ARS ELECTRONICA

ARS ELECTRONICA CENTER: Museum of the Future

Detailed information on the individual installations:

Lower Level: Gulliver's World:

As in the world of giant Brobdingnagians and tiny Lilliputians in "Gulliver's Travels" by Jonathan Swift, it's the dimensions and the interplay of scales and relations that make this installation so cool. You can design Gulliver's World as a game blending reality and fantasy! The different stations enable you not only to interact with prefab characters but also to invent new ones yourself. Do your own drawing, designing and forming of the installation's environment and take your own excursion into Virtual Reality.

Gulliver's World:

Enter the virtual reality of "Gulliver's World" and become a part of it! On the 1st Underground Level of the Ars Electronica Center, the borders between the virtual and real worlds begin to blur.

With the **World Creator**, a device that resembles a model of the planet earth, the user can freely position mountains, meadows and valleys around the globe. Each of these landscape objects is associated with individual characteristics that have a direct impact on the behavior of the figures that inhabit Gulliver's World.

The user can modify existing characters any way he/she likes and assign specific characteristics to them. And those with their own individualized conception of a figure can access the **Modeling Table** equipped with plastic modeling material and a 3-D scanner. Via form and color, these characters are endowed with particular qualities and can thus interact in a wide variety of ways with the other figures in Gulliver's World.

In the **Greenbox**, video sequences of visitors are recorded and then reproduced in miniaturized form on the play level. Moreover, anyone can create a life-size stereoscopic projection of him/herself and appear as an avatar on the play level. A "computer vision" system captures and analyzes the user's movements and behavior and transmits this in real time to the avatar, which can thus directly intervene in what's going on in the game.

Concept: Peter Freudling
Roland Haring
Helmut Höllerl
Horst Hörtner
Andreas Jalsovec
Hirokazu Kato
Christopher Lindinger

ARS ELECTRONICA

Dietmar Offenhuber
Date: 2004

Touchscreen:

"Touchscreen" focuses exclusively on touch, the pleasure of physical contact, playing a wide range of variations on the theme of types of behavior and expectations displayed by the users of interactive installations.

Through a window positioned at eye-level in a wall, the visitor can touch the "Touchscreen". Various different video and/or audio sequences are assigned to each sector of the monitor; their arrangement is determined at random, so that even after extended use, it is impossible to make out any sort of regular pattern. A total of more than 400 different events can be called up on screen.

The user is buffeted by a constantly vacillating flood of feelings. He might be an object of desire whose hand is requested, and the spot that it touches kissed with rapt devotion; and, perhaps immediately thereafter, his harassment is scorned and he himself shamed as someone who doesn't know when to keep his hands to himself.

If no impulse is received over an extended period, the installation activates sequences to call attention to itself and to stimulate potential users to make contact. For example, a beautiful blonde presses her nose against the screen and checks out new "clients," or a man vigorously knocks on the glass and calls out "Hello!"

If the monitor is touched at too many places at once or if the intervals between touches are too short, furious reactions from the interior of the computer are the result—"Not everybody at once!" or "Don't be so pushy!" the machine is heard to say, and it gives the impatient guest a dirty look.

Besides the extremely realistic video sequences, there are also purely audio segments. Users navigate through sounds like hissing, clinking glass, gurgling, harrumphing, rattles and thumps. Or the real finger is pursued by a virtual one. As the point of contact proceeds from left to right or from top to bottom, the sounds become louder or softer, higher or lower.

Concept: Anna Anders
Date: 1999

Project Credits:
Klaus Gasteier

Autostereoscopic / SeeReal:

The centerpiece of this project is a display that enables viewers to experience computer-generated 3-D worlds stereoscopically without any additional equipment such as special glasses. This

technology is making it possible for the Ars Electronica Center to open up a new field of research and experimentation.

Concept: Ars Electronica Futurelab
Date: 2003

Museum Elevator:

One may safely assume that there's going to be more to a Roy Ascott-conceptualized elevator ride in the Ars Electronica Center than merely convenient vertical transportation. And indeed, computer animation sequences projected onto the elevator car's floor thoroughly justify the label "experience." Viewing options include "Apollo 13," a trip into outer space, "The Visible Human," a high-speed toe-to-head traversal of the human body, and "Um-Chi-Im e Je-Sul- The Art of Movement," the journey of two Manga warriors through the elevator shaft.

Date: 2003

Cave:

The CAVE, one of the Ars Electronica Center most popular installations, is a cube measuring 3 x 3 x 3 meters. One side is open; the interior walls constitute its projection surfaces. In the CAVE, several individuals can simultaneously experience a virtual, three-dimensional world.

The CAVE was developed at the Electronic Visualization Lab in Chicago. Ars Electronica Center continually invites artists to design new virtual worlds (i.e. applications) for the CAVE based upon their own artistic conceptions.

The simulation technology installed in the CAVE has reached such a level of sophistication that it actually gives users the feeling of being part of the installation. Doing away with the need for a data helmet - which isolated users from their environment - makes it possible for a group to visit the CAVE installation together - a social act in a virtual space.

Technology: Reality Behind the Virtuality

A magnetic emitter, a large coil which sends out a magnetic field, is positioned above the CAVE. In order to enter this virtual world - that is, to control the spatial system - all that is needed are a pair of LCD shutter glasses and a Wand, a type of 3D mouse, each of which must be equipped with a magnetic field sensor. These sensors register the position of the visitor within the CAVE space and his/her line of sight.

