slowly started to put this universal, programmable tool—the digital computer—into the hands of the artists. Until then, computers had been mainly reserved for the military, large corporations, and universities. Two years before the first Ars Electronica Festival, in 1977, Apple had released the Apple II designed by Steve Wozniak, one of the first

8-bit microcomputers, which presented itself as an open system. And after that, further major steps towards (somewhat) more affordable personal computing would take place: In 1980 IBM commissioned Microsoft to develop an operating system for its PCs and in 1985 Microsoft launched its own graphical user surface named “Windows” that ran on Microsoft’s operating system MS DOS. In 1984 the first free operating system—Richard M. Stallman’s GNU Project—began development and in the same year the antipode to an open source operating system hit the market together with its own hardware: the first Apple Macintosh running MacOS. Most personal computers at that time were still bulky and quite expensive machines, requiring a substantial amount of time, knowledge, and tech skills to properly use them. Consequentially, the majority of artists present at Ars Electronica also had a technological background and in fact embodied different strands of Ars Electronica’s transdisciplinary conception. And a lot of the technology involved there consisted of analog electronic devices such as analog synthesizers rather than digital ones.

In recent years, the understanding became manifest among historians that the year 1979 bears a heightened historical significance. Not only the well-known, major historical milestones deserve our attention: the end of World War II and of Nazi dictatorship in 1945 or the 1989 fall of the Iron Curtain, which had been running across Europe for several decades. The so-called “Iron Curtain” was a symbol of the Cold War, with armed forces blocking any cross-system migration. It separated the communist countries of the Warsaw Pact under the leadership of the Soviet Union from the capitalist countries of the Western Bloc under the hegemony of the US. Seen from Linz, the closest part of the Iron Curtain, the Austrian-Czechoslovakian border near Freistadt north of Linz, was a mere 30 kilometers away. 1979 marks a major turning point in history, since that year saw the start of many developments in world politics, developments that certainly influence and possibly define today’s world forty years later. Fueled mainly by global satellite television, a “shock of the global”⁷ came to public attention. The



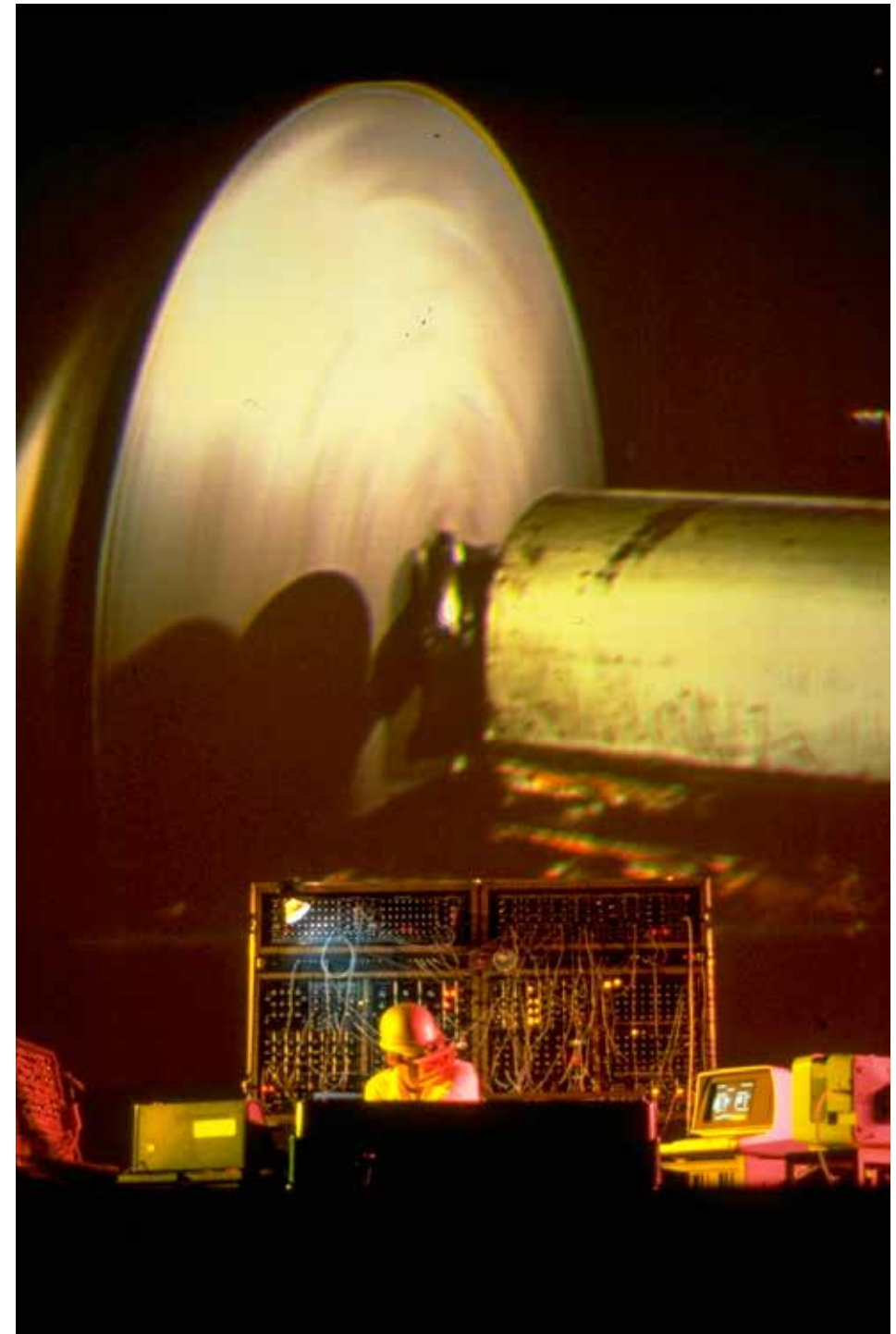
German composer Walter Haupt (*1935), who created the first “Klangwolke” (Sound Cloud) in 1979 and several of the Linz Sound Clouds in the 1980s and 1990s.

second oil crisis of 1979 led to stagnation in economic growth in many European countries and questioned the paradigm of unending prosperity and growth. The emancipatory ideas from 1968 suffered a significant backlash and made way for neoliberal politics resulting in an economization in all areas of life, a process that has in fact continued up to the present day, as has the digitization process, which is one of Ars Electronica’s core topics. So we find echoes from several of those developments in the topics reflected at Ars Electronica over the years.

"1979 offered a unique constellation of factors for the founding of Ars Electronica. It was like one of those rare planetary configurations we see in astronomy."

Gustav Pomberger

In a conversation with the author, Linz, 2019.



German composer and electronic music pioneer Klaus Schulze (*1947) and workers from the voestalpine steel plant performing *Linz Steel Symphony* at Ars Electronica 1980.

"From the beginning, Ars Electronica has been open to signals from the future, open to experiments. This openness is based on the idea that in conjunction with the computer, the basic technology of microelectronics is changing our work, our economy, our thinking, and ultimately our culture, more than almost any other technology before."

Hannes Leopoldseder

Hannes Leopoldseder: Foreword, in: Druckrey, Timothy, Ars Electronica (Eds.): *Ars Electronica: Facing the Future – A Survey of Two Decades*, The MIT Press, Cambridge, Massachusetts, and London, England, 1999, p. 7.

Castor and Pollux in the Skies of a 24-Hour World of Telecommunications

The second Ars Electronica Festival took place in September 1980, one year after the first one. That this young festival would survive its infancy was not a given. It required a well-balanced combination of innovation and tradition to keep up the momentum of the founding year and to gain institutional weight. Although it would have been far too early to consider any element of Ars Electronica a "tradition," there were certain ingredients of its initial success that would soon acquire such status.

Hannes Leopoldseder understood the combination of popular events and the creation of a forum of electronic arts pioneers and future thinkers to be such a constellation that should be maintained. He saw Ars Electronica and the Klangwolke as separate entities, while being connected in a special way: "The original 1979 festival concept regarded the Linzer Klangwolke and Ars Electronica as an inseparable duo, like the stars Castor and Pollux in the constellation Gemini. Indeed, each star was designed to play a specific role."⁸ In Greek and Roman mythology, Castor and Pollux are twin half-brothers, originating from different fathers. One of them, Pollux, was of divine origin, being the son of the god Zeus. Leopoldseder refrained from clearly stating who was who in the astronomical-mythological connection he drew, but we know which of the two events would remain closer to his heart.

His main concern in 1980, however, was developing this interdisciplinary forum for electronics, art, and society. He saw Ars Electronica's intention to set the course for the future, "not only as an attempt to link tra-

dition and avantgarde, but also as a cultural experiment seeking to influence the cultural awareness of the public in many ways.”⁹ So his was a dual strategy from the very beginning and he continued to develop it further in the second year. Ars Electronica was at that time still seen as being part of the Brucknerfest that traditionally took place in September, so using Anton Bruckner’s music again seemed like a highly logical choice. This time Bruckner’s *Symphony Nr. 4 in E-flat major* was selected for the Klangwolke. This Fourth Symphony, “Romantic,” premiered in 1881 and is considered to be one of Bruckner’s most popular works. Following Walter Haupt’s suggestion, the German-American artist Otto Piene (1928–2014) was invited to create the visualization for the Klangwolke and he came up with an airborne sculpture named *Blue Star Linz*. Piene, who was 52 when he first came to Ars Electronica, had been director of the Center for Advanced Visual Studies (CAVS) at the Massachusetts Institute of Technology (MIT) since 1974. With the involvement of Otto Piene in the Festival of 1980, a first link was forged between Ars Electronica and MIT, a link that would last up to the day.

Otto Piene had started the artists’ group ZERO in 1957 with the aim of redefining art after World War II. Artists including Yves Klein, Jean Tinguely, and Lucio Fontana became members of ZERO. In the 1960s Otto Piene experimented with different media including broadcast television, which resulted in *Black Gate Cologne*, presumably one of the first ever television programs created by experimental visual artists.¹⁰ Piene’s work with what he called “Sky Art” went as far back as 1967. He also brought expertise from his work with helium-filled polyethylene tubes and balloons used at the 1972 Summer Olympic Games in Munich to the Klangwolke in Linz. Here at Ars Electronica, Piene became part of a new and much broader effort to redefine art through its relationship with technology and science.

Although the city of Linz hoped to cast off the image as a “city of steel,” the steelworks continued to serve as an important topic in many art projects at Ars Electronica well into the new millennium. Media artists—either



German-American artist Otto Piene (1928–2014), fellow of the Center for Advanced Visual Studies at MIT, preparing for the Sky Events at Ars Electronica 1982.

working directly with the steelworks or relating to them in many different ways—thus seemed to be contributing to a collective effort of coming to terms with this part of the history and the present day of Linz. Commissioning the German composer and electronic music pioneer Klaus Schulze with a piece relating directly to the voestalpine steelworks for the 1980 festival marks the start of this line of art projects in the program of Ars Electronica. His *Linz Steel Symphony* had three movements—Largo, Presto and Adagio—and followed the work process in the steel plant with subdivisions featuring “The Glowing Ore,” the “Casting,” the “Fire Column” and ultimately the “Filled Form.” For this, Schulze worked with sounds coming live from the steelworks and also featured workers from the steel plant as participants of his composition, which—despite a mainly critical reception—made his piece an important step in the electronic music relating to industrial sounds in the context of the festival.

The makers of Ars Electronica did not forget to integrate an element of audience participation in their program. While the Klangwolke continued to be staged in the Donaupark in front of the Brucknerhaus, a separate kind of participatory concert took place on Linz Hauptplatz bearing another Latin

title, “MUSICA CREATIVA.” So Bruckner’s music continued to be the subject of the Klangwolke, but audience participation this time relocated to the even more popular context of folk music, a kind of music performance that also drew local politicians to actively participate alongside the citizens of Linz. Taking over Linz Hauptplatz would also start a new kind of “tradition” for Ars Electronica, which has continued to this day. This move to the Hauptplatz where the historic city hall stands, actually brought the festival even closer to the heart of the city, both geographically as well as symbolically.

Much less noticed, but nonetheless of far-reaching significance, was a different kind of sub-event that took place in the lobby of the Brucknerhaus during Ars Electronica 1980. The Third World Computer Chess Championship welcomed US mathematician and electronic engineer Claude Shannon (1916–2001). Shannon is best known for his achievements in cryptography and for founding information theory with his paper “A Mathematical Theory of Communication” published in 1948. With another paper on “Programming a Computer for playing Chess” from 1949, he also pioneered efforts to develop chess computers. A little less than half a century later, in May 1997, IBM’s computer system “Deep Blue” defeated the reigning world champion Garry Kasparov. 30 years after Shannon’s first visit to Ars Electronica, the Ars Electronica Center devoted the 2010 exhibition *Codes & Clowns* to the “father of information theory.”

When preparing for the next edition of Ars Electronica, Hannes Leopoldseder encountered certain obstacles that threatened the still young festival: “That the Castor & Pollux conception of Ars Electronica and the Klangwolke is the right one was proved in 1981. In the process of doing the budgeting for the two events, city officials let it be known that they were considering dropping Ars Electronica and going forward with just the Klangwolke. A strategic move prevented Ars Electronica’s extinction: LIVA (Brucknerhaus) and ORF proposed shifting from an annual to a biennial format in order to buy time, and the city of Linz agreed.”¹¹ Danger was averted, but

this incident highlights how difficult it was to establish the core topics of Ars Electronica, which were after all still ahead of their time.

The next festival, following a two-year pause in 1982, continued with the spectacular events by now associated with the Klangwolke, while at the same time strengthening the international dimension of Ars Electronica. Otto Piene of MIT returned to Linz to stage the Sky Art Conference, which provided a kind of overarching theme and took the triple form of symposia, open-air events, and exhibitions. Most notably, he invited the Korean American artist Nam June Paik (1932–2006) and his long-time collaborator, the US cellist and performance artist Charlotte Moorman (1933–1991). The performance of Charlotte Moorman with her cello, suspended in the sky above the Donaupark in front of the Brucknerhaus, symbolizes the distinct influences that run from Ars Electronica back to the avantgardes of the 1960s. Nam June Paik and Charlotte Moorman were both connected with the interdisciplinary artist community Fluxus, which had originated in classes taught by American composer John Cage (1912–1992) back in the 1950s. John Cage, as will become visible as things evolve, belongs to this small number of highly influential artists and thinkers who—without ever having personally participated in Linz—exert a kind of background presence across these 40 years of Ars Electronica’s history. Nam June Paik also had a pioneering role in video art and created a “TV Bra” and a “TV Cello” for Moorman, which was built from TV monitors and was also used during their performance at the ORF Regional Studio in 1982.

For the 1982 festival, Ars Electronica also commissioned three projects, which could not have been more different and which reveal the balancing act of the new festival between the demand for spectacle and the wish for intellectual relevance. The Italian composer Giorgio Battistelli, who was 29 years old at that time, was commissioned to compose a *Linz Steel Opera*, which was performed on the city’s Main Square and included 36 workers from the steel plant. The second commission went to Japanese composer Isao



Cellist and performance artist Charlotte Moorman (1933–1991) performing *Sky Kiss* while flying over the Danube Park as part of the Sky Events developed by Otto Piene for Ars Electronica 1982

Tomita (1932–2016) for his piece *The Bermuda Triangle* with visualizations by Ron Hays, which was performed at the Brucknerhaus. Tomita, a pioneer of electronic music, who created highly popular synthesizer arrangements of music by composers like Igor Stravinsky or Modest Mussorgsky, would return to Linz in 1984 for a large open-air performance. A pattern somehow characteristic for Ars Electronica starts to become visible here with Tomita as well as with Piene before him: The first contact with Ars Electronica through one—smaller—project, paving the way to a much more extensive involvement in the following years.

The third commission turned out to be the least publicly noticed of the three and at the same time the one with the most lasting impact in the field of art and technology—Ars Electronica's core area of experimentation and exploration. It was also the one which re-connected with Bertolt Brecht's thoughts on radio becoming an apparatus of communication, which had also inspired Hannes Leopoldseder at the very inception of Ars Electronica.

The Canadian-Austrian artist Robert Adrian X (1935–2015) was commissioned to manage the project *The World in 24 Hours*, which linked 16 cities on three continents and used the ORF Regional Studio in Linz as a hub for its operations. From noontime (Central European Time) of September 27 until noontime of the following day, the artists were making connections through phone lines using slow-scan television or telefax as well as a dial-up to a computer timesharing service. The setup also reflected the struggle of artists to gain access to the media, which at the time was restricted by regulations and prohibitively high costs. Participating locations included places like Florence, Amsterdam, Toronto, Tokyo, Hawaii and some place in Turkey, where the artists' group Minus Delta T happened to be while en route to Bangkok. The lack of public attention for *The World in 24 Hours* was not a failure, but intrinsic to the concept that Heidi Grundmann, founder and long-time director of ORF Kunstradio —Radiokunst, explained: "And this type of project didn't have anything to do with the audience either. The

point was: you were either a participant or you weren't. After all, there's nothing to see. There's no performance, no communication. This process of mutual exchange engendered something that can't be called a work, since it's actually a matter of the dissolution of both the work and of the author. And that alone dictates that there can't be an audience either."¹² Even with authors and audiences vanishing, the project turned out to be well noticed and influential for future generations of artists.

Robert Adrian X was born in Toronto, Canada, in 1935 and came to Vienna in 1972. The pioneering use of electronic media in his art practice merged with his long-time strategies of connecting different kinds of media—analog and digital—as well as re-interpreting modernity. As a live telecommunications project, *The World in 24 Hours* had predecessors of course, as the artist and curator at Ars Electronica, Manuela Naveau, pointed out: "It was, in fact, based on experiences that artists such as Douglas Davis and Nam June Paik had already gained in the 1970s in telematic projects via satellite. And there had already been computer telecommunications projects—for instance, Bill Bartlett's *Interplay* in Toronto in 1979, and The Artist's Use of Telecommunications Conference in 1980 at SFMOMA, which Robert Adrian X had been involved in."¹³

The computer system that was involved allowed them to use ARTEX (Artist's Electronic Exchange System), an early kind of chat room developed by Robert Adrian X and Bill Bartlett. Robert Adrian X had clear motives for setting up this system long before the internet became available to the public and even longer before the advent of "social media": "Right from the outset, my principle was to set up a network that was simultaneously a communications web and a medium for the exchange of ideas." And he stated the overall intention of *The World in 24 Hours*—for him a "communications sculpture"—at Ars Electronica: "Artists using electronic communications are trying to find human meaning in an electronic space."¹⁴ A motive that could very well be said to apply to Ars Electronica itself of course.



Project *The World in 24 Hours*, conceived by Canadian artist Robert Adrian X (1935–2015) for Ars Electronica 1982.

"Openness has become a fundamental characteristic of the festival: open to new trends, open to the interactions between art and technology, open to that which is yet unfinished, open to contradictions, open to new territories, but especially open to the encounters between artists, scientists, and those who are involved in discussing our future."

Hannes Leopoldseder

Hannes Leopoldseder: Foreword, in: Druckrey, Timothy, Ars Electronica (Eds.): *Ars Electronica: Facing the Future – A Survey of Two Decades*, The MIT Press, Cambridge, Massachusetts, and London, England, 1999, p. 7.

Computer Culture Meets Avantgarde Art and Experimental Television

Around the mid 1980s, the future moved even further into the focus of Ars Electronica. The symbolic Orwell year '1984' may have played a role in this or at least made this focus easier to communicate. English novelist George Orwell (1903–1950) completed his greatest success, the dystopian novel *1984* in 1948. The trouble with any science fiction that mentions specific dates in the future is the passing of time that sooner or later turns those dates into the present day. Orwell is believed to have consciously chosen a relatively close era for his book and made that year also the book's title, since he wanted to emphasize the sense of urgency behind the looming threat of totalitarianism emanating from his story. The mindset of Ars Electronica that year, however, was not dystopian, but looked at the future with an optimistic while critical mind.

In 1984 Ars Electronica cast two—symbolic—kinds of glances into the future: There was talk about the generation of 1984, the children born that year, who would be 35 years of age in 2019 and would presumably have taken on responsibilities in society. A symposium with speakers like the prominent Austrian forecaster Gerhart Bruckmann discussed the perspectives for "The future of Austria — Life in the Year 2019." Some fifteen years later, Ars Electronica would introduce the first of several awards and other activities specifically addressing and encouraging young people. In the meantime, in 1984 artists were invited to express wishes for the future and a box with those messages for the future was buried in the ground in the Brucknerpark. The Klangwolke this year moved away from Bruckner

and was devoted to Ludwig van Beethoven's *Symphony Nr. 9 in D minor*. Beethoven's last completed symphony ranks among the most popular of all classical compositions and contains the *Ode to Joy* by German writer Friedrich Schiller with its message of world peace. Isao Tomita was invited back to Linz, this time for an open-air event titled *The Mind of The Universe*, which told "a story of the creation, development, and future of our cosmos and our planet." From a 5-ton light pyramid suspended in mid-air, Tomita did live mixes of the tracks and controlled the performance. With its intensive use of laser, fireworks, and projections on surfaces of smoke and water as well as a helicopter acting as a UFO, Tomita's project set a very high standard for Klangwolken in the years to come.

The American engineer Robert Moog (1934–2005), the inventor of the "Moog synthesizer," spoke at a symposium on "The Digital Art — Future Perspectives in Computer Art" in the Digital Sound section. Since the later 1960s, the—analogue—Moog synthesizer had been highly influential for many musicians, including pop bands of the day like Emerson, Lake and Palmer or Tangerine Dream. The instrument marked an important step in the development of electronic music and later digital music. Four years earlier, in 1980, both Robert Moog and the American composer Wendy Carlos (*1939) had participated in the Ars Electronica symposium Electronics in Music. Wendy Carlos had gained fame through her works with the Moog synthesizer, including the soundtrack for the 1971 film adaptation of Anthony Burgess' novel *A Clockwork Orange* by director Stanley Kubrick.

The Austrian artist Peter Weibel—born in 1944 in Odessa in the Ukraine—introduced himself at Ars Electronica 1984 with two contributions. In his lecture "On the History and Aesthetics of the Digital Image" he analyzed the imaging technologies of the day and drew connections to the history of art: "Many of the aesthetic aspects of earlier forms of art are directive for digital art which, however, transcends these. (...) The plotted line of some drawings by Matisse up to Warhol have ended in the plotter



Hannes Leopoldseder with American engineer **Robert Moog** (1934–2005), inventor of the Moog synthesizer, and Japanese composer and electronic music pioneer **Isao Tomita** (1932–2016) during Ars Electronica 1984.

(a drawing device of the computer). From Pointillism to Divisionism all the way up to the raster technique, there are dot techniques that call painting as an analog art into question. The synaesthetic concepts of the total artwork from the turn of the century already formulated the program of music videos: to make visible what is audible."¹⁵ With those connections to art history in the background, he could formulate what may be seen as the credo of his work for Ars Electronica in the following years: "We are standing before the quantum leap: digital image works are becoming independent of other artistic forms, digital art is becoming autonomous."¹⁶

In his lecture Weibel referred to an effect of the use of computers by artists that could also be found in Hannes Leopoldseder's original vision for the festival: "Researchers are leaving the university for industry, artists are moving into the university and commercial areas, engineers are switching over to art. In the process, encounters occur between the three, involving joint work."¹⁷ Ars Electronica, at which Weibel had now arrived, in

fact had begun to provide a platform for such encounters and had become a gathering of individuals with just such hybrid careers between art and technology. Weibel, himself a theoretician and curator as well as an artist, belonged to this new type. Consequently his other contribution that year was the electronic media opera *Der künstliche Wille* (The Artificial Will) at the Brucknerhaus.

The next Ars Electronica Festival in 1986 involved a re-structuring of the entire event. It was now staged in June instead of September and thus separated from the Klangwolke, which remained part of the Brucknerfest in the fall. While the ORF focused on activities around “computer culture,” the Brucknerhaus—or, more precisely, the municipal event organizer behind it, the LIVA—took Peter Weibel on board as artistic advisor. Weibel had been critical of previous events leaning towards spectacle: “A bit of confusion prevailed at first, and the festival was soon in danger of getting bogged down at the nexus of pop music, trade fair, ars metallica, ars pneumatica and ars pyromanica—that is to say, somewhere between the kinetic metal sculptures, balloons and fireworks.”¹⁸ So Peter Weibel initiated—together with Regina Patsch and Gottfried Hattinger for the Brucknerhaus team—a stronger emphasis on the avantgarde of media art. The LIVA had a new director, the cultural manager Karl Gerbel (1939–1997), who re-established Ars Electronica Festival as an annual event, which it has now been since 1986. This re-structuring also indicated a kind of power shift, since the Brucknerhaus received the budget from the city of Linz for the event and the ORF was mainly reduced to the role of co-production and media partner.

The Ars Electronica 1986 concerts showed this shift away from previous, predominantly mainstream, kinds of electronic music. They included commissions for some of the most en vogue music acts of that time: American avantgarde performance artist and singer Diamanda Galás presented her work *Masque of the Red Death* at the Linz shipyards. The British band Cabaret Voltaire, combining Dada influences with elements of industrial music,



French writer and filmmaker Alain Robbe-Grillet (1922–2008) at the symposium Literature to Hear and See during Ars Electronica 1980, at the ORF Regional Studio.

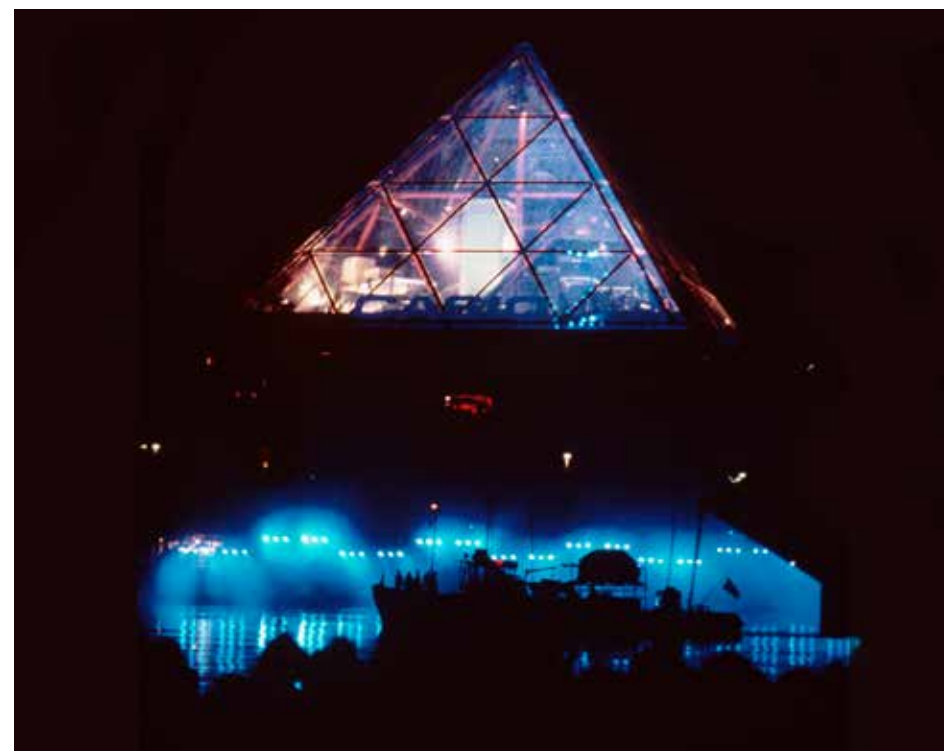
performed *A Contemplation of Dangerous Games* at the Brucknerhaus. 1986 also brought the first appearance of the performance and music collective “Minus Delta t,” formed around Mike Hentz and Karel Dudesek, who would later return to Ars Electronica several times under various names. In 1982 they had participated in *The World in 24 Hours*, conceived by Robert Adrian X, while they were transporting a monolith from Europe to Asia as part of their *Bangkok Project*. Their often provocative performances were frequently repeated at art festivals, including Documenta. For Ars Electronica 1986 they created a “container city” at the Donaupark, where they staged their radio and television project *Ponton*, with the aim to “demonstrate the free and creative presentation of information”¹⁹ by producing a full week of programs. Their

anarchic art and activism represent an emancipatory appropriation of the means of production of media like radio and television, which at that time were still monopolized by public broadcasters in Europe. Their involvement in Ars Electronica, which was co-produced by the ORF—the Austrian public broadcasting corporation—highlights the genuine degree of openness to innovation and experimentation on the part of the ORF in Upper Austria at that time.

Beginning in 1984, Hannes Leopoldseder formulated his ideas about an emerging computer culture: “Computer culture is understood in the broader and in the narrower sense of the word: in the broader sense asking the questions of how far the computer changes our lives, our society, and our attitudes; and in the more narrow sense, how far the computer as a tool influences cultural and artistic processes and artistic creation and in how far a new creativity is emerging.”²⁰ This broad approach contains a visionary element outlining the future work of Ars Electronica and the scope of questions it in fact would be addressing in the following years. In 1986 Leopoldseder shaped those ideas into an event called “Ars Electronica Computer Culture Days Linz,” which was organized by the ORF and held at the ORF’s Regional Studio. Christine Schöpf had joined the Ars Electronica team—while working for the ORF—as early as 1980, when she curated and produced the symposium Literature to Hear and See with participants including the French writer Alain Robbe-Grillet (1922–2008). In 1981 she became head of the department “Culture and Science” at ORF Upper Austria and thus responsible for the ORF’s parts of Ars Electronica. Schöpf also played a key role in a new kind of event introduced in 1986: the ORF Videonale. The Videonale contained a full week of commissioned video pieces by artists including Valie Export, John Sanborn, and Inge Graf + ZYX.

The ORF Videonale included a video created by two Austrian artists: Richard Kriesche and Gottfried Bechtold. The title of the piece, *Stille elektronische Post* (Silent Electronic Mail), is a reference to the popular children’s

game “telephone” (German: *Stille Post*). One player whispers a message into the ear of the next person, and that person then whispers it to the next and so on. Invariably the message becomes garbled as it passes from player to player, so that when the last player repeats it, it bears little resemblance to the original message. Richard Kriesche at the ORF studio in Linz and Gottfried Bechtold at the ORF studio in Dornbirn were exchanging messages using the ORF’s electronic communications infrastructure for sound and video. Their two positions and inputs were “ultimately transformed into a single, undivided media location on the screen.”²¹ In the words of Richard Kriesche, who is active both as a media artist and as a theoretician, they “challenged both the media and the public equally.”²² The piece, which through the involvement of the ORF could utilize an infrastructure not available to the public, anticipated the special field of telematic media art that would later gain importance for a number of artists featured at Ars Electronica.



Open-Air concert *The Universe* by Japanese composer and electronic music pioneer **Isao Tomita** (1932–2016) at the Danube Park during Ars Electronica 1984.



THE FESTIVAL AND THE PRIX FORM A DOUBLE STAR 1987–1995

An international award for creative achievements in areas like computer animation, computer music, and—later—also interactive art, was established alongside the festival. The Prix Ars Electronica became both a stage for emerging art scenes as well as a sensorium for new trends in the rapidly developing intersection of creativity and technology. The new double star that Ars Electronica had become went through exciting and turbulent years, a formative process of shaping it in between competing visions about its direction.

11 The Birth of the Golden Nica

12 Dreaming of Electric Sheep and Exploring Virtual Worlds

13 The Rise of the Internet — Wide Awake in a Wired World

14 Planning Ars Electronica Center — The Art of Turning a Vision into Reality



Luxo Jr. – Stills from the film by John Lasseter / Pixar, winner of the first Golden Nica in the category “Computer Animation” of Prix Ars Electronica in 1987

"The Prix Ars Electronica has always understood itself to be a laboratory and testing ground, in which the outlines of a new digital art may be identified."

Hannes Leopoldseder

Hannes Leopoldseder, Prologue, in: Druckrey, Timothy, Ars Electronica (Eds.): *Ars Electronica: Facing the Future – A Survey of Two Decades*, The MIT Press, Cambridge, Massachusetts, and London, England, 1999, p. 12.

The Birth of the Golden Nica

The little table lamp plays with the ball, and jumps on it, until it deflates. Watched over by a senior lamp, little Luxo Jr. immediately wins the hearts of viewers and those of the jurors of the newly born Prix Ars Electronica in 1987. The young West Coast company Pixar, a spin-off from George Lucas' Industrial Light and Magic (ILM), had originally intended the short animated film to be presented at SIGGRAPH, an industrial fair for computer graphics in the US. When awarding the first Golden Nica to this creation by John Lasseter, the jury in Linz stated: "It would not be possible to realize the image world created in 'Luxo Jr.' at this time in any medium other than computer animation." Computer animation was one of three categories—the others being Computer Graphics and Computer Music—of the new award launched by the ORF in 1987, and it was also the most spectacular and innovative among them.

Indeed, the short film about the little lamp set standards not only in the sophistication and application of computer technology, but also in terms of its emotional design. Animating inanimate objects as characters in an emotional story pointed the way for an entire industry of computer-animated films that would follow—quite a number of them produced by Pixar—and could even be said to anticipate reflection about human's emotional relationships not only with synthetic characters, but also with autonomous robots. Living in today's world surrounded by computer-generated images makes it hard to imagine a time when such imagery could mesmerize viewers. In the first year of Prix Ars Electronica, the German computer scientist Rolf Herken noted: "The fascination emanating from the new tools for creating images, films and sound is incredible. (...) the computer could become the preferred instrument of an artistic avantgarde, to whom the separation of art and science makes no sense."¹



Mayor of Linz, Franz Dobusch, hands over Golden Nicas to **Christine Schöpf** and **Hannes Leopoldseder** for their achievements for Ars Electronica at the Gala in 2009.

This comes close to the original idea of Ars Electronica and thus the conceptual considerations of Hannes Leopoldseder and Christine Schöpf when developing this new award. After several editions of the festival, it became clear that an international award would open up an eminent source of input for the festival, connecting it with any emerging trends regarding the use of computer technology for artistic creation. Also such a competition would enhance the international recognition of the festival even further. Leopoldseder understood that all this could only be achieved if the new award offered substantial prize money to its winners and could rely on the reputation of juries with internationally known experts in the field. With the help of Siemens as a sponsor, Prix Ars Electronica was able to make its entry at that high level in the very first year. Leopoldseder saw the Prix also “as an impulse to understand computer art / computer-aided art, the use of the computer in the arts not as an isolated phenomenon but within the overall context of computer culture”.²

The award also needed a trophy and it was found in the statuette of Nike of Samothrace. The choice of that antique sculpture of the winged goddess had a special back story that connected it with Linz. Before the birth of Ars Electronica, Forum Metall—an exhibition of large-scale metal sculptures—took place in Linz in 1977. Christine Schöpf recalled the incidents around the Nike almost two decades later in 1996: “Forum Metall’s symbol and promotional figure was a sculpture by the artists’ group Haus-Rucker-Co, installed high above the Hauptplatz—an 8-meter-high copy of the Greek goddess of victory, Nike of Samothrace, on display in the Louvre. (...) The Haus-Rucker Nike set off a steam of strong protests throughout the population of Linz. (...) By order of the city, the sculpture was covertly removed.”³ Some 8 years later, Leopoldseder and Schöpf decided it was time for a return of the “Nica,” as the prize figure—39 cm tall, cast in bronze and gilded—was named, echoing the last letters of “Ars Electronica.” She should and would become the “goddess of victory for the electronic arts.” At an award ceremony held at the ORF Studio in Linz, televised and broadcast for a full hour on prime time Austrian television, filmmaker John Lasseter for “Luxo Jr.” and musician Peter Gabriel for “his creative use of new technologies” were among the first ever winners to receive a Golden Nica.

The Prix’s relevance for Ars Electronica is also evident in the discussions it has fueled about certain crucial questions, discussions that have accompanied Ars Electronica over the years in various guises. In German such questions are known as “Gretchenfragen,” a reference from Johann Wolfgang Goethe’s drama *Faust I*, where Gretchen asks Faust about his position on religion. They are questions that go straight to the core of a problem, and are usually not too pleasant for the person being asked. For Ars Electronica one such question is about its relationship or insinuated proximity to big tech corporations and to commerciality as such. In the case of the new Prix category “Computer Animation,” the entertainment industry was naturally close and also the Nica-winning start-up company Pixar was part of an industry working with huge budgets. That question is

"I cherish those moments in jury deliberations, when something suddenly becomes clear and that clarity emerges from the high level of the discussion."

