



dLux media|arts
innovative film, video, new media and sound arts

presents

in collaboration

with

Australian Centre for Photography

Artspace

The Powerhouse Museum



HARD|SOFT|WET ARTIFICIAL LIFE

autonomousAudio

curated by **Mitchell Whitelaw**

<http://www.artspace.org/autonomousAudio>

autonomousAudio presents experimental electronic music and interactive audio processes which make use of complex systems and artificial life. Automated rhythms flicker, feedback cycles spiral, algorithmic transformation unfold; the net itself becomes an instrument, a soundfield crawling with autonomous processes.

Work by: **Oren Ambarchi and Martin Ng; Nik Gaffney; Gordon Munro; Ignacio Platas; Alistair Riddell; Jaques Soddell; Christopher Willittis.**

Erwin Driessens / Maria Verstappen (netherlands)

Ima Traveller

text by Emmanuelle Lequeux - translated by Brian Holmes

The gaze plunges in, deeper, ever deeper into matter. Atoms brush by, electrons swim into view. Quarks? We are sure to have reached the most infinitesimal - yet the journey continues. Frustrated microscope... The gaze plunges in, only to be engulfed, and quickly understand: it is condemned to a perpetual zoom. Never does one arrive at the object, never does one succeed in focusing, in finally setting on some point of clarity. An eternal travelling shot. And what should one fix upon in any case? Each image is like a phantom. You have simply to go through it, and leave to meet another semblance. The one before is already just a memory. It's a palpating black hole: Ima Traveller sucks us in. For a humble and brilliant confrontation with our own infinities. Images give birth to other images, pixels to other pixels, without end. At each tremble of the mouse another universe is born: the spontaneous generation of the computer mystery named Ima Traveller. Like a image-voyager, or a wandering picture: amalicious program of self-created images, invented by Erwin Driessens and Maria Verstappen. An "artificial artist", in the words of the demiurgical couple.

They claim to have done nothing except preside over its creation. All the rest springs directly from "pixel consciousness", as Maria calls it. Each cell secretes new colours, as a function both of what it is and of what it knows of its surroundings. From a reddening chaos to a mine shaft of emeralds, the screen becomes an open breach for our desires, ever more prolific. And always surprised. We should soon be able to embark on spin-off programs, to plunge into an eternal tunnel or create forms without and. All with Hollywood quality. "Because even if a work is conceptual, it must be good, to allow you to flee and to escape yourself. To submerge you". Constellations of nuances, flowering crystals... Never can one turn back to see the landscapes hardly touched. We are keenly conscious of it right away: each voyage is unique. No trace of it remains. As with any meeting a monomaniac can always try to create a monochrome: in vain will he hover ardently over the same blue, harassing it with the mouse. Never will he obtain uniformity. For uniformity is not part of nature and its chances. Life, its dynamic processes, its chain reactions - above all, its "unpredictability". Indeed, what Maria Verstappen and Erwin Driessens attempt to construct are semblances of life. Unpredictable but rationally programmed, always changing but never entirely different, Ima Traveller is, in short, a living organism. It escapes all control, "coherent but not responsible", according to the watchword of its creators. Just like their Tickle, a little domo-domestic animal of their imagination, autonomously fulfilling its robot mission of scratching backs. Just like their Factory: a plant for assembly - line creation, turning out twisted bits of wax in tortuous and tortured loops, engendering them only to plunge them once again into a hot bath where they shed their form to find another. Something like a reassuring infinity.

Breed software

Breed is a computer program to explore virtual space. It presents possible configurations of objects in an abstract space. The program does not focus on an explicit functionality while developing the objects, it only works with internal creative processes, processes that react on previous steps during the growth of a certain object.

The generating algorithm is a process similar to cell division. The objects pass through different stages of development towards an ever increasing complexity of shape. By using a simple volume as a starting point, it is possible to let evolve an infinite amount of different shapes. While growing, a cell divides into eight parts, which do or do not contain matter. Being massive or being empty is defined by the spatial configuration of this cell and it's adjacent cells. The program uses a 'genetic' code to store the split behaviour. This code consists of a split reaction for every possible constellation of a dividing cell and its surroundings. Each different genetic code will create a different object.

The breeder component of the software uses evolutionary principles to manipulate genetic codes. The fitness of an object is determined according to desired criteria, such as volume, surface and connectivity. Starting with a random genetic code, the program generates an object and checks how this object fits the desired criteria. This generation zero genetic code is saved along with its fitness, as a reference. The program mutates the reference genetic code into a new code and generates an object using the new code. If the fitness of the new object is higher than that of the reference code, the mutant code becomes the reference genetic code. While the program is breeding, the genetic code is mutated until it produces an object that has a maximal fitness.