The computer's tremendous processing power enables it to continually produce graphics that accurately depict perspective. The graphics are projected to the left and right eye alternately at a

speed of 96 images per second. The glasses are equipped with a battery and an infrared receiver, and are synchronized with the pace of the graphics via infrared signal from the computer. The process of moving about within the virtual world is accomplished by the Wand, a navigation instrument with a pressure-sensitive joystick.

Processing with Power

Artist-scientist Dan Sandin was way ahead of his time. When Sandin conceived the CAVE in the 1980s, the massive computing power necessary for this installation was not even available. It was not until 1992 that the CAVE could make its public debut at the Electronic Visualization Laboratory in Chicago. Since then, the high-tech cube has been placed in service at a number of different scientific and industrial research laboratories - for example, in the product design departments of General Motors and Caterpillar, where the designs for auto interiors or vehicle prototypes can be evaluated before the models go into production. NASA has been employing the CAVE in the space program, whereas the National Center for Supercomputing Applications uses it to visualize complex mathematical and chemical formulas.

The CAVE in the Ars Electronica Center was the first to be installed outside the US, and is one of two in the world - along with the CAVE at the ICC in Tokyo - that is open to the public. The Ars Electronica Center's CAVE has also been involved in research and development projects, including collaborative undertakings with firms such as MCE (Machinery Construction Engineering), VAI, Fronius and Siemens Nixdorf; nevertheless, the CAVE in Linz is one of the few of its kind that has been placed primarily in the service of art.

In light of this commitment, Ars Electronica Center continually invites artists to design new virtual worlds (i.e. applications) for the CAVE based upon their own artistic conceptions. After all, as CAVE-inventor Dan Sandin himself once formulated it: "Artists know better than most engineers how the virtual world ought to be set up."

Concept: Dan Sandin
Date: 1996

Lobby: Login Gateway

Welcome to the future: Six floors of future. Six levels to get familiar with, to try out, to get hands-on experience with, to play with, to customize to one's own tastes, to learn. The Login Area is the gateway to the world of digital interaction. Right from the start, visitors begin exploring the museum and all its possibilities—access to information is offered in playful fashion.

Date: 1996

Innovision Wall

Inscribe a message into the Ars Electronica Center's digital guest book. "Innovision Wall" is the Information Age's answer to the blackboard.

A tablet PC and digital camera make it possible for any visitor to the Museum of the Future to create his/her own personal entry on the Ars Electronica Center's blackboard. The tablet PC's intelligent screen lets visitors compose notes and pictograms and customize photos with scribbles.

These messages then appear in the form of Post-its and Polaroids on digital bulletin boards. The result is a colorful info-collage that reflects in highly personalized fashion visitors' impressions of the Ars Electronica Center. The communiqués can evoke spontaneous reactions on the part of other visitors and thus bring forth new and individualized communicative phenomena.

Concept: Horst Hörtner
Date: 2004

Project Credits:
Roland Haring
Christopher Lindinger
Christian Naglhofer
Erwin Reitböck

Brumm, brumm – Commotion:

Hairpin curves, white-knuckle rides, breathtaking acceleration—at the Ars Electronica Center, anybody can try his/her hand as a Formula 1 driver. The one who does the best job of imitating the sounds made by the car's supercharged engine is the winner!

Two contestants, two interfaces and two racecars—and it's "Gentlemen, start your engines!" A microphone built into each "driver's" helmet records the volume of the sounds each makes imitating a racing motor. A computer program translates this into real acceleration of two electrical cars on a Carrera slot car racetrack. At high speeds, the "driver" gets shaken up just like in a real race.

The challenge is to vocally regulate the acceleration in such a way that the racecar can avoid a crash—or maneuver back onto the track after spinning out in a curve—but still complete the lap in the fastest possible time and be the first to take the checkered flag.

This installation is a great example of the potential of new approaches to interaction design. For example, instead of restricting games to the computer screen and forcing the user to utilize primarily manual steering elements, the PC in the case of "Brumm, Brumm – Commotion" is an analog implementation device that creates a multi-sensorial technical environment. The human-machine interface that is entirely integrated into the game offers players and viewers alike a completely new experience.

The interactive installation "Brumm, brumm – Commotion" was created in December 2003 during a one-week workshop at the Institute for Media & Interaction Design of the Ecole Cantonale d'Art de Lausanne (ECAL) in Switzerland.

Concept: Alexandre Armand
Bram Dauw
Date: 2004

Cheese

Happy faces are everywhere—in commercials, on billboards, in Hollywood movies. "Cheese" provides a glimpse behind the mask of this seemingly ubiquitous joviality.

The impetus to produce "Cheese" came from the relentlessly friendly smiling faces of the entertainment industry. It all started with an ad in a Hollywood trade paper: "Actress wanted, TV anchorwoman type, for video portraits." More than 800 young actresses responded.

Before a rolling camera, six actresses tried to smile as long as possible—up to an hour and a half. Each of these extended smiles was simultaneously monitored by a computerized perception system; as soon as the acted-out friendliness sank below a certain level, an alarm signal was triggered as a means of prompting the actress to put a bit more sincerity into her performance.

"Cheese" is a staging of a form of human-computer interaction in which the computer plays the lead part. The actresses' very real emotional uneasiness—which they are able to conceal by means of convincing jobs of acting—comes across only during the breaks that are necessary to relax their strained facial features.

This work is based on research on emotion recognition being done at the Machine Perception Laboratories of the University of California, San Diego.