Christine Schöpf

In a conversation with the author, Linz, 2019.

closely connected to another one about the relationship with technology itself, namely the insinuation of a naive and unreflected fascination with the technology, which would reduce Ars Electronica to a mere showcase for the latest products of the involved companies. Both questions are indeed complex. At that time the costs of computer technology capable of designing and rendering complex, or even animated imagery were still significant. Seen from the mid 1980s, it would be years before this technology became affordable outside the entertainment industry, advertising budgets of the corporate world, or academic institutions, so that independent artists could use such infrastructure to work on their own projects. A fascination with new technologies was also shared by many artists and somehow forms a natural precondition of the desire to appropriate those technologies for your own artistic practice. Gerfried Stocker described the motivation: "Enthusiasm not for the technology itself but for what you could do with it when you made the leap from the position of consumer to that of designer and producer."⁴

Commerce, Experiment, and a Glass Bead Game

Peter Weibel—while clearly interested in the new potentials of the digital image and impressed by encounters with people like George Lucas⁵—took a critical position, as formulated in 1993: "Computer art was for a long time just a descendant of this apparently harmless, industrial standard aesthetic. Only now is it slowly beginning to uncover / discover the dangerous, the subversive, the obscene, the critical, the dirty. It is recognizing that this is the only way it can redeem its artistic promise. (...) Criticality, complexity, and art are layering the new foundation for computer culture."⁶ There is also a productive potential to those two opposing positions, as the director of the OK Center for Contemporary Art, Martin Sturm, has pointed out. Since 1998 his institution has been annually presenting an exhibition of the winning projects of Prix Ars Electronica and in 2009 he wrote about those exhibitions: "Here, commercially successful products (such as those



Austrian artist and new media theoretician Peter Weibel (*1944) lecturing on “The Aesthetics of the Digital Image” at Ars Electronica 1984.

that have emerged from the animated film industry) take their place alongside experimental artworks and radical scientific approaches, whereby this contradictory juxtaposition that thwarts a hegemonic conception of media is precisely what makes Ars Electronica so appealing.”⁷

There has been a third such “Gretchenfrage” with regard to the potential effect that those insiders, early-on acquainted with computer technology, those circles of international pioneers and specialists of electronic art gathering at Ars Electronica, would become a new elite of the computer culture. Hannes Leopoldseder himself has voiced such concerns, when writing about aspects of an emerging computer culture since 1984 and about a “Fifth Cultural Technique” in 1987: “Hermann Hesse’s novel *Das Glasperlenspiel* (The Glass Bead Game) reveals itself as a vision of the computer culture’s society. As the players of the Glass Bead Game had invented ‘a universal language and method of expressing all spiritual and artistic values and terms to give them a common dimension,’ the computer with the binary alphabet creates a new system of language and thought. Hesse’s utopia is the quest for an answer to how a part of a society is developing towards computer culture in relation to a non-computer culture.”⁸ Indeed, several key aspects for Ars Electronica can be found in this reflection on *Das Glasperlenspiel*, which German author Hermann Hesse (1877–1962) wrote during the 1930s. The book was published during World War II in 1943 by a Swiss publishing house, as the Nazi dictatorship in Germany had prohibited its publication. While writing the novel, Hesse found himself in opposition to the 1930s Zeitgeist of rising nationalism and fascism, which directly led to the devastating World War II and the Holocaust. The community of Glass Bead Game players forms a highly intellectual order, living separate from the rest of the world in the province of Castalia. The links between the Glass Bead Game and its mathematical and musical elegance on the one hand and the mathematical foundations of computer technology on the other hand meet in the ideas about a “universal language” by German philosopher and mathematician Gottfried Wilhelm Leibniz (1646–1716).

An elite of insiders of a new computer culture might find themselves similarly isolated and even in opposition to the majority of society. Negative reactions to the pioneering efforts of the avantgarde of media arts, preferably from proponents of the art system—art critics, art museums—could have fueled tendencies to form closed circles, seeking to isolate themselves from the surrounding communities in ivory towers. But as the protagonist of Hesse’s novel, game master Josef Knecht, seeks contact with the world outside of his intellectual province, the strategists of Ars Electronica also strove to ensure that it would remain in a direct and ongoing exchange with society. Hannes Leopoldseder saw from early on that education would have to be an essential part of Ars Electronica’s efforts and called for a “computer-literate society.”⁹ Later steps in the evolution of Ars Electronica, namely the creation of the Ars Electronica Center in 1996 and numerous educational programs in the following years, have proven Ars Electronica’s valid answer to that “Gretchenfrage.” Gerfried Stocker, another passionate reader of the “Glass Bead Game,” points out: “To go to your own limits of thinking and beyond, is the key for innovation and development. So we made crossing frontiers a principle of Ars Electronica Center and—contrary to conventional museums—put education in the first place.”¹⁰

But at the time of Prix Ars Electronica’s inception, the Ars Electronica Center was still nearly a decade away. With the Prix, Hannes Leopoldseder and Christine Schöpf made an important conceptual as well as tactical move in the development of the overall architecture of Ars Electronica. With the “Videonale” of 1986 as a kind of “testing ground,” the Prix ultimately marked the first step away from the festival—as a cultural event taking place once a year for a few days—towards a cultural system, in which different parts support each other. Leopoldseder had the “understanding that after about 5 to 6 years you should not just do the same thing over again, but invent something new. The tree should grow another strong branch, so we created the Prix Ars Electronica.”¹¹ That new strong branch also resulted in a power shift in the delicate balance between the ORF and the Brucknerhaus, while



Christine Schöpf and Hannes Leopoldseder, initiators of Prix Ars Electronica in 1987, during a jury meeting in 1998.

the ORF was extensively interpreting the cultural mandate it had as a public broadcasting corporation. The situation displayed all features of a “power play” between different actors in the cultural landscape of Linz, which would be a formative element for Ars Electronica for several years to come. With the Prix, the ORF had regained a certain area of autonomy, where it could shape the future path of Ars Electronica in what Christine Schöpf called “the stormy times of the Digital Revolution.”¹²

"Cyberspace is not some unexplored natural region, but an utterly unnatural space boiling out from nothingness: a gigantic badland of mirrors which replicate the pioneer's own inner mentalities."

Bruce Sterling

Bruce Sterling, "The Future of Cyberspace – Wild Frontier vs. Hyperreal Estate" (1990), in: Druckrey, Timothy, Ars Electronica (Eds.): *Ars Electronica: Facing the Future – A Survey of Two Decades*, The MIT Press, Cambridge, Massachusetts, and London, England, 1999, p. 114.

Dreaming of Electric Sheep and Exploring Virtual Worlds

Between the late 1980s and the mid 1990s the speed of the digital revolution significantly accelerated. You could almost see projections of exponential developments like Moore's law at work, an observation that the number of transistors in a dense integrated circuit doubles about every two years. Personal computers were now affordable and were quickly spreading also to private homes, finally becoming the "personal" tools their names had already promised them to be. Besides the rise of audio CDs, which were replacing vinyl records and audio cassettes, the CD-ROM became the medium of choice to publish and distribute content that was called "multimedia," as it made typographically set text and images, sound, and video accessible through interactively designed user-surfaces. Still far more expensive and demanding in processor power were applications of what appeared to become an entirely new medium: "virtual reality." Both multimedia and virtual reality were swiftly adopted by artists and surfaced in numerous art projects and theoretical discussions at Ars Electronica.

The artist and theoretician Peter Weibel had joined the team of Ars Electronica as artistic advisor in 1986, and in 1988, together with Gottfried Hattinger, he was responsible for the program for the first time. Between 1992 and 1995 he was a member of the directorate and chairman of the artistic advisory committee, with Katharina Gsöllpointner in his team at the Brucknerhaus. Weibel, in his dual activity as artist and researcher, could himself be seen as the embodiment of the typical Ars Electronica artist. He started giving the—meanwhile annual—festival a special topic each year with the intention of identifying the coming trends before they reached the mainstream. This also provided a thematic focus to the—now explicitly



The panel at the Philosophy of the New Technologies symposium, Ars Electronica 1988, included Vilém Flusser, Jean Baudrillard, Heinz von Foerster, Friedrich Kittler, and Peter Weibel. Note the boxing ring in the background at the Brucknerhaus.

scientific—symposia and the texts in the catalogues. In 1989 he produced the festival catalogue as a special edition of the German art publication KUNSTFORUM under the title “Im Netz der Systeme” (In the Network of Systems) with a reflection on “interactive art” as a new art form. The following themes displayed also an increasing focus on the relationships of technology and society: “Digital Dreams – Virtual Worlds” (1990), “Out of Control” (1991), “The World From Inside – Endo and Nano” (1992), “Genetic Art – Artificial Life” (1993) and “Intelligent Environments” (1994).

During Ars Electronica Festival 1988, a discussion panel on the Philosophy of the New Technologies convened at the Brucknerhaus, brought together by Peter Gente and Adelheid Paris of Merve publishing house. That panel included a rare combination of thinkers: among others, Czech-born philosopher Vilém Flusser (1920–1991), French cultural theorist and philosopher of postmodernity Jean Baudrillard (1929–2007), the Austrian-American scientist and pioneer of cybernetics Heinz von Foerster (1911–2002), and media theorist Friedrich Kittler (1943–2011). At that moment of looming

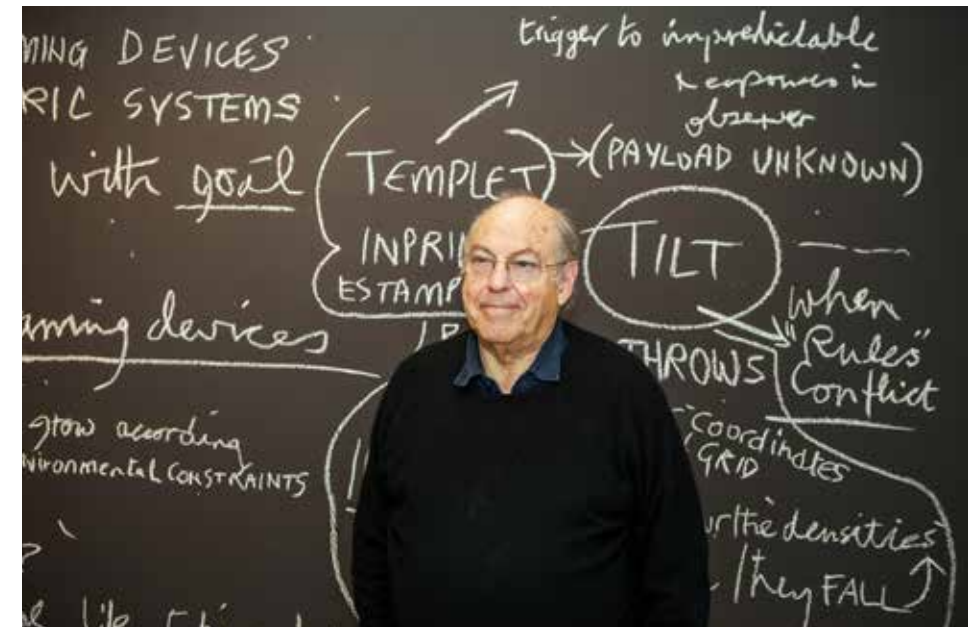
transformations to many aspects of our lives through digital media, the late Vilém Flusser—who had to flee from Prague due to Nazi occupation in 1939 and lost all of his family in the concentration camps of Nazi Germany—turned the attention to the question of memory: “At present, electronic memories are in the process of reshaping our cultural memory. (...) We can only begin to understand the impact that this revolution is having on our existence, when we face the critical distance from memory function that has been made possible by electronic memories.”

Also in 1988, Ars Electronica commissioned a theatrical-musical piece, once again relating to the voestalpine steelworks, but this time not bringing the sounds of heavy industry to the city, but going the other way and taking the performance right there. *MAELSTROMSÜDPOL*—drawing upon motifs from an Edgar Allan Poe story—was conceived and directed by Erich Wonder, with music by Heiner Goebbels and a text by Heiner Müller. The audience travelled by boat and train from the Donaupark to the blast furnaces at the compound of the steelworks. In the following year, another train—albeit a significantly smaller one—would take individual visitors to a temporary “Media Village” in the Donaupark on a ride, lying on their backs, along “Digital Pathways across the Whole Earth.” Roy Ascott described his 1989 project *Aspects of Gaia: Digital Pathways Across the Whole Earth* as an attempt “to investigate the potential of the digital screen on the horizontal, rather than on the more familiar vertical format, from above and from below, offering images from a bird’s-eye view and from below, as ‘wormholes’ into parallel universes.”¹³ The title refers to the “Gaia hypothesis,” which was formulated in the 1970s by English scientist James Lovelock (*1919) and American biologist Lynn Margulis (1938–2011) and describes Earth as a complex, self-regulating system. Multi-media input during the ride through *Aspects of Gaia* came in the form of computer images, digital sound, and electro-acoustic environments, fed by incoming material from a number of artists participating. They started creating the “Gesamtdatenwerk” installation that Ascott was looking for: “The site for such work must be the

"Painters, designers, composers, graphic artists working as computer programmers in their relevant spheres of art do not only receive a new tool—the computer also demands a new way of thinking. The computer brings forth a new type of universal artist—in the sense of Leonardo da Vinci."

Hannes Leopoldseder

Hannes Leopoldseder, "Ten Indications of an Emerging Computer Culture" (1986), in: Druckrey, Timothy, Ars Electronica (Eds.): *Ars Electronica: Facing the Future – A Survey of Two Decades*, The MIT Press, Cambridge, Massachusetts, and London, England, 1999, p. 69.



British artist Roy Ascott (*1934), ranked by Ars Electronica among the "visionary pioneers of media art." At Ars Electronica 2014.

Roy Ascott's project *Aspects of Gaia* offered "a digital path through the entire world" at the Ars Electronica Festival 1989.



planet as a whole, its dataspace, its electronic noosphere.”¹⁴ The “Media Village” in the Donaupark brought together several projects. Van Gogh TV made their appearance there with *Ponton Medias*, this time also using the satellite television of 3SAT to bring together cultural parallels in Europe in a networked form. 3SAT had been launched in 1984 as a cultural satellite program produced through a cooperative network of three national public broadcasters from Germany, Austria, and Switzerland: ZDF, ORF, and SRG SSR. 3SAT would repeatedly play an important role in realizing a number of projects at Ars Electronica, reflecting a networked world that would come with the advent of the internet. In fact, it was in that same year, 1989, that the English computer scientist Tim Berners-Lee (*1955)—while working at CERN in Switzerland—conceived and implemented the first successful client-server-exchange via the internet using a Hypertext Transfer Protocol (HTTP)—the birth of the World Wide Web. But it would still take a while before the internet became available to the public.

In 1990 the time was ripe to take the next evolutionary step in the development of Prix Ars Electronica by adding a new category for “Interactive Art.” The American computer artist Myron W. Krueger (*1942), who had started early on with the development of interactive pieces, won the first Golden Nica in this category with his piece *Videoplace*. The Australian media artist Jeffrey Shaw (*1944) received an Award of Distinction for *The Legible City*. This was an interactive art installation, where the visitor rides a stationary bicycle and on this navigates through the computer simulation of a city, where the houses lining the streets are built from tall letters forming the words. Different streets following the street maps of existing cities—Manhattan, Amsterdam, and Karlsruhe—could be cycled through and were thus made “legible.” In the following year, Shaw was appointed founding director of the ZKM Center for Art and Media Karlsruhe, Germany.

Under the title “Digital Dreams – Virtual Worlds,” the 1990 Ars Electronica Festival took a look at an emerging area that promised to go



American science fiction writer Bruce Sterling (*1954), one of the founders of the cyberpunk movement, at the Hypermats – Cyberpunks conference, Ars Electronica 1990.

far beyond interactivity: virtual reality. The panels offered a cross-section of positions and visions in a field that sparked high expectations for science, education, and art, while still suffering from technical limitations. One of the speakers on the Virtual Worlds – Artificial Realities panel was the Belgian-Canadian scholar Derrick de Kerckhove (*1944), Director of the McLuhan Program in Culture and Technology at the University of Toronto. Throughout the 1970s he had been assistant to the Canadian philosopher

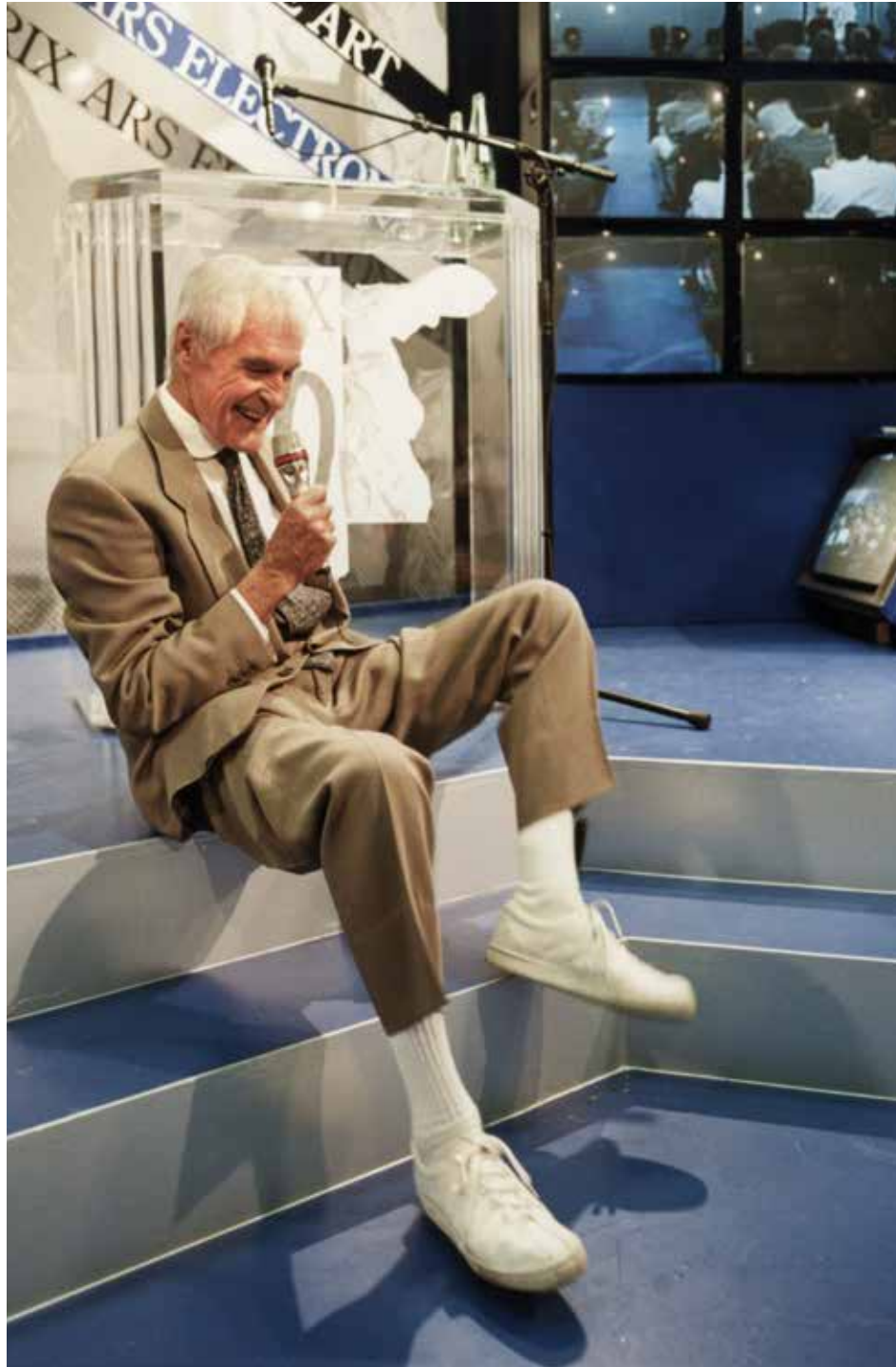
Marshall McLuhan (1911–1980), who had coined the term “global village” and predicted the World Wide Web some three decades before its invention. De Kerckhove stepped into the discussion about virtual reality with the quip: “(...) virtual reality could just as well have been called ‘artificial imagination’,”¹⁵ before connecting it with philosophies from ancient Greece and the art of the Renaissance. He also reached out to another speaker at the festival that year, the American computer scientist and artist Jaron Lanier (*1960), a pioneer of virtual reality. In his comprehensive article on “Virtual Reality for Collective Cognitive Processing” de Kerckhove singled out a key aspect of virtual reality defined by Lanier: “(...) the essence of virtual reality is that it’s shared,” with Lanier describing it as “the first new level of objectively shared reality available to humanity since the physical world.”¹⁶ Although referring to the Renaissance in his talk, de Kerckhove clearly denied the expectation that virtual reality would bring about a new Renaissance. Instead he emphasized the potential of virtual reality for what he described as “collective cognitive processing”: “Collective cognitive processing is bound to change the basis of Renaissance psychology. What we need is a sense of an expanding, flexible self, inclusive rather than exclusive, environmental rather than frontal, collaborative rather than confrontational, conscious of its bionic extensions rather than resolutely ignoring any suggestion that we are not made of flesh alone.”¹⁷

The conference titled Cyberspace–Virtual Visions at the Regional Studio of the ORF in 1990 was the first interdisciplinary conference on “Virtual Reality” and brought together a broad range of experts: the American psychologist Timothy Leary (1920–1996), the American scholar Brenda Laurel (*1950), author of *Computers as Theatre* (1991), which influenced whole generations of interface and interaction designers, the Canadian media theorist Arthur Kroker (*1945), who, together with his wife Marilouise Kroker (1943–2018), would start editing the influential academic journal *CTheory* in 1996, and American media artist and interaction designer Scott S. Fisher (*1951).



American scholar Brenda Laurel, author of *Computers as Theatre*, lecturing at the Cyberspace — Virtual Visions conference, Ars Electronica 1990.

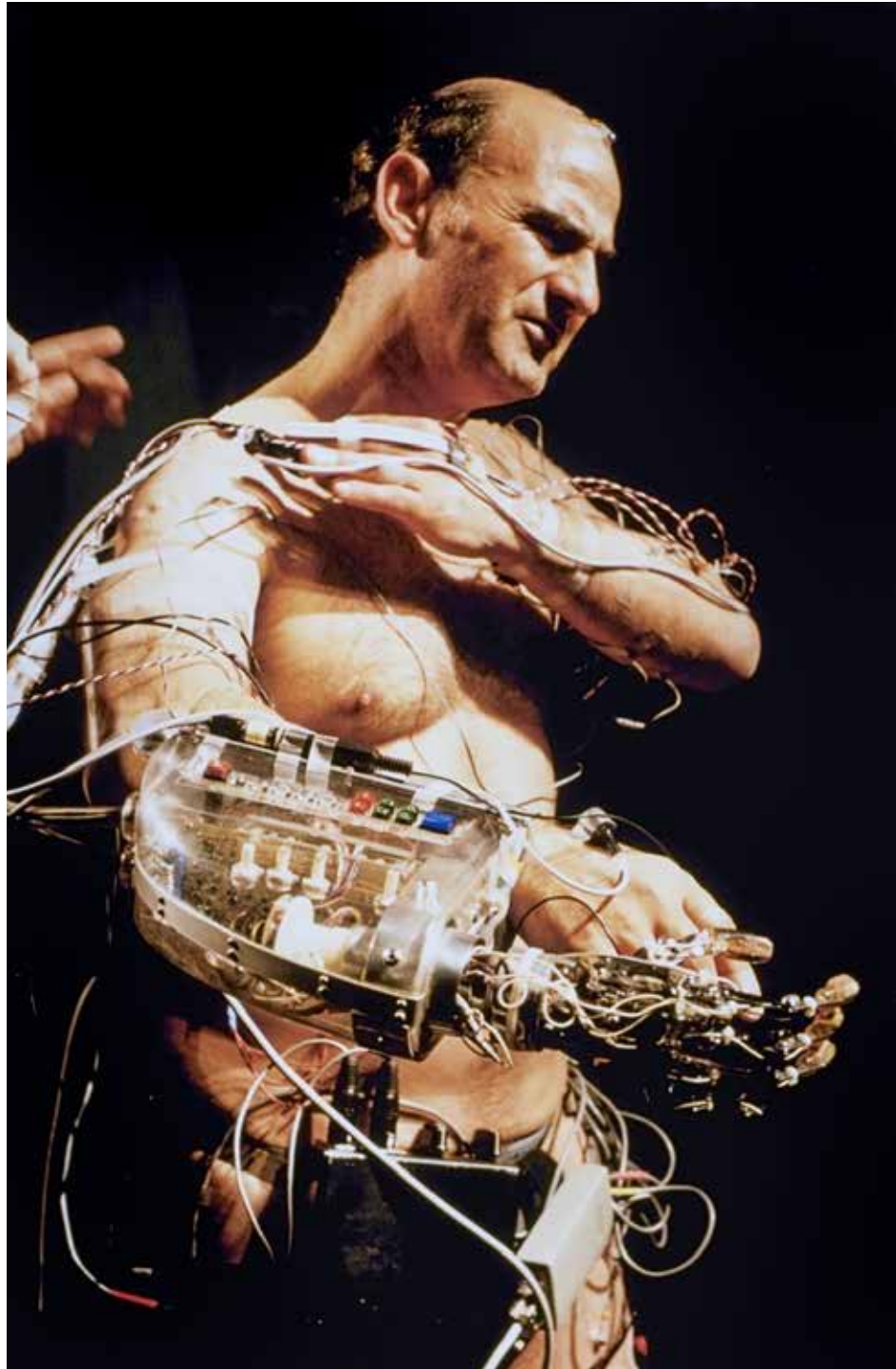
Discussions at Ars Electronica continued beyond virtual reality to the notion of “cyberspace,” a term that remains opaque to this day, which made one of its earliest appearances in the 1984 novel *Neuromancer* by American science fiction author William Gibson (*1948). Gibson spoke at a panel on “Hypermats – Cyberpunks,” whose participants included the American science fiction author Bruce Sterling (*1954) as well as Jaron Lanier and Steina (*1940) and Woody Vasulka (*1937), who had founded the multi-disciplinary art and performance space “The Kitchen” in 1971 in New York City. Gibson and Sterling were obviously the ones referred to by the term “cyberpunks,” as they were key representatives of the literary movement of this name. Bruce Sterling characterized this group of writers in his preface to *Mirrorshades: The Cyberpunk Anthology*, which he edited in 1986: “The cyberpunks are perhaps the first SF generation to grow up not only within the literary tradition of science fiction but in a truly science-fictional world.”¹⁸ With cyberpunk



American psychologist Timothy Leary (1920–1996), widely known for his work on psychedelic drugs, lecturing at the Cyberspace – Virtual Visions conference, Ars Electronica 1990.

a new form of counterculture combined with a hacker underground and “street tech” had entered the scene during the 1980s: “An unholy alliance of the technical world and the world of organized dissent—the underground world of pop culture, visionary fluidity, and street-level anarchy.”¹⁹ With cyberpunk, any techno-utopianism found its dystopian alternative. The 1982 movie *Blade Runner*, directed by Ridley Scott (*1937), had somehow set the tone for this kind of dystopian science fiction. The movie was based on the 1968 novel *Do Androids Dream of Electric Sheep?* by American writer Philipp K. Dick (1928–1982), who greatly influenced the entire genre both with regard to the topics he addressed in his novels as well as in the light of numerous adaptations of this book. In his lecture at Ars Electronica on “The Future of Cyberspace — Wild Frontier vs. Hyperreal Estate,” Bruce Sterling expressed views that—seen from today—sound visionary: “It is not in the nature of a capitalist society to carry its media to ultimate forms; instead they are optimized for profit, while containing or subverting attempts at revolutionary breakthrough.”²⁰

One type of character that appears in cyberpunk novels—which are frequently also populated by “androids”—is the “cyborg,” in most cases a human with biomechatronic body parts. While more and more sophisticated prosthetics became a reality in medicine, artists have been exploring and testing the limits of the field. The Cypriot-Australian performance artist Stelarc (*1946) declared the human body to be obsolete and performed with self-developed robotic devices applied to his own body. *Third Hand* is a mechanical human-like hand attached to the artist’s right hand, whose dimensions it replicates. The “third hand” is controlled by electrical signals from muscles independent from the actual right hand. Stelarc performed with the *Third Hand*—enhanced with amplified body signals and sounds—at the Posthof, an off-culture space near the port of Linz, during Ars Electronica 1992. He saw the *Third Hand* not as prosthetics, but rather as an augmenting addition to his body, which allowed him to explore the body-machine interface and at the same time address critical questions regarding the



Australian performance artist Stelarc (*1946) during *Parasite: Event for Invaded and Involuntary Body*, Ars Electronica Festival 1997.

technical modification of the human body: “THE BODY MUST BECOME IMMORTAL TO ADAPT. Utopian dreams become post-evolutionary imperatives. THIS IS NO MERE FAUSTIAN OPTION NOR SHOULD THERE BE ANY FRANKENSTEINIAN FEAR IN TAMPERING WITH THE BODY.”²¹ With his work so pointedly and critically reflecting certain highly sensitive ethical aspects of Ars Electronica’s themes, Stelarc’s appearance in 1992 would definitely not be his last in Linz.

At their concert at the Brucknerhaus during Ars Electronica 1993, the German band Kraftwerk allowed themselves to be replaced by robots on stage during parts of their performance. Many songs by the band, founded in 1970, were classics by then and the musical material, which had been originally created with analog equipment, had already been transferred to digital instruments in the early 1990s. Their fame and widespread influence on many musicians stood in a certain contrast to the way, how the individual members of the band—referred to as “music workers”—preferred stepping back behind the collective, which was described as the “machine.” Their song “The Robots” from their 1978 studio album *The Man-Machine*, was often performed by those torso-robots built to resemble the members of the band.

When the Austro-Canadian robotic scientist Hans Moravec (*1948) spoke at Ars Electronica in 1991, he laid out his visions for future robots and characterized those he foresaw for the time after 2050 as “Mind Children”: “The fully intelligent robot marks the point where our cultural side can exist on its own, free of biological limits. Intelligent machines, which are evolving among us, learning our skills, sharing our goals, and being shaped by our values, can be viewed as our children, the children of our minds.”²² In a remote way, Moravec’s idea develops thoughts Vilém Flusser expressed about memory in the light of the digital revolution a few years before. There are numerous such subtle connecting points between different contributions made along the line of the festival’s annual topics. Over the years, the discussions at the Ars Electronica Festival somehow

form a huge polylogue. At times, the entirety of Ars Electronica may seem like a room full of voices from some of the most brilliant minds from art, science, and technology. Their conversations are circling around a canon of themes that—astonishingly stable over the years despite changing trends and buzzwords—address the burning questions around art, technology, and society that still concern us today.

It was numerous voices that could be heard during Ars Electronica 1991 at an installation in the Donaupark by American composer Alvin Curran (*1938) and American conceptual artist Melissa Gould (*1958). Gould, whose mother came from a Jewish family in Vienna, Austria, reconstructed the floor plan of a Berlin synagogue, which had been destroyed under Nazi rule, with fluorescent lights in the park on the banks of the Danube. Following that floor plan, Curran created massive but invisible “walls of sound” from some one million human voices singing.²³

In the presence of cyborgs and robots, who were now “regulars” at Ars Electronica, it had become impossible not to address questions of artificial intelligence. The American cognitive scientist Marvin Minsky (1927–2016), a leading researcher in artificial intelligence, participated at Ars Electronica 1990 on the same panel on the same “Virtual Worlds – Artificial Realities” panel as Derrick de Kerckhove. Minsky, who had described the human mind as a society of simple processes, which he called agents,²⁴ sparked intense controversy in Linz when he argued against medical ethics slowing down progress in his research. In 1993 the festival topic was “Genetic Art – Artificial Life,” thus expanding the festival’s field of vision to new, partially related areas of research and artistic creation. Among the artists involved was Peter Kogler with his project *Ants* (Ameisen), a tapestry of giant ants symbolizing a comparison of the computer to an anthill.

The American writer Kevin Kelly (*1952) participated in the 1993 festival with his thoughts on “The Bionic Convergence” and in the follow-



American cognitive scientist Marvin Minsky (1927–2016), a leading researcher on Artificial Intelligence, joining the Virtual Worlds – Artificial Realities conference, Ars Electronica 1990.

ing year published his book *Out of Control: The New Biology of Machines, Social Systems, and the Economic World*. Kelly had been editor of the magazine *Whole Earth Review*, helped found one of the oldest online communities in continuous operation “The WELL” (The Whole Earth ‘Lectronic Link) and became the founding executive editor of *WIRED* Magazine in 1992. Drawing upon his experiences with bee keeping, he advocated for the intelligence of swarm-like structures to be applied to technology and computing as well as to structures in society and economy. His initial comment on the status quo of research on artificial intelligence was critical: “The failure to create artificial intelligence in the last two decades has made it embarrassingly clear that the naked clockwork logic of machines alone cannot build a workable robot.”²⁵ He proceeded to cast his vision of what he called a “bionic convergence”: “At the same time that the logic of bios is being imported into machines, the logic of technos is being imported into life.”²⁶

Austrian media artist Christa Sommerer (*1964) and French media artist Laurent Mignonneau (*1967) contributed to the topic of “artificial life” with their installation *Interactive Plant Growing*, which explored the principles guiding the growth of artificial plant organisms in a virtual three-dimensional space. In the following year, Sommerer and Mignonneau won the Golden Nica for Interactive Art with their real-time environment *A-volve*, where visitors could interact with virtual creatures in a pool of water. The installation allowed you to create such creatures with your gestures and to influence their life. Regarding the intentions of their project, Sommerer and Mignonneau pointed out: “*A-volve* reduces the borders between real and unreal, by connecting reality to ‘non-reality.’ Human decision in the creation of a new form and the rules of evolution and selection will create an environment that is open to all possible modifications and selections, following the laws of evolution and creation. The visitor becomes part of the evolutionary system, he is a partner of the virtual organisms and gives and promotes their ‘artificial life.’”²⁷



Concert of the band Kraftwerk at Ars Electronica 1993.

Relationships of the real and the virtual were also investigated in two projects that enabled the visitor to interact with an environment and with others. The German-Swiss group for electronic art, KR+cF Knowbotic Research, won a Golden Nica in the category Interactive Art at Prix Ars Electronica 1993 with their project *Simulation Room*, which they described as a “Mosaic of Mobile Data Sound—A Walkable Data Bank.” *Simulation Room* was presented at the Brucknerhaus parking garage. Visitors there were “equipped with a tracking sensor” and could “interactively explore the system in a physical walk-in room and (...) trigger sounds and influence the organization of the sound elements.”²⁸ They were entering a “black space,” a situation for which they were “not yet equipped with knowledge” and which “provides an opportunity to expand our perception and arrive at a critically reflected, technoid-aesthetic experience.”²⁹

“The purpose of European culture should not be to define a society that identifies itself only in economic terms. It must go beyond this and initiate a dialogue between the individual spheres of society to inspire a visionary approach to culture.”

Van Gogh TV

Van Gogh TV, *Pompino Project* (1990), in: Druckrey, Timothy, Ars Electronica (Eds.): *Ars Electronica: Facing the Future – A Survey of Two Decades*, The MIT Press, Cambridge, Massachusetts, and London, England, 1999, p. 381.

While the *Simulation Room* had provided a rather personal experience, the *Piazza Virtuale* inside the Brucknerhaus in 1994—now under the festival topic “Intelligent Environment”—offered somewhat more noise, action, and entertainment, quite in tune with the condition of the media world in general. Van Gogh TV had run their live interactive television program *Piazza Virtuale* in 1992 at Documenta IX in Kassel for 100 days, and it had won them an Honorary Mention at Prix Ars Electronica in 1993. At the “Service Area a.i.” during Ars Electronica 1994, visitors could access a virtual space, where they appeared as geometric avatars on a specially created surface and found themselves in interaction with other users and a crew of moderators which included the front man of the band “Einstürzende Neubauten,” Blixa Bargeld.

With their game of *Pong*, played by a huge, enthusiastic crowd at Linz Hauptplatz for the opening night of Ars Electronica Festival 1994, Loren and Rachel Carpenter brought audience participation in public space at Ars Electronica to a new level. The American computer graphics researcher Loren Carpenter (*1947), co-founder and chief scientist of Pixar Animation Studios, had developed CINEMATRIX, the system of computer-assisted interactive audience participation, which allowed participants to steer the game by raising either the red or the green side of a reflective wand. The accumulated input from their signals, which were picked up by camera, defined the movement of the game’s controllers. The game *Pong* itself was quite simple, reminiscent of early video games you could play on your TV at home. The experience of the collective game play however, was a new one for everybody involved, and turned the game into a large-scale experiment with processes inside large crowds and questions raised about swarm intelligence. Loren and Rachel Carpenter noted: “Games that require participants to let go of exactness and make intuitive decisions seem to put people in touch with each other in a different way, to go beyond the usual linear mode of thinking.”³⁰

"From the outset Ars Electronica set its goals decisively: to sustain a focused assessment of the impact of computing on all aspects of culture and creativity."

Timothy Druckrey

Timothy Druckrey, "Ready or Not?," in: Druckrey, Timothy, Ars Electronica (Eds.): *Ars Electronica: Facing the Future – A Survey of Two Decades*, The MIT Press, Cambridge, Massachusetts, and London, England, 1999, p. 19.