Driessens/Verstappen
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The Amsterdam based artist couple Erwin Driessens (1963) and Maria Verstappen (1964) have worked together since 1989. They both studied at the State of Fine Arts, Amsterdam, and the academy of Fine Arts, Maastricht. They have held numerous joint and solo exhibitions in galleries and museums in The Netherlands, France, Germany and other West European countries. In 1999 they were rewarded a 1st prize in the international artificial life competition LIFE 2.0. There y has been extensive press, catalogues and publications reviewing and highlighting their work.

Life Spacies II

"Life Spacies II" was developed for the ICC Intercommunication Museum in Tokyo as part of the museum's permanent collection. It is an interaction and communication environment where remotely located visitors on the Internet and the on-site visitors to the installation at the ICC Museum in Tokyo can interact with each other through evolutionary forms and images. Through the "Life Spacies II" web page, people all over the world interact with the system: by simply typing and sending an email message to the "Life Spacies II" web site; (<http://www.nticc.co.jp/~lifespacies>), one can create one's own artificial creature.

We developed a special text-to-form coding system that enables us to use written text as genetic code and translate it into a visual form. In a way similar to the genetic code in nature, letters, syntax and sequencing of the text is used to code certain parameters in the creature's design functions. Form, shape, colour, texture and the number of bodies and limbs are influenced by the text parameters. As there is a great variation in the texts sent by different people, the creatures themselves vary greatly in their appearance.

As soon as a message is sent, the produced creatures start to live and move around in the "Life Spacies" environment. Depending on the complexity of the written text message the creature's body design and its ability to move is determined. Some creatures might move very fast where as others might be slower. Creatures also look for food and aim to eat text characters that can be interactively released by the visitors: creatures always eat the same characters as contained in their genetic code. For example "John" creature will only eat "J", "o", "h", "n". Since other creatures might want to eat the same characters as well, competition among creatures for certain types of food will occur. Creatures also might starve and die if they do not succeed in catching enough text characters. On the other hand if a creature has eaten enough food (=text characters) it will look for a mating partner and bear a child. Offspring creatures will carry the genetic code of the parent creature and live and interact with other creatures in "Life Spacies".

Sommerer / Mignonneau
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Sommerer & Mignonneau are internationally renowned media artists working in the field of interactive computer installations [3]. They have created systems such as: "Interactive Plant Growing" (1992/93), "Anthroposcope" (1993), "A-Volve" (1994 - Golden Nica Award Ars Electronica), "Trans Plant" (1995), "Intro Act" (1995), "MIC Exploration Space" (1995), GENMA (1996), "Life Spacies" (1997), "Time_Lapse" (1998), "VERBARIUM" (1998), "HAZE Express" (1999) and "PICO_SCAN" 2000. Their artworks are permanently installed in media museums and media collections, for example at the ZKM Media Museum in Karlsruhe, Germany, the NTT-ICC InterCommunication Center in Tokyo, Japan, the Tokyo Metropolitan Museum of Photography in Japan, the NTT Plan-Net in Nagoya, Japan, the Ars Electronica Center in Linz, Austria, the Shiroishi Multimedia Art Center, Japan and the Cartier Foundation in Paris, France, and the KIASMA Museum of Contemporary Art, Helsinki.

The Tissue Culture & Art Project

An Installation Presenting the Results of Growing Semi Living Worry Dolls Inside a Bioreactor

In collaboration with SymbioticA (The Art and Science collaborative research lab) at the Department of Anatomy and Human Biology, University of Western Australia, and The Tissue Engineering and Organ Fabrication Laboratory, Massachusetts General Hospital/Harvard Medical School.

The Tissue Culture and Art Project (initiated in 1996), is an on-going artistic research and development project into the use of tissue culture and tissue engineering as a medium for artistic expression. The Tissue Culture & Art project (TC&A) utilises biologically related technologies (mainly tissue culture and tissue engineering) as a new form for artistic expression to focus attention and challenge perceptions regarding the fact that these technologies exist, are being utilised, and will have a major effect on the future.

This installation presents the results of an experiment we have conducted as part of Ars Electronica Festival 2000. In this experiment, which was the first time that living tissue engineered constructs were presented in an art show setting, we have grown seven tissue engineered worry dolls in a zero gravity bioreactor (developed by NASA, manufactured by Synthecon INC.).

What is Tissue Engineering:

Tissue engineering is the creation (fabrication) of human made tissues or organs, known as neo-organs (1). It is about producing body spare parts. Tissue engineering usually involves the construction of artificial degradable biopolymer scaffolding in the desired shape, which is then seeded with the appropriate cells and immersed in a solution rich with nutrients and growth factors in conditions that try to emulate the body (37°C, 5% CO₂). The system that provides these conditions is referred to as a bioreactor. With the advances in stem (embryonic) cell technology, it is in essence an artificial womb, which is being used to grow us new organs/extensions/additions.