Smile for the camera!
Concept: Christian Möller
Date: 2004

Project Credits:
Sean Crowe

SKY Elevator:

The Ars Electronica Center's exterior elevator is not just a conventional lift; it's also an exhibition space for interactive installations. As an elevator, it provides direct access to the SKY Media Loft, where guests can spend a relaxing afternoon in a state-of-the-art

Austrian *Kaffeehaus* or a festive evening in an elegant ambience without paying Museum admission to boot, and as an art space it offers an unforgettable ride through digital worlds.

Incredible Elevator:

In collaboration with the Ars Electronica Futurelab and under the supervision of Thomas Zöchbauer and Thomas Bredenfeld, five students in the Fachhochschule St. Pölten's media technology program created the "Incredible Elevator" installation for the SKY Lift in the Museum of the Future.

An interactive animation sequence is played in the elevator car. What goes on inside the "incredible machine" is determined on one hand by the position of the car, but the passengers can also directly intervene in the installation through the press of an interaction button. The visuals were executed in comix style using Softimage XSI, After Effects and Flash MX.

Initiated and realized in collaboration with Ars Electronica Futurelab: Christopher Lindinger, Theodor Watson, Erwin Reitböck.

Concept: Thomas Bredenfeld
Thomas Zöchbauer
Date: 2004

Project Credits:
Richard Hastik
Markus Prinz
Mario Reitbauer
Christoph Schöfer
Gerald Schöllhammer

Mezzanine: Cyberdeck:

Virtual Reality technologies bring the age-old human dream of flight closer to fruition than ever before. The simulator has come to replace the balloon, helicopter, airplane, and hang-glider. Whereas it is still inconvenient and uncomfortable to squeeze into the enclosed and darkened cabins of contentional simulators, "Humphrey" actually does allow passengers to lift off and float freely in midair.

Humphrey II

The dream of flight is one of mankind's oldest dreams. To glide above the cityscape, effortlessly and seemingly unbound by the force of gravity—this is the feeling you'll get on the Humphrey II flight simulator.

The basis of this latest development to emerge from the Ars Electronica Futurelab is the Humphrey

prototype that was one of the Museum's most popular features ever since it was installed in 1996. The aim of this enhanced version is to achieve an even more realistic feeling of flying that, by enabling the pilot to move his/her whole body with complete freedom, imparts the most intense possible impression of an actual flight.

The user wears special overalls resembling a pilot's jumpsuit and is lifted into a horizontal position by pneumatically operated cables. Data glasses feed stereoscopic images to the user and thus give the illusion of a three-dimensional environment. The pilot can navigate intuitively by moving his/her body and can look around in these virtual worlds by turning his/her head in any desired direction. Images projected on plasma displays allow other visitors to experience the flight as well.

The most important elements of this installation are the data helmet and the mechanical system responsible for generating the physical forces at work. Computer-controlled technologies featuring ever-more-advanced processing capabilities make possible simulations of artificial environments that get closer and closer to perfection. By means of the force feedback apparatuses—i.e. pneumatically controlled cables—from which the pilot is suspended, the physical forces at work in the respective environment can also be mechanically simulated. This combination of technologies imparts a feeling of weightlessness and of the centrifugal force generated by flying that is as realistic as can be.

Concept: Robert Abt
Martin Honzik
Horst Hörtner
Stefan Mittlböck-Jungwirth
Gerfried Stocker
Date: 2003

Project Credits:
Martin Bruner
Michael Büttner
Stefan Degen
Stefan Feldler
Peter Freudling
Andreas Jalsovec
Christopher Lindinger
Werner Pötzelberger
Michael Weingärtner
Mario Zepetzauer

Design:
Scott Ritter
Jakob Edlbacher

1st Upper Level: Robolab

The Futurelab is a model of a new kind of media art laboratory in which artistic and technological innovations engender reciprocal inspiration. The lab's teams bring together a wide variety of specialized skills; their approach is characterized by interdisciplinarity and international networking. The Futurelab's wide-ranging activities include designing and engineering exhibitions, creating artistic installations, as well as pursuing collaborative research with universities and joint ventures with private sector associates.

On display here are the results of the Artist-in-Residence Program in which artists from beyond Austria's borders are given the opportunity to develop and execute projects at the Ars Electronica Futurelab. Golan Levin and Zachary Lieberman (USA), John Gerrard (IRL) and Takehisa Mashimo, Satoshi Shibata and Akio Kamisato (J) created the works in this exhibit.

Date: 2004

Networked Portrait

Fresh from the barber and sporting their best clothes—that's still the way people today go to a photographer to have their portrait taken. And many are still not satisfied with the result because their wrinkles still show, their smile isn't wide enough and their shirt or blouse is wrinkled. But now, "Networked Portrait" makes it possible for anybody to change a portrait at will.

To start with, the visitor is confronted by two monitors from which two faces are peering at him. He is now requested to utilize the touchscreen to modify the portraits any way he wishes. As soon as the user has created the desired facial expression, he can swivel the two monitors to face one another and watch what happens.

Following the swivel, the focus of faces' attention shifts from the user whom they had been scrutinizing to the other portrait across from them with which each has suddenly been confronted. This contact triggers a series of reactions that depends on the original facial expression created by the user. The fullness and form of the new facial expressions are evaluated by special software (Ekman's Facial Action Coding System), which results in a sliding scale with reactions over which the user has no control.