The Rise of the Internet — Wide Awake in a Wired World

When by the mid 1990s the internet had become available and accessible to the public, it was like a door opening to a new territory for many artists. A lot of enthusiasm and high expectations met with critical positions and warnings; and there were different visions of what the internet and the space it opened up actually were and what they would mean for art and for societies. After initial approaches in the year 1994 under the heading "Life in the Net," the Prix and the Festival of 1995 mirrored those discussions and made them an important part of Ars Electronica. The Festival featured symposia on "Mythos Information" and "Wired World," and a number of "Net projects." Peter Weibel in his introductory essay to the festival catalogue noted: "Just as centuries ago, with the aid of atlases and meridians, new territories would be measured and devised, discovered and construed, so too, the global data networks represented a new, if virtual, geography. The discourse of cyber-culture has expanded to the data highways. We no longer inhabit streets and buildings, but also cable channels, telegraph wires, E-mail-boxes and, thus global digital dependency."³¹ Prix Ars Electronica added a new category named "World Wide Web." Hannes Leopoldseder referred to the internet as a "new form of human communication, as a new global medium currently growing faster than television, radio, or the printed media ever did" and highlighted the wish to "emphasize the cultural dimension of this new medium."³²

The arrival of the internet in the form of the World Wide Web, which contained websites with text, images, and sound, and which could

be accessed with a graphic browser software called “Mosaic,” was in fact a key experience of breakthrough. The American writer and pioneer of online culture Howard Rheingold (*1947) had spoken at Ars Electronica Festival in 1994 about the “future of democracy.” Rheingold, the author of the 1993 book *The Virtual Community – Homesteading on the Electronic Frontier* recalled a special, revelatory moment during a visit to Japan in early 1994 with his friend Joichi Ito (*1966), then an entrepreneur and activist in his later twenties, today director of the MIT Media Lab: “A Mosaic page painted itself on his PowerBook screen. (...) Even before he issued a command, I knew I was looking at a new world. (...) I remember my first sight of a Macintosh in 1984. I remember the first time I logged onto The WELL in 1985. I remember the vertigo of reading through the names of thousands of newsgroups the first time I fell into Usenet. I’ve learned to recognize those moments when a technological breakthrough sucks us all into a new dimension.”³³

The internet as it presented itself in 1995, was the product of decades of development, showing traces from many different influencing factors. Its early beginnings in 1968, as the ARPANET, mark it as a child of cold war politics, conceived inside the military complex of the US. Its basic architecture of distributed nodes without a central authority was intended to make it resilient in case of a nuclear strike. Later it would be exactly this military aspect in its DNA that kindled hopes for a resilience against regulation and censorship. Expanded in the early 1980s, the internet for a long time remained restricted to use by academic institutions. It became publicly available only in 1993 with the “National Information Infrastructure Act” from US Vice President Al Gore, which allowed also private investment and made the internet part of the commercial sphere. It is this long government-funded period in its history, which the internet spent shielded off from commercial interests, that added to its DNA the element of a “peer to peer” culture of mutual sharing. Quite in this spirit of openness and collaboration, in 1989 the English computer scientist Tim Berners-Lee conceived the concept and the different technical parts—including the address systems of URLs, the

Hypertext Transfer Protocol HTTP, and the Hypertext Markup Language HTML to create pages on the WWW—that together result in the World Wide Web. At the core of the concept lay “hypertext,” which allows connections between all kinds of information. Hypertext finally brought earlier ideas to reality: the concept of a Memex machine envisioned by the American engineer and pioneer of analog computing Vannevar Bush (1890–1974) in his 1945 article “As We May Think” and by the American philosopher and information technology pioneer Ted Nelson (*1937), who coined the term “hypertext” in the 1960s and formulated an early concept of an easy-to-use computer network, the “Xanadu project.” Berners-Lee had also taken care of the development of the first “browser,” the client software needed to access and display web pages. For Berners-Lee the WWW was intended as a tool for collaboration and consequently his browser also allowed the user to modify web pages, a feature that the first widely spread browser, NCSA Mosaic, which came out in 1993, did not offer. In the later 1990s this idea would resurface with tools for weblogs and for wikis, the most prominent example of which is certainly Wikipedia, which was founded in 2001.

The World Wide Web and Notions of “Webness”

In 1995 Tim Berners-Lee was awarded with a Golden Nica for his concepts of hypertext, in the category Interactive Art. In the same year, the jury for the new category World Wide Web was pushing the boundaries, while formulating the criteria to judge web projects in a young, but rapidly evolving field. As Christine Schöpf recalls, jurors “discussed how to concisely formulate the essence of this networked world’s makeup: community forming, virtual identity, social impact and artistic merit were a few of the criteria put up for discussion.”³⁴

The jury—which included also Derrick de Kerckhove and Joichi Ito—came up with concepts of “webness,” looking for things that could only be done in this medium, and for new aesthetics based on web technology. The

American economist Robin Hanson (*1959) received the first Golden Nica for his project *Idea Futures*, where ideas and hypotheses could be traded like futures contracts. Derrick de Kerckhove described this as “collective forward thinking in action,” where you can see how ideas grow when people invest in them. The Award of Distinction went to “t0 Public Netbase,” a cultural media initiative and open access internet platform in Vienna founded by hypermedia researcher Konrad Becker (*1959) and technologist Francisco de Sousa Webber in 1994. One of the Honorary Mentions at Prix Ars Electronica 1995 went to the “Microsoft Hate Page” by Chris J. Mutter (*1973), who at the time worked as a network administrator at Ars Electronica as well as for organizations of counter culture, like the Stadtwerkstatt or the netculture initiative servus.at. During those years, the software company had a near monopoly with its operating system Windows and was considered “evil” by all those who saw the big tech corporations as enemies of freedom of the internet and the openness of computer technology. Namely because of its aggressive imagery regarding the founder of Microsoft, Bill Gates (*1955), the “Microsoft Hate Page” caused various tensions and moved from server to server. The dispute points to a rising controversy about the future of the internet and cybercultures in general.

The festival in 1995 presented a number of internet platforms which had been founded and were run by artists. Besides “t0 Public Netbase” there were also “The Thing” from New York and several “digital cities,” pioneering among them “De Digitale Stad (The Digital City) Amsterdam” and the “International City Berlin.” The Dutch media scholar and activist Geert Lovink (*1959), also one of the founders of the influential “Nettime” mailing list, explained key aspects of the Digital City Amsterdam, that neither charged entry fees nor tracked its users: “The digital city is global in its connections, national in its language and local in its basic information.”³⁵ Those platforms provided virtual neighborhoods, critical discourse, and not-for-profit access to the internet, thus creating non-commercial areas of cyberculture at a time where commercial enterprises discovered the

internet and began to change it. It is not without symbolic meaning that also around that time, more precisely in 1994, Jeff Bezos founded Amazon as an online marketplace for books.

Many artists’ initiatives of that time were continuing and expanding the work of earlier online communities that had existed separately from the internet and were part of the struggle by artists for access to technology and communications infrastructures. “The Thing” had been founded in 1991 as a conceptual art project based on the technology of a Bulletin Board System (BBS) by the German-American artist Wolfgang Stähle (*1950). In 1995 “The Thing” launched their website during Ars Electronica and turned into an international net community of artists. Robert Adrian X and Gerfried Stocker had launched their project *ZERO – The Art of Being Everywhere* in 1992, including ZERO.net as an international BBS-network, which served not only as a platform for art projects, but also as a tool for production.³⁶

Exploring Cyberculture and Meeting the “Digerati”

After the mid 1990s the focus of many artists shifted towards different strategies to experiment with—and to adopt—the new spaces of cyberculture with the aim of enabling participation. In 1994 Howard Rheingold expressed it like this: “Clearly, now is a time for artists to take their place strongly in the dialogue about the kind of societies and the kind of people we are creating through the technologies we are choosing to use.”³⁷ At first, optimistic expectations dominated the public discussion and were counterpointed by certain critical artistic positions, as Joichi Ito—who does not consider himself an artist—recalls almost 25 years later: “In 1995 everything was pretty techno-utopian. We did not envision the dark side at the time. But this dark side, which is visible now, was already foreshadowed in some of the art we saw back then.”³⁸ The same Howard Rheingold, who was widely perceived as propagating the liberating and educational potential of online collaboration and communities, had also uttered early warnings in 1993:

“(…) The wise revolutionary keeps an eye on the dark side of the changes he or she would initiate. Enthusiasts who believe in the humanitarian potential of virtual communities, especially those of us who speak of electronic democracy as a potential application of the medium, are well advised to consider the shadow potential of the same media. We should not forget that intellectuals and journalists of the 1950s hailed the advent of the greatest educational medium in history—television.”³⁹

Around what was then called “cyberculture,” which reached far beyond the internet into gaming, simulations, etc., an entire scene had grown in the US, namely on the West Coast. This shaped much of the discourse at that time and by influencing key protagonists in the companies and research labs of Silicon Valley had in fact shaped the culture and the tools themselves. In retrospect this cyberculture is seen now as a product of the alternative culture of the 1960s, which—although often characterized by a reserved distance towards technology and a leaning toward a “back to nature” mentality—had merged with a culture embracing computer technology in the 1980s.⁴⁰ Timothy Leary, who spoke at Ars Electronica in 1990, expressed some of this in his often quoted dictum “the PC is the LSD of the 90s.”

Following Kevin Kelly in 1993 and Howard Rheingold in 1994, the American poet and cyber activist John Perry Barlow (1947–2018) also spoke at Ars Electronica Festival in 1995, when there was a lot of talk of people “migrating to cyberspace” and of cyberspace as a new “frontier”: “When we are all together in Cyberspace then we will see what the human spirit, and the basic desire to connect, can create there. I am convinced that the result will be more benign if we go there open-minded, open-hearted, excited with the adventure, than if we are dragged into exile.”⁴¹ Another key figure from that group of “Digerati”—a term coined by John Brockman⁴²—was the American writer and activist Stewart Brand (*1938), one of the founders of the online community The WELL in the 1980s, who only made his appearance at Ars Electronica much later in 2004.

At Ars Electronica the “digerati” found themselves amid a highly diverse global community of artists and scientists, many of whom did not share the techno-utopian mindset often associated with the West Coast of the US. Ars Electronica’s roots in a specifically European critical discourse on media art and technology were strong enough for neither the festival nor the Prix to get swept away in the “digital revolution.” Ars Electronica continued to steer due course along its founding ideas around art, technology, and society and made its own contributions to the emerging “cybercultures.” Two events at the 1995 Ars Electronica Festival highlighted this connection between a knowledge of the past and the daring steps towards the future.

Radio and Television Merge with Telematics and the Internet

The *Checkpoint '95* project drew upon the history of Linz, which had been a divided city for the decade between the end of World War II in 1945 and the end of Allied occupation of Austria in 1955. During these 10 years, the Danube served as the border between the US sector south of the Danube with the Hauptplatz and the city center and the Soviet sector in the part of the city called Urfahr north of the Danube. To cross from one part of the city to the other, citizens had to show their papers at the Allied Forces’ checkpoints installed on the bridge, the Nibelungenbrücke. On that very bridge, US and Soviet troops had met in 1945 at the end of the war. In 1995, after the end of the Cold War, a project combining Television and telepresence offered a kind of re-enactment of that encounter between veterans from both sides, who now resided in Moscow and in New York. Two small remote-controlled cars were steered towards each other across the bridge in Linz by the veterans—equipped with head-mounted displays—in the TV studios in Moscow and New York. The telepresence was made possible by a combination of three simultaneous live television programs connected via multimedia satellite links and data lines.

The project was initiated by the team of the artists' cultural collective Stadtwerkstatt Linz. They involved the American curator Kathy Rae Huffman (*1943), who brought them together with people from the Russian State Television and Radio Broadcasting Company in Moscow and Paper Tiger TV in New York, and with Ars Electronica and ORF to co-produce. Huffman, an expert on video and media art, was a regular contributor to Ars Electronica by then, with her involvement dating back to the 1980s. One aspect of her work was bringing artists into collaborations with television channels. For Stadtwerkstatt Linz, the project was part of its broader agenda in working with television: "The main object was not only to give artists the opportunity to present art in television, but also to have them work with this medium on a live and experimental basis. (...) Despite some hesitation at the beginning, Ars Electronica has in the past few years succeeded in giving artists an opportunity to work with TV as a medium on an artistic and experimental basis within the festival."⁴³ The Russian-American new media researcher Lev Manovich (*1960) commented on some of the project's aspects by connecting the telepresence with the concept of a Potemkin village: "Umberto Eco once defined a sign as something which can be used to tell a lie. This definition correctly describes one function of visual representations—to deceive. But in the age of electronic telecommunication we need a new definition: a sign is something which can be used to teleact."⁴⁴

Horizontal Radio was a live 24-hour multimedia telematic radio network project that took place from noon of June 22 until noon of June 23, 1995. It was conceptualized and coordinated by Gerfried Stocker of the x-space artists' group and Heidi Grundmann, founder and director of ORF Kunstradio, and involved 22 radio stations worldwide as well as 25 network nodes. It used the radio network infrastructure of the European Broadcasting Union (EBU), which was founded in 1950 and has 117 members—all Public Service Media Broadcasters financed and controlled by the public—in 56 countries. *Horizontal Radio* formed a single worldwide

performance environment for over 100 artists, musicians, and writers. The project explored "unknown territory" by combining broadcast radio with the internet in a completely new way.⁴⁵ Gerfried Stocker and Heidi Grundmann also emphasized the aspect of audience participation: "The audience is real, but its presence is only virtual. At any time, a member of the audience can switch the sides and intervene actively in the artistic process. *Horizontal Radio* is part of the process of confronting the social and artistic implications of new media technologies."⁴⁶

The 24-hour duration of the project and its international network of participants naturally contained a reference to Robert Adrian X's 1982 telecommunications project *The World in 24 Hours*. *Horizontal Radio* carried the ideas from pioneering telecommunication art projects further and created an easily accessible, open, and collaborative environment, where—in tune with the basic ideas of the internet that made no distinction between sender and receiver—everyone could creatively participate. The project, however, was not merely an empty container for various contributions, but also had a principal theme: migration. Migration at that point was seen "as a metaphor for a changing society and the transition to a culture of telecommunication and telepresence (...)." ⁴⁷

“Three factors will be characteristic of the AEC in Linz: interactivity, scenarios in a virtual space, and networking. In this sense, the AEC is no ‘center,’ but rather a node in a dynamic ‘net.’ ”

Hannes Leopoldseder

Hannes Leopoldseder, Statement from 1992, in: Druckrey, Timothy, *Ars Electronica* (Eds.): *Ars Electronica: Facing the Future – A Survey of Two Decades*, The MIT Press, Cambridge, Massachusetts, and London, England, 1999, p. 9.

Planning Ars Electronica Center — The Art of Turning A Vision into Reality

With so much attention focused on questions surrounding internet and cyberculture during the Ars Electronica Festival in June 1995, something else went widely unnoticed: That very same year was a major turning point for Ars Electronica as an institution. For around four years a kind of background process—like those computer processes running in the background without user intervention—had been underway to fundamentally change Ars Electronica: the creation of the Ars Electronica Center.

Buildings lend weight and stability to institutions and therefore many institutions strive to have their own. A year-round presence enables an institution to exert a far stronger influence than even the most impressive annual event ever could. And, as Hannes Leopoldseder had been well aware of when adding the Prix Ars Electronica to the Festival in 1987, an institution needs to come up with something new every 5 to 6 years in order to stay vital and fresh. So in 1991, when Hannes Leopoldseder heard about a public building site with no designated use, he immediately took steps to seize the opportunity. It was an ideal high visibility location in Linz: the so-called Donautor at the northern bridgehead of the Nibelungenbrücke, just across the Danube from Linz Hauptplatz. The architects Klaus Leitner and Walter Michl had won a contest in 1988 for the entire area south of that bridgehead and proposed a public building with a cultural use for the top position by the bridge. Several institutions were competing for this site and it was generally believed that the city’s own fine arts museum, the Neue Galerie, would win and house their collection of graphics there. But the decision had not yet been made and the mayor of Linz, Franz Dobusch, seemed to be considering other options.

Leopoldseder came up with a first draft of the project idea for the Ars Electronica Center and in October 1991 he presented it to both Dobusch and the cultural director of the city, Siegbert Janko. After a discussion with international experts in the field, including Roy Ascott and Kathy Ray Huffman, a more detailed proposal followed and a project study was carried out in cooperation with the Swiss architect Edouard Bannwart (1943–2007) and his team at ART+COM Berlin. ART+COM was a private organization that specialized in computer-aided design and presentations and was therefore the ideal partner to develop Leopoldseder's initial ideas further and also to transform them into state-of-the-art—or rather visionary—visual form. The visualizations played an important role in convincing the stakeholders that Leopoldseder wanted to buy in his idea of the Ars Electronica Center, as the Ars Electronica Center was mainly referred to in the papers and presentations. Such computer-generated images of architecture were quite rare at that time and created a strong and colorful impression of the finished spaces that allowed a vision of this “Museum of the Future” to form in many minds. The vision put emphasis on learning and knowledge, which would become a defining element of the Ars Electronica Center and even gain in relevance in the years to come. And there was “Cybercity Linz,” a computer-model of the city promising insights into modern tools for urban planning and connecting the Ars Electronica Center with Linz. The presentations also contained a so-called “Datarium,” a room for 3D animations, simulations, and visualizations. The “Datarium” was an early vision of what would become the CAVE in 1996 and then “Deep Space” in 2009. Experiences of galaxies and cosmic space as well as looking at micro-level dimensions of nature and life itself were promised. Such promises were still beyond what was realistically and technically feasible at the time, but they would be both realistic and feasible by the time the Ars Electronica Center opened, and even more so in the following years.

None of this was standard technology at the time and none of this was familiar to either decision makers or the citizens of Linz. The proposed

areas and functionalities of the Ars Electronica Center were in a way a bet on the future, that is: on future technological development and primarily on the availability and affordability of the technologies in question. In the actual preparation of the installations, one of the main concerns was that the technology used would be outdated by the time that the Ars Electronica Center opened. So the visionary quality of the early concepts of the Ars Electronica Center applied to both the conceptual ideas as well as the bold outlook on technology. Although the initial concepts did in fact touch upon the challenges of the information society and integrate other insights from more than a decade of Ars Electronica, there was only moderate mention of art or media art, while the presentations put rather a strong emphasis on advantages that the Ars Electronica Center would bring for the city as well as for the regional economy.

So Leopoldseder put a lot of time and energy into reaching all stakeholders and convincing them of his ideas one by one. Looking at the kinds of presentation materials he used for this immediately makes clear just how “far out” and futuristic all this must have seemed to many of the decision makers. The images were mostly created on the computer by the ART+COM team, who knew how to design compelling presentations. A video with a moderator performing a complete walk-through of the future Ars Electronica Center was produced by the ORF using the simulations from ART+COM. This film was projected at certain events and meetings for stakeholders with mesmerizing effect. The presentation of these visualizations however, was mainly done in printed form. Hannes Leopoldseder and Peter Schöber (*1970), who at that time was working for ORF Upper Austria with an increasing focus on the marketing and sponsoring deals for the new Ars Electronica Center, went to many presentations with a carousel slide projector. They filled the slots of the circular rotary slide projector tray—technology from the 1960s—with slides made from the computer renderings, specially selecting a set of slides for each occasion, be it for a group of city council members, for regional entrepreneurs, or for the different political parties. They took good care to

cultivate a sound basis for communication with all political parties in order to ensure broad support for their project. Another highly “analog” instrument in Hannes Leopoldseder’s toolkit was a small booklet of pictures with those same renderings of the “Museum of the Future.” This small booklet was like a mini photo album from those days of camera film and photo prints, which people used to carry around with them to show off their holiday pictures. Leopoldseder always carried just such an album around with him, ready to give it to stakeholders after presentations, to remind them of their glimpse into the future. One politician confessed to Leopoldseder, the day after such a presentation, that his young daughter had been so excited by the pictures in the mini album and was so keen to visit the Ars Electronica Center that her father simply had to vote in favor of the project.

The City of Linz Decides on the Creation of the Ars Electronica Center

On March 19, 1992 the City Council of Linz voted for the AEC, selecting Leopoldseder’s project from a range of competitors for the building at the bridgehead, and also decided upon the creation of a new institution, the “Ars Electronica Center — Museum of the Future” as a legal entity owned by the municipality. The ground-breaking ceremony followed in 1993 and Leopoldseder and Siegbert Janko were entrusted with the further coordination of the project. Siegbert Janko (*1945), had become cultural director of Linz in 1990 and turned out to be a vehement and persevering supporter of Ars Electronica over many years. The project involved, in addition to ART+COM, a number of external consultants, whose expertise flowed into this complex and unprecedented endeavor. The typical history of many large cultural construction projects such as the Centre Pompidou in Paris, the Sydney Opera House, or the Museumsquartier in Vienna, characteristically entails long gestation and planning processes, public controversy, and even political and media campaigning against the project. The building of an opera house in Linz—the Musiktheater—had such a long and troublesome

history involving a number of potential construction sites being considered, two rounds of architectural competitions, a public opinion poll, and many years of delay until it finally opened. Despite the extremely exposed building site and a function and content that was difficult to grasp, the Ars Electronica Center did not have such a history, which seems to be due to Leopoldseder’s prudent lobbying and to the fact that the mayor of Linz, Franz Dobusch, stood behind the project the whole time. Dobusch (*1951), who studied Mathematics and Physics before turning to Law, had become mayor in 1988 at the age of 36. The fact that both Dobusch and Leopoldseder reached their leading positions at a relatively young age may have made them ready to entrust an even younger man with the artistic direction of the new Ars Electronica Center in 1995, the media artist Gerfried Stocker, who was just 30 at the time.

The position of artistic director of the AEC had been procured by tender as part of the preparations for the finish and opening of the new museum. After winning a Prix Ars Electronica Award of Distinction in 1994 with the project *realtime* and leading the preparations for the *Horizontal Radio* project, where the ORF Upper Austria studios served as a node, Stocker was by then quite well known to Christine Schöpf. Schöpf and Stocker also shared collaborators, namely the media art pioneer Robert Adrian X, who was well acquainted with Ars Electronica since the early days of the festival, and Heidi Grundmann, director of ORF Kunstradio, who—among many other projects—conceptualized *Horizontal Radio* together with Gerfried Stocker. Their paths had crossed several times—also at international events for electronic art in the US, where Gerfried Stocker and his partner in the artist’s group x-space, Horst Hörtnner, had presented their installation *Winke Winke*. These events included Siggraph 94 in Orlando, Florida and the “Electronic Café International,” a performance space with a focus on collaborative telecommunications art, founded and run by Sherrie Rabinowitz (1950–2013) und Kit Galloway (*1948), in Santa Monica, California. Christine Schöpf encouraged Stocker, an artist with a strong background

in technology and someone capable of coordinating complex cooperation on an international level, to apply for the position of artistic director of the Ars Electronica Center.

Immediately before Gerfried Stocker was about to be officially appointed as director of the Ars Electronica Center in 1995, events started to escalate. Peter Weibel, who had been artistic director of the Ars Electronica Festival since 1992, and the director of LIVA and Brucknerhaus, Karl Gerbel, gave a press briefing at the end of the Festival in June. They announced that they would both be stepping down from their positions with Ars Electronica and that this would be the end of Ars Electronica in its previous form. The City of Linz had informed Gerbel that the Ars Electronica budget, which had gone to the Brucknerhaus up until that time in 1995, would in future go to the newly opening Ars Electronica Center. That press briefing left journalists with no clear idea about what was going on or what the future of Ars Electronica would be. Leopoldseder soon convinced the relevant decision makers that this was not the end of Ars Electronica and that the Ars Electronica Center would be also responsible for realizing the annual festival from now on. Accordingly, Gerfried Stocker was appointed artistic director of both Ars Electronica Festival and of the Ars Electronica Center, while the Prix would continue to be realized by the ORF in cooperation with Ars Electronica.

And Finally Everything Becomes New

These somewhat turbulent moments finally resulted in a completely new structure for Ars Electronica, which received not only its own building in form of the Ars Electronica Center with its own organizational and legal structure behind it, but also an artistic director responsible for the entire program. This new structure brought stability and continuity by putting an end to several years of tensions between competing organizations and rival creative teams with different visions of the direction that Ars Electronica should take. Peter Weibel and his team working for the LIVA, including Katharina

Gsöllpointner, were criticized for leaning too far towards the avantgarde and the art world, for loading the symposia and the festival catalogues with too much theory and science, and for including Weibel's own artistic projects in the festival program. The team at the ORF around Hannes Leopoldseder and Christine Schöpf in return was accused of leaning too far towards popular computer art and putting a stronger emphasis on spectacular events than on artistic substance. In fact, both teams made important contributions to the development of Ars Electronica during those years of rapid change and the digital revolution and contributed to the breadth and the diversity of the organization's scope, which became an integral part of its identity.

So in the summer of 1995, Gerfried Stocker, who had been living in Graz, moved to Linz and plunged into the task of preparing the new Ars Electronica Center for its opening, which was scheduled for September of the following year. He stepped into a planning process that was of course already quite advanced and pre-defined at that point. Plans and contracts for contents, interior architecture as well as technical infrastructure and equipment of the Ars Electronica Center were mostly fixed. Stocker took the challenge and—by keeping many things and changing even more of them—successfully re-designed almost every part of the house according to his vision. He was joined by his long-time collaborator Horst Hörtnner as head of technology during that process, and by Jutta Schmiederer as producer of the next Ars Electronica Festival, which would take place in September 1996 and coincide with the opening of the Center. An early announcement of the new Ars Electronica and the opening of the Ars Electronica Center took place at a party during Siggraph 95 at the Figueroa Hotel in downtown Los Angeles in August 1995. There at the hotel pool and bar, many key figures of the international electronic art scene—including Jaron Lanier and Dan Sandin—met with the new artistic director of Ars Electronica. And when they returned from California, Stocker and his team entered a one-year high-speed tunnel of work to turn Hannes Leopoldseder's vision, which had now become Gerfried Stocker's vision, into reality.



A MUSEUM AND A LABORATORY FOR THE FUTURE 1996–2003

When the Ars Electronica Center opened in 1996, Ars Electronica finally—after years of preparation and lobbying—became a permanent institution. This new “Museum of the Future” offered an all-season program of exhibitions, installations, and new models of dialogue-oriented educational programs. With the creation of the Ars Electronica Futurelab, an independent research and development facility—in those years with a focus on virtual and augmented reality and human-computer-interaction—was added to the setup of the institution. Ars Electronica now rested on four pillars, able to cover inhouse most of the topics it came to address: Festival, Prix, Center, and Futurelab.

15 More Than a Prototype – The First Ars Electronica Center

16 Memesis – Re-Formatting the Festival

**17 Finding Out What the Future of the Laboratory and
a Laboratory for the Future Could Be**

18 The Art of Staying Ahead of the Times

**19 Into A New Millennium – Ars Electronica Amidst
the Scenes of Global Conflicts**



"... the Ars Electronica Center cannot be regarded simply as a center of cultural competence, but—where culture is understood as technological evolution—as itself an art project of this culture."

Gerfried Stocker

Gerfried Stocker, "Vector in Open Space" (1996), in: Druckrey, Timothy, Ars Electronica (Eds.): *Ars Electronica: Facing the Future – A Survey of Two Decades*, The MIT Press, Cambridge, Massachusetts, and London, England, 1999, p. 149.

More Than a Prototype – The First Ars Electronica Center

Already from afar—when crossing the Nibelungenbrücke over the Danube—the freshly completed Ars Electronica Center at the bridge head came into view for approaching visitors. The slim structure was characteristically marked by a full visibility of both the spacious lobby and the café on the top floor, which had transparent glass walls running from floors to high ceilings. In between were two more floors without any windows, their facades covered with stone, large letters forming the institution's name and a strange, unknown graphic symbol next to it. Such windowless rooms seemed quite befitting for exhibitions and installations full of computer screens and projections, but were in fact a relic from the building's original purpose, which was to house the city's graphics collection. So the fact that both analog media—like graphic works on paper—as well as digital media defy direct sunlight, somehow symbolically linked those two "worlds" at the time of the "digital revolution." The actual link between the design of the building by architects Klaus Leitner and Walter Hans Michel and the final functional concept was not so easy. For the interior and exhibition design, the Austrian architect Rainer Verbizh (1944–2018) had been contracted. Verbizh had lived in Paris for many years and had been involved in projects like the Centre Pompidou and the Parc de la Villette, experience that was beneficial for this task. In Linz he saw the challenge of trying "to package the hardware to make it look as attractive as possible,"¹ while knowing at the same time that this hardware would very soon be replaced by entirely new devices. Gerfried Stocker had quite a different position in that regard: "Neither to hide technology nor to mystify it but rather to make its applications accessible and understandable in a very concrete way is AEC's aim."² So intense

discussion ensued, until the final shape of things inside the Ars Electronica Center was settled, where the technical equipment and the interior design had spread to cover up much of the original building's architecture.

Expectations were running high, and when the Ars Electronica Center opened to the public on September 2 1996 it more than fulfilled them. The path “from idea to reality” had not been an easy one. Hannes Leopoldseder characterized the situation of entering into a new digital era: “There is much that cannot yet be seen or identified, much that is still hidden; no one really knows yet where the digital revolution will lead in a new century.”³ Gerfried Stocker titled his first programmatic text about the Ars Electronica Center in a similar vein: “Vector in Open Space.” That vector, luckily, could originate from a known coordinate that had been defined by Ars Electronica's original vision, shaped through the experiences and the success of 17 years existence of Ars Electronica Festival and 9 years of Prix Ars Electronica. Stocker called this well-tested model the *raison d'être* of the Ars Electronica Center, highlighting an “artistic commitment as the guiding principle for navigation through a world in the throes of a media-led transformation.”⁴ He went even further than that: “(...) the Ars Electronica Center cannot be regarded simply as a center of cultural competence, but—where culture is understood as technological evolution—as itself an art-project of this culture.”⁵ This understanding in fact defined the guidelines for all future development and gave all the conceptual freedom needed for this daring project.

When entering the Ars Electronica Center, visitors almost immediately encountered two quite different kinds of experience: Between the different digital displays of the guidance system, there was a little garden with flowers and a robot arm in the middle. The *Telegarden* invited you to join a global community of people, who were using a web interface to take care of this (real) garden. Their actions, like watering or planting new seeds, were executed by the tele-controlled robot. The community was open to new members, but you had to work your way into the circle of those, who—after



Telegarden installation by American artist Ken Goldberg (*1961) at the Ars Electronica Center, 2001

100 logins—were allowed to plant seeds. The *Telegarden* was an art project created by American artist Ken Goldberg (*1961). It showed not only the life of the plants, which could also be viewed remotely through the robot's cameras, as well as the growing of an online community in action, forming itself around a shared infrastructure and a common task. With its community of 10,000 users from different countries, it also gave an impression of the idea of the global village that started to gain new contours with the spread of online culture. On a day-to-day level it also offered the unusual immediate experience of communicating and working with a tele-controlled robot. And it was—in the midst of all that “virtuality”—a real garden that could be enjoyed in its tranquility of slow growth and development both on site in Linz and via the internet.



Virtual Reality flight simulator *Humphrey* gave visitors the immersive experience of flying over Linz and Upper Austria, Ars Electronica Center, 1996.

Hovering just a few meters above the lobby of the Center, an installation called *Humphrey* promised a very different kind of experience to the contemplative *Telegarden*, albeit one also connected to a deeply human desire. *Humphrey* was an unusual kind of flight simulator that gave visitors the experience of flying—complete with the physical sensation. Instead of entering a flying object, you put on a kind of suit plus a head-mounted display. You were then brought into a flying position, where you could navigate a virtual reality environment through your own body movements. From the

roof of the Ars Electronica Center you started your virtual flight over Linz. This special form of virtual reality experience brought visitors into intimate contact with technologies and their potential.

Even in the preparation phase, the initiators and the core team of the AEC all shared the understanding that “a project so exposed to the elements of change and innovation requires a strong identity that sets it above considerations of transient techno-chic and short-lived-hype.”⁶ Further elements were added to the identity that continued to be based on the “art, technology and society” formula previously linked with both the Festival and Prix. The Center was described as the “prototype” of a “Museum of the Future” and—consequently— as a “work-in-progress.” So the terminology used to introduce something that was seen as breaking new ground—both in the local as well as in the international context—related to art (“work-in-progress”) and engineering (“prototype”) and thus expressed the characteristic kind of cross-disciplinary approach that is intrinsically linked with Ars



Netsurf: A computer terminal provides convenient access to the Internet and the Ars Electronica Maindeck video-on-demand-system with the whole history of the Ars Electronica Festival. 1996.

"The origins of the character are located in virtual space. It has a transparency and intangibility that reflect the ephemerality of the new digital infrastructures."

Johannes Zeitelberger

Johannes Zeitelberger / Missing Link, Guide to the Digital Future, in: Janko, Siegbert / Hannes Leopoldseder, Gerfried Stocker (eds.), *Ars Electronica Center – Museum of the Future*, Ars Electronica Center Linz, 1996, p. 82

Electronica. These two terms also mirrored the speed with which technology was developing and the profound shifts that the understanding of the "digital revolution" was going through.

The identity of the Ars Electronica Center found visual expression primarily in two elements, one derived from the building's architecture and the other a specially designed graphic element. This graphic element was the creation of Johannes Zeitelberger (*1963), a consultant and founder of various IT companies, and his team at Missing Link in Vienna. Zeitelberger referred to it as "the character," which he saw as the combination of a maze—symbolizing the search for the right path—and a kind of crossing over, which stood for the encounter of two different factors thus creating something new. He also gave the "character" a name—YOUK—and explained that the character's only option for action was a replication of itself.⁷ This notion is somehow reminiscent of Richard Dawkins' concept of the self-replicating cultural unit of the "meme," which would become connected with Ars Electronica at the 1996 Festival "Memesis." The character, however, proved its "memetic" qualities by becoming Ars Electronica's omnipresent logo up to this day, although probably few still remember its origin. Besides the logo, two colors became part of Ars Electronica's identity for several years. They could be found inside the building and were part of Leitner and Michel's original architectural concept. Orange, for instance, was the wall color outside the elevator shaft, running through the entire building, and a special color blue completely covered the inside of the staircase. That blue was mainly understood as "blue-box blue," the color of television studio backgrounds used for chroma key compositing, which made it possible to place a person in the foreground in front of any moving imagery. This method, whose origin goes back to the 1930s, had been based on the color blue because human skin contains very little blue. While the actual hue of blue from Ars Electronica Center's staircase may have changed in its various applications in print and on digital screens, we were somehow also reminded of that specific blue that the French painter and performance artist Yves Klein (1928–1962)

“The aim was to provide a real-world proving ground for the vision of a new quality of participation and of empowerment of the individual via open networks and systems. This was a matter of emancipated enlightenment (...). Enthusiasm not for the technology itself but for what you could do with it when you made the leap from the position of consumer to that of designer and producer.”

Gerfried Stocker

Gerfried Stocker, “Nothing Is As Fascinating As The Future”, in: Leopoldseder, Hannes, Christine Schöpf, Gerfried Stocker (Eds.): *The Network for Art, Technology and Society – The First 30 Years Ars Electronica, 1979–2009*, Hatje Cantz Verlag, Ostfildern, 2009, p. 232.

had mixed and referred to as his “International Klein Blue”—another of the subliminal connections of Ars Electronica with 20th century modernity.

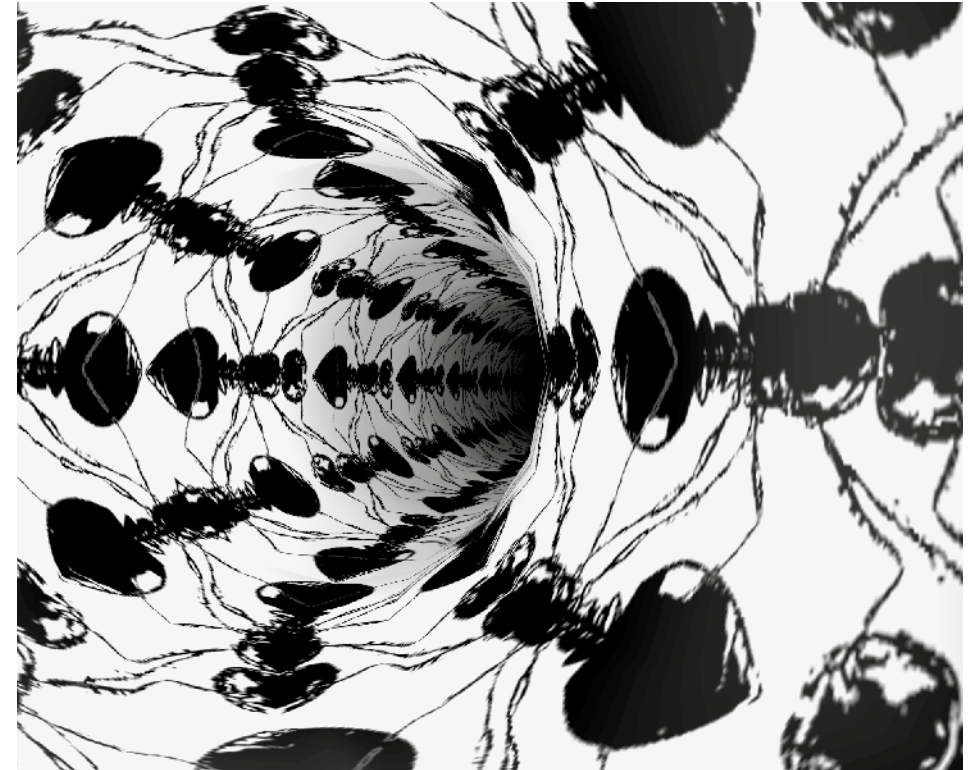
Descending to the basement meant approaching and—after some waiting and preparation time—then entering a small room that was considered to be the main installation of the Ars Electronica Center. The dimly lit premises and the limited dimensions of that room gave the feeling of entering a deep underground cave or a miniature theater with no seats and no stage. You were part of a small group of people wearing shutter glasses and—if you were lucky—you were the one holding a controller in your hands. The three dimensions of the cube you were in each measured 3 meters, but when the lights went out and the simulation started, all of a sudden you found yourself in a different world. Meadows stretched far into the distance and flowers at your feet seemed to be waiting to be picked. Streets lined with historic buildings invited you to stroll through them. Or a multitude of cave-like spaces—connected to each other and lined with giant ants—could be explored and navigated in ways unknown in the real world.

This cave-like environment was in fact named the “CAVE”—an acronym for “Cave Automatic Virtual Environment.” The name was also intended as a reference to the Allegory of the Cave from *The Republic*, which was written by the ancient Greek philosopher Plato almost 2,500 years ago. This allegory has been repeatedly explored throughout the history of philosophy and bears special significance to media since it raises numerous questions regarding reality and virtuality, and to the role of the senses. The CAVE was an immersive virtual reality installation with 3D-projections on three sides plus the floor of a cube with 3 meters on each side. It had been developed by a team around the American artist and researcher Dan Sandin (*1942) and the American computer graphics pioneer Thomas A. DeFanti (*1948), directors of the Electronic Visualization Laboratory (EVL) of the University of Illinois at Chicago. So far, the CAVE had found use inside academic institutions and for industrial development.

