

in collaboration with

The Powerhouse Museum  
Australian Centre for Photography

Artspace

presents

  
FUTURESCREEN00

ARTIFICIAL LIFE HARD | SOFT | WET



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### Are we about to liberate GOD ?

futureScreen00 is the third in an annual series of dluxevents established to explore the cross-influences of new media art practices, cultural theory and recent developments in science and technology.

dLux media | arts has drawn together a stellar gathering of inter/national artists and theorists to mine the compelling dimensions raised by robotic, computational and biotechnological engineering of life. Hard | soft | wet : Artificial Life converge's through a symposium at Powerhouse Museum and exhibitions at Australian Centre for Photography and Artspace.

From the deep dark rumblings of the cave - man turns another cycle - carbon based life suggests its own end - the inevitable emerges - carbon and silicon mutations and attempts on 'life'. Visionaries of the future have seen for a long while what is coming to effect as we speak. Man fucks with life + the sublime mysteries of nature to re-engineer a world from man's own hand. So, what are the issues here and what do we have to offer nature ?

Consider the following recently published in **Robo sapiens Evolution of a new species** by Peter Menzel and Faith D'Aluisio.

**Robo sapiens: n (English, from robot, a mechanism guided by automatic controls; and Latin, from Homo sapiens, mankind) 1. A hybrid species of human and robot with intelligence vastly superior to that of purely biological mankind; began to emerge in the twenty-first century. 2. The dominant species in the solar system of Earth. [Microsoft Universal Dictionary, 2099]**

We may do well to qualify the paradigm of intelligence!

At its best the scientific discipline of Artificial Life may offer greater scope in understanding nature - this human intelligence and the mechanisms of creation on earth. At its worst - it may engineer a species to replace us.

In a riptide of reverse influence what will be the authentic consequence ?

On behalf of dLux I wish to extend our appreciation to all the presenters for their commitment, energy and vision for this, the third installment of futureScreen. A special thanks is warranted to our international visitors for making the trek to Australia to partake. Particular thanks to Alessio Cavallaro (previous dLux Director) for his past efforts and vision for dLux.

dLux gratefully acknowledges the collaborating organisations, and in particular Matthew Connell and Campbell Bickerstaff from the Powerhouse Museum, Alasdair Foster and Francisco Fisher from the Australian Centre for Photography and Artspace

**Leah Grycewicz**  
Curator, dLux media | arts

### About dLux media | arts

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 dluxevents 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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Mitchell Whitelaw, Gary Zebington

**Program Design**  
Panos Couros + Leah Grycewicz

**futureScreen Web design**  
Panos Couros

**Technical Consultant**  
John Tonkin

dLux media | arts gratefully acknowledges the financial assistance of the Industry and Cultural Development branch of the Australian Film Commission; the New South Wales Film and Television Office, the Visual Arts and Crafts program of the New South Wales Ministry for the Arts and the New Media Arts Fund of the Australia Council for the Arts.

dLux media | arts extends particular thanks to the artists whose vision and integrity and hard work (often unpaid) is manifest in work exhibited.

dLux media | arts also gratefully acknowledges the following for their energy and commitment to evolving futureScreen00: Alessio Cavallaro (project concept and initiation); Mitchell Whitelaw; Annemarie Jonson; John Tonkin; Mathew Connell, Campbell Bickerstaff and Jason Gee, Powerhouse Museum; Alasdair Foster and Francisco Fisher from the Australian Centre for Photography; Nick Tsoutas, Director and Jaqueline Phillips from Artspace; Buzzle; John Levey - LEVTEC; Darren Lewis; Susan Charlton; Hayden Mancktelow.

[www.dLux.org.au/fs00](http://www.dLux.org.au/fs00)



ARTSPACE



## Christopher Langton

### Artificial Life: A Millenium Retrospective

Art + Life = Artificial Life: Life made by Humans rather than by Nature.

Our technological capabilities have brought us to the point where we are on the verge of creating 'living' artifacts. This will have profound consequences for science and technology, philosophy, ethics, social theory, and religion, not to mention the life that is already here.

What form will such living artifacts take and what will be the nature of the relationship between them and naturally evolved life? What will be the nature of "Nature" in the future?

#### Biographical information

Dr. Christopher Langton organized the first three international workshops on Artificial Life, and is currently the Editor of the Artificial Life journal, published by MIT Press. Dr. Langton is currently with the Swarm Development Group in Santa Fe, New Mexico. He was previously a Research Professor at the Santa Fe Institute, where he was the Director of the Artificial Life Program and the Swarm Project.

Dr. Langton did his undergraduate work at the University of Arizona, graduating with a double major in Anthropology and Philosophy. He received his PhD in Computer Science from the University of Michigan, where his thesis work was on "Computation at the Edge of Chaos". Research interests include artificial life, complex adaptive systems, the origin and evolution of life, distributed dynamical systems, simulation in science and technology, virtual worlds, and the role of information in physics.

For recreation, Dr. Langton plays blues and bluegrass guitar, and drives a motorcycle too fast.