The development of such photographic portraits that can be regarded from all sides is a watershed in the history of photography since the individual photographic element that computer technology has long since divorced from the conception of a true-to-life depiction becomes the object. The newly animated "photographs" can exist in the installation space in that they react to participants, act on their own, or simply do nothing.

"Networked Portrait" was realized within the framework of the Ars Electronica Futurelab Artist-in-Residence Program and made possible by the Pépinières européennes pour jeunes artistes 2003.

Concept: John Gerrard
Date: 2003

Project Credits:
Martin Bruner
Andreas Jalsovec
Erwin Reitböck

Watchful Portrait

Janus, the double-faced Roman god of day and night, inspired John Gerrard's "Watchful Portrait." "Caroline," his real-time 3-D model, follows the course of the sun by day and the moon by night.

Here, Gerrard pursues a new paradigm according to which the work is oriented on the world in its entirety and is no longer especially interested in or reacts to the participation of human beings. His "Watchful Portrait" consists of two portraits of Caroline. Two picture screens that can be swiveled in a range of directions enable visitors to view both images while Caroline continues to follow one of the two heavenly bodies.

As with Janus, whose shrines—usually just portals—were opened during wartime and closed during times of peace, a user, following his/her visit, can leave open either the empty, minimalist side of the images or the side with the portraits. In either case, the position of the images does not influence Caroline's activities.

The development of the 3-D object brought many new temporal and conceptual contexts with it, and these have opened up interesting areas of research for artists. They can be clearly differentiated from older media in that they have no limited, terminal duration. Initial reactions to these contexts include works that undergo change in real time in order to simulate processes that take hundreds if not thousands of years to be consummated.

Realized through the support of Siemens AG within the framework of the Siemens Artist-in-Residence Project at Ars Electronica 2004.

Concept: John Gerrard
Date: 2004

Project Credits:
Roland Haring
Werner Pötzelberger
Robert Praxmarer
Erwin Reitböck

Messa di Voce

"Messa di Voce" involves the interplay of language, sounds and graphics. It's a virtuoso narrative account that interlinks acoustic and visual elements. With it, you can use your words and songs to draw and paint your own pictures!

As in the artists' earlier works—for example, "RE:MARK" and "Hidden Worlds of Noise and Voice"—their latest project is also a way of making human language visible. To accomplish this, the software by Tmema transforms every vocal nuance into highly expressive graphics that simultaneously serve as elements controlling audio playback.

A computer equipped with a video camera tracks the position of visitors' heads and, at the same time, analyzes the sounds they make. As a reaction to this information, it projects various graphic compositions onto a screen. With the help of a tracking system, these visualizations can be shown in a way that makes them seem to be emanating from the mouths of the visitors themselves. The graphics are, to a certain extent, not only a visible manifestation of the sounds, but also serve as an interface with which the depicted sounds can be triggered again by the visitor.

"Messa di Voce" received an Honorary Mention in the 2004 Prix Ars Electronica's Interactive Art category. The extremely well received concert performance of "Messa di Voce" at Ars Electronica 2003 was sponsored by SAP.

Concept: Jaap Blonk
Joan La Barbara
Golan Levin
Zachary Lieberman
Date: 2004

Librovision:

Mountains of books fill shelf after shelf of libraries, archives and the bookcases of private homes. Much has changed since the invention of the printing press but space requirements are still enormous. Experience the future of information dissemination at the Ars Electronica Center!

With "Librovision," the Ars Electronica Futurelab is pursuing a new approach to dealing with digital data and information. The user can leaf through a virtual book, enlarge details or shift them about on the display surface by using simple hand motions and without physically touching the computer or the monitor screen. There are also certain gestures that launch videos and hyperlinks on the book's interactive pages.

The linkage between the reader and the virtual book is produced by a video camera that registers

the user's movements, interprets them in real time and feeds that information on to the control unit. The results of R&D in the field of "computer vision" forms the basis for invisible human-computer interfaces that make possible intuitive information exchange with the medium.

"Librovision" can be adapted for use with a wide variety of content. At the Ars Electronica Center, the winners of [the next idea] art and technology grant competition staged at the 2004 Prix Ars Electronica are being presented on this special surface.

Concept: Horst Hörtner
Christian Naglhofer
Robert Praxmarer
Date: 2004

INSTAR

Information and Navigation Systems Through Augmented Reality

INSTAR offers intuitive assistance for precise vehicle navigation: Augmented Reality for everyday life, an innovative concept for automobile navigation.

Directly overlaying the actual view of the road with graphic navigation data enables motorists to enjoy simple, intuitive orientation without having to take their eyes off the road in order to view the navigation screen. Thanks to this special technology, a wide variety of additional information can also be integrated into the video display. INSTAR thus offers intuitive assistance for precise vehicle navigation.

Date: 2002

Project Partners:
Ars Electronica Futurelab
Department of Business Informatics, Software Engineering, Johannes Kepler University, Linz
Institut für Praktische Informatik, Gruppe Software, Johannes Kepler University, Linz
Siemens CT SE1, Corporate Technology, Software & Engineering

Moony

Colorful butterflies seem to inhabit the 1st Upper Level of the Museum of the Future. If you try to catch them, they flutter away; if you hold your hand steady, though, they alight. But then it turns out they're "only" virtual.

In "Moony," water vapor serves as the interface between reality and virtuality. Butterflies are

projected onto this vapor and behave just like their real counterparts flying around outdoors. The result is a novel perception of reality.

When a visitor goes to touch a butterfly perched on a column, it flies away. If he tries to catch it, it disappears from view. But when the visitor holds his hand steady in the water vapor, the butterflies flock about it and begin to play.