"To go to your own limits of thinking and beyond, is the key for innovation and development. So we made crossing frontiers a principle of Ars Electronica Center and—contrary to conventional museums—put education in the first place."

Gerfried Stocker

In a conversation with the author, Linz, 2019.



CAVE project created by Austrian artist Peter Kogler for the Ars Electronica Center, realized in 1999.

It was actually a double “coup” to install this first CAVE outside of the US at the Ars Electronica Center in Linz. The CAVE at the Center would be the first to be continuously open to the public and to be used by media artists and artist-developer teams. Convincing Dan Sandin and the EVL was an important step, but funding the technical infrastructure required for the real-time rendering of the VR spaces seemed almost out of reach. The high-performance graphics computers would have to come from the American manufacturer of high-performance computers, Silicon Graphics (SGI), in Mountain View, California. There Ars Electronica’s marketing manager Peter Schöber drew upon his own enthusiasm and talent to convince people. Schöber, who was in his mid-twenties at the time, achieved the seemingly impossible and talked the management of SGI into giving Ars Electronica an incredible 80% discount on the machines needed.

Many of the key ideas guiding the conception of the Ars Electronica Center were mirrored in the areas of the house and the main installations. Absolutely paramount was the overarching idea of making the visitors the focus of design considerations. This meant considering the visitors' point-of-view and their personal experience, and consistently encouraging their active participation. Such visitor-orientation was rarely found in conventional museums at that time. It was a new kind of audience participation—adapted to the museum setting but based on years of experience with projects involving large-scale audiences at the Ars Electronica Festival.

It became clear why Gerfried Stocker insisted that the Ars Electronica Center—despite having “Museum of the Future” in its full name—was not a museum in the conventional sense, or not even a museum at all. The Center would not assemble and house a collection and had no mandate to conserve the installations it presented. Rather, the installations were under constant development both in terms of content and technology. Neither the history of media art was to be found on display there nor the history of science fiction. The Center was not a place where different concepts of the future were stored and exhibited, but a place where one could get in direct touch with, and become acquainted with the future.

Visitors would not be left alone with installations and projects, which in many cases were often simply too unfamiliar—in their interfaces and the ways to use them—to be self-explaining. So a “human interface”—bridging any potential gaps between visitors and the various parts of the Center—was introduced to the concept and the planning by Gerfried Stocker from the very beginning. One of the consultants of the preparatory phase, Peter Rebernik, who had been director of the Technical Museum in Vienna, came up with a name for those members of the Center's team who would become the human face of Ars Electronica for many visitors: “Infotrainers.” The name stuck and their communicative presence became one of the key elements of the quick and ongoing success of the Center. Encountering an Infotrainer for the first

time was certainly a new experience for many, since they were not museum wardens protecting the exhibits from the visitors, nor company representatives trying to sell you something at a trade fair. From the very beginning, Infotrainers were far more than guides offering tours of the house, which of course they also did, they were prepared to individually support visitors in their interaction with the installations and to enter into conversation with them about the many issues and questions raised by the projects presented. Throughout all those updates, re-designs, and re-launches of the Center, the Infotrainers have remained a constant element to this day, even growing in importance and in numbers.

While the Infotrainers offered a personal interface to the content of the Center, an entire area on the first floor was dedicated to the immediate living environment of visitors from Linz. At the “Cybercity” they could access a multimedia history of the city, real-time data about the current situation in the city, and cast a look at the future of the city in the form of visualizations of planned projects. Some visualizations could be explored and navigated while “riding” a static bicycle through the virtual environments. The project *Sim Linz* even allowed visitors to adopt the role of the mayor of Linz and use a gaming environment to make alterations to the city with a simulation of the city, all this based on real data from the city's administration and a graphical information system (GIS).

Quite befitting for such a future-oriented house, the elevator that transported visitors to the different levels of Ars Electronica Center was itself a media art installation. Based on an idea by Roy Ascott and realized by Futurelab member Dietmar Offenhuber, the elevator had a transparent floor serving as a projection screen for different kinds of media art pieces. The most prominent among them was the elevator projection *Apollo 13*—named after NASA's 1970 failed lunar mission that barely managed to return to Earth following an explosion on the spacecraft. During the elevator's ascent, the elevator car seemed to crash like a rocket through the roof of the Ars

Electronica Center into the skies above Linz and beyond into space. This only happened of course during a ride to the upper levels, as the simulation was delicately synchronized with the movement of the elevator car and the acceleration and deceleration at the various stops along the way. Naturally, the best ride was the one up to the top level without any stops in between. You were rewarded by the full animation sequence and then the (real) view of the Linz skyline through the panoramic windows of the Sky Media Loft. The Sky Media Loft was not just a regular café: it was full of multimedia equipment integrated into the lounge furniture. The space and the furniture were designed by the American-Austrian architect and designer Scott Ritter (1962–2018) in cooperation with Denise Schulz, who specialized in experience-oriented design for restaurants, and technology consultant Wolfgang Giegler and myself, who had put together this team for the project, with the idea in mind to integrate inspirations from artist-run places like the Electronic Café International in Santa Monica into the overall concept. For Scott Ritter, this environment was his first work for Ars Electronica, which was followed by many more designs in the years to come.

The Sky Media Loft was conceptualized as a media space with a high-speed connection to the internet as well as to the in-house video-on-demand servers of the Ars Electronica Center. It offered a broad mix of media experiences from such brand new technologies like video-on-demand to the first online versions of newspapers as well as their printed editions, which were also available—as is the custom in any good coffee house in Austria. Internet access was still rare at this time and many, especially young, people obtained an Annual Pass for the Ars Electronica Center in order to go online there after school. Some even skipped school to spend hours there. Many schoolchildren first got in touch with the Ars Electronica Center when joining sessions at the “Knowledge Net” and the multimedia classroom together with their teachers. The educational element was an important part of the Ars Electronica Center from the very beginning and the range and high profile of special programs offered for schools and for young people in general would soon increase.

Memesis — Re-Formatting the Festival

In Hermann Hesse’s novel *The Glass Bead Game*, the protagonist Josef Knecht is promoted to the position of “Magister Ludi,” the master of the game, at a relatively young age. As part of his duties, Knecht also carefully designs and then presides over the annual festive *The Glass Bead Game*, which many guests attend. Gerfried Stocker was in his early thirties when appointed director of Ars Electronica. Born in 1964, the son of a carpenter grew up in the small village of Möschitzgraben, in a rural area of the Austrian province Styria, and became an avid reader of books from the local library and a dedicated listener to the ORF’s cultural radio program OE1, while never losing touch with practical skills and hands-on experience. He graduated from the Institute for Telecommunication Engineering and Electronics in Graz. There, in the provincial capital of Styria, which is also home to the international festival for contemporary art *steirischer herbst* (Styrian autumn), he deepened his acquaintance with the music avantgarde and with modernity in general. Since 1990 he has been working as an independent artist and has collaborated with pioneers of media art like Robert Adrian X and with ORF Kunstradio. In 1991 Stocker founded the artist’s group “x-space” together with Horst Hörtnner, and they were invited with their projects to international events including Seville EXPO ‘92, Venice Biennale 93, SIGGRAPH in 1994 and 1995 as well as ISEA 95 in Montreal. In 1992/93 he served as artistic director of the Steirische Kulturinitiative (Styrian Cultural Initiative) and initiated the artist’s network ZEROnet. He brought the artist’s mind, the intellectual’s critical approach, and the engineer’s hands-on attitude to his work as director of Ars Electronica. With this spirit he also approached the

dual task of developing the actual form of the Ars Electronica Center and the program for the Ars Electronica Festival 1996, which would also include the opening events for the inauguration of the Center.

Developing a Festival program at this turning point for Ars Electronica was a complex task. It was clear for Gerfried Stocker from the outset that in order to fulfill its original vision in a form appropriate to the challenges of the times, Ars Electronica should and could not be an insider event for the media arts crowd and for mainly theoretical discussions. Also it should shift from the strong focus of the 1995 Festival on online culture towards a more balanced and diversified program. Due to the transfer of the Festival budget away from the Brucknerhaus towards the newly established organization of Ars Electronica, the Brucknerhaus was no longer available as a venue for the Festival. So it moved in part to the newly built Design Center, which was situated across the street from the Regional Studios of the ORF. With the new organization, Stocker assembled an entirely new team for the production of the Festival under the guidance of Jutta Schmiederer, who had previously produced all of the x-space projects. So continuity with the preceding 17 years of Ars Electronica's development was guaranteed by Stocker's own way of having absorbed the DNA of Ars Electronica, by the presence of Christine Schöpf in the directorate of the Festival, and by Hannes Leopoldseder's influence as founder of Ars Electronica and regional director of the ORF as co-operation partner and organizer of Prix Ars Electronica.

Consequently, the 1996 Festival combined a certain amount of continuity with the past and significant signs of transformation and innovation. The theme of the Festival and of the symposium contained the first indications of change: Memesis — The Future of Evolution, seemed less like a theme dedicated to one area of research or one major trend of developments, and more like a kind of meta-theme allowing reflection of the direction of “digital evolution,” which had replaced talk of the “digital revolution.” With “Memesis” the festival “seeks to identify orientations for the thinking and



SKY — A Feast for Linz: Opening event of the new Ars Electronica Center on September 2, 1996. Show conceived by Els Comediants/La Fura dels Baus.

acting of a dawning cultural praxis,” as Gerfried Stocker and Christine Schöpf remarked.⁸ Stocker saw the moment quickly approaching “at which the existence of the hardware becomes self-evident, and working with digital technologies makes the transition from *cultural technique* to second nature, a simple fact of life.”⁹ What becomes visible here, is Gerfried Stocker’s specific way of looking ahead and at the world when shaping the Festival’s annual topic. Here lies the annual challenge of staying ahead of the times, which is an integral part of the life cycle of the Festival.

The English evolutionary biologist Richard Dawkins (*1941) coined the term “memes” to describe “cultural information units, cognitive behavioural patterns that propagate themselves and replicate through communication, a paradigm of a *cultural-based history of development*.”¹⁰ Richard Dawkins held the keynote talk at the symposium, which had been preceded by a Net Symposium, for which Gerfried Stocker had provided a text titled “The Memesis Statement” in order to spark off discussion in an online forum, which was moderated and summarized by Geert Lovink. The idea was to break up the hierarchical model of symposia—usually containing a series of frontal talks and little space for discussion—and make the real-life meeting and symposium at the Festival in Linz part of a longer process of involvement and discussion. Participants of the symposium included, among others, the American mathematician John L. Casti (*1943), Marvin Minsky, British philosopher Sadie Plant (*1964), the writer and free speech advocate Karin Spaink (*1957), and the American media theorist Allucquère Rosanne Stone (*1936).

The Festival commenced with an opening event titled *SKY*, which stretched from the Ars Electronica Center and the immediate surroundings, now called the Ars Electronica Quarter, across the Nibelungenbrücke to the Hauptplatz and beyond. *SKY* had been conceptualized by the Catalan theater groups Els Comediants and La Fura dels Baus. The performance contained elements of reference to the early days of Ars Electronica and Otto Piene’s



Liquid Cities project by Michel Redolfi at the Parkbad indoor pool, Ars Electronica Festival 1996.

Sky Events and also integrated the bridge across the Danube to link the freshly inaugurated Ars Electronica Center with the Hauptplatz as the site of many of Ars Electronica’s events in public space.

Two of the 1996 Festival’s projects lured visitors into interactive media environments where music and sound played a key role: one of them a kind of musical “mind forest” and the other an underwater world of sounds. The former was the *Brain Opera* by American composer Tod Machover (*1953), professor of Music and Media at the MIT Media Lab, the latter the piece *Liquid Cities* by the French composer Michel Redolfi (*1951). The *Brain Opera*

consisted of a set of fanciful musical instruments—self-developed devices that Machover called “hyperinstruments”—which were heavily loaded with sensors. Machover explained the motivation to design those instruments: “My view of technology has always been that it should respond to human intentions, rather than simulate or replace them.”¹¹ Those instruments—a singing tree, a melody easel or a gesture wall—provoked intuitive and joyful user interaction, which resulted in all kinds of sounds. Together, they formed a “mind forest,” which can also be read as a homage to Tod Machover’s mentor, the pioneer of Artificial Intelligence Marvin Minsky and his seminal book *The Society of Mind* (1986). Four years after its presentation at Ars Electronica Festival 1996, the *Brain Opera* was permanently installed at the House of Music in Vienna.

With *Liquid Cities*, Michel Redolfi transformed the indoor pool of the Parkbad public swimming baths into a fluid, interactive three-dimensional space. When diving into the swimming pool you could explore a transparent city consisting of its sounds only. The installation could only be experienced underwater, as the city’s sounds travelled across the pool and were received directly through the swimmer’s body. Cameras tracked the movements of the swimmers, thus making the swimming pool interactive by allowing visitors to control the acoustic environment through their movements. A polyphony of the names of registered users interacting via internet added to the experience of the installation, enabling the swimmers to listen not only to the underwater city but to a globally dispersed community of users. Both of these acoustic environments lured users into unknown territory—the somehow magical mind forest or the mesmerizing underwater city—which in its ultimate form was shaped by the participation of the users themselves as a collective.

The 1996 winner of the Golden Nica in the category “Computer Animation” was no stranger to Ars Electronica, but the winning project entered unknown territory, which nobody had crossed into until then. The

film *Toy Story*, which tells the emotionally gripping story of a child’s toys coming to life and features cowboy Woody and astronaut Buzz Lightyear, was the first ever feature-length film to be entirely computer-animated. For John Lasseter, who had already won a Golden Nica twice, it was his directorial debut in a feature film, produced by Pixar and released by Walt Disney Pictures, with Steve Jobs as one of the executive producers. The film was praised for its story and dramatic structure,¹² but the film’s innovative use of computer animation made the greatest impact, and it marked a transition for the film industry by paving the way towards a much broader use of computer animation.

At the same time, in the World Wide Web category, a very different kind of project with a sharply ironical and critical attitude towards big business was awarded, once more illustrating the broad scope of Prix Ars Electronica. The artists’ collective “etoy” won a Golden Nica for *The Hijack Project*. The members of the group referred to themselves as agents and made their performance-like appearances in uniform outfits including bald-shaven heads, orange overalls, black boots and mirrorshades. etoy dedicated their work to exploring alternative ways of producing art, applied a collective authorship, and operated internationally with a corporate base in Switzerland. With their project *The Hijack Project*, etoy shed light on the weak points of the internet by infiltrating popular search engines of that time with designated keywords and thus setting up “traps” for internet users.¹³ The jury liked how “‘etoy’ fools around with the preconceived notions about the Net and turns these upside down,” and at the same time it was not entirely sure whether “‘etoy’ might be a hype.”¹⁴

While etoy were exploring the “twilight zone” of the internet, a quite different kind of “twilight” zone of street tech lured visitors of Ars Electronica 96 to the compound of the voestalpine steelworks. *Contained – Rearview Mirror to Reality* was a project by the Austrian machine artist Just Merritt (1963–2001), who in 1996 also founded “Time’s Up – Laboratory for the Construction of

“The work of the men of steel and that of the children of the city of steel are called into account, just as the feeling of strangeness which arises out of the impossibility of an understanding of life without art.”

Just Merritt

Just Merritt, “What’s That Supposed to Be, What’s Program?” (1996), in: Druckrey, Timothy, Ars Electronica (Eds.): *Ars Electronica: Facing the Future – A Survey of Two Decades*, The MIT Press, Cambridge, Massachusetts, and London, England, 1999, p. 404.

Experimental Situations.” The project *Contained* involved numerous artists who had been continuously building this setting of experimental machines and machine art on the compound of the steelworks since 1992. In 1996, Ars Electronica Festival visitors flooded into the *Contained* area in the evening, listening to performances of robot-operated electric guitars and consuming spicy experimental food and drinks. Entering the world of *Contained* did not only present the festival crowd with the eminently physical results of working with machine art and street tech, but also felt like stepping into a setting from one of the cyberpunk novels by William Gibson or Bruce Sterling.



Entrance to the project *CONTAINED* — *Rearview Mirror to Reality*
by machine artist Just Merritt (1963–2001) at the voestalpine steelworks in Linz, Ars Electronica Festival 1996.

"If science gets accessible, it will most likely be through the arts."

Horst Hörtner,
Director Ars Electronica Futurelab

In a conversation with the author, Linz, 2019.

Finding Out What the Future of the Laboratory and a Laboratory of the Future Could Be

With the opening of the Ars Electronica Center in September 1996, it seemed that Ars Electronica was now "complete." The Center complemented the Festival and the Prix in a triple structure, as Hannes Leopoldseder had planned and promoted it. But something was still missing: the "Ars Electronica Futurelab." Such an independent, in-house research and development laboratory had already been named and outlined in earlier papers by the "Friends of Ars Electronica," a group of experts brought together by Leopoldseder in the preparational phase of the Center. The seed of the idea goes back even further, as Gerfried Stocker suspects: "The birth of the Futurelab was to a certain extent preprogrammed in Ars Electronica's DNA, and it was probably just a matter of time until the right people came together at the right place and time to make it happen."¹⁵ That unique constellation of elements came together in the fall of 1996, right after the Center had opened its doors.

The story of the genesis of the Ars Electronica Futurelab is also the story of two artists, who had known each other since the 1980s. Gerfried Stocker and the media artist and musician, Horst Hörtner, had met in their student's dormitory in Graz. Hörtner was studying Telematics and Civil Engineering at the time. Together they formed the artists' group and workshop x-space in 1991, collaborating closely together on numerous international projects. Gerfried Stocker's recollection of the moment when he was designated to become director of Ars Electronica, brings the constellation of the two men to the point: "When, in 1995, I was presented with the once-in-

a-lifetime opportunity to take on this assignment, it was crystal clear to me that I would need Horst Hörtner to do it.”¹⁶ They shared an endless curiosity, a keen interest in technology, and the disposition to go beyond their limits and to always seek new challenges. Their skills complemented each other, just as their very different personalities did. One can find several teams of two quite differently structured personalities collaborating with remarkable results in the history of Information Technology. Bill Gates (*1955) and Paul Allen (1953–2018), the founders of Microsoft, and Steve Jobs (1955–2011) and Steve Wozniak (*1955), the creators of the Apple Macintosh, are probably the most well-known among them. In most of these duos, one of them tends to be more prominent and at the same time more visible in the public eye, usually the one who is more uncompromising and the greater perfectionist of the two, while the other one brings in more pliable and counterbalancing elements and also works more in the background at times. However, while this is not a fixed pattern, certain parallels may be recognized.

In 1995, when they entered the one-year-long tunnel of turning the Ars Electronica Center into reality, Horst Hörtner was put in charge of technology, which included all installations as well as the servers and network infrastructure of the Center. For this, he assembled a team that already showed many of the characteristics of the later Futurelab crew. In a small building right behind the construction site of the Ars Electronica Center, they set up office on the first floor, which basically consisted of a single room with the walls lined with tables. Everybody worked there, facing outwards, in front of several computers per person. At certain points during the day—and night—a meeting would be called, and everybody would turn inwards and roll their swivel chairs towards a table in the center of the room, cluttered with empty coffee cups, full ashtrays, and empty cans of energy drinks. Gerfried Stocker described that situation in 1996: “Even in the months prior to the official inauguration, the working atmosphere at the Ars Electronica Center was not one of sterile institutional process control—it was more like an open workshop, in which creative intelligences tested the capabilities of

the equipment (...).”¹⁷ Drawing their name from the location, the team—who belonged to a “new generation of hacker-artists”¹⁸—was referred to as the “first floor.” Quite befittingly, Firstfloor.org continued as an independent artists’ network.

When thinking about the first year, which turned out to be the incubation phase for the Futurelab before its inception, Horst Hörtner¹⁹ points out the teamwork of this mixed group of people, something that would also become a defining feature of the Futurelab in the following years. “The Futurelab is ongoing proof of the fact that the dedication of a handful of people, their creativity and will to innovate were able to turn groundbreaking ideas and ideals into a tangible reality, and a loose-knit crew of obsessed individuals could turn into an institution that has made a name for itself on the global media landscape.”²⁰ And it was, in fact, a diverse group of highly individualistic personalities from different backgrounds, who intensely collaborated to meet the common goal of opening the Center in time. Chris Mutter, who had gained fame—and a Recognition by Prix Ars Electronica in 1995—for his “Microsoft Hate Page” at a time when Microsoft was a sponsor of the Festival, was the first system administrator of the Ars Electronica Center. Team members of the first hour included Oliver Frommel, Manuel Schilcher, Tom Teibler, Vaclav Cizkovsky, Dietmar Offenhuber, Gerda Palmetshofer, and Matthew Smith.

In his 2014 book *The Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution*, the American author Walter Isaacson (*1952) described in depth how “most of the innovations of the digital age were done collaboratively” and how the “tale of (...) teamwork is important because we don’t often focus on how central that skill is to innovation.”²¹ Isaacson’s thoughts on collaboration well apply to the work of the Ars Electronica Futurelab, which also incorporates elements of a hacker culture, united by the joy of collaboratively overcoming even the worst challenges in the field of computer software and hardware. Together with

"The Futurelab is ongoing proof of the fact that the dedication of a handful of people, their creativity and will to innovate were able to turn groundbreaking ideas and ideals into a tangible reality, and a loose-knit crew of obsessed individuals could turn into an institution that has made a name for itself on the global media landscape."

Horst Hörtner

Horst Hörtner, "The Ars Electronica Futurelab – From Server Crash to Atelier / Laboratory," in: Leopoldseider, Hannes, Christine Schöpf, Gerfried Stocker (Eds.): *The Network for Art, Technology and Society – The First 30 Years Ars Electronica, 1979–2009*, Hatje Cantz Verlag, Ostfildern, 2009, p. 288.

their directors, the crew of the Futurelab shared a never-ending curiosity, a spirit of exploration, and a hacker's ethics, oriented towards making things—and the world—better. The location of the "first floor" in a small building tucked behind the looming Ars Electronica Center, and the closely-knit community of first-generation Ars Electronica crew, are both reminiscent of the cathedral works of stone masons and artists who designed the huge gothic cathedrals in the Middle Ages. And their position bears traces of the legendary "Tech Model Railroad Club (TMRC)" of the 1960s, housed in Building 20 on the campus of the Massachusetts Institute of Technology (MIT), who are considered the earliest group of hackers. While the TMRC members had access to multi-million dollar machines like the IBM 704 computer, called the "Hulking Giant,"²² the team on the "first floor" had at their hands a maybe even more awe-inspiring array of hi-end computers from manufacturers like Silicon Graphics, DEC, and Evans & Sutherland. Similar to the mainframe computers of the 1940s and 1950s, and also to the blast furnaces at the steelworks not far away, those machines were used in shifts on a 24/7 basis. This workstyle also continued after the opening of the Ars Electronica Center, with the Futurelab team experimenting with the Center's infrastructure and continuously developing it further when the last visitor had left the building. However, while the members of the "Tech Model Railroad Club" were somehow only participating in the MIT's infrastructure, the crew of the Ars Electronica Center and the Futurelab were actually creating and running the place themselves.

The infrastructure of the Ars Electronica Center included many things that were true novelties at the time of the opening. For instance, the "Oracle Streaming Server" was the first one with public access to be installed in Europe, at a time when video streaming was still rare. Also the 155 MBit/s fiberoptic ATM connection to the university and from there to the internet was quite unusual even for larger institutions. And then there was the machine that was situated deep in the basement but was, in fact, at the "heart" of the Ars Electronica Center: the CAVE.

In his book *Computergraphik–Computerkunst* (Computer Graphics – Computer Art),²³ Herbert W. Franke includes the American video and computer graphics artist Daniel J. Sandin (*1942) and the American computer graphics researcher Thomas A. DeFanti (*1948), who in 1972 founded the “Circle Graphics Habitat,” which became known as the “Electronic Visualization Laboratory (EVL)” at the University of Illinois at Chicago. Peter Weibel speaks about Sandin and DeFanti in his 1984 lecture “On the History and Aesthetics of the Digital Image” as members of the “Chicago Circle of Computer Art.”²⁴ So the work of the EVL had been on Ars Electronica’s radar for a long time and consequently the CAVE—first presented by EVL at SIGGRAPH 1992 in Chicago—was part of the original plans for the Center, which Hannes Leopoldseder had promoted. After the cooperation with EVL was established and the necessary computing infrastructure secured, Horst Hörtner and Jürgen Kern went to Chicago for several months to receive in-depth training to help master the technology of the CAVE. Horst Hörtner recalls that at that time in the mid 1990s—with the dynamics of the “digital revolution” promoted by the presidency of Bill Clinton (*1946) and Al Gore (*1948)—the US were clearly ahead of Europe in terms of digital technology and were accordingly considered to be “cool.”²⁵

The immersive qualities of the CAVE environment—which combined 3D-projections with spatial sound—were not to be underestimated. Gerfried Stocker remembers how the CAVE had the potential to fascinate the team of Ars Electronica who tested it: “For hours at a time, we stood, sat, and lay in the CAVE and let the immersive worlds of imagery seep into our consciousness.”²⁶ And then someone managed to get the game engine powering the first-person shooter game *Doom* running on the CAVE’s array of SGI Onyx computers. In *Doom*, users had to fight their way through levels full of demons from Hell. The title of the first episode, “Knee-deep in the Dead,” already characterizes the basic situation and mood of the environment. When alone in the CAVE, late at night after a long working day, Horst Hörtner enjoyed playing *Doom*, where you would see the room tilt as you fell to the ground after



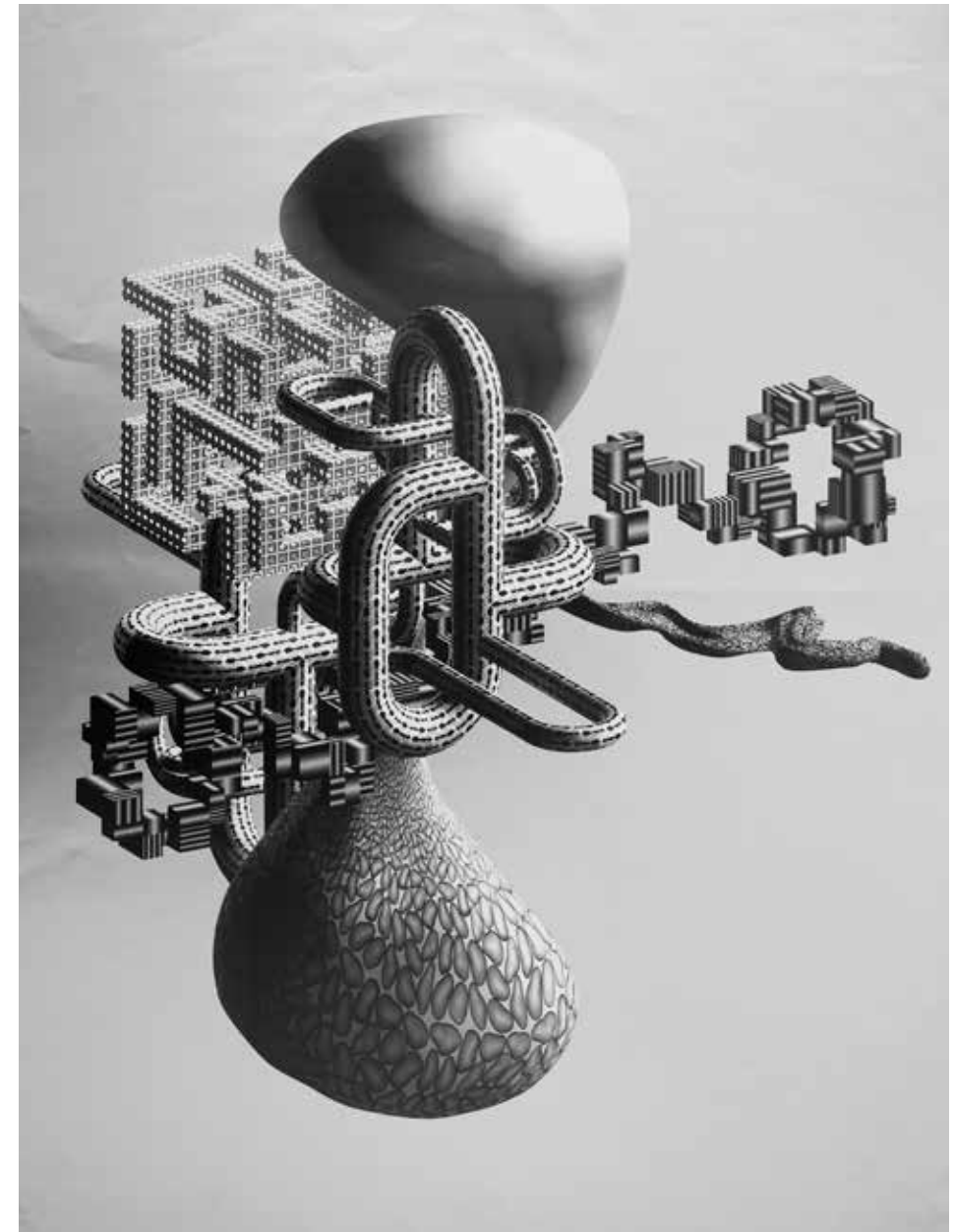
American artist Dan Sandin (*1942), co-director of the Electronic Visualization Laboratory (EVL) and co-creator of the CAVE at Ars Electronica Center 2002.

Dan Sandin of EVL with Horst Hörtner, director of Ars Electronica Futurelab, Linz, 2002.



being fatally hit. However, one night at around three in the morning, Hörtnner heard a deafening roar and sensed one of the monsters approach and attack him from behind, moments before seeing the room tilt—a sensation that felt a little bit too real after all. So he quit the game, left the CAVE and went home. Daytime visitors to the Center, who did not usually get the opportunity to play *Doom* at the CAVE, were instead offered thorough preparations for Virtual Reality experiences like the CAVE. Such preparations included training for exploring virtual objects and manipulating them, getting used to a head-mounted display while writing text on the wall of a virtual room, and learning how to orientate yourself via sounds only. The simple fact that those preparations were offered at all makes clear how unfamiliar Virtual Reality and the experiences it contained were for most visitors in the mid 1990s.

This little room in the basement of the Ars Electronica Center could contain so many different rooms, if not worlds: All in all around 50 applications and virtual worlds were presented at the CAVE during its time of operation at the Center between 1996 and 2008. With all the sophistication of the CAVE software and all the computing power that went into creating those Virtual Reality experiences, it may seem astonishing that probably the all-time favorite with visitors of the Ars Electronica Center was the interactive virtual environment *Crayoland* by American computer scientist Dave Pape. This interactive environment was decidedly non-photorealistic and instead offered crude, 2-dimensional crayon drawings placing you in a 3-dimensional scene. In a landscape of green meadows stood a house, with a little river and a lake with ducks next to it. There were flowers and trees with birds singing, and bees busily humming. Users could pick up and move a flower or a small piece of rock, or experience a butterfly landing on their hand. The setting had the quality of immediately transporting you to the dreamlike fantasies of your childhood days and, on a deeper level, evoked visions of a “back to nature” lifestyle, reminiscent of the ideas in *Walden; or, Life in the Woods* by American writer Henry David Thoreau (1817–1862).



CAVE project created
by Austrian artist Peter Kogler
for the Ars Electronica Center in 1999.
Visualization by Peter Kogler.

The 1999 *CAVE* project by Austrian multimedia artist Peter Kogler (*1959) contained a complex maze-like space, which felt explicitly artificial and “unreal.” The title was somehow programmatic for the project, since you entered a system of spaces, which were connected like the inside of an underground cavity, and at the same time reflected your own presence and navigation under the conditions of the Ars Electronica CAVE. Users exploring it would pass through a labyrinth of narrow tunnels populated by giant ants, slip through winding passages inside a huge brain, and follow geometric pipes forming a system of cube structures.²⁷ The installation’s sound was by Franz Pomassl and was designed specifically for the CAVE environment in collaboration with Dietmar Offenhuber and the Ars Electronica Futurelab team. And there was also the option to view the entire system from the outside, like an astronaut on a spacewalk, with the structure floating in front of you like a spaceship. Users were tricked by certain sensations, like a kind of gravitational field of the structure seen from outside or dizzying views of lower levels on the inside. *CAVE* seemed to transport you right inside the artist’s brain, which you would find populated—or haunted—by his favorite creatures and preferred structural elements, familiar from his artistic oeuvre.

World Skin by French artist Maurice Benayoun (*1957) and French composer Jean-Baptist Barrière (*1958) took visitors on a “Photo Safari in the Land of War.” This installation from 1997, which the artists developed in collaboration with the Futurelab, turned out to be the only CAVE environment to ever win a Golden Nica for Interactive Art in 1998. *World Skin* seemed like the antithesis of *Crayoland*. Users were immersed in a nightmare composed of photographs of various battle zones and catapulted into a voyeuristic situation, confronted with the ways in which war promotes the “reification of another human being.”²⁸ The “interaction” offered to users was the option to take pictures with a camera, while this act resulted in the photographed part of the war scene being “removed” from the setting and leaving a white spot behind. Users were handed a printout of the scene they had “removed.”

World Skin made you reflect on the meaning of photographic images and the ways in which the media “flatten” all war images by neutralizing their content: “The rawest and most brutal realities are reduced to an emotional superficiality in our perception.”²⁹

While the artistic appropriation of the CAVE technology—and thus the different aspects of virtual reality—defined many of the worlds presented there to visitors of the Center and of the Festival, the CAVE also had an important additional function for the Futurelab. Not only were those artistic projects valuable references for the ability of the team of the Futurelab to bring a technology to its limits and beyond, the CAVE also helped pave the way towards Futurelab cooperations with both academia and industry. Right after the opening of the Center, Horst Hörtnner’s team moved on to new tasks: from creating and installing the Center’s attractions to the day-to-day operation and maintenance of the Center. During this phase the Futurelab was born as a separate part of Ars Electronica, no longer merely the tech department of the Center. “The point of departure was the development of interactive exhibition objects and installations for the Ars Electronica Center,”³⁰ which went far beyond the CAVE and the Humphrey flight simulator. With the inception of the Futurelab, another aspect came to light: “The concept of an atelier-laboratory as proving ground and workshop for solutions exhibiting the application of both artistic and technical skills was also connected with the idea of implementing an economically sustainable model.”³¹ So in its first year already, the Futurelab was able to realize a CAVE project for the simulation of turbine flows for MCE, a subsidiary company of voestalpine, the Linz steelworks. In forging such cooperations with industry, Gustav Pomberger (*1949), Professor of Applied Computer Science at Johannes Kepler University (JKU) Linz and head of the Christian Doppler Institute of Software Engineering, played a crucial role. Pomberger had been involved with the Ars Electronica Center since the early days of Hannes Leopoldseder’s efforts to conceptualize it, and since 1995 had served as a member of Ars Electronica’s supervisory board. And he had been at Linz

"This sensitivity to the necessity of invention, to transformation and synergies of the technically feasible and the intuitively conceivable—insights and capabilities that are, by definition, the artist's forte—will be increasingly important for (technological) innovation in the future."

Gustav Pomberger

Gustav Pomberger, "Elective Affinities," in: Leopoldseder, Hannes, Christine Schöpf, Gerfried Stocker (Eds.): *The Network for Art, Technology and Society – The First 30 Years Ars Electronica, 1979–2009*, Hatje Cantz Verlag, Ostfildern, 2009, p. 291.