<http://www.swarm.org>

## Tom Ray

### A Wildlife Reserve in Cyberspace

The proposed project will create a very large, complex and inter-connected region of cyberspace that will be inoculated with digital organisms which will be allowed to evolve freely through natural selection. The objective is to set off a digital analog to the Cambrian explosion of diversity, in which multi-cellular digital organisms (parallel MIMD processes) will spontaneously increase in diversity and complexity. If successful, this evolutionary process will allow us to find the natural form of parallel processes, and will generate extremely complex digital information processes that fully utilize the capacities inherent in our parallel and networked hardware. The project will be funded through the donation of spare CPU cycles from thousands of machines connected to the net, by running the reserve as a low priority background process on participating nodes.

<http://www.hip.atr.co.jp/~ray/pubs/reserves/>

#### Biographical information

Prof. Tom Ray is Professor of Zoology at the University of Oklahoma, an invited researcher in the Evolutionary Systems Department at ATR (Advanced Telecommunications Research Institute International) Human Information Processing Research Labs in Japan, and on the external faculty of the Santa Fe Institute for Complexity Studies. A tropical biologist, since 1974 he has studied the evolution and ecology of a variety of organisms inhabiting

rain forests, particularly in Costa Rica, where he is active in rain forest conservation. He is currently conducting research on evolution in the digital medium, and is a pioneer in the new discipline of Artificial Life (ALife).

## Christa Sommerer & Laurent Mignonneau

### Giving up Control: Interaction and Evolution in the Interactive Artworks of Sommerer and Mignonneau

Since 1992 Sommerer & Mignonneau have used biological principles to create interactive artworks that integrate artificial life and real life by means of human-computer interaction. Exploring real-time interaction and evolutionary image processes, visitors to our interactive installations become essential parts of the systems by transmitting their individual behaviours, emotions and personalities to the works' image processing. Images in these installations are not static, prefixed and predictable but "living systems", representing minute changes in the viewers interactions with the evolutionary image processes.

#### Biographical information

Sommerer & Mignonneau are internationally renowned media artists working in the field of interactive computer installations. They have created numerous 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 major media museums and media collections internationally.

<http://www.mic.atr.co.jp/~christa>

## Critical Art Ensemble (CAE) Steve Kurtz

### The Promissory Rhetoric of Biotechnology in the Public Sphere

What rhetoric can be used to represent new biotech initiatives so that they can keep their distance from eugenics? If the secular utopian rhetoric of the Enlightenment is off limits due to association with first wave eugenics, then what is left? The pitchmen of biotech, whether corporate or academic, are turning to the utopian rhetoric of christianity, offering promises of new universalism, the end of aging and perhaps immortality, miracle cures, and edenesque abundance. Critical Art Ensemble's presentation examines the structure and deployment of this rhetoric, and will show documentation of the tactical media project that this cultural development inspired.

#### Biographical information

CAE is a collective of five tactical media practitioners of various specialisations including computer graphics, film/video, photography, text art, book art, and performance. Formed in 1987, CAE's focus has been on the exploration of the intersections between art, critical theory, technology, and political activism. The collective has performed and produced projects for an international audience, and has written three books: *The Electronic Disturbance*, and its companion text, *Electronic Civil Disobedience and Other Unpopular Ideas*, and *Flesh Machine: Cyborgs, Designer Babies, and New Eugenic Consciousness*. The group's latest book, *Digital Resistance: Explorations in Tactical Media*, will

appear in fall 2000.

<http://www.critical-art.net>

## Cynthia Breazeal

### The Art + Science of Sociable Machines

Sociable machines are intuitive for people to communicate with and to teach. This endeavour involves artistry, science and engineering. The issues of aesthetics, believability, expressiveness, and audience perception factor heavily into building a robot that can engage humans in a familiar and compelling manner. The design of the robot's perceptual, motivational, and behavioural systems must be well matched to human social and behavioural expectations. Hence, models from psychology, ethology, developmental psychology, and evolutionary perspectives can be very useful in designing robots that behave in a life-like and sociable way. Ongoing work with an anthropomorphic robot called Kismet is presented to illustrate these concepts.

#### Biographical information

Dr. Cynthia Breazeal is a postdoctoral fellow at the MIT Artificial Intelligence Lab. She has developed numerous autonomous robots, from planetary micro-rovers, to upper-torso humanoid robots, to highly expressive robotic faces. Always inspired by the behaviour of living systems, scientific models and theories factor heavily into the hardware and software design of her robotic creations. Her current interests focus on social interaction and socially situated learning between people and humanoid robots. She received her Sc.D. and S.M. degrees from MIT in the Department of Electrical Engineering and Computer Science working under Prof. Rodney Brooks.

<http://www.ai.mit.edu/projects/cynthia/cynthia.html>

## Michele Barker

### Digital Physicalities

This paper will address the positioning of multimedia in relationship to information, and the reduction of corporeality via genetics to information. It will articulate the ways in which the CD-ROM work *Præternatural* both acknowledges the present limitations of multimedia bound by conceptual structures of information theory, and attempts to go beyond these. It will set out to explore the problems associated with the current state, both conceptual and technical, of multimedia. The paper will also address cybernetic theory and the work of other visual artists deploying relations between bodies, culture and information.