The water vapor is an interface as well as a projection surface. The artists also associate it with the steamy physical warmth of a living creature.

At the 2004 Prix Ars Electronica, Akio Kamisato, Satoshi Shibata and Takehisa Mashimo were awarded [the next idea] technology grant sponsored by **voest**alpine for their "Moony" concept.

Concept: Akio Kamisato
Takehisa Mashimo
Satoshi Shibata
Date: 2004

LEGO® MINDSTORMS™ Center

Robots come to life and face competitive challenges. Whoever assembles and programs his/her robot the best is the one who will emerge victorious!

In the LEGO MINDSTORMS Center, children age eight and up can experiment with new technologies and, in doing so, nurture their creativity, analytical thinking and problem-solving abilities. The challenge is to set up robots to be deployed in the "RoboMatch" game environment in which their task is to score as many goals as possible within a specified timeframe.

In workshops, groups of two go about facing this problem. What's more effective—kicking the ball or throwing it? What tactical approach should the robot take? As soon as the most important questions are answered, it's time to get busy assembling the robot. LEGO components, motors, as well as touch and light sensors are put together and linked up with the RCX, a LEGO microcomputer.

With user-friendly software, the assembly team can use drag-and-drop procedures right on the PC to endow the constructed robot with a personality, certain modes of behavior and special skills. The program is then transmitted to the robot via infrared signal.

Now, the robot is ready to go into action and measure its capabilities against those of the creations of other workshop participants.

RCX technology was developed in cooperation with the Massachusetts Institute of Technology in the US.

Date: 2004

Dog[Lab]01

Perfect domestic pets, perfectly domesticated plants, perfect people? In the genetic engineering of the future, everything will seemingly be possible—but is this what we want? Welcome to the "Brave New World" ...

The "Dog[Lab]01" project is France Cadet's ironic attempt to point out the dangers of cloning and taking genetic engineering to its limits and beyond. He presents five "dog robots" that display modes of behavior and the external appearance of genetically modified dogs.

The genetic make-up of "Copycat" is half dog and half cat. It is independent and clean, but also affectionate and playful—the perfect pet. "Dolly" is a blend of the genetic material of a dog, a cow and a sheep. A phosphorescent coat is the outstanding feature of "GFP Puppy." The gene of a green fluorescent protein was built into the genetic code of a dog. "Xenodog" combines the intelligence and social behavior of a pig with characteristics of a dog and the genes of a hairless mouse—a coatless dog! "Jellydoggy" received the genetic endowment of a jellyfish and qualities of a chameleon, which make him adaptable to life in the water.

The Ars Electronica Center shows "Copycat".

Concept: France Cadet
Date: 2004

Topobo

Bring figures to life! "Topobo" enables visitors to assemble any living things they like—animals, plants, human beings—and then by pushing, pulling or spinning them, to set them in motion. Construct your own individualized dog, cat or bird and then teach it to run, jump or flap its wings!

"Topobo"—a name made up of "topology" and "robotics"—is a 3-D construction system with a built-in kinetic memory that can record and play back movements. It consists of a total of 10 basic forms that can be assembled in a multitude of different ways. Nine of these components are merely "passive" (static) elements and serve to create stable connections. The "active" (motorized) components feature state-of-the-art robotics technology.

By simply snapping these components together, a user can quickly construct forms like plants or animals that can then be animated by pushing or tugging on them. The system then repeats these movements. For example, the pieces can be used to assemble an elk, which can be taught to walk by the user moving its legs. "Topobo" functions like en extension of the body—one that endows the creature with the capacity to reckon and to remember.

This project was inspired by contemporary trends in computer media design and by the work of artists and scientists like Ernst Haeckel, D'Arcy Thompson, Mybridge, Maret and Michael Grey, who

have used visual investigations and models in an effort to better understand the patterns that emerge in the natural world. "Topobo" is designed to enable experimentation and playful self-expression on the part of human users in order for them to discover and test the general, natural relationships between nature's forms and their dynamic movements.

Concept: Amanda Parkes
Hayes Raffle
Date: 2004

Project Credits:
Cristobal Garcia
Wesley Jin
Andy Lieserson
Josh Lifton
Brian Mazzeo
Ben Recht
Jeremy Schwartz
Elysa Wan
Nick Williams
Laura Yip

2ND UPPER LEVEL: Archiquarium:

The point of departure of the Archiquarium archive installation is Gerhard Dirmoser's study "25 Years of Ars Electronica – An Overview as Memory Theater." The Linz theoretician has produced a thematic cartography of all aspects that he considered relevant to Ars Electronica.

The large format wall chart generated with this data simultaneously constitutes the portal to an information space: Ars Electronica's digital project archive that offers a complete overview of all projects realized since 1996 in conjunction with the Ars Electronica Center. By physically approaching a text element in the diagram, the user summons forth the virtual information hidden behind it. The technical basis of the interface is a series of radio frequency identification tags (RFIDs) that mark the corresponding locations on the diagram and can be read with a PDA. The physical wall diagram thus becomes a permeable surface and an interface with the data realm.

The installations making up the Archiquarium constitute a technical prototype for ergonomic access to and intuitive modes of working with complex collections of data and digital archives.

Ars Electronica Futurelab (A)

Date: 2004

ARS ELECTRONICA

Eine Welt der Wahrheiten

Prejudices, xenophobia and right-wing extremism have by no means disappeared in modern-day Europe. They can be found among members of many different strata, groups and segments of society.