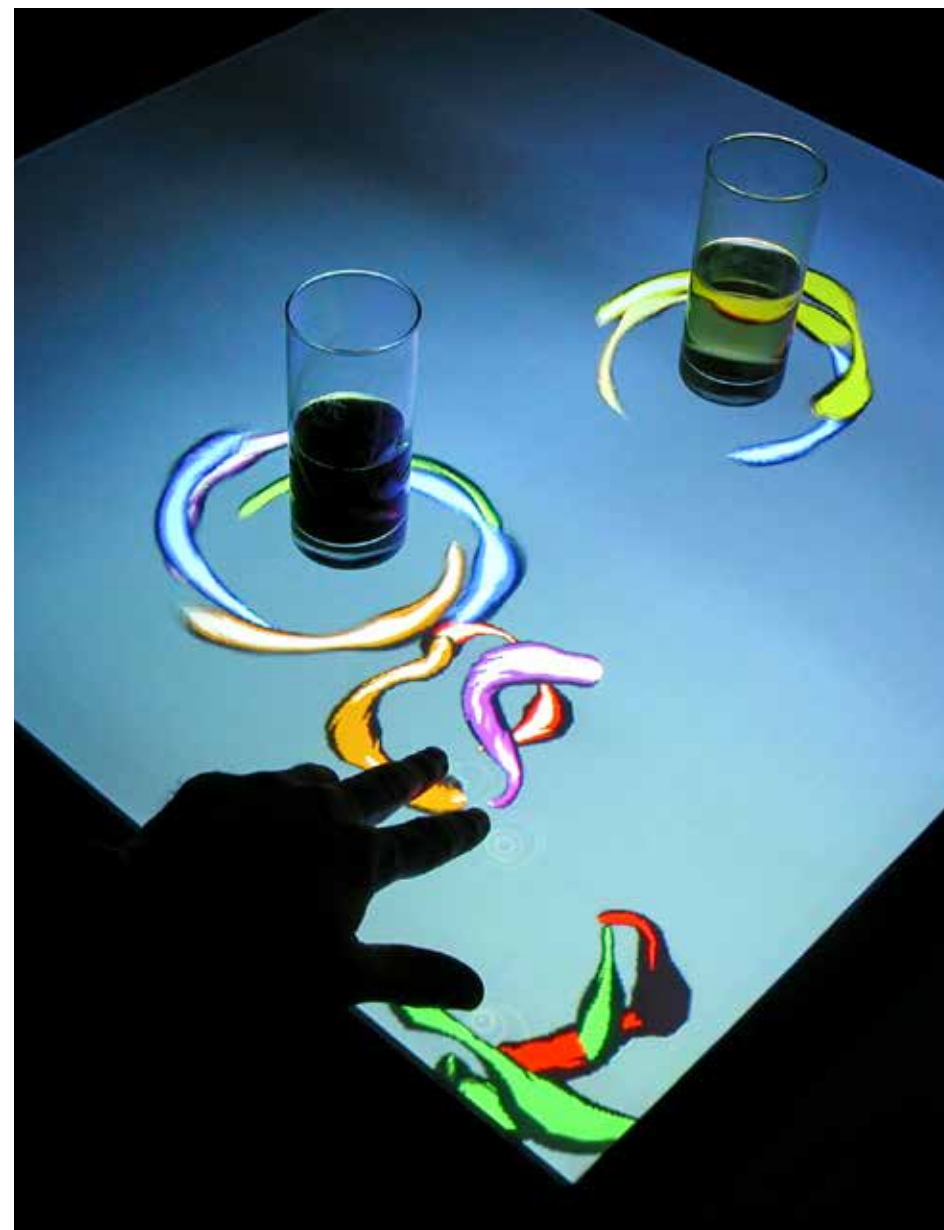
airport in 1979, when the robot SPA-12 arrived for the opening of the very first Ars Electronica Festival. Pomberger immediately saw the importance of adding the Futurelab to the structure of Ars Electronica: "The Linz municipal administration's far-sighted decision to establish, alongside the Museum of the Future, a lab to actively develop and design technologies with great promise for the future was a decisive milestone."³² He turned out to be not merely a fan from the very beginning, but also a university lecturer who was not afraid of contact with the wild bunch of "hackers," who formed the Futurelab at that time. In fact, he enjoyed working with the team so much that numerous collaborations between the Futurelab and the university as well as between the Futurelab and industry took place over the years.

A downside of the CAVE—as originally developed by EVL in Chicago—was the fact that it was a proprietary system that required an array of expensive supercomputers to run on, which made development and experimentation time quite rare. To make this valuable tool more widely available to artists and researchers, the Futurelab began to develop an improved version of the CAVE infrastructure that would run on a cluster of standard, off-the-shelf PCs. This collaborative effort of the Futurelab and Gustav Pomberger's department finally led to the development of the advanced VR platform with the nondescript name "ARSBOX" in 2001. Horst Hörtnner proudly remarked: "(...) it was exactly 10 years after Dan Sandin and his team unveiled their CAVE at the world's largest conference for experts in computer graphics, SIGGRAPH 1992 in Chicago, that 'the guys from Linz' presented the first PC variant of the CAVE at SIGGRAPH 2002 in San Antonio, Texas: the ARSBOX (2001)."³³ In 2002 the Futurelab, with Christopher Lindinger as key researcher, presented "VRizer," a software framework to bridge the gap between game engines as "the most widespread way to generate PC-based, interactive, real-time applications" and "high-end platforms like the ARSBOX."³⁴ In fact it opened the ARSBOX to any OpenGL application and thus made the development of immersive, interactive, 3-D worlds widely available.

Christopher Lindinger (*1977)—a graduate of computer science from Johannes Kepler University Linz—had briefly worked at the Ars Electronica Center as an Infotrainer in the year of its opening before joining the Futurelab soon after its inception in the spring of 1997. He had gained experience with supercomputer visualization of abstract mathematical models as a visiting researcher at the University of Illinois at Chicago and was able to share this with the Futurelab, where there was need for CAVE programmers, since the entire worldwide community of CAVE programmers at the time merely numbered around 80 people.³⁵ He became co-director of the Futurelab in 2002, responsible for the lab's research activities. Lindinger served as project director for several of the Futurelab's developments, among them two long-time favorites with the younger audiences of the Center: *Gulliver's World* from 2004 and the project which preceded it, *Gulliver's Box* from 2003. Irish writer Jonathan Swift (1667–1745), who was an early protagonist of the Enlightenment, published his satirical novel *Gulliver's Travels* in 1726 and would certainly have recognized the flying island of Laputa from his book in the mixed reality installation of *Gulliver's Box*. And he would also have appreciated the way in which users could create their own version of *Gulliver's World*, insert new characters into the setting by making 3D-scans of figures formed with plasticine modeling clay, or record little acting or dancing scenes, which would then appear in the virtual reality. In 2006 *Gulliver's World* received an extension with the interactive simulation environment *City Puzzle*, which used the playful ease and intuitive qualities of the mixed reality platform for personal experimentation with city planning. So within a few years of intense research work in the Futurelab, simulations that far surpassed the 1996 first version of the "Cybercity" installations in the Center became possible.

In those first years of the Futurelab, cooperations, which had started with Gustav Pomberger, quickly increased in number and in scope. While Virtual Reality (VR) applications played a dominant role in the first phase after 1996, a focus on Human Computer Interfaces (HCI) came to the fore-

ground around the turn of the millennium. This also included the work with augmented reality (AR), where different kinds of digital data are blended into a person's perception of the real world. Using AR for navigation systems in



Interactive Bar by artists **Golan Levin** and **Zachary Lieberman** in the Sky Media Loft, Ars Electronica Center 2004.



Visual from the project *Interactive Bar* by artists **Golan Levin** and **Zachary Lieberman** on the facade of the Ars Electronica Center, 2004.

2002 was completely unusual, so the series of applications named INSTAR (Information and Navigation through Augmented Reality) represented a real innovative breakthrough. Gustav Pomberger describes INSTAR as “an outstanding example of the value of a transdisciplinary approach” and pointed out in 2009 how “this concept and the prototype that testifies to its feasibility are today being taken up and implemented by navigation systems manufacturers worldwide.”³⁶ Here, Pomberger touches upon two characteristics of the work and role of the Futurelab: At the Futurelab, a transdisciplinary approach integrating artists is part of everyday working life, while it is hard to find in academic institutions and corporate R&D. The development of highly innovative and daring prototypes is one of the Futurelab’s strengths, while turning the innovations into profitable products is maybe less so. Both aspects will resurface in different contexts in the years to follow.

Five years after the birth of the Futurelab, two important steps in its development as an independent research atelier and lab followed in 2001. Moving into new premises near but not inside the Center, helped shape the identity of the Futurelab as one of the pillars of Ars Electronica, positioning it at eye level next to Festival, Prix, and Center. Hosting the annual conference *Pixelspaces* for the first time in the same year, as a forum for encounters and exchange among the wider international community of artists and scientists engaged in transdisciplinary work, helped enhance the international network and visibility of the Futurelab. In contrast to the general thematic conferences of the Festival with their open layout, *Pixelspaces* had the character of an intimate gathering of international experts, sometimes even referred to as a kind of “conclave.”³⁷ With annual topics such as “Transplanted Interactions” or DAMPF (Dance and Media Performance Fusions) “Sensory Environments – Immaterial Interfaces” and with the Ars Electronica Center as its traditional venue, *Pixelspaces* continues to explore the latest trends in the rapidly changing field of digital culture, which defines the wider habitat of the Futurelab.

"The annual topics of the festival are nothing less than the imperative to constantly reinvent yourself. There are always new frontiers out there to discover."

Gerfried Stocker

In a conversation with the author, Linz, 2019.

The Art of Staying Ahead of the Times

For Ars Electronica, the period from 1996 to 2003 was a time to calibrate its thematic matrix and establish its four-part system, also referred to as its "four pillars." Now, the thematic matrix was no longer merely formed by the annual Festival topics, but also included a series of exhibitions at the Center. The four pillars of the organization—from 1997 under the dual directorship of Gerfried Stocker as artistic director and Austrian business economist Wolfgang Modera as head of business administration—developed their qualities as a system of communicating elements. Artists or researchers might enter the gravitational field of Ars Electronica through any of its parts: for instance, by being distinguished at Prix Ars Electronica, or selected for participation in the festival with an installation or a lecture, or becoming an artist-in-residence at the Futurelab. Such entry points led to long-term involvement in many cases, and sometimes even resulted in joining the staff of Ars Electronica. While in previous years the Prix had served as a kind of "radar" for the Festival, it now also fed the pool of artists, who collaborated with the Futurelab and participated in the exhibitions of the Center or the CAVE environment with their projects. Seen from an artist's perspective, Ars Electronica became even more attractive after 1996, by being able to offer different formats of residency, collaboration, and presentation.

Among Ars Electronica's numerous fruitful cooperations, the lasting relationship with the Japanese computer scientist Hiroshi Ishi (*1956) stands out. Hiroshi Ishi founded the Tangible Media Group at the MIT Media Lab in 1995, around the same time when Gerfried Stocker and Horst Hörtner had

"Where the sea meets the land, life has blossomed into a myriad of unique forms in the turbulence of water, sand, and wind. At another seashore between the land of atoms and the sea of bits, we are now facing the challenge of reconciling our dual citizenships in the physical and digital worlds."

Hiroshi Ishii,

founder of the Tangible Media Group at MIT Media Lab

Hiroshi Ishii, *Ars Electronica: "Intellectual Inter-Tidal Zone to Shape the Future"* (2009), in: Leopoldseider, Hannes, Christine Schöpf, Gerfried Stocker (Eds.): *The Network for Art, Technology and Society – The First 30 Years Ars Electronica, 1979–2009*, Hatje Cantz Verlag, Ostfildern, 2009, p. 258.

commenced work on the realization of the Ars Electronica Center. Hiroshi Ishii got involved at Ars Electronica as early as 1997, when he gave a talk on "Blurring the Boundaries between Bodies, Bits & Atoms" at the Festival's "FleshFactor" symposium.³⁸ His concept of "Tangible Bits" was "an attempt to give physical form to digital information, making its bits directly manipulable and perceptible. The goal is to blur the boundary between our bodies, cyberspace, and our physical environment."³⁹ With his research and his projects he reacted to a challenge he grasped with this metaphor at the opening of the exhibition "Get In Touch" at the Ars Electronica Center in 2001: "Where the sea meets the land, life has blossomed into a myriad of unique forms in the turbulence of water, sand, and wind. At another seashore between the land of atoms and the sea of bits, we are now facing the challenge of reconciling our dual citizenships in the physical and digital worlds."⁴⁰ In a similar poetic vein, the various projects of the Tangible Media Group exhibited at Ars Electronica over the years have offered visitors highly sensual and inspiring experiences along the "seashore" of their encounter with the interactive art pieces. Visitors may, for instance, open corked bottles which "contain" the sounds of violin, cello, and piano playing together, or move sand with their hands and thus modify in real time a variety of computational simulations projected onto the sandscape.

In 1998, both the Prix and the Festival entered new phases of structural stabilization and advancement. In the spring of 1998, the OK Centre for Contemporary Art moved into a former convent school building in the compound of the Ursulinenhof, in the center of Linz, which had been renovated and adapted by architect Peter Riepl. In the new premises, the OK Centre could develop its full function as an exhibition and production space for contemporary art. Austrian curator Martin Sturm (*1957), who became artistic director of the OK in 1991, was ready to present the annual "Cyberarts" exhibition of prize-winning works from Prix Ars Electronica at his institution. Although the artists and the projects had, of course, already been selected by the jurors of Prix Ars Electronica, the OK curators with

their expertise—especially in process-oriented art—turned out to be strong dialog partners for both Ars Electronica and the winning artists. Martin Sturm and—since 2003—also curator Genoveva Rückert (*1974) approached this presentation, which, naturally, was somewhat unusual for an art institution, with the clear focus that “the annual Cyberarts showcase in the OK has always been an artistic exhibition and not a commercial art fair.”⁴¹ The collaboration between the two institutions, which continues to the present day, seems also significant in the light of the fact that many art museums—at least at that time—had difficulties in working with media art and were less open to embracing the art and the topics of Ars Electronica than institutions active in the performing arts. Questions of the relationship between Ars Electronica with the art world would come up again in the years to follow. In the year 1998, the Festival returned to its original venue, the Brucknerhaus, when Austrian musicologist Wolfgang Winkler (*1945) became director of the municipal cultural organization LIVA and artistic director of the Brucknerhaus. Winkler had been working in the cultural department of the ORF Regional Studio in Upper Austria under its director Hannes Leopoldseder since 1979, the year in which Ars Electronica was born.

The topics of the Festivals between 1996 and 2003 can be read as forming a triple thematic pattern, which relates to the original conceptual ideas behind Ars Electronica around the relationships of art, technology, and society. Both “Mimesis – The Future of Evolution” in 1996 and “CODE – The Language of Our Time” in 2003 are, to a certain extent, meta-themes that span an arc across the other themes and also contain reflection on the evolution of themes at Ars Electronica itself. With “FleshFactor – Informationsmaschine Mensch” (FleshFactor – The Human Information Machine) in 1997, a whole range of topics opened up around the Life Sciences and their implications, which were understood in terms of a “Biological Revolution” that was immediately following the “Digital Revolution.”⁴² The Festival topics “Life Science” in 1999 and “Next Sex – Sex in the Age of its Procreative Superfluosity” in 2000 swiftly followed. Closely linked with these topics,



Crag (“Teleklettergarten”) project by the group FOK/CH, students of Zurich University of the Arts on Linz Hauptplatz (Main Square), Ars Electronica Festival 2003.



Music Plays Images X Images Play Music by **Ryuichi Sakamoto** and **Toshio Iwai**, who also won the Golden Nica of Prix Ars Electronica 1997 in the category Interactive Art.

a quite different, but no less critically positioned line of topics opened up about the social implications of technologies and responsibilities of scientists and artists in the context of globalization and global conflicts. “Infowar – information.macht.krieg (information.power.war)” in 1998, “Takeover – Who’s Doing the Art of Tomorrow” in 2001, and “UNPLUGGED – Art as the Scene of Global Conflicts” in 2002 form a cluster of topics around questions of social and political relevance.

At the same time, new formats at the Festival and new awards were created. In 1998 the new category “Cybergeneration U19” was introduced by the Prix. This evolutionary step for the Prix did not adapt the grid of categories to accommodate emerging new phenomena, but to include new generations with an open focus towards “freestyle computing.” The category successfully complemented the opportunities the Center could offer to young visitors and marked a milestone in the involvement of young generations in Ars Electronica. The first Golden Nica of the new category u19 in 1998 went to an entertaining short animation film titled *TITANIC*, which coincided with the Golden Nica in the category “Computer Animation / Visual Effects” being awarded to the American visual effects supervisor Robert Legato (*1956) for his work on the feature film *Titanic*, directed by James Cameron. A year later the “Marianne von Willemer Award for Digital Media” was created in a cooperation between Ars Electronica, the City of Linz, and the ORF, specifically awarding the achievements of women in their work with digital media. The award is named after Austrian actress Marianne von Willemer (1784–1860), who was—presumably—born in Linz and who gained fame through her relationship with Johann Wolfgang von Goethe (1749–1832) and her collaboration with him on his late poetry collection *West-Eastern Divan*.

Between 1996 and 2000 the project *Ridin’ A Train*, which was actually a musical event format in itself, took visitors on a night train ride with live electronic music through the enormous compound of the voestalpine



Ridin' A Train — a musical night-ride through the voest steelworks, conceived by Austrian musician **Fadi Dorninger** (*1960), featuring American composer and sound artist **Marina Rosenfeld** (*1968), Ars Electronica Festival 2000.

steelworks, thus carrying further the artistic exploration of the industrial past of the city. *Ridin' A Train* was conceptualized by Austrian musician Wolfgang Fadi Dorninger (*1960) and featured musicians including the Finnish electronic music group Pan Sonic, the Austrian experimental music group Radian, and Marina Rosenfeld. Starting in 2000, a new format was added to the Festival activities in the Brucknerhaus, where traditionally the symposium, parts of the exhibitions, and some concerts would take place during Ars Electronica. Now the spacious lobby of this philharmonic hall was transformed into the “openX-electrolobby.” “openX-electrolobby” was the Festival’s “in-depth digital culture & lifestyle arena”⁴³ and offered a platform for many different kinds of net-inspired projects and communities. In 2001, the “electrolobby” would also be the setting for a four-day Game Jam, where visitors could experience live the design and development process of online games. The vibrant platform was curated by TNC network, which

was founded in 1995 by the Swiss artists Tina Cassani (*1966) and Bruno Beusch (*1963), organizers of numerous network events at festivals like Documenta in Kassel and ISEA in Chicago. The “electrolobby” developed into one of the important epicenters of the Festival, where you could get an immediate view of the appropriation of technology by new generations of artists and activists. In 2001 the entire Festival—titled “TAKEOVER – who’s doing the art of tomorrow”—took a broader view of that burst of creativity that was taking place in digital countercultures, often outside of the conventional art system.

Shockwaves of a Biological Revolution

The massive advances made by the Life Sciences in the 1990s had made the contours of a “Biological Revolution” visible, which Ars Electronica now addressed in different formats and from different angles. This “Biological Revolution,” not unlike the “Digital Revolution” before, attracted a rising number of artists, who entered developing fields like “Bio Art” and related forms of artistic enquiry into the numerous questions raised by genetic engineering. Dolly the sheep, born on 5 July 1996, was the first mammal to have been cloned from an adult somatic cell, marking a breakthrough for science and, at the same time, sending shockwaves through societies, which suddenly realized just how far the Life Sciences had already gone. Questions quickly moved beyond the basic ethical concerns to a reformulation of the “human condition,” a new understanding of humans as “information machines.” Speakers at Ars Electronica’s related symposia in those years included the American scholar Donna Haraway (*1944), author of the 1985 essay “A Cyborg Manifesto,” and American digital media artist Victoria Vesna (*1959), as well as American economic and social theorist Jeremy Rifkin (*1945), French philosopher and sociologist Bruno Latour (*1947), and Austrian-born Bulgarian-American chemist Carl Djerassi (1923–2015), who fled Austria and the Nazi regime and helped develop the oral contraceptive pill.

In his contribution to the symposium on “Life Science” in 1999, Brazilian-American artist Eduardo Kac (*1962) pointed out: “Two of the most prominent technologies operating beyond vision are digital implants and genetic engineering, both poised to have profound consequences in art as well as in the social, medical, political, and economic life of the next century.”⁴⁴ In the same lecture he proposed “Transgenic Art” as a new art form, which makes use of biotechnology in order to intervene in the genetic structure of plants and animals, thus inventing new life forms.⁴⁵ At the festival, Kac presented his installation *Genesis*, which makes the strategy of “Transgenic Art” clear. *Genesis* features an “artist’s gene” invented by Kac, which was taken from a sequence of the biblical text from the Book of Genesis, translated into Morse Code, and from there into DNA.⁴⁶ With works from his 1994 computer-generated photographic series *KLONES*, Austrian artist Dieter Huber (*1962) presented one of the earliest artistic treatments of the potential of genetic engineering at the Festival “Next Sex” in 2000. Huber had used the image processing capabilities of computer technology to create provocative large-scale pictures of modified human bodies with dual tongues or breasts and shifting sexual attributes. As Gerfried Stocker put it: “Genetic engineering, and particularly modern human genetics, has become the central provocation of our age.”⁴⁷ Provocative and, at the same time, raising public awareness for the topics of “Next Sex,” was the “Sperm Race,” which took place in a scientific laboratory, set up in a container right on Linz Hauptplatz. The project, titled “Sex i(n) motion,” actually had a serious background regarding issues of male infertility. It gave male visitors the opportunity to submit a semen sample with the aim of having the quality of their sperm medically tested and have the chance to be identified as the day’s winner.

However, the strong presence of the Life Sciences in program of Ars Electronica and the number of related art projects did not go down well with everybody. So in 2000, Gerfried Stocker and Christine Schöpf felt the need to emphasize that “the shift of Ars Electronica’s focus is only an apparent

one in that nothing has changed with respect to the programmatic agenda of analyzing new technologies’ cultural processes and process of becoming a culture, as well as the possibilities of intervening in their formation.”⁴⁸ The point that Stocker and Schöpf were making here is, in fact, a crucial one for Ars Electronica. It touched upon Ars Electronica’s ability to continuously reinvent itself, not only in terms of event formats, but also thematically along emerging developments in and between the key areas that had been identified as early as 1979: art, technology, and society. This ability is closely connected with and also helps explain Ars Electronica’s resilience and the fact that we can meanwhile look back at four decades of its history.



The Border Patrol project by American artist **Paul Garrin** (*1957) and Canadian artist **David Rokeby** (*1960) received an Award of Distinction at Prix Ars Electronica 1997 and was exhibited at OK Center in 1998.

"To be genuinely contemporary, artists must conceive of themselves as nodes in a technologically determined social environment—and in doing so assume a highly political responsibility."

Gerfried Stocker

Gerfried Stocker, "Vector in Open Space" (1996), in: Druckrey, Timothy, *Ars Electronica* (Eds.): *Ars Electronica: Facing the Future – A Survey of Two Decades*, The MIT Press, Cambridge, Massachusetts, and London, England, 1999, p. 151.

Into A New Millennium — Ars Electronica Amidst the Scenes of Global Conflicts

Those years around the turn of the millennium were by no means exclusively dedicated to an ongoing "Biological Revolution," but in fact opened at least as much space to questions arising in areas of conflict between information technology, global politics, and art. First of all, there was the omnipresence of images of war via digital media, while warfare itself had changed massively through the same technology. In the year 1991, as Hannes Leopoldseder put it, "the computer lost its innocence," when in January the first laser-controlled bomb hit its target and the Gulf War started. "In no war before had the electronic command and decision system been used to such a degree of complexity."⁴⁹ Just a few days before the start of the 1998 Festival with the theme "Info War," the US Military started "Operation Infinite Reach" on August 20, with airstrikes against targets in Afghanistan and Sudan. In the course of this operation, as retaliation for bomb attacks on US Embassies, a pharmaceutical factory in Sudan was also destroyed. Speakers at the Festival included the American and New Zealand war correspondent Peter Arnett (*1934), well known for his coverage of the Vietnam War and the Gulf War, as well as French philosopher Paul Virilio (1932–2018), who wrote about the use of images and information in warfare way back in the 1980s. It was somewhat ironic that FBI agents were spotted at the Festival and at the same time, in the Donaupark in front of the Brucknerhaus, a hackers' meeting titled "HEART: Hackers Electronic Art" was reflecting on InfoWar from the perspectives of hackers and cyberpunks. Three years later, merely

five days after the end of the 2001 Festival on the topic of “Takeover,” the 9/11 attacks took place, which were broadcast live on television and which resulted in the 2003 hi-tech war in Iraq. The new millennium had begun with the escalation of global conflicts, which made certain dark sides of digital technology and growing geopolitical fault lines drastically visible.

The Tricky Business of Trying to Bridge the Digital Divide

One such fault line was understood as the “digital divide,” which separated the “information rich” from the “information poor.” A similar concern regarding such gaps in terms of computer-literacy within societies had been discussed by Hannes Leopoldseder in the early 1980s, while now this fault line was mainly seen between the rich industrialized countries well equipped with internet access and computers and the global south, which lacked access to networks and computer technology. Consequently the Festival in 2002 titled “UNPLUGGED: Art as the Scene of Global Conflicts” featured guests from African countries and thus opened up an entirely different kind of discussion compared to previous festivals. Participants from Africa like the Senegalese fashion designer Oumou Sy (*1952), who— together with the Greek-French film producer Michel Mavros (†2006)— founded “Metissacana,” the first Internet provider in West Africa in 1996, and Aminata D. Traoré (*1947), a former minister of culture and tourism of Mali, were busy adjusting many of the European misconceptions about Africa.

The choice of the Festival’s title image, which was based on the “Dymaxion Map” created by American architect and futurist Richard Buckminster Fuller (1895–1983), expressed the wish to achieve a broad and balanced view. Fuller had designed this modular map of “Spaceship Earth” in order to replace the 16th century model of the world—based on the generally used “Mercator projection”—with a flat map that allowed a more accurate and less distorted view of the planet rather than world maps that place the richest and, at that time, technologically most advanced areas of Europe, North Amer-



Premiere of the large-scale concert performance *Dialtones: A Telesymphony* by American artist **Golan Levin** (*1972) at the Brucknerhaus, Ars Electronica Festival 2001.

Golan Levin, winner of an Award of Distinction for Interactive Art with his project *Audiovisual Environment Suite* at the Prix Forum 2000.



ica, and Japan at the center. This broadened view contained a reality check for many of the techno-utopian notions of the digital revolution, including the hopes attached to the emancipatory potential of the internet. Belief in the paradigm of infinite growth in the digital economy had been badly shaken by the burst of the dot-com bubble in March 2000, and the 9/11 terrorist attacks had an even greater sobering effect on many levels. The world had changed, and the fact that some of the Festival's guests from Africa were arrested upon their arrival in Austria only served to highlight this.

Surveillance Comes in Many Guises

Carnivore by the Radical Software Group (RSG)—a public domain version of an FBI surveillance tool of the same name—won the Golden Nica for “Net Vision” in 2002. With this decision, the Prix Ars Electronica jury took a clear stance on the discussion about the public image of libertarian, activist hackers who were being increasingly cast as outlaws and criminalized in times of rising surveillance and security concerns. When entering the narrow corridor of the *Border Patrol* installation—winner of an Award of Distinction at Prix Ars Electronica 1997—at the OK Center in 1998, visitors found themselves quickly captured by the reticle of surveillance cameras and—just moments later—heard gunshots and saw their own image turn red. The unsettling experience of this interactive installation by American artist Paul Garrin (*1957) and Canadian artist David Rokeby (*1960) brought about an immediate change of perspective for those living within one of the protected, wealthy parts of the world, such as the “Fortress Europe.” Mexican artist Rafael Lozano-Hemmer (*1967) let nighttime passers-by on Linz Hauptplatz trigger interactive projections onto giant screens. Inside their own huge shadows, images of people from all around the world became visible. This playful work with your own “shadow image” in public space received an Award of Distinction for Interactive Art in 2002. Those attending the large-scale concert performance *Dialtones: A Telesymphony* by American artist Golan Levin (*1972) at the Brucknerhaus in 2001 were confronted

with questions of privacy and with their own image, which was in this case reflected in a huge mirror hanging above the stage. The members of the audience—after registering their mobile phones—could participate in the concert, composed of ringtones from their phones, which were triggered by Golan Levin and the other performers on stage. With projects like these and numerous others during those turbulent times, media art at Ars Electronica was much more than just “the scene of global conflicts” and revealed its potential for playful experiment, critical reflection, and political relevance.



Body Movies project by Rafael Lozano-Hemmer at Linz Hauptplatz (Main Square), Ars Electronica 2003.



ARS ELECTRONICA CASTS ROOTS IN THE REGION AND REACHES OUT GLOBALLY 2004–2008

Ars Electronica, meanwhile a fully established, four-pillar organization enabling transdisciplinary creation, became well-rooted also in the cultural landscape of Linz. Ars Electronica Futurelab earned the reputation of being a sought-after partner in cooperations with academic institutions as well as industry. In 2004 Ars Electronica entered the international stage by bringing the new Prix category “Digital Communities” to events at the United Nations and cultural partners in New York City. An ever-expanding portfolio of exporting exhibitions and forging international collaborations on several continents would follow.

- 20** **Ars Electronica in New York –
Reaching an International Stage**
- 21** **Going to the Country –
The Challenge of Simplicity**
- 22** **Diving Right into the Middle of the City
and Flying Over it**
- 23** **The Long Tail of the Hybrid**



Massive collaborative project *All of Linz – A Group Photo from Above* on the 2007 Ars Electronica Festival theme – “Goodbye Privacy.”

„Ars Electronica used to be my second home. I would go there to connect with my tribe.“

Joichi Ito, director MIT Media Lab

In a conversation with the author, Linz, 2019.

Ars Electronica in New York – Reaching an International Stage

After 25 years, the time seemed ripe for Ars Electronica to finally go global. Guests and participants had always come from many parts of the world, but bringing Ars Electronica's achievements onto an international stage was a different story. Anniversaries may be arbitrary numerological occurrences, but they are good moments to communicate what has been achieved and—even more important—to muster the resources for the next phase. Sometimes such anniversaries also coincide with developments, if not shifts, which are happening in larger contexts.

The first gold rush years of the digital economy and the disillusionment of emancipatory hopes attached to online culture, were followed by the burst of the dot-com bubble. Then a “reclaiming of the internet as a social space” emerged after some time. The numbers of non-commercial online projects, initiatives, grassroots platforms, and online communities, rose. Mobile phones were increasingly used for sending text messages instead of phone calls, and wireless networks—later named “Wi-Fi”—made internet connectivity for notebook computers and personal digital assistants (PDAs) available also in cafés and public spaces. In 2004, the appearance of smartphones was still three years away—with the unveiling of the Apple iPhone in 2007, internet access using mobile phones was slow and expensive. Nonetheless, online culture had become quite mobile and ubiquitous, and the first generation of “digital natives”—for whom computers and the internet had always been there—was growing up.

The introduction of a new Prix Ars Electronica category constitutes a reaction to this emerging trend. It was to be called “Digital Communities,” and Gerfried Stocker entrusted me with developing a master plan for this

first Prix category that had a clear focus on social phenomena related to digital culture and also touched on aspects of international policies. This came at a time when international organizations like the United Nations (UN) and the International Telecommunications Union (ITU) were holding large scale events to address issues of what was then called the “Information Society.” Those issues included the “digital divide” between industrialized countries and the countries of the “global south” as well as questions of generally promoting digitization, internet access, and media literacy. The first gathering of the World Summit on the Information Society (WSIS) in Geneva, December 2003, coincided with the preparational phase for the new Digital Communities category. In Geneva, the Austrian Sinologist, writer, and translator Ingrid Fischer-Schreiber (*1956) and myself worked on promoting the new category and on enlarging the network of international experts that she had already been busy weaving. Ingrid Fischer-Schreiber had been working as editor of the catalogues for the Prix and the Festival since the mid



American writer Howard Rheingold (*1947), author of *The Virtual Community – Homesteading on the Electronic Frontier*, at jury meetings of the new Prix Ars Electronica category “Digital Communities” in 2004.

1990s, and involved in the conception of Ars Electronica’s symposia since 2002. With her command of several languages and her excellent contacts to experts of the digital revolution, she was the right person to work with in developing Digital Communities.

My initial concept for the category tried to identify some of the challenges involved: the extremely broad scope of different phenomena that could fall into this category, the resulting difficulty to define criteria for selecting projects, and the best procedure to arrive at a proper assessment of the qualities of, for instance, an online community in a language you do not speak. Together with Gerfried Stocker and Ingrid Fischer-Schreiber, we arrived at a—in retrospect pretty complex—procedure, which consisted of a network of international experts giving their assessment of the submitted projects, a jury to select a shortlist of submissions and, finally, a jury to identify the winners. The first jury to identify the winners of the 2004 Digital Communities category, reflected the complex pattern of the category. Howard Rheingold, who was no stranger to Ars Electronica and who had only recently published his book *Smart Mobs – The Next Social Revolution* (2003), was our starting point in selecting the right mix of people for the jury. Clearly, we wanted this man, who was somehow the legendary father of “virtual communities,” to help us launch this new category. Another legend in his own right was the Italian photographer Oliviero Toscani (*1942), who had gained fame with his controversial campaigns for Benetton, and who had discovered his interest in digital media through the encounter with Gerfried Stocker and Ars Electronica. Being nonetheless a highly “analog” kind of person, he would often take the role of devil’s advocate in the jury deliberations. Joichi Ito had been member of several early juries in the World Wide Web category and was now bringing this experience to the early days of the Digital Communities category. Jane Metcalfe (*1961) and Louis Rossetto (*1949) founded and published *WIRED* magazine in the 1990s, a true hotspot of the digital revolution. The development and democracy expert Shanthi Kalathil (*1971) had recently co-authored—with Taylor C. Boas—

the 2003 book *Open Networks – Closed Regimes: The Impact of the Internet on Authoritarian Rule*. The Ugandan technologist and engineer Dorothy Okello was best known for her work in the Women of Uganda Network. Kalathil and Okello also brought in important expertise in the area of projects addressing aspects of the “digital divide.”

As a result of the complexity of the field to be covered by the Digital Communities category and the wish to address at least the main two aspects of “online community and collaboration” and initiatives striving to bridge the “digital divide,” we ended up awarding two projects in the first year. One Golden Nica went to *The World Starts With Me*, an educational website which combines addressing issues around the prevention of HIV/AIDS with skills in Information Technology. The other Golden Nica went to Wikipedia, the collaborative online encyclopedia co-founded by Jimmy Wales (*1966) in 2001. Wikipedia seemed to encompass several of the aspects behind the “reclaiming of the Internet as a social space.” A community of people collaborates to create a common public good and does so by using a piece of open source software, the wiki tool, which allows users to collaboratively set up and change websites. With this key feature, the Wiki software was in fact a tool that closely followed the original ideas of Tim Berners-Lee when creating the World Wide Web. It seems notable that Wikipedia still exists up to this day, is continuously maintained and improved by a community of volunteers, and is still run by an independent foundation—and has resisted being bought by investment capitalists or one of the big tech companies dominating the markets for technology, social media, and content today.

When Ars Electronica—on the occasion of its 25th anniversary in 2004—staged a number of exhibitions and events in New York City, the winners of the first Digital Communities award were part of the presentations. The fact that the Golden Nicas for *The World Starts With Me* and for Wikipedia were handed over during a ceremony at the headquarters of the United Nations in New York in June 2004, a few weeks before the usual Prix Gala

during the Festival in September, underlines the special character of this new category of Prix Ars Electronica. The exhibition *Digital Avant-Garde* in New York, co-curated by the American curator Benjamin Weil (*1962) and Gerfried Stocker, was held at Eyebeam. A second exhibition, *Interactions / Art and Technology*, took place at the American Museum of the Moving Image, and a symposium was held at the Austrian Cultural Forum. Benjamin Weil was at that time director of the Media Art Department at the San Francisco Museum of Modern Art (SFMOMA) and chief curator at Eyebeam Art + Technology Center in New York. The Austrian artist and curator Manuela Naveau (born in 1972 as Manuela Pfaffenberger) had already worked in the Ars Electronica Festival team, when Gerfried Stocker asked her to join a meeting together with Benjamin Weil in Linz, where the presentations in New York were planned. Naveau recalls how this inspiring meeting suddenly seemed to “open up the big world”¹ and in fact mark the birth of what would then become her department, Export, at Ars Electronica.

New York was the beginning of a series of international presentations for Ars Electronica, which continue up to the present day. They added an “Export” aspect to the impact and overall visitor numbers of many of the exhibitions, which so far had been shown only at the Festival and in a local context. This international stage also extended Ars Electronica’s network of cooperations to a global level. This applied to cultural institutions like the ones in New York as well as international organizations and global players in industry. After the burst of the dot-com bubble, the reputation of the Ars Electronica Futurelab kept companies approaching Ars Electronica. The presentations in New York had been possible due to the involvement of the German software company SAP as a sponsor. The regional headquarters of SAP in Berlin were also the site of the first international commission of the Futurelab—the project *Hidden Worlds*. *Hidden Worlds* was the mise en scène of an installation by Golan Levin and Zachary Lieberman, titled *The World of Noise and Voice* from 2002. Microphones and sensors pick up sounds, the pulse, and gestures from visitors and transform them into virtual creatures

drifting through the building as projections. The conceptual work on *Hidden Worlds Berlin* in 2004 and 2005 brought Gerfried Stocker and Horst Hörtner together in a close collaboration with Martin Honzik, who at that time was a member of the Futurelab. The project—later followed by the interactive guidance system *Source.Code* for SAP Headquarters in Walldorf, Germany in 2007—would turn out to be the model of working with innovative interfaces and data in relation to architecture, the urban context, and the modern workplace. Despite its quarter of a century of reputation, cooperations like this one with big players of the industry provided a learning curve for the—comparatively—small actor on that international stage that Ars Electronica was at the time.

But the reputation helped, and part of it was of course formed by the international recognition of Prix Ars Electronica, which in 2004 also underwent an important structural change, in fact the most important organizational change for Ars Electronica since 1996. In 2004 the entire responsibility for the Prix shifted from the previous cooperation between Ars Electronica and the ORF towards a single ownership by Ars Electronica. In 1998, Hannes Leopoldseder had taken the position of director of Information at the ORF in Vienna and Kurt Rammerstorfer succeeded him at the Regional Studio in Linz. Some of the winners of Golden Nicas in that year reflect the status quo of the digital revolution and the emerging trends resulting in the introduction of the Digital Communities category. The “.net” category awarded the initiative “Creative Commons,” which developed and promoted new kinds of licensing models for copyrighted content, which were better adapted to the situation of digital content in an online culture and to the needs of creatives and copyright holders, who were increasingly bypassing the usual gatekeepers like record labels, publishing houses, agents, and galleries. The Golden Nica in the Interactive Art category went to the mathematician Mark Hansen and the artist and designer Ben Rubin for their project *Listening Post*, which is a real-time visualization and sonification of online conversations. The installation is formed from 231



Listening Post installation by statistician **Marc Hansen** and artist **Ben Rubin**, winners of the Golden Nica in the “Interactive Art” category in 2004.

electronic displays, which show random words from online communication while those words are made audible by text-to-speech software. The piece has the seductive quality of triggering the audience’s own associations to complete the fragmented communication and exudes a meditatively poetic mood, while representing an online culture interpretation of musical work with an element of randomness inspired by the works of John Cage.