Tissue engineering can offer an option of producing what we refer to as Semi-Living Objects. A tissue is a collection of cells of an individual organism that specialise in performing a specific task. When we combine this speciality with other tissue (not necessarily from the same organism) and artificially constructed support mechanisms, we will be able to 'grow' task specific or general use tools. The TC&A Project is interested in using tissue engineering and artificial wombs to grow sculptures. These sculptures are still in the realm of a symbolic gesture representing a new class of object/being. These objects are partly artificially constructed and partly grown/born. They consist of both synthetic materials and living biological matter from complex organisms. These entities (sculptures) blur the boundaries between what is born/manufactured, animate/inanimate and further challenge our perceptions and our relations toward our bodies and constructed environment.

The concept of using Semi-Living Objects can be seen as a way to minimize the risks associated with new technologies as well as a way to eliminate some of the problems regarding the existing technologies and culture of consumerism. Changing the culture of production from manufacturing to growing could reduce the environmental problems associated with the process of manufacturing. The relationships that consumers will form with these semi-living objects will be different from the relationships they have with inanimate objects. Tissue engineering offers a possibility to change our own design as well as create a new breed of 'things': Presently, scientists are trying to mimic nature. However, how will we look when we decide to improve?
<http://www.tca.uwa.edu>

Oron Catts

Born in Finland, lived in Israel and Australia. Currently a research fellow at the Tissue Engineering and Organ Fabrication Lab, Massachusetts General Hospital, Harvard Medical School, Boston. Coordinator of SymbioticA: The Art & Science Collaborative Studio, Department of Anatomy & Human Biology, the University of Western Australia. Worked as a part-time lecturer at Curtin University School of Design. He has covered areas such as creative thinking and eco-design. Trained in product design, and specialized in the future interaction of design and biologically derived technologies. Initiated The Tissue Culture & Art Project in 1996, as an outcome of his thesis: Living Surfaces, Biotechnology & The Design Way: An investigation of issues concerning design & biotechnology.

Ionat Zurr

Born in England, lived in Israel and Australia. Currently a research fellow at the Tissue Engineering and Organ Fabrication Lab, Massachusetts General Hospital, Harvard Medical School, Boston. Studied photography and media studies, specializing in biological and digital imaging, as well as video production. Joined the project in 1997, wrote her thesis: Communicating Tissue Culture as Art, as part of her Photo-Media course.

Guy Ben-Ary

Born in USA, lived in Israel and Australia. Currently living and working in WA. Manager of the Image Analysis and Acquisition Facility (IAAF), Department of Anatomy and Human Biology, UWA. Specializing in microscopy and biological imaging. Coordinator of SymbioticA: The Art & Science Collaborative Studio. Specializing in microscopy and biological imaging. Trained in programming and web development, graduated the Tel Aviv University Law School, joined the project in 1999.

Michelle Barker (Australia)

Præternatural

collaboration with

David Cappie - Programmer

James Courso - Sound Designer

Præternatural is an interactive CD-ROM, divided into two areas. The first is a genealogy, exploring the role of the monster in western culture from the 17th century to the middle of the 20th century. The intention is to establish the significance and changing perception of the monstrous within the paradigms of medicine and science.

Præternatural argues that the monster is used as a metaphor in the field of perception from divinity through to scientific discovery.

During the 16th century, the monstrous was indicative as a sign of divine power. Western culture throughout this time was controlled by religious and moral beliefs, positioning deformities as retribution and punishment from God. Yet, from the late 16th century and throughout the 17th century, the monstrous became part of a system of collecting driven by a culture of curiosity.

The 18th century brought with it increasingly detailed observation and the recording of normal and abnormal anatomy and within this, the monstrous began to take its place as a scientific phenomenon. And finally, the 19th century established the methodologies of medical and biological research that enabled a limited corporeal understanding of the monstrous. However, it also represented a decline in the more humane aspects of interest in the grotesque.

Within this 300 year period, the notion of the monstrous always held a position of significance. Its development was concurrent with developments taking place both scientifically and medically. Its articulation reflects a larger understanding of the body based on a particular belief system - one that is intermeshing of the cultural, medical and scientific.

The second area of Præternatural addresses a contemporary textualisation of the monstrous, specifically in relation to its sense of phasing out. Taking further the current relations between science, medicine and the body, the work looks not only at the sense of the monster, but the absence of the body itself from the contemporary discourse. In particular, it focuses on developments in genetics as these relate to attempts to abolish the monstrous and its corporealities.