"A World of Truths" is Stephan Maximilian Huber's confrontation with the subject of right-wing extremism and its preliminary stages. In going about this, he arrived at the conclusion that there are a wide variety of perspectives from which to approach this issue—sociological, economic and psychological. He uses the ball of yarn as a metaphor for this state of affairs—talk, discussion and action goes on all about an inner core without the participants being able to define the nature of what is at the center of the ball.

For his project, Stephan Maximilian Huber conducted interviews with friends in which he questioned them about their prejudices and the reasons for them. He also recorded passages from books and then interlinked the interviews and the texts. He divided the interviews in accordance with their individual questions and used this material to produce a long line of text that wrapped around an invisible ball. The result is a ball made up of text fragments wrapped around each other. The user can navigate through this tangled ball, call up content, or jump from one link to the next.

The video recordings of the interviews are synchronized with the text and projected onto an outer covering surrounding the ball of yarn. Since it's coupled with the link positions on the text passages, it is distorted analogously to the user's navigation.

Concept: Stephan Maximilian Huber
Date: 2004

Somnambules

"Somnambules" involves the interplay of dance, painting and music on the Internet. With the click of a mouse, any online visitor can exert his/her own personal influence on this net project. Become a part of a fascinating choreographic show!

"Somnambules" consists of a prologue/prelude and 12 scenes that merge contact dance, painting, video and music. The filmed movements of the dancers are projected onto a stage set made up of painted elements, and the music is composed as an evocation of emotions. The graphic and musical interactivity shifts the user into the center of the choreography.

This work is based on the short interactive films conceived and made by Jean-Jacques Birgé and Nicolas Clauss, which can be viewed online at http://www.flyingpuppet.com. Didier Silhol, on the other hand, is one of the French pioneers of improvisational contact dance, an artform that deals with laws of physics and interpersonal relationships.

Concept: Jean-Jacques Birgé

Nicolas Clauss
Date: 2004

Project Credits:
Elsa Birgé
Anne-Cathrine Nicoladzé
Didier Petit
Didier Silhol
Bernard Vitet

bitforms gallery

Pictures, sculptures or installations—the art market was long confronted solely with works of art whose forms remained static. At galleries, auctions and exhibition openings, this is what has been presented and sold to collectors. So then, how does one go about establishing software art, which initially seems far less tangible than an oil painting or a piece of sculpture, as collectable art?

In an effort to come up with a response to this question, New Yorker Steve Sacks founded bitforms gallery, where software artists can present their works to a wider audience. Sacks differentiates between framed and unframed software art. The former more closely corresponds to a traditional understanding of art and thus has an easier time establishing itself as art in the public perception, whereas this process is far more difficult with the latter.

Works of framed software art are generally one-of-a-kind objects that are set within a frame or a custom-made housing. They are sold as individual pieces or in limited editions, and the buyer receives, in addition to a fixed-term warranty, detailed instructions for care and maintenance.

Unframed software art is considerably more difficult to define. These can be interactive works, parts of a network or stand-alone pieces. They are sold in the form of CDs. bitforms gallery offers individual works in editions of between 10 and 250, whereby each CD is signed and comes in original packaging. In this way, software art becomes a tangible object.
Steve Sacks presents unframed software art on Software Art Stations that make it possible to hang these works of art on the wall like paintings and to interact with them. Software Art Stations consist of a touch-screen with a hidden CPU, wireless network connection, mouse and keyboard. Sacks places very high value on the presentation of software art on dedicated, specially designed systems; in his view, installing software art alongside other programs on a common, everyday computer distracts from the piece as a work of art and detracts from the enjoyment of it.

Other suitable domains for the presentation of unframed software art are network or Internet link-ups, whereby the work is put on display in a virtual space in which multiple users can participate and form the object via their interaction. These pieces, which are set up on a server, are sold in the form of shares.

Steve Sacks on software art:
"Software art is empowering. Engaging. Endless. Whether or not it becomes a valuable collectable, I am convinced that it will be a part of the art nomenclature. Its beauty and possibilities are too alluring. The artists are too talented. And the world deserves a new creative outlet."

Casey Reas' "Tissue" is another fascinating example of new software art that can be experienced in the Museum of the Future' Virtual Reality area on the 1st Lower Level.

Concept: Steve Sacks
Date: 2003

Sur la table

Eating, reading, working, cooking—all of these can be done on a table. Osman Khan makes this familiar piece of furniture the centerpiece of his artistic work and enables visitors to interact with it.

"Sur la table" is an effort to explore the household situation. Typical activities revolving around a table—like setting objects upon it or eating a meal at it—are intensified by projections that become the basis for interactivity.

A camera mounted above the table captures the events that take place atop it and feed the images to a computer that is set up with special software to process the images in such a way that the colored objects lose their color. The modified images are then projected back onto the table, which makes a continual flow of images visible.

Concept: Osman Khan
Date: 2004

I/O Brush

Painting without watercolors or oils—instead, all you need is your environment and its movements, hues and structures. I/O Brush opens up completely new possibilities for those who love painting!

To work with this installation, an artist needs a monitor screen, an interesting setting and a special brush that, at first glance, looks to be a common, everyday paintbrush but actually conceals within its barrel a tiny video camera, light sources and touch sensors. By stroking the brush over an object to be reproduced, it can record colors, structures and motion in its environment like a fountain pen sucking up ink, and then reproduce them on screen. In this way, any artist can compile his/her own personal color palette.