Basically at the same time as Ars Electronica started to go global in 2004, the organization also cast further and deeper roots in the local cultural and academic landscape of Linz. Interestingly, these new bonds in the local context were all connected with international partners and projects and came about through the involvement of new people. In 2004, the media artists Christa Sommerer and Laurent Mignonneau returned from their teaching assignments at IAMAS Institute of Advanced Media Arts and Sciences, in Gifu, Japan, in order to assume their professorships at the Interface Culture Lab of the University of Art and Design in Linz. They introduced a cooperation between IAMAS, the University of Art and Design Linz and Ars Electronica in order to present the results of their students’ work at IAMAS during the

Ars Electronica Festival. The success of this project in the following years led to the format of the “Campus Exhibitions” as an ongoing, important part of the Festival. The format of the “Campus” exhibitions was one of the fruits of the alliance between Gerfried Stocker and the rector of the University of Art and Design, Reinhard Kannonier (*1947). The University of Art and Design in Linz had been founded in 1947 as the city’s “art school” in the spirit of the ideas of the Bauhaus. The Bauhaus had been founded in 1919 by architect Walter Gropius (1883–1969) in Weimar, Germany, and was active as a center of modernity and avantgarde until it was closed down in 1933 due to pressure from the Nazi regime. By modeling the new art school in Linz on the ideas of the Bauhaus two years after the end of World War II, the city had drawn a decisive demarcation line between the new approach to art and the art ideology of the National Socialist dictatorship, which had dominated the preceding years. In 2009 Reinhard Kannonier noted: “At the beginning of the 2000s the Art University Linz established ‘Intermediality’ as one of the central building blocks of its profile—a step that would have been inconceivable without the outstanding international significance of Ars Electronica (...).”²

In 2003 the Austrian curator Stella Rollig (*1960), who had been the founding director of the art platform “Depot” in Vienna, was appointed director of the Lentos Art Museum in Linz. The Lentos had been created from the former municipal “Neue Galerie,” which had competed with Ars Electronica for the building that then became the Ars Electronica Center in the 1990s—and moved into its new premises, designed by the Swiss architects Weber and Hofer. The Lentos was a 130-meter-long, glass-covered structure in the form of an arc, situated on the banks of the Danube just across the river from the Ars Electronica Center. These opposing urban positions of the Ars Electronica Center and the Lentos seemed to symbolize the juxtapositions between media art and contemporary art. Stella Rollig critically characterized the general situation in 2004: “The persistent, latent disdain for media art obvious in numerous institutions is inevitably transmitted in

museumgoers. Reservations regarding media art are the most deep-rooted and hardest to eradicate among the rampant prejudices about contemporary art.”³ Her cooperation with the Ars Electronica Center, however, turned out to be a good and lasting one: “This neighborly arrangement of the Ars Electronica Center and the Lentos Museum makes possible a division of responsibilities without entanglement in a dogmatic turf war.”⁴

When Rollig commenced her work as director of the Lentos in 2004, Gerfried Stocker and Reinhard Kannonier soon paid her a visit. They hoped to gain her support for a cooperation with them in founding a new institution in Linz, which would be devoted to research on the history of media art. Thus a new Ludwig Boltzmann Institute in Linz, the LBI for Media.Art. Research, was born. The German media theorist Dieter Daniels (*1957) was appointed director of the new institute, with Ingrid Fischer-Schreiber as deputy director. The institute positioned itself between the humanities and cultural studies on one side and the natural and technological sciences on the other.⁵ It embarked on a number of projects, also drawing from and researching in what meanwhile consisted of almost three decades of Ars Electronica’s archive. The Italian researcher Annalisa Pelizza wrote her 2009 thesis on the basis of the Prix Ars Electronica Digital Communities category, and for this conducted research into the Ars Electronica Archive. She titled it *Tracing Back Communities*,⁶ and noted about the crisis of libertarian digital culture, which also deeply affected the work of Ars Electronica in that field: “(...) from the end of 1990s to mid 2000s, three of the main libertarian myths based on the cybernetic vision of information technology as the source of a second industrial revolution bearing the promise of emancipation for the citizenry had to face counter-evidence.”⁷ Activities at Media.Art.Research meanwhile culminated in the exhibition *See This Sound*, which was presented in the context of Linz ‘09—Linz being European Cultural Capital in 2009. The institute’s effort, however, was short-lived, and in 2009 the Ludwig Boltzmann Society routinely evaluated the results and decided not to prolongate the institute’s operations in Linz.

„SIMPLICITY is not the opposite of complexity; rather, it is its complementary key, the formula that permits us to access and utilize the polyvalences of virtual realities and global knowledge networks.“

Gerfried Stocker and Christine Schöpf

Gerfried Stocker, Christine Schöpf, SIMPLICITY – the art of complexity, in: Stocker, Gerfried / Christine Schöpf (Eds.), *SIMPLICITY – the art of complexity, Ars Electronica 2006*, Hatje Cantz, Ostfildern, 2006, p. 10

Going to the Country – The Challenge of Simplicity

The complexity of the manifold activities, diverse cooperations, and numerous artistic projects of Ars Electronica had increased from year to year. This was not merely due to the great increase in recognition both locally and abroad, which went hand in hand with many more options to cooperate. It also reflected an overall situation, which was directly related to what Ars Electronica is about. The effects of—meanwhile ubiquitous and indispensable—digital technology had massively added to the pressure and complexity felt at the workplace as well as in private life. Globalized economies and politics as well as networked media realities together had turned the world into an often confusing and challenging place to live in. So a longing for simplicity was noticeably on the rise and promised to represent more than a short-lived hype for one season.

Rather than standing on the sidelines of these developments, Ars Electronica has tended to dive right into the maelstrom of change, innovation, and critical issues. The program of the Festival reflected this in a plethora of events running in parallel at different venues across the city. When Ars Electronica in 2006 addressed all this and made “SIMPLICITY – the art of complexity” the theme of the Festival, it was of course not done with a naive notion of “simplicity” in mind, as Gerfried Stocker and Christine Schöpf quickly pointed out: “SIMPLICITY is not the opposite of complexity; rather, it is its complementary key, the formula that permits us to access and utilize the polyvalences of virtual realities and global knowledge networks.”⁸ The choice of the venue for one of the days of the Festival, however, had a remarkable impact in terms of experiencing and reflecting on “simplicity.” So on a late summer day in September 2006, the Ars Electronica crowd made the little journey to St. Florian Monastery some 15 km south of Linz.

"I have always been very critical and skeptical of modern technology, not because I am against it, but because I believe it easily leads to creative laziness. But thanks to Ars Electronica I have learned about the utility of technology and not its passivity, of its possibilities and not its limitations, of its creativity and not its conformity."

Oliviero Toscani

St. Florian Monastery of The Canons Regular of St. Augustine goes back to the fourth century and was dedicated to the martyr Saint Florian, who lived in the third century and whose grave lies beneath the monastery. The patron saint of both the city of Linz and the province of Upper Austria had trained military fire fighters, which also made him the patron of firefighters. The monastery is famous for its library of around 150,000 volumes—including around 800 medieval manuscripts and one of the greatest collections of Arabic literature—and the organ named after the composer Anton Bruckner, who himself was a virtuoso on the organ and for some time the official player of the instrument. The monastery's set of chimes is an extensive system of historic and modern bells positioned in the different towers. For participants of that day's events at St. Florian, the act of "Going to the Country"—which was also the day's theme—provided a beneficial change of perspective on the Festival's symposia and discussions.

Those discussions had started in Linz and continued at St. Florian, as the conference speakers had made it to the Monastery, as well as several of the Festival's artists who participated with their—mostly musical—performances. The American designer and technologist John Maeda (*1966), who was at that time professor at the MIT Media Lab, had curated the symposium on "simplicity." Maeda had recently brought out his book *The Laws of Simplicity* (2006), which not only explained his thoughts around his opening formula "Simplicity equals Sanity," but also expressed them in the design and brevity of this slim 100-page volume. The discussions he led at St. Florian addressed questions on "how a new generation of designers is dealing with the growing complexity of our world," and included speakers like American blogger and designer Jason Kottke (*1973), who had developed the Silkscreen typeface. German publicist Wolfgang Blau (*1967), who in 2017 would become president of Condé Nast International, discussed with Oliviero Toscani and the Italian scholar of Media Studies, Donatella Della Ratta, how the "pressure exerted by the mass media to simplify messages is ruining politics and democracy," in fact a far-sighted topic about a process

whose results are visible today. Oliviero Toscani co-created the magazine *COLORS* together with the American art director Tibor Kalman (1949–1999) in 1991, while Donatella Della Ratta had extensively written about media in the Arab world and in 2017 published *Shooting a Revolution – Visual Media and Warfare in Syria*.



British composer of minimal music Michael Nyman (*1944) performing his *Concert for an 8-tone set of bells* at the Novice Garden as part of *Going to the Country St. Florian*, Ars Electronica Festival 2006.



Italian photographer Oliviero Toscani (*1942), German journalist **Wolfgang Blau** (*1967), American movie director **Marc A.Z. Dippé** (*1958), and American designer **John Maeda** (*1966) at *Going to the Country St. Florian*, Ars Electronica Festival 2006.

“Simplicity” was not only discussed at St. Florian, but its aspects could also be experienced in various parts of the Monastery’s compound. Zen archery was practiced in the garden while the Austrian composer and musician Rupert Huber (*1967) took “advantage of the harmonic resonant space of the 15-meter-high Marble Hall for his piano improvisations.” At the Bruckner organ, the collective *Spire*—formed by British musicians Charles Matthews (*1966) and Philipp Jeck (*1952), together with Austrian musician Christian Fennesz (*1962)—developed together with the monastery organist, Hungarian musician Robert Kovács (*1976), a piece of “musical time travel.” British composer Michael Nyman (*1944), famous for his film scores for Peter Greenaway, performed his *Concert for an 8-tone set of bells*, sitting in the garden and using the remote controls for the bells up in the church’s tower. In the monastery’s Baroque library texts by French philosopher Paul Virilio, who had also written about topics of speed and technology, and by St. Augustine of Hippo (354–430), the early Christian theologian and philosopher, were read all day long.

"Art seeks the relevant interfaces between the great questions raised by Ars Electronica and the needs of society in order to insinuate itself at precisely that spot as magical authority, demonstrator or diplomat, as membrane or catalyst."

Martin Honzik

Martin Honzik, "Ars Electronica Goes Public", in: Leopoldseder, Hannes, Christine Schöpf, Gerfried Stocker (Eds.): *The Network for Art, Technology and Society – The First 30 Years Ars Electronica, 1979–2009*, Hatje Cantz Verlag, Ostfildern, 2009, p. 182.

Diving Right into the Middle of the City and Flying Over It

Music did not only figure prominently during the Festival's visit to St. Florian, but generally belongs to the DNA of Ars Electronica. In a way, that initial moment of Ars Electronica in 1979 with music by Anton Bruckner used for the first *Klangwolke* set the tone for the following years of countless concerts and musical projects at the Festival and the respective category of Prix Ars Electronica. Since 1979 the conditions for creating and for listening to music changed due to digital technology, which brought the computer as a musical instrument and streaming of digitized music as the dominating form of listening. Over several years, American conductor and pianist Dennis Russell Davies (*1944) and Japanese pianist Maki Namekawa have often discussed such questions with Gerfried Stocker, and a longstanding and fruitful cooperation between the two musicians, the Bruckner Orchester Linz, and Ars Electronica was a result of these discussions. Dennis Russell Davies became chief conductor of the Bruckner Orchester Linz in 2002, and as early as 2003 entered the cooperation with Ars Electronica to "combine the resources of the Ars Electronica's visual technology, the musical expertise of the Bruckner Orchester Linz, and the composers whose music in recent years has found its expression through the medium of the modern (acoustical) symphony orchestra but is still struggling to find a wider audience."⁹

In 2004 the first of a series of music visualizations was realized together with the Ars Electronica Futurelab: a concert performance of the opera *Das Rheingold* by German composer Richard Wagner (1813–1883).

In the framework of a visual concept by Austrian painter and media artist Johannes Deutsch (*1960), the singers were represented by virtual characters, which were in direct connection with them. A visualization of the 1913 ballet *Le Sacre du Printemps* by Russian composer Igor Stravinsky (1882–1971) with artistic design and choreography by Austrian director and media artist Klaus Obermaier (*1955) and interactive design by Ars Electronica Futurelab followed in 2006. Besides the work with orchestral music, Dennis Russell Davies and Maki Namekawa also repeatedly performed together on the piano in projects for Ars Electronica, with music from composers like Philip Glass in conjunction with the works of different media artists. Drawing from such experiences, Maki Namekawa reflects on the relationship of music and computer-generated visualizations: “In Japanese calligraphy, the thoughts that are to be expressed are set down on paper in the rhythm of inhaling and exhaling. The characters can have a completely different meaning, depending on how the person writing them feels at the moment. The script lives and breathes.”¹⁰

Bringing Ars Electronica Into Unexpected Settings

The work at the nexus of music and media art connected Ars Electronica not only with traditions of modernity and with influential figures like American composer John Cage (1912–1992). Many composers, musicians, and artist involved in Ars Electronica have been influenced by John Cage, as was Dennis Russell Davies, who remembered their friendship and collaborations in 2006: “(...) the way I thought about and listened to music and the sounds of the environments in which I lived was profoundly changed by his music and ideas.”¹¹ Musical projects also brought Ars Electronica to various spaces, where otherwise doors would not have opened so easily.

The—not only musical—program of that special day in St. Florian in 2006 had been developed by Gerfried Stocker together with Martin Honzik,



Premiere of *Das Rheingold – Visionized*, a visualization of Richard Wagner’s opera *Das Rheingold* by the Ars Electronica Futurelab team, led by **Horst Hörtner** and **Christopher Lindinger** in 2004.

who had only recently become head of Festival, Prix, and Exhibitions and this was his first Ars Electronica Festival in the new role. After studying Visual Experimental Design at the Art University in Linz and completing a master’s program in culture and media management, he had since 2002 worked at the Ars Electronica Futurelab. He enjoyed the new challenges of bringing Ars Electronica to different locations, but at the same time was well aware of the “guest role in the public sphere.”¹² For him a project like *Going to the Country* was the expression of “the wish to break through the conventional boundaries of the theoretical discourse and to push that envelope out as far as possible.”¹³ In the following year, a somehow similar challenge in a profoundly different setting would await him.

The 2007 theme of the Ars Electronica Festival was “Goodbye Privacy,” and the different activities of the Festival were scattered across the city of Linz in order to catapult the discussions right in the middle of urban reality. The Marienstraße, a neglected side-street in downtown Linz lined with abandoned shops and bars, became one of the action hotspots. This was the time when the online virtual world, Second Life—launched by the San Francisco-based company Linden Lab in 2003—had reached about a million regular users.

Second Life was based on user-generated content—of basically all kinds of activities you might think of—populating its 3D-environment. Individuals, organizations, and companies were rushing there as the new—virtual—“place to be.” The hype of Second Life seemed like a less naive and more ruthless version of the goldrush days of the late 1990s, when the digital economy had been heating up. Ars Electronica saw the potential of the Marienstraße, as Gerfried Stocker and Christine Schöpf explained: “The prevalence of vacant retail space here strongly evokes the atmosphere of a stage set and makes pedestrians feel like they’re walking among the artificial buildings of a virtual city like *Second Life*.”¹⁴

Creating the “Second City”

So Ars Electronica actually performed a kind of artistic and technological “takeover.” Amidst seemingly never-ending torrents of rain, they transformed Marienstraße and the neighborhood into a “Second City” with elements of visual redesign, surveillance technology, numerous art projects, guided tours, and workshops about Second Life, thus turning the entire urban environment there into a “portal between reality and artificiality.”¹⁵ The German media and conceptual artist Aram Bartholl (*1972), who served as a curatorial advisor for this “Second City,” posed questions that quickly came up in this scenario: “What happens when established forms of digital communication are transferred directly into physical public space? What

status does privacy have in that world and in this one?”¹⁶ One may recognize here that it actually is one and the same artist’s approach, which Martin Honzik applied to the visit to the countryside Monastery of St. Florian as well as to the urban side-street virtuality portal of Marienstraße: “Art seeks the relevant interfaces between the great questions raised by Ars Electronica and the needs of society in order to insinuate itself at precisely that spot as magical authority, demonstrator or diplomat, as membrane or catalyst.”¹⁷

One such catalyst of net culture was the Austrian media artist and theorist Armin Medosch (1962–2017), who—together with the radio journalist Ina Zwerger, head of the “radio college” of the ORF’s cultural radio OE1—curated the Festival’s Goodbye Privacy symposium in 2007. The symposium covered many aspects of the overall topic, including questions of autonomy as well as of creative resistance. In his 2004 book *Freie Netze* (“Open Networks”), Medosch had advocated free wireless networks as an important infrastructure independent from the state and from corporations.

Medosch and Zwerger raised questions about aspects of a common public sphere that today seem to have vanished from view: “The open question is whether these platforms, forums and channels constitute a common public sphere in the sense of critical potential for civil society, or whether this potential is nothing more than an illusion for the simple reason that the user-friendly sites that host this self-publication are not the public facilities or commons, but rather private property for the most part.”¹⁸ Their questions also demonstrate just how visible the real character of the so-called “social media” platforms was by 2007, if you discussed them critically—as this Ars Electronica Festival did.

The erosion of privacy was nowhere more evident than in the ubiquity of surveillance technology. The Austrian filmmaker Manu Luksch (*1970) presented her 2007 film *Faceless*, which is a “CCTV science fiction fairytale set in London, the city with the greatest density of surveillance cameras

on earth.”¹⁹ The—staged—scenes of the film were filmed by surveillance cameras, whose material could in many cases be obtained under the terms of the UK Data Protection Act, thus turning the footage into a kind of legal readymade. Based on legislation protecting privacy, the faces of the people in the film *Faceless* were blacked out.

Linz Looks Back

While Manu Luksch was “hacking” the surveillance system with legal means, the project *Ganz Linz (All of Linz) – A Group Photo from Above* followed a different strategy to “look back” at surveillance. Based on an idea by Gerfried Stocker and Martin Honzik, Ars Electronica and the ORF invited the population of Linz to take part in a “collective artistic experience” that was also referred to as “Linz Looks Back.” A special aircraft would circle over Linz at an altitude of 1,140 meters for four hours and thirty minutes and create a hi-res image of Linz from above with a resolution where each of the images pixels would equal 8 cm². There were all kinds of collective creations aiming at a visibility in that “group portrait”: faces, animal shapes, text messages, etc. The project clearly lies in the tradition of the first Ars Electronica from 1979, when the population of Linz had been encouraged to put their radios in the windows and tune in on the music of Anton Bruckner in order to collectively create the *Klangwolke* over the city.

While in 1979 the idea was to use the medium of radio to switch roles from receiver to sender, in 2007 a visual medium was appropriated to switch roles from the objects of surveillance to those actively looking and sending visual messages back. And when many of the pictures were then made available online, the project also fed back into the “cloud” of the World Wide Web.

The Long Tail of the Hybrid

Like a principal theme in a musical composition, certain themes come back in many variations. One such theme in the history of Ars Electronica is “Hybrid.” In their preface to the 2005 Festival catalogue *HYBRID—living in paradox*, Gerfried Stocker and Christine Schöpf drew one connection to Ars Electronica itself: “Digital media art itself is a hybrid born from the connection of art and technology, accumulating diverse modes of expression and demanding a unique crossover of expertise and knowledge.”²⁰ And they reach further back: “The cultural history of hybridization, from the husbandry and cross-breeding of plants and animals, the mechanical, electrical and digital simulation and replication of nature, and now to the arrogance of modern genetic engineering, has also always been an expression of humanity’s age-old longings to rise above itself and to modify and correct nature.”²¹



Performance of *Bleu Remix* by Swiss artist **Yann Marussich** at Lentos Art Museum, winner of an Award of Distinction in the Prix category “Hybrid Art”, Ars Electronica 2008.



Strandbeests installation by Dutch artist **Theo Jansen** (*1948) at Linz Hauptplatz (Main Square), Ars Electronica Festival 2005.

The theme evidently has many facets, the cultural side of which was addressed by Derrick de Kerckhove, who curated the symposium in 2005. “Art is the food of hybridity. It is translating and transporting the modes of one culture into another, lifting bits of both and mixing. Sampling is not just one of the techniques of the digital, it has become a way of life. (...) What can people do in an environment where everything is always available?”²² In his talk at the Hybrid Identities symposium, German art curator and media studies scholar Jens Hauser (*1969) addressed Bio Art, which he—in his text “Bio Art –Taxonomy of an Etymological Monster”—found to be more than a hybrid, but a “proliferating mutant term.”²³ Hauser also reached back to Ars Electronica’s 1993 festival, Genetic Art – Artificial Life, and followed the topic through its many mutations, which also included the different festival topics up to the turn of the millennium.

During the 2005 festival, strange fragile creatures populated Linz Hauptplatz and the OK Centre for Contemporary Art, slowly—as if following inner impulses—moving across a stretch of sand that had been put out for them. The *Strandbeesten* (Beach Beasts) as well as their creator, the Dutch artist Theo Jansen (*1948), were somehow hybrid creatures. The huge beasts were made from large numbers of plastic tubes, designed so that they would be able to move on their own, as soon as they had accumulated enough power from the wind blowing through them. Theo Jansen combined studies in physics with his work as an artist, developing kinetic art objects since 1990. One could easily imagine that the Dutch coastline with its constant winds would be the natural habitat of the beach beasts, which made for a wonderful object of reflections about hybridity, artificial life, and robotics as well.

The 2005 Hybrid festival theme marked the starting point of a freshly intensified look at the field, which also resulted in the creation of the Hybrid Art Prix category in 2007 and the “Bio Lab” as an important element in the new Ars Electronica Center of 2009. Jens Hauser, who focuses on transgenre and hybrid aesthetics in his research and curatorial work, became one of the figures in the Ars Electronica network, who participated more than once in the creation of something new. Jens Hauser was not only important in shaping the new Hybrid Art category, he also joined the first jury of another new category, AI and Life Art, in 2019. Joichi Ito, who was on the jury of the new World Wide Web category in 1995 and the first Digital Communities jury in 2004, would be another such person, whose natural habitat seemed to be in the realms of online culture, virtual worlds, and online games. This notably included the online role-playing game *World of Warcraft*, which he dived deeply into and has also described as a training ground for management skills.²⁴ Ito gained public attention as an entrepreneur and founder of several internet and technology companies and as an activist involved, for instance, in the Open Source Initiative. From 2006 until 2012 he was serving as the chairman of Creative Commons, before becoming director of the MIT Media Lab in 2011. In 2008 Ito published the book *FREESOULS: Captured*

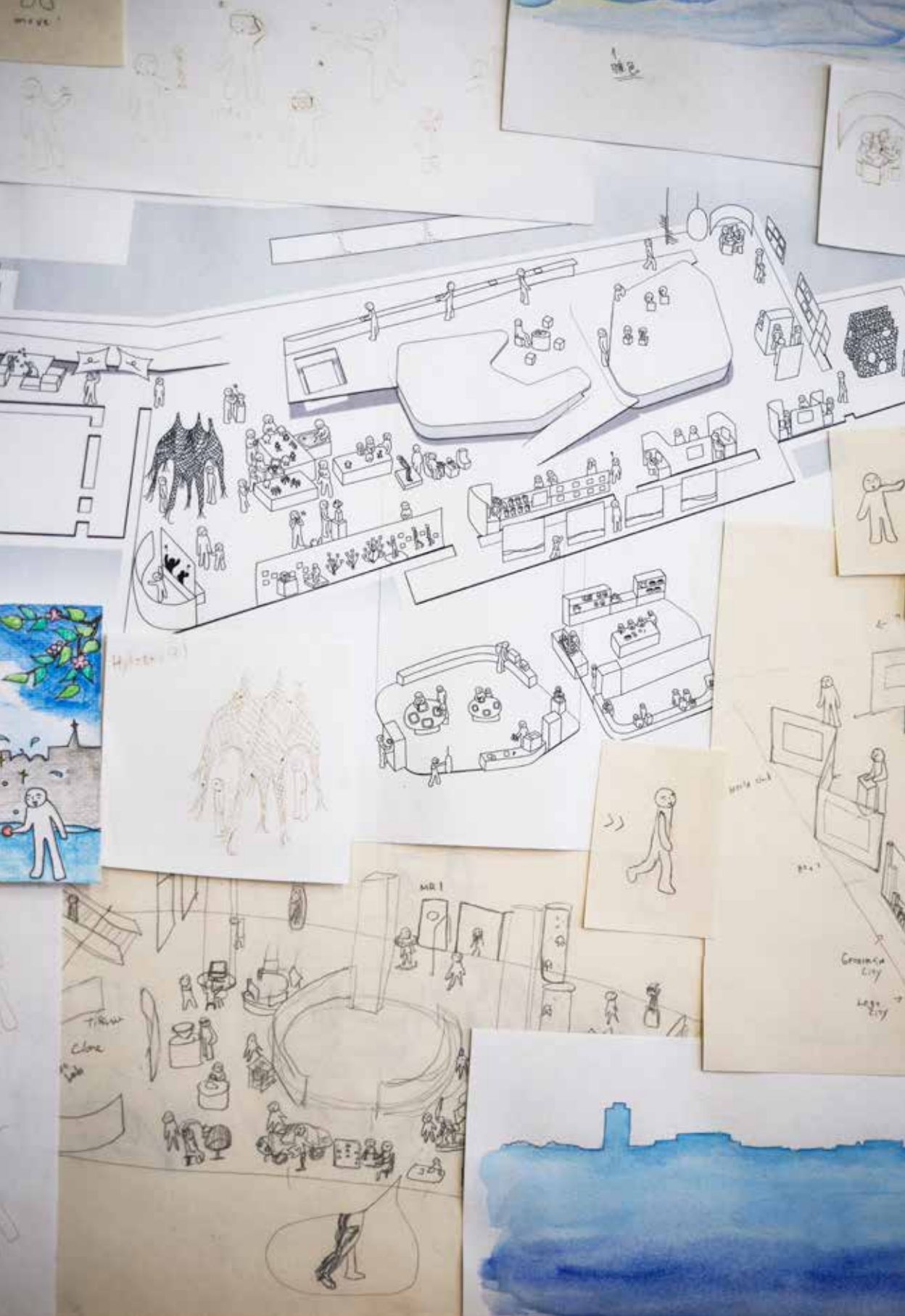
and Released,²⁵ which illustrated the novel approach of Creative Commons to questions of intellectual property through a series of photographic portraits—taken by Joichi Ito himself—and essays by many key protagonists of the digital culture including Howard Rheingold, Lawrence Lessig, Isaac Mao, and Cory Doctorow. The Canadian-British science fiction author and activist Cory Doctorow took part in the 2004 Digital Communities juries .



German media art scholar Jens Hauser (*1969) during Prix Ars Electronica 2017 jury deliberations.

Among the upheavals in economies and societies resulting from digitization and the internet, the effects on the existing system of intellectual property turned out to be most severe and also most difficult to find solutions for. When Ars Electronica took “A New Cultural Economy: The Limits of Intellectual Property” as the Festival’s topic in 2008, it was to cast a look at a discussion dominated by conflicting approaches: “the value of intellectual property, freedom of information and copyright protection, big profit-making opportunities and the vision of an open knowledge-based society that seeks to build its new economy on the basis of creativity and innovation.”²⁶ Joichi Ito curated the symposium in 2008 and noted: “Intellectual property, while key to the post-industrial revolution nature of the firm, is more of an encumbrance than an asset to the sharing oriented mode of creation now central to the internet.”²⁷ One point in the discussion about intellectual property rights, however, was related to realistic and viable ways for creators to have control over the licensing model they wanted to choose for their work, thus finding a balance between participating in a sharing economy and making a living from their creative work. From another angle, a strong statement in the overall discussion of the “New Cultural Economy” was the *Vernichtungsaktion* (performance of destruction) on Linz Hauptplatz. In the course of the day-long performance, based on an idea from Martin Honzik, confiscated knockoff brand name merchandise was destroyed on the very same spot as the usual flea market taking place there.

An exhibition was dedicated to the “Featured Art Scene” of 2008 from Slovenia, curated by Jurij Krpan, the director of Kapelica Gallery in Ljubljana. Krpan’s explanation of the exhibition’s title, *Ecology of the Techno Mind*, included thoughts that well describe the fields of tension where Ars Electronica’s work was located: “The dimension that is neither total fascination with science and technology nor Luddite rejection; neither the fetishism of interface nor the romantic tangle of wires; neither hermetic art nor instrumentalised technology; neither, nor ... ecology as a pose that questions every statement.”²⁸



THE NEXT LEVEL — A NEW ARS ELECTRONICA CENTER 2009–2011

The opening of the second, significantly larger Ars Electronica Center coincided with Linz becoming European Capital of Culture at the beginning of 2009. The new Center offered not only the large-scale “Deep Space” 3D-projection stage, but also a number of “Labs” for hands-on experience in areas including robotics and biotech. The Life Sciences—already present in Festival topics and a Prix Category “Hybrid”—continued to play a prominent role in exhibitions at the Center and the Festival.

- 24** Learning About New Views of Humankind –
The Second Center and its Labs
- 25** Robots and Androids Are Among Us
- 26** Sparks of a New Renaissance – Reaching Out
Into the Deep Space
- 27** 80 + 1 – Turning Jules Verne’s Wager
Into A Global Conversation
- 28** Beyond Repair? – Ars Electronica and Saving the World



Emiko Ogawa's sketches for the second Ars Electronica Center's orientation system, with the Main Gallery exhibition in focus.

"We developed a kind of hybrid between exhibition and laboratory, which has not been done before in that way and was extremely interesting also for the audience."

Gerfried Stocker

In a conversation with the author, Linz, 2019.

Learning About New Views of Humankind – The Second Center and its Labs

In 2009, when Ars Electronica celebrated its 30th anniversary, British architect Peter Higgins wrote: "For me the building presents an entirely new hybrid architectural typology. Yes, it is a visitor attraction, a place of learning, a research lab and an external meeting place with media facade. It can work for the individual, the family or even the festival digerati who will climb all over it every year in the month of September".¹ The building he was referring to, was a completely new Ars Electronica Center, which had replaced the "first" Ars Electronica Center—after 13 years of its operation—in the same location. The inauguration of the new Center on 2 January 2009 coincided with the opening of "Linz '09," the year of activities of Linz as "European Capital of Culture." Higgins, the creative director of Land Design Studio in London and a specialist in the design of narrative environments for museums, had been on the jury of the architecture competition, which had been won by Treusch Architects. Treusch Architects developed a solution that seamlessly integrated the old building with a new structure erected next to it. The entire Center—now with premises of 6,500 m²—was covered with a glass facade with 40,000 diodes in red, green, blue, and white, which at dusk started to turn it into huge shining ship sitting on the banks of the Danube with its colors reflected in the river. With its programmable media facade, the Ars Electronica Center had become a signature landmark of Linz in the context of the other cultural institutions on the opposite bank of the river, the Brucknerhaus from 1974, the Lentos Art Museum from 2003 and the historic Schlossmuseum on the hill above the city, which also received a new wing in 2009. The way in which the building entered into a dialogue with the ambience, mirrored the many ways in which the institution Ars Electronica was collaborating with most of the cultural and academic insti-



Design for the second Ars Electronica Center by Treusch architecture ZT.
The building was opened to the public on 2 January, 2009.

Blue by h.o, installation for the new Ars Electronica Center in preparation, 2008



tutions of Linz. Christopher Lindinger, vice-director of the Futurelab, was the project manager for the new Ars Electronica Center. He specially appreciated the overall shape of the building, which he had favored, and noted how the public quickly started using that new outdoor space opening up between the facade of the Center and a broad staircase on top of the wing housing the Futurelab—a public space somehow reminiscent of the Spanish Steps in Rome or an ancient Greek amphitheater.

With the new building, the Ars Electronica Center had not only gained more exhibition space and urban visibility, but had also used the opportunity to completely reinvent itself. Things were not just bigger, but also profoundly different. The new spacious Main Gallery, 1,000 m² of main exhibition space, into which visitors slowly descended on a staircase, gave the impression of a high-tech “Cabinet of Wonders,” complete with four new laboratories. The BrainLab, BioLab, RoboLab, and FabLab together formed the core of the new exhibition, *New Views of Humankind*, which explored the ways in which digital technologies allowed us to form a new understanding of ourselves as humans. Being able to observe the brain as it thinks or to decode the ultimate building blocks of life itself, belong to the game-changing innovations that could be experienced first-hand in these labs. Also the human activity of “making” took on a completely new twist when succeeded by rapid prototyping with a 3D-printer or a laser cutter. Transforming core parts of the former Museum of the Future into a series of Labs for hands-on learning was an essential aspect of the reinventing of the Ars Electronica Center in 2009. This process was supported by the special architecture developed for this new kind of exhibition. American-Austrian architect and designer Scott Ritter (1962–2018) had designed numerous exhibitions for Ars Electronica since 1996. His approach to the design challenges involved became visible also in the interior housings he had created for the Labs: “The borders between hardware and object, as well as between object and room, should begin to blur whereby the objects and indeed the room itself becomes an interactive spatial experience (...).”²

"The borders between hardware and object, as well as between object and room, should begin to blur whereby the objects and indeed the room itself becomes an interactive spatial experience (...)."

Scott Ritter, architect and designer

Scott Ritter, "Information Architecture: Architecture as Information," in: Leopoldseder, Hannes, Christine Schöpf, Gerfried Stocker (Eds.): *The Network for Art, Technology and Society – The First 30 Years Ars Electronica, 1979–2009*, Hatje Cantz Verlag, Ostfildern, 2009, p. 252.



Main Gallery of the second Ars Electronica Center, exhibition design by **Scott Ritter**, 2010.

One part of the exhibition was occupied by a kind of "forest" of white shimmering mesh-like forms hanging from the ceiling. When you ventured into this *Hylozoic Grove*, the structures came to life and reacted to your presence. This installation by Canadian artist and architect Philipp Beesley (*1956) consisted of a geotextile mesh that was densely equipped with proximity sensors, microcontrollers and actuators, thus turning it into an electrokinetic intelligent machine. *Hylozoic Grove* brought technological materials and components into a symbiotic relationship with organic structures and made you ponder questions about "nature" and "life" on an intuitive as well as rational level. In a long corridor next to the exhibition hall, the installation *Blue* by the group "h.o," led by Hideaki Ogawa, reacted to the river Danube. When arriving at Linz in 2007 for a residency at the Futurelab, Hideaki Ogawa noticed the pool of water in the building pit for the Center and understood the impact of the structure's proximity to the Danube and the fact that the Main Gallery would be located below water level. *Blue* was to become a site-specific art piece that visualized—based on real-time data retrieved from the internet—the flow speed, wave formation, and water level of the Danube along the walls of that corridor right next to the river. *Blue* reflected nature—the times of the day, the passing of the seasons, and the weather—and thus linked the Ars Electronica Center with its immediate surroundings.



Japanese robotics researcher Hiroshi Ishiguro with his android double *Geminoid* at the Ars Electronica Gala 2013 in the Brucknerhaus.

Robots and Androids Are Among Us

There was a man sitting for hours in the CUBUS, the rooftop café of the Ars Electronica Center. He did not really seem to appreciate the view of Linz, nor was he eating anything. His presence gave the visitors of the 2009 festival a strange feeling and so they decided to look closer. You could see the puzzlement on their faces, when they discovered that this “man” was a Tele-operated android by Japanese robotics researcher Hiroshi Ishiguro (*1963). It was called “Geminoid HI-1,” which indicated its role as a duplicate of an existing person. Robotics had been a theme of Ars Electronica since the very beginning, when the robot SPA-12 arrived at Linz airport in 1979. In the 30 years up to 2009, when Hiroshi Ishiguro and his android “double” visited Linz, robotics had made significant advances. It had become necessary to tell the different kinds of “robots” apart, which now populated the RoboLab of the Ars Electronica Center. Hiroshi Ishiguro named their advantages from the researcher’s point of view: “Whilst humanoid robots are good for studying the effectiveness of having a human-like body, and androids are used for seeking the general nature of humans, studies using geminoids focus on investigating the nature of individuality.”³ – Ishiguro was especially interested in questions of how the “presence” of a person or a geminoid can be felt and how individuality is expressed.

The resident and the visiting robots of the RoboLab included the tiny bicycle-riding robots Murata Boy and Murata Girl, who impressed with their cycling skills when exploring the surroundings of the Ars Electronica Center. In contrast, the “Hexapods” ran swiftly on six legs, thus demonstrating that robots abandoning the humanoid imperative could be much more stable and efficient. In 2010 “Asimo”—considered the most advanced humanoid robot

at the time—visited Ars Electronica and demonstrated his skills on stage, which included running at a speed of up to 6 km/h. His childlike figure of 120 cm height somehow symbolized the enormous advances of robot technology and at the same time the long way still to go before robots came close to human capabilities. Meanwhile, a change of perspective has taken place, so that the question rather lies in distinguishing between tasks that robots could do better than humans and tasks that humans would be better at—or at least hoped they would be. Questions around “Human Nature”—also the Festival’s theme in 2009—had brought artists with a focus on Bio Art like Eduardo Kac in dialogue with scientists like the Austrian biomedical researcher Josef Penninger (*1964), who at that time was the scientific director of the Institute of Molecular Biotechnology at the Vienna BioCenter. On another panel, Friedrich Kittler encountered Hiroshi Ishiguro—or maybe his double, as he liked to joke.