Michelle Barker

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Michelle Barker has worked as an artist within the area of new media for the past ten years. She has recently completed an interactive CD-ROM, Præternatural, funded by the Australian Film Commission. This research forms part of a PhD presenting a genealogical exploration of the cultural, medical, and scientific role of the monster in Western culture from the 17th century to the 20th century.

Recent shows include Specimens at Artspace, State of the Heart at the Australian Centre for Photography and The Love Machine as part of the Melbourne Festival.

Michelle is the former Digital Media Coordinator for the Museum of Sydney, and currently lectures in Photomedia at the College of Fine Arts, UNSW.

Kenneth Rinaldo

Autopoiesis

Autopoiesis is a robotic series commissioned by the Kiasma Museum in Helsinki, Finland. It consists of 15 musical and robotic sculptures that interact with the public and modify their behaviours based on both the presences of the participants in the exhibition and the communication between each separate sculpture. Autopoiesis is "self-making", a characteristic of all living systems. This series of robotic sculptures talk to each other through a hardwired network and audible telephone tones, which are a musical language for the group.

Autopoiesis utilises a number of unique approaches to create this complex and evolving environment. It uses smart sensor organisation that senses the presence of the viewer/participant and allows the robotic sculpture to respond intelligently. These passive infrared sensors tell each arm to move in the direction of the viewer, while the active infrared sensor located at the tip stops the arm as it arrives within inches of the viewer. This allows the sculpture to display both attraction and repulsion behaviours.

Furthermore, in Autopoiesis the robotic sensors compare their sensor data through a central-state controller, so the viewer is able to walk through the sculptural installation and have the arms interact both individually and as a group. Because each arm has its own on-board computer control, the overall speed of reaction is rapid and therefore, life-like. Local control always supercedes group control when a local sensor is aware of a human nearby. This allows individual arms to show accuracy and delicacy of approach and avoidance when encountering the viewer/participant. At the tip of two of the arms, lipstick cameras project what they see onto the walls of the space. This gives the viewer/participant a sense of being observed by this artificial life robotic sculpture.

The sculptures communicate using bit strings as information and they exchange the data serially, interconnecting all the sculptures. Each sculpture also generates bit strings of information as algorithms using an internal numerical randomiser. These randomisers effect overall sculptural form and the evolution of the sound environment. Additionally, the tones are a musical language that allows individual robotic sculptures to communicate and give the viewer a sense of the emotional state of the sculptural elements as they interact. Higher and more rapid tones are associated with fear and the lower, more deliberate tonal sequences with relaxation and play. The telephone tones are a consistent language of intercommunication and manifest a sense of overall robotic group consciousness, where what is said by one, effects what is said by others.

Autopoiesis continually evolves its own behaviours in response to the unique environment and viewer/participant inputs. This group consciousness of sculptural robots manifests a cybernetic ballet of experience, with the computer/machine and viewer/participant involved in a grand dance of one sensing and responding to the other.

Kenneth Rinaldo

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<http://www.ylem.org/artists/krinaldo/works/autopoiesis/index.html>

Kenneth Rinaldo is a sculptor and theorist that creates artificial life art works which look to the co-evolution of our natural and technological cultures. His works have been shown at the Kiasma Museum Helsinki, Finland, The Museum of Contemporary Art Chicago; and the V@ Dutch Electronica Arts Festival in Holland. He has been featured in numerous TV shows, such as the KNOW ZONE a TV special on robotics and a 1/2 hour special on Canadian Broadcasting Corporation. He has been critically reviewed in Wired Magazine and Artificial Intelligence Expert to name a few.



a selection of innovative inter/national new media practice which engages with biotech, complex systems and artificial life.

in an era of commercial biotechnology and the proprietary genome, and the engineering of artificial entities, artists offer valuable insights into the shifting nature of living systems. Twisting contemporary technoscience around specific aesthetic and conceptual concerns, **hard | soft | wet** features work spanning grotesque biotechnology nightmares through to clean software ecologies and delicate robotic systems.

We live in nervous postevolutionary times. will OUR drive to engineer living phenomena make us gods, or ultimately displace us?

Artspace

5th - 28th October 2000

autonomousAudio Ima Traveller/Breed Life Species II

Australian Centre for Photography

20th October - 19th November 2000

Autopoiesis • Tissue Culture & Art(ificial) Wombs II • Præturnatural

dLux media | arts encourages and promotes the development and critical discussion of innovative film, video, new media and sound arts in Australia, and exhibits this work to diverse audience nationally and internationally.

futureScreen00 is the third in an annual series of dLux events established in Sydney, Australia to explore the cross - influences of new media practices, cultural theory and recent development in science and technology.

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www.dLux.org.au/fs00



ARTSPACE