The technology is ingenious. The light sources surrounding the camera are activated as soon as the brush touches a surface. To accomplish this, the brush has been outfitted with flexible, spring-loaded sensors that work like the bristles of a paintbrush. The system reads the frames fed in by the camera and stores them to memory. As soon as the brush has been loaded with "paint," the fiberoptic filaments within the brush's bristles begin to glow.

I/O Brush has been set up with three modes to record texture, color and movement. In texture mode, the system saves a snapshot consisting of a single frame recorded of the surface over which the brush was just passed. In color mode, the artist records the environmental color whose RGB value is most frequently registered and can then work with that color. And in movement mode, up to 100 sequential frames are recorded to thereby place "movement" at the artist's fingertips.

The artist can work as long as he/she wants with a particular brush-load of "paint" and can refill at any time as well. Sweeping the brush briskly across the screen produces a watercolor effect; slower brushstrokes give the impression of a more intensive application of color.

The "canvas" is an LCD screen with an integrated graphics tablet. The position of the brush on the screen is recognized by the system, and the brushstrokes on the screen are linked with film sequences that document the location at which the brush picked up the particular load of "paint." This opens up to both the painter as well as the audience a glimpse into the story behind a particular palette of hues.

The World as Palette
Concept: Hiroshi Ishii
Stefan Marti
Kimiko Ryokai
Date: 2004

Pâte à Son

"La Pâte à Son" is a "tonal mélange" that lets any music lover become a composer. An extremely easy-to-use set-up makes it possible for anyone—even those with no training or previous experience—to create a melodious piece of music.

LeCielEstBleu faced the challenge of developing a tool to teach music to children. They decided on a playful approach in which the basic idea was to dissolve a highly ordered structure.

To get things started, the user is presented with a perfectly ordered series of musical notes—scales or simple melodies—and the computer screen displays a chessboard and two containers that give off well-structured tonal ingredients. The user can now intervene in this production by means of pipes from which notes are streaming; repositioning them in any way influences the direction of the music that flows out of them.

Eleven instruments are provided to give expression to the silent musical notation. In addition, X-shaped and T-shaped switches distribute the tonal ingredients in a variety of different directions, and circuits make the simple melodies more complex. Aesthetically appealing circuits create a musically advanced composition, whereby graphic and compositional beauty gives rise to melodious music.

Concept: Jean-Jacques Birgé
Frédéric Durieu
Thierry Laval
Kristine Malden
Date: 2004

Archiquarium

Ars Electronica's 25th anniversary means 25 years of innovative projects, state-of-the-art technology, creative works of cyberart and astounding future-oriented concepts. Now, visitors to the Archiquarium can experience this quarter century of development of new media and media art.

In a multi-year study entitled "25 Years of Ars Electronica – An Overview as Memory Theater," Gerhard Dirmoser has created a thematic cartography of all aspects that seem relevant to Ars Electronica. The approximately 8,000 entries include all contributions, artists, texts and projects represented at Ars Electronica.

This study is the basis of a large-format wall diagram that simultaneously serves as a portal Ars Electronica's digital project archive. Visitors can query the virtual information linked to this Datawall by using a modified personal digital assistant (PDA) that opens up access to additional, related information in the form of texts, images and videos. The technological basis of this interface consists of radio frequency identification (RFID) tags that are built into the diagram and can be read with the PDA. Plus, the Timeslider—likewise based on Dirmoser's findings—allows visitors to utilize two buttons to navigate through the Ars Electronica's "timedisks."

The Datapool and the Navigator provide additional access to interesting archive material. The Datapool provides a link to an extensive video archive featuring documentation of the individual festivals and the best works of computer animation from the history of the Prix Ars Electronica.

The Navigator lets the user chart a specific course through the 25-year history of Ars Electronica. This is the way to find information about all artists and projects that were ever involved with the Festival, awarded a prize at the Prix Ars Electronica, put on display at the Museum of the Future or developed at the Ars Electronica Futurelab. The Navigator also provides access to all texts published in the Festival and Prix catalogs.

Concept: Gerhard Dirmoser
Helmut Höllerl
Dietmar Offenhuber

Date: 2004

Project Credits:
Birgit Beireder
Stefan Feldler
Ellen Fethke
Stefan Hackl
Gerold Hofstadler
Günther Kolar
Gunther Schmidl
Philipp Seifried
Nina Wenhart

Design:
Scott Ritter
Jakob Edlbacher

Protrude, Flow

Who has not on occasion had the desire to be able to freely form material and flexibly design it independent of physical constraints like the force of gravity? Is it possible to produce a real object that corresponds to these specifications?

"Protrude, Flow" creates an illusion that leads us to believe that this dream had come true. Sharply tapering mountain peaks, bizarre forms and flowing particle streams give rise to the impression that these shapes were no longer subject to gravity.

At the basis of this illusion are magnetofluids and sound and image sequences. The black-looking liquid of the magnetofluid changes its form when it interacts with the sounds produced by visitors to the exhibit. A ceiling-mounted microphone records these sounds and a computer transforms them into electromagnetic tension, which regulates the strength of the installation's magnetic field. Every change in the magnetofluid is manifested synchronously with variations in the ambient soundscape, and is recorded by a digital video camera that projects the images onto a screen.

The magnetofluid consists of fine ferromagnetic particles suspended in a liquid such as water or oil; it retains its powerful magnetism even in a fluid state. Three-dimensional organic patterns of great complexity can be produced with this substance.