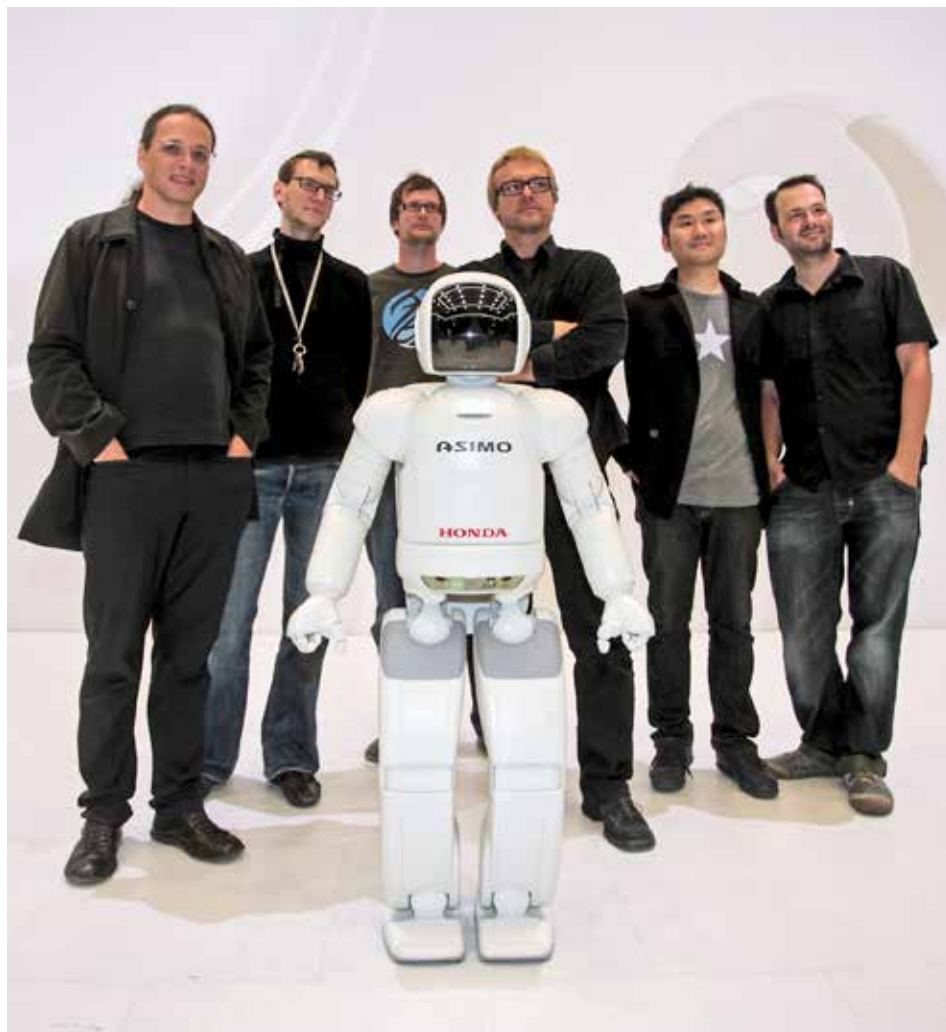
In the vicinity of the RoboLab, both the semi-transparent structures of the BioLab and the FabLab were situated. Creatures could well migrate between those labs, creating unexpected results. “Oribotics” is such a “field of research that thrives on the aesthetic, biomechanical and morphological connections between nature, origami and robotics.”⁴ In this triple-disciplinary new area, the art of paper folding—originating from Japanese Origami—finds its robotic implementation in the 3D printing facilities of the FabLab. Oribotics was the creation of Australian artist and researcher Matthew Gardiner (*1976), who developed the 2010 exhibition, Oribotics [futurelab], during a residency at the Ars Electronica Futurelab. His research ultimately converges towards the “future of self-folding materials.”

While the—artificial—creatures from the four labs presumably resumed at “New Views of Humankind,” a different type of small creature swarmed out through the entire Center. These were hand-drawn human figures, created by Japanese artist Emiko Ogawa (*1979). The figures were part of a new kind of visitor guidance and signage system for the Center,



German media theorist Friedrich Kittler (1943–2011) lecturing at the *Human Nature* symposium, Ars Electronica Festival 2009.

which she had developed together with her husband Hideaki Ogawa. Using hand drawings of stylized human figures, which were applied unto physical surfaces instead of the usual matter-of-fact digital guidance systems, was in fact a novel and experimental approach. It was based on a clearly intuitive process of imagining the Center from the visitor's perspective and giving the visitors the opportunity—as in every good story—to identify with those little humans who just went through the same experiences as oneself.⁵



Honda's humanoid robot ASIMO, seen here with **Gerfried Stocker, Christopher Lindinger, Benjamin Mayr, Horst Hörtner, Hideaki Ogawa, and Roland Haring**, is presented in Deep Space, Ars Electronica Festival 2010.

Sparks of a New Renaissance – Reaching Out Into the Deep Space

At a certain point early in the new millennium, it had become evident that the 1996 building that housed the Ars Electronica Center had—due to the number of visitors and the advances in technology—reached its limits. Simply to be able to present different exhibitions of significant size at the same time and to satisfy the increasing demand for educational programs would require more space. As the Festivals since 1996 had shown, the scope of topics that Ars Electronica was covering had become broader and more complex. Additionally, one of the core attractions of the Center, the CAVE, was showing the limitations inherent to its system. Different scenarios were in discussion between Gerfried Stocker, Horst Hörtner, and the team of the Futurelab, among them a separate structure for a new, larger, and more modern CAVE next to the Center. And then they decided to go for the “big thing.”

On a trip to a conference in Italy, Gerfried Stocker and Horst Hörtner paid a visit to Florence and took a look at Florence Cathedral and the Basilica di Santa Croce, while all the time discussing open questions of the concept and design of a new Ars Electronica Center. Santa Croce is best known for several notable funerary monuments, including those of the Italian astronomer and physicist Galileo Galilei (1564–1642) and the Italian sculptor and painter Michelangelo Buonarroti (1475–1564). Florence Cathedral, with the dome designed by the Italian architect and designer Filippo Brunelleschi (1377–1446), is one of the largest churches in Italy. Maybe it was the combination of the spirit of the Renaissance omnipresent there and the impressive size of the interior space and the dome of the Cathedral that suddenly made things clear for them: They would go for a significantly larger dimension of a projection space for interactive, stereoscopic, and high-definition content. Thus was the birth of the “Deep Space” from the spirit of the Renaissance,

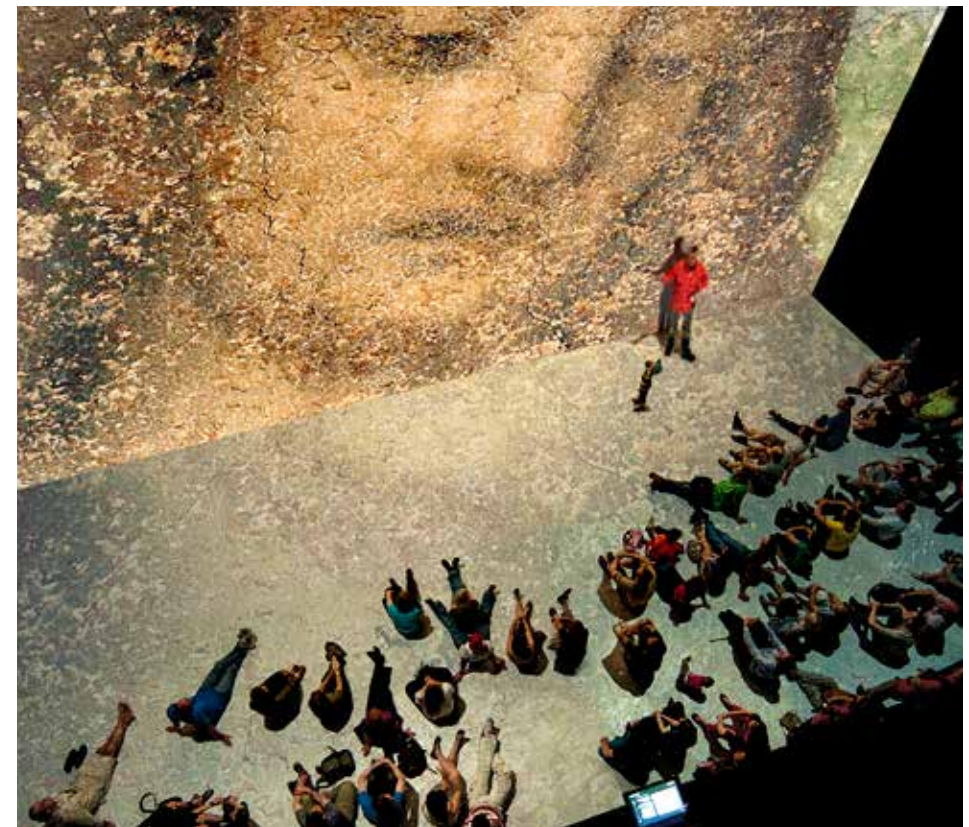
“It was the courage and the farsightedness of this small city, to promote the institution of Ars Electronica and allow it to develop.”

Diethard Schwarzmaier

In a conversation with the author, Linz, 2019.

which would lead to a complete “rebirth” of the Ars Electronica Center only 13 years after its opening. The creation of the first Ars Electronica Center in 1996 as the result of several years of conceptualizing and lobbying, pushed forward by Hannes Leopoldseder, could already be considered to be a kind of “coup.” But to convince the city of Linz to invest again—within a relatively short period of time—into a significantly larger building for the same institution, definitely deserved that title.

But that “coup” had strong promoters like Mayor Franz Dobusch and cultural director Siegbert Janko behind it. An Ars Electronica Center of such new dimensions would not only add a landmark building to the cityscape and allow for capacities to welcome the rising numbers of visitors, but would



A gigapixel image of Leonardo da Vinci's *The Last Supper* in Deep Space at the second Ars Electronica Center, 2009.

mean a quantum leap forward for an institution that had gained local esteem and international reputation, mirroring back to the city of Linz, which found itself increasingly identified internationally as the “city of Ars Electronica.” The idea of the “Deep Space” as the successor of the famous CAVE, played an important part in the convincing strength of the overall vision of a new Ars Electronica Center. This idea was also about size, which would definitely matter in this case: The projections covered a 16 x 9 meter wall and a projection floor of the same size and made flicker-free 3D impressions possible. The space offered experiences for groups of up to 90 people, allowing them also to move around. The opportunity to physically move around had a direct impact on the immersive experience of the virtual worlds presented there.

In the final installation phase of the “Deep Space,” at that crucial moment in a project, when it becomes ultimately clear whether a concept “works” in reality or not, Gerfried Stocker and Horst Hörtner shared a déjà vu experience. Almost two decades earlier, when they were installing their first large-scale project “Klangsee” (lake of sound) in Styria, they had arrived at the massive construction site to realize just how huge and somehow intimidating this thing that they had conceptualized, actually was. But the project worked well and was a success. Also the “Deep Space,” when it was finally installed, felt truly huge, and it worked, and turned out to be even more impressive as envisioned. Among the various interactive and immersive projects presented at the “Deep Space,” one thing stuck out early on that seemed like a reverence towards the artists of the Renaissance, who had served as inspirations for Ars Electronica across a span of more than 500 years. Leonardo da Vinci had worked on his mural *The Last Supper* at the Convent of Santa Maria delle Grazie in Milan in the final years of the 15th century. The painting, which in the original measures 880 x 460 cm, was now presented full screen at the “Deep Space,” in the form of a gigapixel photography, which allowed to zoom into its very details within a matter of seconds. Visitors got a close-up view which only the artist himself—and his assistants and the later restorers—could have had half a millennium ago.

80+1 Turning Jules Verne’s Wager Into a Global Conversation

In his 1873 novel *Around the World in Eighty Days*, French writer Jules Verne (1828–1905) sends his protagonists—the British gentleman Phileas Fogg and his French valet Passepartout—on a journey to circumnavigate the world within 80 days in order to win a wager. Based on the inspiration from this famous story, the project *80+1 – A Journey around the World* connected a base camp on Linz Hauptplatz with 20 locations representing issues of significance for the future. So the physical journey of Fogg and Passepartout was turned into a virtual one during 80 days leading up to the Ars Electronica Festival in September 2009. *80+1* used the telecommunication infrastructures available in the different remote locations, which included the Italian island of Lampedusa representing Migration issues, La Gamba in Costa Rica for Biological Diversity, or the International Space Station for Exploration. The base camp represented the project in the midst of the action of Linz ‘09, and with its architecture of a mirroring surface on the outside, reflected the situation of the Hauptplatz.

80+1 was realized by Ars Electronica together with voestalpine and Linz ‘09, and connected Linz with a cloud of experts, artists, and activists all working around topics, which had already become critical issues or would become so in the near future. The project—with project directors Michael Naimark, Steve Clark, and Manuela Pfaffenberger—culminated at Ars Electronica Festival, which included a separate conference that somehow followed up on this with its theme “Cloud Intelligence.” Curated by American journalist and citizen media activist David Sasaki (*1980) and Chinese entrepreneur and social media researcher Isaac Mao, the conference looked at Cloud Computing, Cloud Activism, and Cloud Intelligence as layers

of what Sasaki and Mao saw as “the emergence of a new Cloud epoch.” The American media scholar and internet activist Ethan Zuckerman (*1973) took a critical position: “The Cloud is a prophecy. It is a beautiful dream of the future where we find ways to connect every corner of the world. (...) But we must remember what we’re imagining and what’s real.”⁷



Derrick de Kerckhove (*1944), former director of the McLuhan Program at the University of Toronto, at the POSTCITY Symposium “Post Public, Post Private”, Ars Electronica Festival 2015.

Head of Ars Electronica Export Manuela Naveau at the Future Innovators Summit in 2014



Beyond Repair? – Ars Electronica and Saving the World

One year later, at the 2010 Festival, Gerfried Stocker—when mentioning issues like “climate crisis, Surveillance Society, the bankruptcy of the financial sector”⁸—found drastic words to describe the situation: “We’ve passed the points of no return. The dramatic consequences are looming on the horizon today. And there’s no excuse for our lethargy since we already possess ideas, tools and techniques to initiate a change of course.” Neither Stocker nor Ars Electronica as such were trying to assume the role of the mythological Cassandra, whose prophecies were ignored. In the past, Ars Electronica had repeatedly contrasted utopian visions with critical positions, and this time took departure from a critical assessment of the situation in order to cast light on solutions to many of the world’s problems, which were already there. So, for instance, projects of vertical farming, biomanufactured bricks, sustainable housing, and “design for repair” were presented at the festival.

Discussions about repairing the environment and finding new kinds of work could not avoid leading—sooner or later—to questions of political decision-making, democracy, and the need for repair of the public sphere and the individual’s options in the reality of surveillance societies. In an afternoon of debates, which I had been entrusted with curating, we discussed together with Derrick de Kerckhove and Joichi Ito, issues of “repairing society” and leading an “open source life” with a group of experts including:

American sociologist Saskia Sassen (*1947), who had recently written a book *A Sociology of Globalization*, Swedish politician Amelia Andersdotter (*1987), who served as Member of the European Parliament for the Pirate Party, or British-born writer John Thackara (*1951), who founded the “Doors of Perception” events in 1993. In his 2005 book *In the Bubble: Designing in a Complex World*, Thackara had formulated a thought in line with the theme of “repair”: “If we can design our way into difficulty, we can design our way out.”⁹ As one possible point of departure for designing our way out of the dominance of corporate owned social media platforms—as the successors of the former “public sphere”—the *Diaspora* project was presented by the American programmer Maxwell Salzberg. *Diaspora* was based on a decentralized, distributed system in order to address the issues of centralized corporate ownerships, which affect dominating platforms like Facebook. Already in 2010 there was a movement criticizing the policies of Facebook, and on 31 May 2010 a “Quit Facebook Day” was held, which many people, including Geert Lovink, who also took part in the discussion, participated in.

Ars Electronica at the *Tabakfabrik*

The location of the 2010 festival seemed quite befitting for looking into topics like “repair” and “new work.” The former tobacco factory in Linz, which had been in operation until 2009 and then been purchased by the city with the aim of putting it to a cultural and public use. The factory had been built between 1928 and 1935 and was an architectural icon, designed by German architect and designer Peter Behrens (1868–1940), a pioneer of modern industrial design, and Austrian architect Alexander Popp (1891–1947), who later joined the Nazi Party, which was illegal in Austria in 1935. Popp became chief architect of the Hermann Göring Steel Works, built between 1938 and 1943 in Linz.

The tobacco factory itself had been created in the spirit of modernity in the 1920s, before the phase of Austrofascism, which began in 1934



Japanese entrepreneur and activist **Joichi Ito** (*1966) at the conference *Open Source Life* at Ars Electronica Festival in the *Tabakfabrik*, 2010

and Nazi rule in Austria after the annexation in 1938. The 2010 Ars Electronica Festival at the tobacco factory was the first time that most of the festival events took place at a single location. The Festival used almost the entire premises of the *Tabakfabrik*, which, with its large courtyard, gave the impression of a temporary Ars Electronica campus. A few years later, this experience would seem like an unplanned rehearsal for an even larger upheaval regarding the (re)location of the festival.



AN ECOSYSTEM OF ART AND SCIENCE IN YEARS OF INNOVATION AND CHANGE 2012–2014

In 2012, the annual *Klangwolke*—33 years after the first ever Ars Electronica had begun with a *Klangwolke*—was once again created by Ars Electronica. This time it included two key elements: a massive public project of collaborative creativity, called *Klangwolke ABC*, and the first performance of a huge flying swarm of drones, the so-called “Spaxels” developed by the Futurelab. During these years, the effects of the 2008 financial and economic crisis hit the City of Linz and also Ars Electronica, thus initiating a period of change for the entire organization.

29 The Alphabet of Collaborative Creation

30 Rough Winds – The Story of the Spaxels

31 The Art of Biomechanics and the Evolution of Memory

32 What It Takes To Change



Robot Cell, a research project at the Institute of Robotics Johannes Kepler University Linz, enables two industrial robots to solve a Rubik’s Cube.

"The aim was to shift essential design parameters into the collective sphere—that is, to put a part of the Klangwolke into the hands of the public, but also to derive the materials for a Klangwolke from the swarms of the cloud (...)."

Gerfried Stocker

Gerfried Stocker, "The Cloud in the Web," voestalpine Klangwolke 2012, in: Leopoldseder, Hannes, Christine Schöpf, Gerfried Stocker (Eds.): *The Big Picture — New Concepts for a New World*, Ars Electronica Festival 2012, Hatje Cantz Verlag, Ostfildern, 2012, p. 202

The Alphabet of Collaborative Creation

33 years after the very first *Klangwolke* in 1979, which marked the start of the Ars Electronica Festival, Ars Electronica got the chance to create the 2012 *Klangwolke*. The concept for 2012, as Gerfried Stocker explained, would honor the "prototype" of 1979 with its massive audience participation. "As popular as this event had been, perhaps its sociopolitical dimension is, in the final analysis, even greater than the impact of the many artistic performances. Thus, the *Klangwolke* is part of Ars Electronica's DNA, since, ultimately, the only way to fulfill the mission of this festival—to function as a platform for art, technology and society—is through the intentional interplay of experimental and popular approaches."¹ At the same time the concept should reflect the developments that had taken place during those 33 years, and transpose it to the media realities of the present day. No longer would a single artist's creation be the focus of the *Klangwolke*. "The aim was to shift essential design parameters into the collective sphere—that is, to put a part of the *Klangwolke* into the hands of the public, but also to derive the materials for a *Klangwolke* from the swarms of the cloud and thereby arrive at forms that symbolically express the realities of global networking."²

The storyline for "The Cloud in the Web" followed the use of technology from the pioneering days of electricity and telecommunications through the history of computing and robotics up to the connected networks of the present. At certain points in this storyline, different kinds of swarms emerged: a gigantic alphabet of 5,000 illuminated letters and later a swarm of 50 autonomously flying quadcopters—the light dots forming a huge eye in the sky over Linz.

"The alphabet seems to have an innate intention for democracy. In an alphabet, the individual letter hardly makes sense. A character is always looking for other characters."

Hideaki Ogawa and Emiko Ogawa

Hideaki Ogawa and Emiko Ogawa, "Klangwolke ABC," in: Leopoldseder, Hannes, Christine Schöpf, Gerfried Stocker (Eds.): *The Big Picture – New Concepts for a New World*, Ars Electronica Festival 2012, Hatje Cantz Verlag, Ostfildern, 2012, p. 242.



Light test with Hideaki Ogawa, My Trinh Müller-Gardiner, and Roland Reiter for the Ars Electronica *Klangwolke ABC* (Sound Cloud ABC) project, part of the voestalpine Klangwolke 2012.

The first of the two swarms massively involved the population of Linz, which showed a quick readiness to take part in the *Klangwolke*, which had long since become an institution and part of the city's identity. The *Klangwolken ABC* was a project in itself, conceptualized by Emiko and Hideaki Ogawa, who were reconsidering the idea of audience participation in the age of social media. They invited people to create their own "character"—the letters of that gigantic alphabet—and for this set up a workshop area in the lobby of the Ars Electronica Center for the three months preceding the event of the *Klangwolke*. The colorful letters—with all their highly individual designs together forming a kind of "Klangwolke font"—were then equipped with LED lights, which could be radio-controlled to "write" elements of text. Emiko and Hideaki Ogawa noted: "Interestingly, when we express text informa-

tion, such as news and tweets, through the *Klangwolke* font, the expression gap between normal typeface and colorful characters makes it seem as though the new characters attempt to reveal a hidden intention behind the information.”³ People organized themselves through social media to form certain statements with their characters, and the *Klangwolke* font became an open font, thus expressing the ideas of openness and collaboration and being made available for others to make use of.

The second kind of swarm did not involve the audience, but the expertise and human resources of the Ars Electronica Futurelab—and quite an amount of technical equipment. For the so far unheard of number of 50 specially equipped drones with lights, which were able to fly as a swarm and form any desired patterns out of their light “pixels”, the Ars Electronica *Klangwolke* would be their public premiere. The performance would take place mainly in the Donaupark, on the banks of the Danube in front of the Brucknerhaus, but the *Klangwolke* also involved the river with various boats and swimming objects. Ars Electronica did break with one *Klangwolke* “tradition”, as there were no fireworks. The pyrotechnics—usually launched on the opposite side of the river—had such an adverse effect on the birds, fish, and small mammals living there as well as on the environment as such. There was a lot of participation and cooperation from all sides, but also high expectations and therefore tension concerning this “double premiere”: Would everything go well with the quadcopters on their public maiden flight? And would the complex action involving so many participants work out and appeal to the audience? The general rehearsal the night before was a disaster. Nothing seemed to work and the entire crew came together in the Brucknerhaus cafeteria that night. The general mood was low. As Veronika Liebl, director of organization and finance for the Festival, Prix and Exhibitions, recalls, Martin Honzik then stood up and in a short speech managed to restore the spirits of his team, motivating and convincing them that everything would be alright on the night of the show...which of course it was. The actual show on the following night was a huge success.



Japanese artist Emiko Ogawa (*1979), here at Prix Ars Electronica jury meetings in 2014.

Director of Ars Electronica Futurelab Horst Hörtner at the Symposium *Art and Science at Work* at POSTCITY in 2016



"The Spaxels were intended as an art project and this is the way we implemented them."

Horst Hörtner

In a conversation with the author, Linz, 2019.

Rough Winds – The Story of the Spaxels

Such a large swarm of autonomous drones flying outdoors was unheard of until then and had been considered impossible by many experts, at least in the short time frame available until the *Klangwolke*. Horst Hörtner had formulated an initial idea of a drone swarm in 2011, but then discovered that nobody had really done it outdoors and that "it just might be due to the Futurelab's artistic know-how that semantic interrelationships were brought out here that did not immediately occur to other experts."⁴ When looking closer at the challenge, Hörtner and his team saw "that this would indeed represent a further evolutionary step in the field of aerial robotics, but that the revolutionary potential here was above all in the area of computer graphics."⁵ They understood that the "technical challenge isn't a matter of getting drones to fly autonomously; the whole point is creating visual compositions (...) in urban space."⁶ So the "Spaxels"—a blend of space + pixel—were created as a matrix of pixels freely definable in space.

Spaxels between *Star Trek* and *Drone 100*

After the successful first show during the 2012 *Klangwolke* in Linz, the story of the Spaxels gathered speed. In early 2013, Paramount booked them to form the Star Fleet Logo next to Tower Bridge in London, celebrating the release of the film *Star Trek Into Darkness*. This was followed by numerous airborne performances in locations like Brisbane, Australia, or Dubai, United Arab Emirates, or for events including the German reunification celebrations or the European Song Contest. Then, in the fall of 2014, Intel got in touch

with the Futurelab and expressed interest in performances related to their new project, *Drone 100*. Intel was founded in 1968 by American engineer Gordon E. Moore (*1929), who formulated Moore's Law about the number of transistors in an integrated circuit doubling every two years, and the American physicist Robert Noyce (1927–1990) as Moore-Noyce Electronics in Mountain View, California. Hungarian-American engineer Andrew Grove (1936–2016) soon joined them and led the company through the 1980s and 1990s, as director of operations and then chairman, to become a world leading manufacturer of semiconductors.



DRONE 100 — Spaxels over Linz, presented by Ars Electronica and Intel at Ars Electronica Festival 2016.

In their collaboration with the Futurelab, Intel called for a doubling of the number of simultaneously airborne drones in the swarm to 100, aiming at a world record, which was, in fact, achieved in November 2015. At Ahrenlohe Airport in Tornesch, Germany, in the early evening of November 4, 2015, a total of 100 Spaxels took off into their coordinated ascent to an altitude of 120 meters. Accompanied by the sound of an orchestra on the airfield playing music from Ludwig van Beethoven's *Symphony No. 5 in C minor*, often referred to as the "Fate Symphony," the flight of 100 Spaxels, developed in conjunction with Intel, made it to the Guinness Book of World Records for The Most Unmanned Aerial Vehicles (UAVs) airborne simultaneously.⁷

Over the years, the Futurelab had cooperated with numerous partners from industry, but working together with a multinational corporation, ranking high among the Fortune 500 companies, was a different kind of experience for the team from Linz. The Futurelab's starting point had, after all, been an artistic one, as Horst Hörtner recalls: "The Spaxels were intended as an art project and this is the way we implemented them."⁸ For Ars Electronica the Spaxels with their large-scale spatial matrix of pixels in the sky were like the "first letters in a new alphabet of creation to be written."⁹ The unexpected success of their Spaxels' shows around the world had initially lured them into creating a spin-off company for them, in fact their first ever spin-off to commercialize one of their developments. Intel would then decide to continue on their own with the drones and for this lured three members of the original Futurelab's team away. More and more other companies would flock to the emerging market for airborne light shows and other applications of unmanned airborne vehicles (UAVs). The Futurelab's strength, as it turned out, was in their extraordinary innovative potential—which made them attractive for big business—and their ability to create prototypes, which would ultimately be developed into products and marketed by others. The Futurelab and also Ars Electronica in general found their position in the world as innovators in different kinds of areas between art, technology and society. And soon there would be other swarms to send out.

"Lowell ...
he's got a Giger."

" 'Giger' ?"

"This painter. Like nine-
teenth-century or something.
Real classical. Bio-mech."

Dialog in a tattoo parlor in the year 2005 from the novel
Virtual Light (1993) by William Gibson

William Gibson, *Virtual Light*, Toronto, 1993, p. 241.

A The Art of Biomechanics and the Evolution of Memory

While sometimes it can be a good thing to forget, we usually suffer from the loss of memory. And sometimes we may have doubts whether certain memories belong to us or not. The theme of the 2013 Ars Electronica Festival, Total Recall, doubtlessly evoked memories of the 1990 film of the same name, directed by Dutch director Paul Verhoeven (*1938) and starring Arnold Schwarzenegger. The film's screenplay was based on the 1966 short story *We Can Remember It for You Wholesale* by American writer Philip K. Dick, and was co-written by American screenwriter Dan O'Bannon (1946–2009). O'Bannon had also written the script for the 1979 film *Alien* with director Ridley Scott. It was also O'Bannon who showed Ridley Scott a book with the painting *Necronom IV* by Swiss artist HR Giger (1940–2014), which led to HR Giger designing the creature in the film *Alien*.

HR Giger as Featured Artist of Ars Electronica

When HR Giger became "Featured Artist" of Ars Electronica 2013 this seemed like an unusual choice for a media arts festival and at the same time a highly plausible one. HR Giger was a fully "analog" artist, who drew with ink on paper, painted with the airbrush, or created his plastic objects with his own hands from wood, or polyester, as he had done with the props for the film *Alien*. But the worlds he created as well as the creatures that populated them, and indeed HR Giger's "biomechanical style" had deep connections with the entire field of cyborgs and cyberpunk, which played

an important part in Ars Electronica's history. In William Gibson's 1993 novel *Virtual Light*, a tattoo parlor in the year 2005 served as the setting for the following conversation:

"Lowell ... he's got a Giger."

"'Giger'?"

"This painter. Like nineteenth-century or something.

Real classical. Bio-mech."¹⁰

So this father of early cyborgs and architect of abysses of our collective fears, seemed quite at home in the underground exhibition space of the Lentos Museum of Art and in the "Deep Space" of the Ars Electronica Center.



The exhibition *The Art of Biomechanics* at the Lentos Art Museum with works by Ars Electronica's 2013 featured artist HR Giger (1940–2014).



Swiss artist **HR Giger** (1940–2014) and curator **Andreas J. Hirsch** at the Deep Space Live presentation of Giger's works, Ars Electronica Festival 2013.

While the former was the venue for the exhibition HR Giger – The Art of Biomechanics, which I had the privilege to curate, the latter was the stage for *HR Giger's World*, a cross section of his oeuvre in gigapixel images. HR Giger took part in this personally and long queues formed for the exhibition and for the book signing of his recently published *Alien Diaries*. Giger's visit to Linz coincided with the first days of shooting the documentary *Dark Star – HR Giger's World* by Swiss filmmaker Belinda Sallin (*1967).¹¹ Only a few days after filming was completed in the spring of 2014, HR Giger passed away.

HR Giger shared the experience of being an Ars Electronica Featured Artist with Austrian artist Richard Kriesche (*1940), a highly influential figure in media art in both theory and practice, who was featured at Ars Electronica



Installation developed by Ars Electronica Futurelab for the Hermann Nitsch Museum in Mistelbach (Austria). Four of Hermann Nitsch's works can be viewed via a multi-touch terminal that allows users to zoom in and discover previously unseen details, 2013.

Austrian artist Hermann Nitsch (*1938) and Gerfried Stocker at the Deep Space Live presentation of Nitsch's work, Ars Electronica Center 2013.



in 2010. And he shared the “da Vinci Treatment” of a gigapixel show at the “Deep Space” with Austrian artist Hermann Nitsch (*1938), a key figure of the Vienna Actionists. Like a somehow complementary move to HR Giger's *Biomechanics*, an exhibition titled “Project Genesis” at the Ars Electronica Center followed up on developments in Biogenic Art, curated by Matthew Gardiner, who noted in that context something that would also have applied to the—significantly different—art of HR Giger: “It's a natural attraction for artists to be drawn to the frontiers of technological and social change (...).”¹²

When Helga Rohra, a former interpreter, spoke at the 2013 Total Recall – The Evolution of Memory Festival about her own life coping with dementia, with which she had been diagnosed at age 54, her lecture left a deep impression on everyone present. Rohra had been fluent in five foreign languages, but dementia forced her to quit her job, and she spoke up for the inclusion of people with dementia, saying: “(...) dementia is not the end of life. No, dementia is a new beginning.”¹³

The loss of individual memory finds its counterpart in the loss of collective memory, the kinds of memory a community or an entire society can have—or lose, whether deliberately or in a stealthy process. The opening ceremony of the 2013 Ars Electronica Festival took place at the *Tabakfabrik* and brought in context aspects of surveillance and of a deliberate eradication of memory: the act of Book Burning. The performance project *Wir sind hier* (We Are Here), initiated and shaped by the Italian artist Salvatore Vanasco (*1960), contextualized book burnings as acts of destroying cultural heritage throughout history, while specifically calling to mind the book burnings carried out by the Nazi regime in Berlin on 10 May 1933. During the decades after World War II, a deliberate form of “silence” or “forgetting” of the atrocities of the Nazi regime and the terrors of the Holocaust often dominated, whereas the “forgetting” in recent years seems due, in part, to a lack of historical knowledge that has obviously not been passed on to the younger generations.

What It Takes to Change

The 2014 Festival, C ... what it takes to change, did not simply follow up on themes of world-changing like the 2010 Repair – ready to pull the life-line Festival, but understood the Festival as “being configured as a proving ground for its own theme, for the consideration of the framework conditions conducive to change, renewal, enhancement and updating.”¹⁴ The Festival seemed to take place all over the city, with a network of—some also unexpected—venues that made the festival visitors embark on an extensive tour of the inner city of Linz. The locals evidently enjoyed this new experience of their home town, while international guests were often puzzled or mildly irritated. The concept was, in fact, even more radical than the transformation of the Marienstraße into “Second City” in 2007, and the theme of “change” actually ran much deeper than the festival crowd might have noticed.

The years leading up 2014 saw quite a number of changes for Ars Electronica. One of the most significant was the long-term effect of the 2008 global financial crisis, which numerous economists consider to be the most serious financial crisis since the Great Depression of the 1930s. The city of Linz was also affected, namely as a consequence of a high-risk FX-linked swap deal with Swiss Francs the city had made in 2007 and which became the subject of long-term lawsuits.

For organizations like Ars Electronica, which are owned by the city, this resulted in severe budget cuts starting from 2012, which in turn forced

the Ars Electronica management to change many things. In such a situation, the excellent cooperation between Gerfried Stocker and Diethard Schwarzmair, who became chief financial officer of Ars Electronica in 2009, proved highly valuable. The economist Schwarzmair had been member of the Board of Directors of Austria Tabak for many years. His co-director Gerfried Stocker as well as Horst Hörtnner and Martin Honzik quickly recognized him as a virtuoso in his field and a great match for the artistic and technological leading team of Ars Electronica.

The changes, however, were far reaching and internally addressed by Gerfried Stocker with reference to “tundra” and the ability of arctic tundra animals to survive long stretches of time at extremely low temperatures by adapting to the harsh climatic conditions. Even before 2012, Schwarzmair had initiated and led a process of structural and strategic change in the organization of Ars Electronica, which allowed it to cope with the “Tundra” effects, which practically affect all areas until today. So the programs of the festivals were adapted accordingly, and several days of symposia were replaced by an increase in cooperations in order to realize certain events. The individual Prix categories were to be awarded only on a biennial basis, with one group of categories in one year and the other group in the following year.

Ars Electronica always had to rely on a high degree of funding from other sources in addition to the city’s budget, but now efforts were successfully increased to make new funds accessible, namely from programs of the European Community. The head of finance and organization of Festival, Prix, and Exhibition, Veronika Liebl, expanded this field with great success. A separate profit unit, Ars Electronica Solutions, was established in 2013 in order to improve the marketing of creations and inventions that resulted from Ars Electronica’s projects. And following the 2014 Festival, another big change was just around the corner.



TURNING INTO A PLATFORM FOR THE FUTURE 2015–2019

More than 35 years after its inception, the Ars Electronica Festival transformed itself from a fully curated and orchestrated media arts festival into a platform for a broad range of activities. They all relate to Ars Electronica's specific way of addressing the issues of art, technology, and society and thus offer reflection about and preparation for the future. The Ars Electronica Center underwent various updates both in terms of content and technological infrastructure, culminating in a complete relaunch of its exhibitions and the profound redefinition of its role as a "Compass" for "Navigating the Future" in 2019.

**33 Re-Inventing the Festival as Platform –
The POSTCITY Phenomenon**

34 The Practice of Art and Science

35 A School for the Future



Gerfried Stocker, artistic director of Ars Electronica, at the opening of the new Deep Space 8K, Ars Electronica Center, 2015.

"The main topics have not changed, but now they concern all members of society and also find their interest. I enjoy discussing the implications of Artificial Intelligence for instance with organic farmers and firefighters at the festival."

Martin Honzik,

Director Ars Electronica Festival, Prix and Exhibitions Divisions

In a conversation with the author, Linz, 2019.

Re-Inventing the Festival as Platform — The POSTCITY Phenomenon

In 2015 Gerfried Stocker noted in his introduction to the POSTCITY – Habitats for the 21st Century festival: "The city, it would appear, is human-kind's most successful survival strategy, and still our greatest social experiment. The Digital Revolution has imparted a new dimension to this experiment."¹ In fact, the format of the 2015 festival was part of the survival strategy of Ars Electronica, and it contained a lot of experimentation. When the search was on for a new festival venue, Gerfried Stocker asked Martin Honzik to take a look at a possible location near the Main Station of Linz, the currently abandoned former logistics center of the Austrian Postal Service. Honzik passed by there every morning on his way to work, often stopping at a red traffic light and looking at an industrial building he could not identify. After being given a tour of the premises, Martin Honzik immediately called Gerfried Stocker, who was in Japan at that time, and told him: "Imagine the entire world, but under one roof. This place is enormous, a city in the city."² And so POSTCITY came to life as the Ars Electronica Festival venue for the next five years. It turned out to be not just another venue, but a quantum leap for the festival, which had already begun a transformation in the previous year, 2014. Fully established at the POSTCITY, the festival would no longer be an event completely curated by Ars Electronica, with many projects produced by the Festival and by Futurelab, but would morph into a platform for invited projects and cooperations with many partners.



Martin Honzik, director of the Ars Electronica Festival, explaining the POSTCITY festival layout, 2017.

Visitors at the Ars Electronica Festival in the POSTCITY, 2015.



The festival themes provided the overarching guiding line for the selection and configuration of projects, and there was ample space for forming different zones and clusters of content. The character of an indoor city helped to create a consistent festival experience despite its many different parts, and experiences from hosting Ars Electronica festivals in the city in 2007 and 2014 and especially the 2010 festival in the *Tabakfabrik* proved useful.

The theme about the city was of course very appropriate for this “city in the city,” and the location itself played a part in the reflection of the future role of the Digital Revolution for cities. It had meanwhile become clear that certain earlier concepts would have to be left behind, as Austrian urban planner Dietmar Offenhuber explained: “The ‘Smart City’ is dead. (...) The Smart City is a comprehensive concept in which all urban systems talk to each other, governed by a control system that, invisible to the public, keeps everything in an optimal equilibrium. Meanwhile, even the companies that originally promoted the concept have come to realize that cash-strapped municipalities are unlikely customers for such comprehensive solutions.”³ Offenhuber, who had been a key researcher at Ars Electronica Futurelab and now taught at Northeastern University in Boston, reflected on “participation” with regards to digital technology in this context, and pointed out: “Collectively defining protocols and standards is a democratic concern in the 21st century city.”⁴

Another such concern of the 21st century city were questions of future mobility. In fact, it was, to a certain extent, an autonomous vehicle that initially led Ars Electronica to the POSTCITY. Since 2013, the Futurelab had been engaged in a cooperation with Mercedes-Benz, who were building an autonomous vehicle, the F 015 Luxury in Motion research car. Together with the team of the Futurelab, they investigated how to create a positive human-machine coexistence. Such a coexistence was not a given, as self-driving cars in city traffic tended to irritate pedestrians. As Futurelab key researcher Martina Mara (*1981), professor for robot psychology at the Linz

“In recent years, artistic cooperation with a wide variety of project partners from all over the world has been one of the key driving forces of the festival.”

Veronika Liebl

Veronika Liebl in an interview with Martin Hieslmair, November 13, 2017, Ars Electronica Blog.
<https://ars.electronica.art/aeblog/en/2017/11/13/european-media-art-platform/>

Institute of Technology (LIT), Johannes Kepler University, since 2018, and Futurelab co-director Christopher Lindinger explained in 2015, “proactive communication by self-driving cars—early warnings of states, processes and upcoming maneuvers issued by the computer system—will constitute an essential precondition for pleasant human-machine coexistence.”⁵ The Futurelab’s Spaxels were used for simulating various such traffic scenarios, as they could fly at up to 60 kilometers/hour at human shoulder height and were able to communicate with light signals and movements. Thus a syntax for human-machine communication was developed, with the autonomous system recognizing not only the presence of a person, but also gestures, and responding with signals of confirmation, which helped to give confidence and a feeling of security to the person.

The German futurist Alexander Mankowsky (*1957), working in Future Studies & Ideation at Mercedes-Benz, clearly enjoyed the collaboration with Ars Electronica Futurelab as he did “like to get in contact not only with the scientific community, but also with creative people, artists, activists, and artist-inventors, in short: the ‘naturally curious’ crowd.”⁶ So the F 015 Luxury in Motion research car required a significantly large indoor space to demonstrate its full range of behavior, and such a space was available at POSTCITY. The autonomous vehicle had its European premiere at Ars Electronica Festival. It gave rise to a lot of interest and media coverage and of course also some controversy about Ars Electronica apparently becoming a trade fair for the automobile industry.

Dancing With the Robot

In fact, the new platform character of the Ars Electronica Festival had nothing to do with a trade fair and actually offered many advantages, but this was not immediately clear to everybody. The POST CITY allowed the festival to develop in many different directions, which also included—after Wolfgang Winkler, the artistic director of the Brucknerhaus and a longtime

“Ars Electronica Futurelab creates prototypes. This allows you to better discuss the implications of a technology. Prototypes answer questions that in a purely theoretical discourse would never have been asked.”

Christopher Lindinger

In a conversation with the author, Linz, 2019.



Director of Research and Design at Ars Electronica Futurelab, **Christopher Lindinger**, and robot psychologist **Martina Mara** at an interactive presentation with autonomous drones at Mercedes-Benz Future Talk, 2014.

Robot psychologist Martina Mara, at that time key researcher at Ars Electronica Futurelab, at an interactive presentation with autonomous drones at Mercedes-Benz Future Talk, 2014.





Igor Stravinsky's *Le Sacre du Printemps* (The Rite of Spring), performed by Bruckner Orchester Linz, conducted by Dennis Russell Davies, with real time visualizations by Cori O'Lan, at the Big Concert Night, Ars Electronica Festival 2016.

collaboration partner of Ars Electronica had retired in 2013—getting its own concert hall in the former *Gleishalle*. The *Gleishalle* was the venue for spectacular musical performance events like *The Berlioz Project* in 2018, where a huge 2,5-ton industrial robot moved right next to the orchestra together with dancers to the sound of the *Symphonie fantastique* by French composer Hector Berlioz (1803–1869).⁷

Ars Electronica and the Art Market

Starting in 2017, the Ars Electronica Festival also opened up to the art market by creating the “Ars Electronica Gallery Spaces” for galleries presenting media art, complete with its own discussion forum. For many years, art museums and the art market had kept their distance towards media art, often due to “its novelty and highly experimental approach, the large number of technical aspects, the virtual and ephemeral nature” and “difficulties of preservation and maintenance,”⁸ as Gerfried Stocker explained in 2017. Things slowly changed with the introduction of specific programs related to

media art in art schools, like the program “Interface Cultures” founded by Christa Sommerer and Laurent Mignonneau in 2004 at the Art University in Linz or the traditional Campus exhibitions during the Ars Electronica Festival, which meanwhile brought numerous international art schools to Linz. The Art Market Initiative at Ars Electronica 2017 represented a next step in this process, with the aim to “provide a platform for the encounter and exchange between the art market and media artists.”⁹

Ars Electronica itself had developed into an “ecosystem for creativity and innovation,” which has grown beyond the proven flow of exchange between the Festival and Prix, offering to artists and researchers—together with the Center and the Futurelab—options like artists’ residencies and participation in exhibitions. With the activities of Ars Electronica Export and their network of collaborations with many media art institutions worldwide, a strong international dimension was added.



The Berlioz Project: Hector Berlioz’ *Symphonie fantastique*, performed by the Bruckner Orchester Linz, conducted by Markus Poschner, choreography by Silke Grabinger, and robot programming by Johannes Braumann at the Big Concert Night, Ars Electronica Festival 2018.

At the same time, the Festival also included activities that had grown into their own “festival within the festival” over the years. In 2011, the CREATE YOUR WORLD Festival was introduced as an extension of the U19–freestyle computing Prix category, which had been rewarding the



German artist **Jonathan Meese** (*1970) with his mother **Brigitte Meese** at his first virtual reality production *Mother and Son = Reality meets Art*, Ars Electronica Festival 2018.

achievements of young creatives and innovators since 1998. Winners of the U19 category were invited to offer their own open labs during the festival. In 2013 the musician and former teacher Hans Christian Merten (*1980) became responsible for CREATE YOUR WORLD. In 2015 Merten complemented the festival with the “CREATE YOUR WORLD Tour,” which offered educational workshops with visiting artists as a learning opportunity for students and their teachers at the same time. Another “festival inside the festival” was the Ars Electronica Animation Festival, curated by Christine Schöpf, since 2009 together with the computer animation specialist Jürgen Hagler, professor at the Upper Austria University of Applied Sciences in Hagenberg. The Ars Electronica Animation Festival draws from the full range of projects submitted to the Prix category and since 2013 is complemented by the Expanded Animation symposium, reflecting recent trends in this field, which was one of the first Prix categories at the inception of Prix Ars Electronica in 1987. The broad spectrum of activities at the POSTCITY was complemented in 2018 by new event formats with an in-depth focus for specialized audiences. Among them were the cooperation with the Linz Art University on “Fashion & Technology: The Future of Fashion” and the “Sonic Saturday,” a digital music focus at the Bruckner University’s new location.

The year 2015 marked the first Ars Electronica Festival in the POSTCITY and was also the year of the European refugee crisis. To cope with the large number of refugees arriving in Linz at that time, parts of the POSTCITY were converted into temporary shelters immediately after the end of the festival. During the festival, problems and potential solutions for refugee camps had been discussed together with Kilian Kleinschmidt, the former UNHCR official who served as director of the Zaatari refugee camp in Jordan. Ars Electronica Solutions, led by Michael Badics, presented solutions for the reconstruction of villages that had been destroyed by natural disasters.

"For science and for art you need an open atmosphere in society. We need freedom to perform, to think, and to express. Both science and art need freedom, openness, and trust. Tim Berners-Lee, for instance, had the freedom and trust to develop something. That freedom was given to him by the institute he worked for, and what he did was every bit as creative as a work of art. He could have developed anything. What he did develop was the World Wide Web."

Rolf-Dieter Heuer,
CERN

Stocker, Gerfried, Andreas J. Hirsch, Ars Electronica / European Digital Art and Science Network (Eds.): *The Practice of Art and Science*, Hatje Cantz Verlag, Berlin, 2017.

The Practice of Art and Science

The title of the 2011 Ars Electronica Festival—ORIGIN – How it all begins—not only provided the headline for a festival featuring CERN, which was intended as a “statement on behalf of the importance of advanced basic research,”¹⁰ but also marked the origin of a lasting cooperation between the two institutions. CERN – The European Organisation for Nuclear Research—was founded in 1954 in Switzerland and houses the Large Hadron Collider (LHC)—the biggest man-made machine ever built. Of course there was one subtle connection due to the fact that Tim Berners-Lee, who had been working at CERN, received a Prix Ars Electronica in 1995 for the invention of hypertext. US author Dan Brown mentions the plaque commemorating this in his novel *Angels and Demons*—the film adaptation starred Tom Hanks—and the plaque was also shown to Gerfried Stocker and Horst Hörtner when they visited Rolf-Dieter Heuer, Director General of CERN, in 2011. German physicist Rolf-Dieter Heuer (*1948) served as Director General of CERN from 2009 to 2015, in fact one of the longest terms of directors of this institution so far. During this time, in 2012, the Higgs boson particle was discovered at CERN, which researchers had been looking for for another fifty years.

So CERN was a logical attractor not only for the leading team of Ars Electronica, but also for many artists seeking an encounter between their art and the sciences working with the LHC. The collaboration, which started with the 2011 Festival, first led to the Prix Ars Electronica Collide@CERN Award, which offered three residencies at CERN and the Ars Electronica Futurelab between 2012 and 2014. CERN then also took part in the European Digital Art and Science Network, which was funded by the European Union program Creative Europe, in the following years.

American composer and sound artist Bill Fontana (*1947) arrived for his residency at CERN in 2013 and turned the Large Hadron Collider into the



American sound artist Bill Fontana (*1947) with his scientific partner, CERN cosmologist Subodh Patil, during his residency at CERN's Large Hadron Collider in 2013.

world's largest acoustic instrument, thus creating the piece *Acoustic Time Travel*. Fontana, who had studied with John Cage, had gained fame with his large-scale sound sculptures for institutions, including the Whitney Museum of American Art in New York, the San Francisco Museum of Modern Art, and Tate Modern in London. In 2009 he won the Golden Nica in the Prix Ars Electronica category Digital Music & Sound Art for his project *Speeds of Time*. The Prix Ars Electronica Collide@CERN Award, which was developed—in collaboration with Gerfried Stocker—by Ariane Koek, then head of the arts program at CERN, awarded in this first round of residences three generations of artists, who somehow served as ice-breakers with the community of scientists at CERN. Besides Fontana, Japanese electronic composer and visual artist Ryōji Ikeda (*1966) and German artist Julius von Bismarck (*1983) also enjoyed residencies there.

The European Digital Art and Science Network then widened the concept. Further scientific institutions joined: the European Southern Observatory (ESO), the European Space Agency (ESA), and Fraunhofer MEVIS. Both ESO and ESA—like CERN—were organizations based on international cooperations involving several countries, which had joined forces in order to facilitate research at a level that would have been impossible for any of these countries individually. So the contexts for encounters between art and science now reached from research at the micro-level of particle physics to the macro-level

of space exploration. The residencies were to be followed by time spent at the Ars Electronica Futurelab in order to—ideally—conceptualize and realize the project drawn from the input gathered at the scientific institution. And then followed the opportunity to present the work at Ars Electronica Festival or at the Center and—which was another addition to the new program—at cultural partners across Europe, which included Kapelica Gallery in Ljubljana, Slovenia, LABORAL in Gijon, Spain, and Science Gallery in Dublin, Ireland. The experiences and lessons from the different residencies in the framework of the European Digital Art and Science Network were reflected with the artists as well as with the scientific and cultural partners, and then presented in the 2017 book *The Practice of Art and Science*,¹¹ a resource intended to inform and inspire future encounters between artists and scientists.

Chilean artist María Ignacia Edwards (*1982) was the first of the artists in this residency program to visit the ESO observatory ALMA in the Atacama desert in Chile at an altitude of 5,000 meter above sea level. The Spanish astrophysicist Fernando Comerón (*1965), who had been Head Representative of the European Southern Observatory since 2013, took care of the visiting artists himself. Her piece *Mobile Instrument of String and Air* brought 11 swings at several of the cultural partner's galleries in telematic connection with a piano in the lobby of the Ars Electronica Center during the 2015 festival. The movement of the swings across Europe resulted in musical notes played at the piano in Linz, thus creating a reference to time and the motions of the universe.

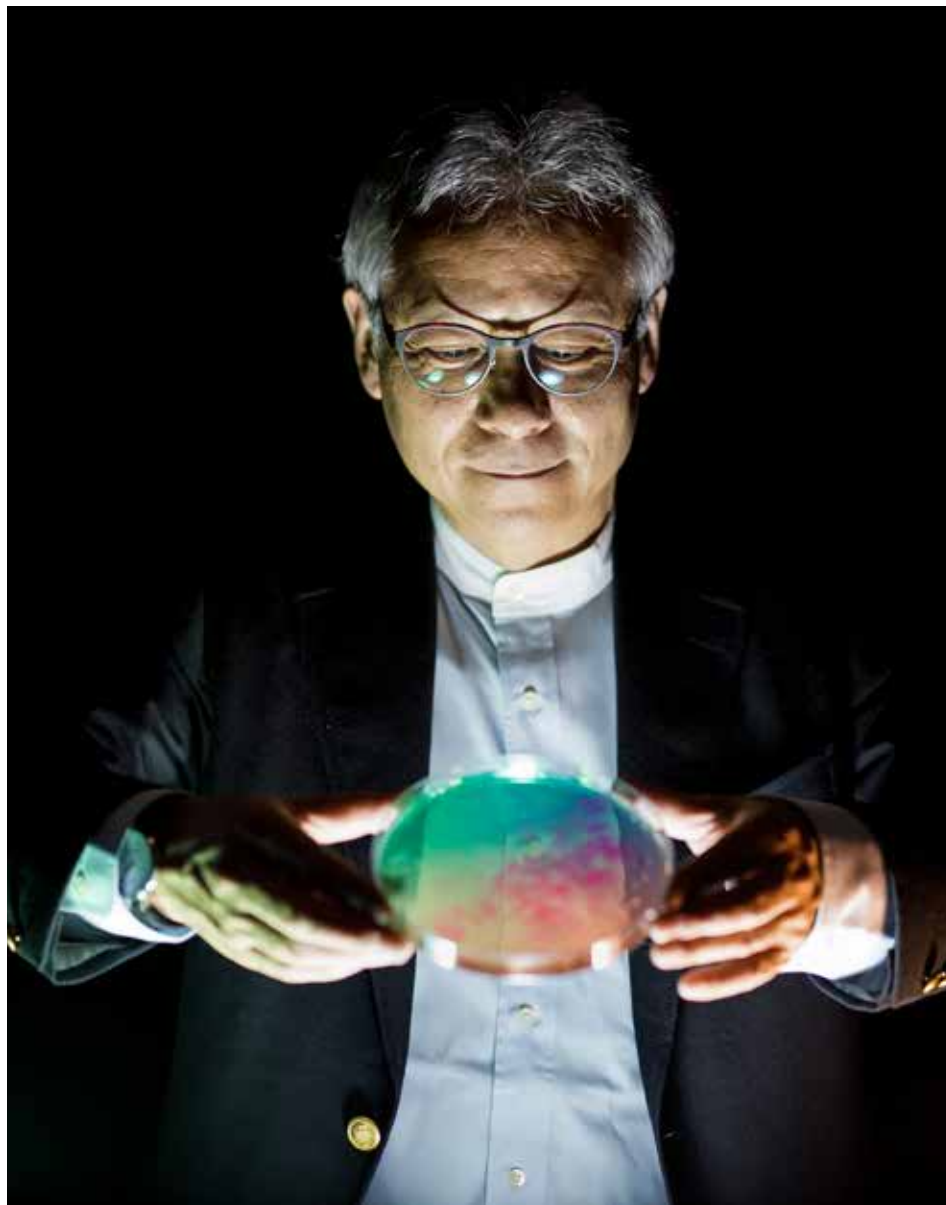


American artist and scholar Victoria Vesna at a Jury Meeting of Prix Ars Electronica 2017



Chilean artist María Ignacia Edwards (*1982) at La Silla Observatory in Chile, operated by the European Southern Observatory (ESO), 2015.

She was the first recipient of the joint European Digital Art and Science Network / Ars Electronica Futurelab's Art & Science Residency.



Japanese computer scientist Hiroshi Ishii, founder of the Tangible Media Group, MIT Media Lab, at the Radical Atoms Exhibition, Ars Electronica 2016.

A School for the Future

María Ignacia Edwards' artist's studio with its fragile structures and planets suspended from the ceiling and a huge blackboard filled with drawings and texts in a fine web of connections, seemed remotely reminiscent of the laboratory of the English "natural philosopher" Isaac Newton (1642–1727), who was a key figure of the scientific revolution and at the same time engaged in alchemy. The theme of the 2016 Ars Electronica Festival and an exhibition with the same title, RADICAL ATOMS and the alchemists of our time, referred to a new generation of scientists and creative engineers who were "already at work amalgamating the disembodied world of digital data with the physical world of our bodies" and "interconnecting bits and atoms in elementary form, fabricating new high-tech materials from natural substances."¹² Here the topic of "art and science" naturally continued and for Hiroshi Ishii and his Tangible Media Group, who were the cooperation partners in these projects, their concept of "tangible bits" had moved on to the sphere of "radical atoms."

In the years leading up to its complete relaunch in 2019, the Ars Electronica Center had already started a kind of transmutation process, which would lead to the total reinvention of the Center, best characterized by two different metaphors. Firstly, the Ars Electronica Center had become a "School for the Future." The term "school" had long been avoided in order not to conflict with the existing school paradigm, but it was finally adopted, since it best described a key purpose and aim of the Ars Electronica Center—to prepare us for the Future. Another way of seeing the new role of Ars Electronica in a changing world was the metaphor of Ars Electronica having become a tool or, more precisely, a "compass for navigating the future" for the general public. "That "transmutation"—a term that actually goes back to alchemy, but is also in use in modern physics—had started with the festival theme RADICAL ATOMS and the alchemists of our time in 2016



Klaus Luger, the Mayor of the City of Linz, **Gerfried Stocker**, the Artistic Director of Ars Electronica, **Doris Lang-Mayerhofer**, Linz City Councilor of Culture and **Diethard Schwarzmaier**, the Financial Director of Ars Electronica at the press conference of the new Ars Electronica Center exhibitions, 2019

Slovenian artist Maja Smrekar (*1978) with **Gerfried Stocker** at the 2017 Prix Ars Electronica award ceremony, receiving the Golden Nica for her *K-9_topology* project.



and continued with the 2017 projects and theme, Artificial Intelligence – The Other I. All areas of the Center, which were completely relaunched in 2019, were now designed as zones of joyful learning. The exhibitions Understanding Artificial Intelligence and Global Shift, and the newly configured and positioned Labs, spanning a broad range from the BioLab and the SecondBodyLab to the MaterialLab and the CitizenLab, were prominent among them. In this new configuration, the Infotrainers, who had been a constitutive element of the Center since the beginning, also played an important role. Nicole Grüneis, who became head of the Infotrainer team in 2015, was responsible for the thorough training of the Infotrainers on the new Artificial Intelligence topics over several months. This enabled the Infotrainers to engage in well-informed conversations with visitors about those topics, which did, after all, affect everybody.

The Deep Space, which in 2015 had been upgraded to 8K projection technology, had become another such area of learning. This applied to regular visitors to the Center, who attended programs on topics such as astronomy, geosciences, or medicine. But it also applied to special groups like fire fighter captains, who receive special training, or medical students, who attend anatomy lessons in the Deep Space. Andreas Bauer, who—together with Christoph Kremer—is head of the Center since 2011, takes care of an increasing number of such activities. A new technology called “cinematic rendering” developed by Siemens Healthineers and then by the Futurelab was adapted for the unique possibilities of the Deep Space 8K, could now be put to use by Professor Franz Fellner from the Medical University of Linz. It utilizes rendering techniques from computer animation for the film industry in combination with medical data from computer tomography in order to create 3D visualizations of the human body that surpass the insight which could be gained from an autopsy.

Juliane Leitner and Michaela Obermayer, who are both responsible for the Deep Space 8K, meanwhile command a rich set of applications making



The “School of the Future Festival” by Tokyo Midtown, Japan and Ars Electronica, 2019, attracted more than 120,000 visitors over four days. Showing the sound installation *PiTon* by the Swiss artist duo Cod.Act.

Hideaki Ogawa, director of Ars Electronica Japan, at the 2015 *ROBOTINITY* exhibition in Osaka, Japan, as part of the collaborative project “Ars Electronica in the Knowledge Capital.”

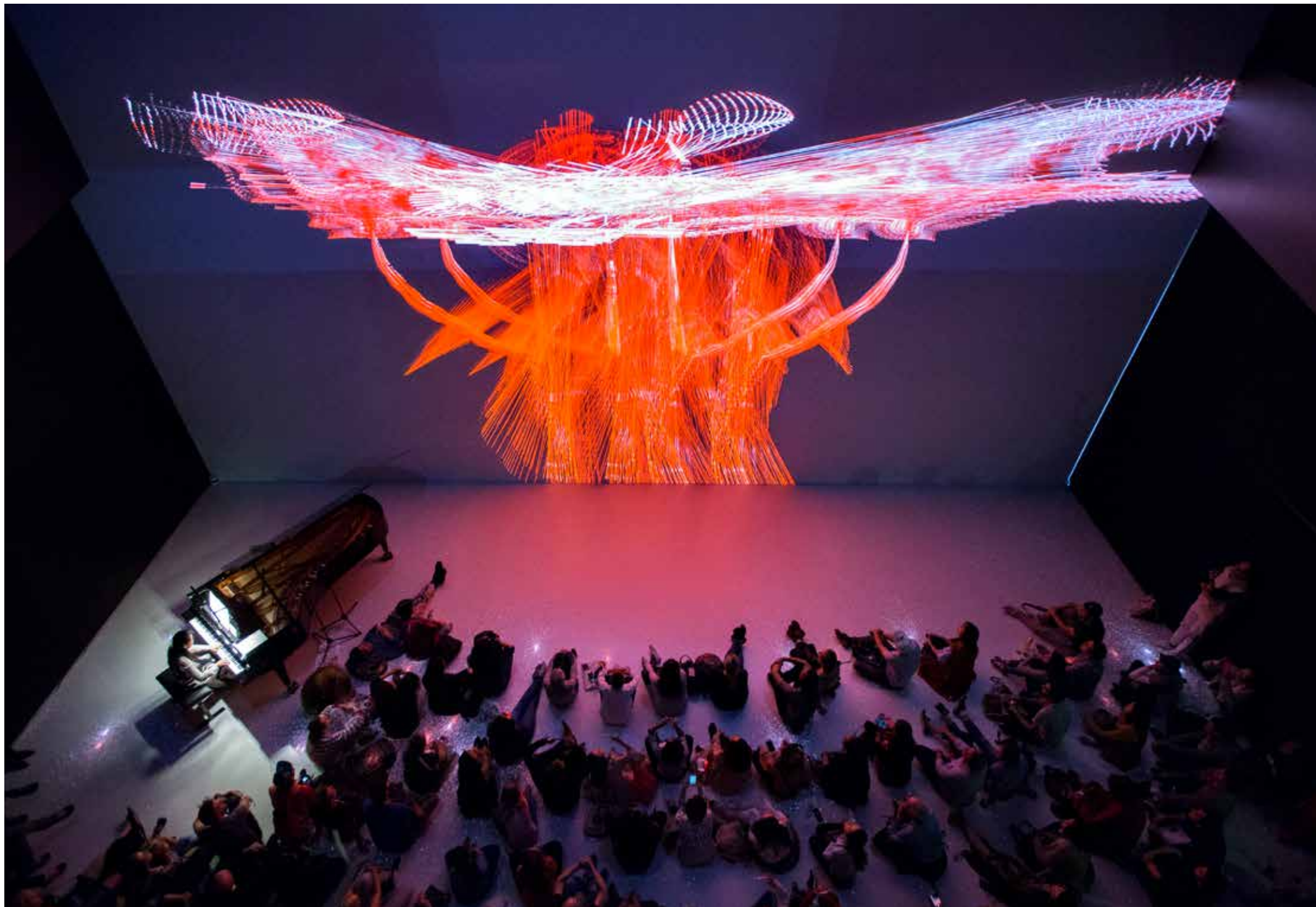


use of the advanced possibilities of this projection space. Among them, projects relating to knowledge from encounters with cultural heritage, including the 2019 cooperation with the Museum of Art History Vienna—initiated by Michaela Wimplinger, Director for Special Projects at Ars Electronica—to bring gigapixel images of works by the Dutch painter Pieter Bruegel the Elder to the Deep Space. It is often art projects that explore the limits of the medium to new heights, like the works *Waves* by Turkish artist Memo Akten or *Noise Aquarium* by American artist and researcher Victoria Vesna.



Community-based collaborative project *Tagtool* in Deep Space, CREATE YOUR WORLD Festival 2018.

Learning and communication happened not only within the Ars Electronica Center, but also outwardly. The programmable media facade of the Center was part of the EU-funded *Connecting Cities* project, a network of institutions collaborating with their media facades and public displays with the aim of empowering citizens. On the initiative of Christopher Lindinger, co-director of the Futurelab and in 2019 appointed Vice-Rector of the Johannes Kepler University Linz, Ars Electronica had been a driving force behind the city of Linz becoming a UNESCO City of Media Arts in 2014 and thus part of the UNESCO Creative Cities Network. With the *Art Thinking Program*, a collaboration of Ars Electronica Japan with Hakuho since 2014, the special approach and innovative potential of Ars Electronica sparked international interest. Ars Electronica Japan is a special branch of Ars Electronica Futurelab under the direction of Hideaki Ogawa, which focuses on cultural programs, offering support, *Art Thinking* and implementing innovative research in Japan.



Japanese pianist Maki Namekawa playing 3 of Philip Glass' *Etudes for Piano*, with real time visualizations by Cori O'Lan, *Deep Space 8K*, 2017.

THE SEARCH FOR THE SECRETS OF “ARS THINKING”

This overview of four decades of Ars Electronica history shows a fabric of themes and motifs, some of them recurring over the years in many variations. These patterns form a matrix of various aspects of resilience, which are based on an artist's mindset of transdisciplinary collaboration at the nexus of art, technology and society.

- 36** 1979–2019: A Tale of Generations and a Vision Fulfilled
- 37** Pattern Recognition: A Matrix of Themes and a Fabric of Motifs
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"Digital media art
will be the formative
cultural heritage of
our time."

Gerfried Stocker

In a conversation with the author, Linz, 2019.

1979–2019: A Tale of Generations and a Vision Fulfilled

The generations that have so far been involved in Ars Electronica since its beginnings in 1979 have grown up in fundamentally different times. The older generations used communication technologies that the youngest ones may have never even heard about. Hannes Leopoldseder was born in 1940 and grew up during World War II and the early post-war years of hunger and military occupation. He was fifteen years old when the first television test broadcasts started. Herbert W. Franke, born in 1927, was eleven years old when Nazi dictatorship began in Austria in 1938. The younger members of the 2019 Ars Electronica team are "digital natives," who have never known a time, when there was no internet.

Although these generations grew up with all different kinds of technologies, and although Austrian society and the world have also changed massively during these forty years, there is a remarkable consistency to be found throughout the entire history of Ars Electronica so far. Although major driving forces play an important role in shaping the main course of history, we must remember to pay tribute to the role of individuals and their very different personalities in the actual events taking place.

So it would be easy to attribute much of consistency in Ars Electronica's history to the fact that there have been a few key people, who have steered the course of Ars Electronica through changing times. Linz itself contributed to the valuable continuity, for example, with the long-term Mayor of Linz, Franz Dobusch, who was in office for more than 25 years, the cultural director

Siegbert Janko, and the many heads and directors of museums and other cultural institutions in the city. This effect allowed for corresponding continuities in the cooperations that Ars Electronica has built up and cultivated over the years with most of the city's cultural and scientific institutions.

But such personal factors and continuities cannot fully explain the consistency of Ars Electronica, which goes back to the strength of the original vision that Hannes Leopoldseder had in the late 1970s about creating an organization at the nexus of art, technology and society. The vision provided the basic DNA of an organization that has, of course, passed through several phases of development and maturing. Over the years, this Ars Electronica DNA received various additions and went through evolutionary modifications, which were always influenced by the people involved, who also left their mark. The original vision did not weaken or lose relevance in a changed world, but rather—in the light of the current world situation and the dynamics of science and technology—has only now reached full blossom.

Pattern Recognition: A Matrix of Themes and a Fabric of Motifs

In the history of Ars Electronica certain patterns present themselves, some of which become best visible when looking in retrospect at this significant stretch of time. Among the recurring themes there is one that goes far back into the history of the city, long before the birth of Ars Electronica. The steelworks, which shaped the city in many ways and for many decades, kept inspiring many of Ars Electronica's artists to compositions and performances integrating the workers, the blast furnaces, and even the vast industrial compound itself. At the same time, voestalpine developed into a modern hi-tech company and the city—namely with the help of Ars Electronica—cast off the old image of “steel city” and became the “city of Ars Electronica.”

Also the skies above Linz seemed to exert a special attraction for generations of artists. Maybe the opening event of the first Ars Electronica in 1979, the *Klangwolke*, which hovered over Linz as a cloud of sound, set the tone for future events in the sky and for a frequent use of that term in many project titles, and even up to the “SKY Media Loft” in the first Ars Electronica Center. The figure of Charlotte Moorman performing with her cello while suspended in the skies above the Donaupark may come to mind each time at the Prix Ars Electronica Gala when a Golden Nica is handed over—modelled after the winged statue of the Greek Goddess of Victory, the Nike of Samothrace, seemingly in the act of landing from her flight.

Meanwhile the clouds in the skies have turned into “The Cloud,” which contains all of our data, and also a project like the 2007 *Linz looks back* can be seen as following the tradition of the first *Klangwolke*. This constitutes a succession, rooted in the conceptual element of audience participation, which has occurred in many variations up to the *Klangwolke ABC* of 2012. “The Cloud” of our times also refers to a long lineage of projects using and reflecting global communications and networking, a lineage going back to the project *The World in 24 Hours*, conceptualized and realized by the artist Robert Adrian X at Ars Electronica 1982.

When Ars Electronica was nearly cancelled after its first two editions, surviving mainly due to the strategic skills of Hannes Leopoldseder, it became clear that it would take more than large visitor numbers and the good media coverage of the 1979 festival to make it resilient. So over the years, Leopoldseder and later Gerfried Stocker recognized the windows of opportunity to take further major steps in the development of Ars Electronica. Some of those steps, all of them diligently prepared, had the character of “coups,” namely the founding of the first and then of the second Ars Electronica Center, which positively stand out in the often overly long and painful gestation phases of many international cultural landmarks.

Re-Inventing as Art: The Resilience of a Public Good

Part of the resilience that Ars Electronica built up over the years can surely be found in the international reputation and also the regional recognition it gained, and in the many partnerships it successfully forged. This is complemented by the complex ecosystem into which Ars Electronica developed, which offers artists different entry points into collaborations and promises international visibility—in fact an ecosystem that is hardly available in this form on the usual art market or elsewhere. And this resilience is backed up by the public ownership of the organization, which, to a certain degree, shields it against any kind of takeover, frequently seen in industry.

Behind all this lies an element of resilience that at first sight might seem to be rather the contrary. There is a readiness shared by the key people of Ars Electronica, to go for the impossible. This could be considered a madness, were it not based on well-assessed risk-taking and a long track record of the seemingly impossible, which had been achieved after all. This began with the realization of the first Ars Electronica Center within little more than a year, and continued with the creation of the Spaxels for the 2012 *Klangwolke*, which many experts declared to be impossible, and numerous further acts of re-inventing Ars Electronica or parts of it over and over again. It is, in fact, this ability for re-invention that results in a resilience remarkable for an organization that never belonged to the traditional set of cultural institutions a city might have and wish to sustain.

Intangible: Cultural Heritage Ahead of Its Interesting Times

The skill of reinventing oneself has of course also been trained and cultivated over the years through the annual topics of the Ars Electronica Festival. The imperative to identify a new topic every year and with these topics to not merely jump on the bandwagon of current media hypes, but to clearly stay ahead of the times, became part of Ars Electronica's DNA. This imperative comes with the privilege of a festival also to experiment with topics and formats. This freedom for—productive—error even became the topic of the 2018 Ars Electronica Festival, which was in fact not the first Festival topic to contain a self-reflective element, like, for instance, the 1996 Memesis topic.

The times through which Ars Electronica navigated during its history so far have been “interesting” at certain points, thinking about such different kinds of events like the fall of the Iron Curtain, the Gulf War, 9/11 or the 2008 global financial crisis. In the narrower field of digital culture, there were cycles of utopian and dystopian attitudes going back and forth between high expectations and sobering effects, for instance regarding the internet and social media.

Since 1979 an entire history of media art has unfolded, which—as Gerfried Stocker put it—will be the formative cultural heritage of our time. The sum of activities at Ars Electronica during these forty years amounts to an archival treasure, which largely still waits to become the object of ongoing scientific research. Research together with Ars Electronica's educational programs and artistic re-interpretations of the historic material keep this kind of cultural heritage alive, which seems especially important in times of an apparent erosion of historical knowledge and awareness in general.

The Search for the Secrets of “Ars Thinking”

What has become a characteristic of Ars Electronica, is the way in which almost all of the so-called “narcissistic blows” have been addressed, which—following Sigmund Freud's thought here—science has dealt to the human mind. From the cosmological to the biological, and further to those coming from quantum physics, brain research, genetic engineering to robotics and artificial intelligence. It might even seem that Ars Electronica, while working at the nexus of art, technology and society, in fact moves along this line of narcissistic blows, forcing us to “look them in the eye” and thus enabling us to form our own informed opinions about the future we wish to shape.

In recent years, certain qualities of Ars Electronica's approach to solving problems through involving artists and cultivating cross-disciplinary collaborations, have caught international interest. “Art thinking” has become a formula for this, namely used in projects of Ars Electronica Japan. Behind this, and of interest to those who wish to look more closely at the history of Ars Electronica, lies a special kind of “Ars Thinking.” This may be a way to grasp what is ultimately hard to grasp: the actual secret behind the fascinating development and ongoing success of Ars Electronica, a combination of openness and the will to collaborate with an artist's mind and the readiness to take risks. A way of resilient living encouraged and inspired by “Ars Thinking.”

Appendix

Footnotes

Photo Credit

Acknowledgments

About the Author

I THE FOUNDING YEARS OF A NEW FESTIVAL

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Andreas J. Hirsch, Vienna, 2019

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About the Author

Born in 1961 in Vienna, Austria, Andreas J. Hirsch lives and works there as a writer, art curator, and photographic artist. He obtained his PhD in Law from the University of Vienna in 1986. His writings include books on Pablo Picasso, Tina Modotti, Friedensreich Hundertwasser, HR Giger, and Ludwig van Beethoven as well as the children’s book *Florian Featherlight and the Quest for the Magic Pearl*.

As curator of Kunst Haus Wien from 2009 until 2014, he was responsible for large monographic exhibitions of photography including René Burri, Henri Cartier-Bresson, and Linda McCartney. He has worked with artists as diverse as Franz West, Bill Fontana, Scott S. Snibbe, and HR Giger.

His involvement with Ars Electronica, which includes a range of roles as consultant, curator, juror, and artist, started in 1996 with the concept for the SKY Media Loft in the Ars Electronica Center. From 2004 until 2007 he served on the Prix Ars Electronica jury for the Digital Communities category which he had helped to create. He curated the conference Open Source Life at the 2010 Ars Electronica Festival, with speakers including Saskia Sassen, Joichi Ito, Derrick de Kerckhove, and John Thackara. When the Swiss artist HR Giger was selected as the Featured Artist for the 2013 Ars Electronica Festival, Andreas Hirsch curated both the exhibition HR Giger – The Art of Biomechanics at Lentos Art Museum and the project HR Giger’s World for the Deep Space at the Ars Electronica Center. In 2015 he participated in the POSTCITY Festival with his photographic project Re-Reading the City, inspired by situationist ideas and psychogeographic strategies. Together with Gerfried Stocker, he published the book *The Practice of Art and Science* in 2017.