Concept: Sachiko Kodama
Minako Takeno
Date: 2003

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Mediathek

A location for seminars, workshops and teamwork, but also a quiet place for internet surfing.

Physically dislocated from the installations is the Mediathek. The Mediathek provides the resources of ten workstation, which are included in the Ars Electronica Center network, for seminars and team oriented workshops. Visitors of the Museum have the possibility to surf through the internet in quiet atmosphere, and to look through new programs of learning and teaching.

Alongside a CD-ROM collection, the digital catalog archive is located in the Mediathek which comprises 20 years of Festival Ars Electronica and is also accessible via www.aec.at.

Date: 1996

Futureme.org

What does the future hold in store? Will you have achieved everything you're dreaming of today? To remind yourself tomorrow of the ideas you have today, you can send an e-mail into the future to yourself!

What would I like to be some day? Will I have a family? Climb high up the career ladder? Will I ever fulfill my dream of becoming a star athlete or a pop singer? Everyone has his/her own dreams and conceptions of what the future holds in store. But when the future arrives some day, will these dreams have been long forgotten or already realized?

Matt Sly and Jay Patrikios have taken their inspiration from a typical school essay theme—"How do you imagine your future?"—and created Futureme.org, a website that enables users to send an e-mail into the future to themselves.

What's more, since changes take place relatively quickly and frequently in our fast-moving modern-day world—and especially in the field of computer technology—there's also a built-in management system that lets you change your mailing address at any time to guarantee delivery of the e-mail in the future.

Concept: Jay Patrikios
Matt Sly
Date: 2004

Project Credits:
Gunther Schmidl

Nudemessenger

Kitschy sunsets and birthday greetings featuring cliché inscriptions—we're all familiar with the typical offerings of most e-card services. But now you can surprise your friends with electronic post of a totally different sort from "Nudemessenger"!

The background of Francis Lam's project is the overwhelming amount of pornography on the Internet. Studies have concluded that 12% of all websites are of a pornographic nature, most of them showing naked women designed for a male audience. Only a very few such sites are oriented on women's tastes, and most of the ones that sexually exploit men in this manner target homosexual users. At the same time, we're bombarded daily with countless spam e-mails featuring pornographic content.

In "Nudemessenger," Lam calls attention to this problem in a sarcastic, witty way. Visitors to this website can design animated e-cards from a huge selection of naked men—they dance, sit, stand, and fly (talking) balloons. You can arrange them in patterns or simply let them frolic across the screen.

Concept: Francis Lam
Date: 2004

3rd Upper Level: SKY Media Loft

Now accessible directly from the street!
Right below, there's the Danube; on the legendary Nibelungen Bridge across the city's famous waterway, the traffic flows by; and as dusk settles in and the lights of Linz begin to go on, the SKY Media Loft is bathed in an incomparable, almost magical ambience. The museum café on the third upper level of the Ars Electronica Center brings it all together— the facilities of a state-of-the-art *Kaffeehaus* and the atmosphere of a top-of-the-line event venue.

Its huge glass walls make the museum's café an attractive vantage point above the river and the cityscape beyond. Plus, the Ars Electronica Center's new interactive exterior elevator—featuring the prizewinning installation "Flow in a Lift"—now provides access to the SKY Media Loft independent of a visit to the Museum of the Future. But if you later decide to take a journey through the digital world after all, you can purchase your admission tickets at the counter located right in the museum café.

As a *Kaffeehaus*, the SKY Media Loft is the perfect setting in which to spend a relaxing afternoon. As a bar from Friday to Sunday, it's a top attraction among Linz's night people in the know. And it's also the site of concerts, plays, cabaret performances and much, much more.

The SKY Media Loft can also be booked as an event location by businesses and private parties. Whether it's a product launch, press conference or book signing, as a venue for birthday parties, banquets or wedding celebrations featuring live music—the SKY Media Loft's one-of-a-kind ambience

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and state-of-the-art infrastructure make it the ideal setting for all sorts of events. You'll find additional details under "To Rent".

Opening Hours

Monday, Tuesday
The SKY Media Loft – Café & Bar is closed

Wednesday, Thursday
9 AM – 5 PM

Friday, Saturday
9 AM – 2 AM

Sunday
9 AM – 10 PM

Café & Bar
Concept: Scott Ritter
Date: 1996

Remote Furniture

In these parts, rocking chairs are associated with comfortableness, gemütlichkeit and rest. But what happens when the chairs become independent? The rocking chairs in the SKY Media Loft are interlinked to each other as well as to the people who occupy them!

The idea behind "Remote Furniture" is to bring about unexpected interpersonal encounters in public spaces. Noriyuki Fujimura confronted the problem of how to utilize interactive art and digital interfaces as a means to get pedestrians passing through public spaces to establish contact with one another.

He outfitted each of two rocking chairs with a sensor and a motor and interlinked them via computer. When someone rocks in one of the chairs, the sensor reads the angle of inclination and transmits the data to the other chair, which then begins to rock in coordination with the first one.

In Japan, "Remote Furniture" was installed in various public spaces like subway stations and shopping centers. They induced curiosity on the part of passers-by, who ultimately sat down and began to rock and play. When they realized that there was interaction between the chairs, they began to communicate with one another. Conventional communication was made easier because the chairs enabled people to encounter each other in a familiar situation.

Computer Controlled Chairs – Interactive Installation in Public Space
Concept: Noriyuki Fujimura
Date: 2004

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