#### Biographical information

Michele Barker has worked as an artist within the area of new media for the past ten years. She recently completed an Australian Film Commission funded interactive CD-ROM, *Præternatural*. 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 to the 20th century. Her recent shows include *Specimens* at Artspace, *State of the Heart* at the Australian Centre for Photography and *The Love Machine* at the Melbourne Festival. Michele currently lectures in Photomedia at the College of Fine Arts, UNSW.

<http://www.liquiddna.com>

**What is Biotechnology?**

Few words today stimulate greater political and cultural discord than 'biotechnology'. But what exactly is it? To some of its advocates it is as familiar and benign as the arts of brewing and baking, while to some opponents it is a corrupting force more virulent and dangerous than nuclear energy. I trace the history of the shifting notion of bio-technology (and cognates) and of the industrial uses of life designated by it through the 20th century, together with the multifarious fears and hopes it has borne for different groups to the present day.

**Biographical information**

Dr. Nicolas Rasmussen is Senior Lecturer in the School of Science and Technology Studies at UNSW, where he teaches topics in the history of life sciences. He has researched and published extensively on the history of industrial life science and also on the role of experimental technology in scientific change, including the book *Picture Control: The Electron Microscope and the Transformation of Biology in America, 1940-1960*, winner of the 1999 Paul Bunge Prize of the Hans Jenemann Foundation for best work on the history of scientific instrumentation.

[http://www.arts.unsw.edu.au/sts/sts\\_core\\_links/sts\\_staff\\_homepages/nick\\_rasmussen\\_site/rasmussen\\_page.htm](http://www.arts.unsw.edu.au/sts/sts_core_links/sts_staff_homepages/nick_rasmussen_site/rasmussen_page.htm)

**John Sutton**

**Connectionism, Culture, and Cognition**

New connectionist, PDP (Parallel Distributed Processing), or neural network models of memory and mind seemed to offer more holistic frameworks than those of classical AI. But how plausible are claims that a future connectionist theory of mind will be sensitive to the embodied and socially situated nature of cognition? After a historical and conceptual sketch of the development of connectionism, this paper investigates its impact on recent work on complexity and subjectivity. It argues that some connectionist account of mental representation is needed in the construction of a cultural cognitive science which can deal with the subpersonal and the social at once.

**Biographical information**

Dr. John Sutton teaches philosophy at Macquarie University, and has held visiting fellowships at UCLA and Edinburgh University. He is author of *Philosophy and Memory Traces: Descartes to Connectionism* (1998) and coeditor of *Descartes' Natural Philosophy* (2000). He has written and performed *Empedocles: Love and Strife*, and *Kenelm Digby and the Liquid Empire* in the *Philosophy Nights* series at the Steki Taverna in Newtown. He was chair of the NSW HSC Philosophy Distinction course committee from 1996 to 1998.

<http://www.phil.mq.edu.au/staff/jsutton/>

**Elizabeth Wilson**

**Helplessness, confusion and error:**

**Affects and AI**

In 1963 psychologist Silvan Tomkins suggested that AI research would proceed most profitably if it could "create and nurture mechanisms which began in helplessness,

confusion and error". Tomkins argued that affect and infant development would provide the most secure foundation for the development of artificial entities. While cognitive science research since the 1960s has foreclosed on the affects, in recent years there has been a return to affect and infant development in AI. This paper traces this recent evolution with reference to the work of Alan Turing, in which both affect and infant development were prominent. Special attention is paid to surprise as the mechanism through which the interface of the human and the artificial is forged.

**Biographical information**

Dr. Elizabeth A. Wilson is a research fellow in the Research Institute for Humanities and Social Sciences, University of Sydney. She is the author of *Neural geographies: Feminism and the microstructure of cognition* (Routledge, 1998) and guest editor of a special issue of *Australian Feminist Studies* (1999) on science studies. She is currently completing a book on neuroscience, *affects and evolution*. [www.arts.usyd.edu.au/rihss/ewilson.html](http://www.arts.usyd.edu.au/rihss/ewilson.html)

**Claude Sammut**

**Quadruped robots that play soccer**

The Sony legged robot league of the international robot competition RoboCup involves three robots from each team playing soccer on a ping pong table sized field. The job of the competing teams is to program the robots' soccer playing intelligence: they must perceive their environment, build a representation of the world, and act to achieve a goal while responding to changes in the environment. In a field of 12 international robotics laboratories, The UNSW United team from the School of Computer Science and Engineering became the RoboCup 2000 Sony legged robot league champions. This presentation will describe the strategies that lead to the team's success.

**Biographical information**

Prof. Claude Sammut is Professor of Computer Science and Engineering at the University of New South Wales and Head of the Artificial Intelligence Research Group. His main research interests are in Machine Learning, computer systems that are capable of acquiring new skills or improving on existing ones by learning from example or by trial and error. His research in Machine Learning lead to applications in robotics and eventually to UNSW's participation RoboCup. He was leader of the team that was runner up in the Sony legged robot league in Stockholm in 1999 and he also lead this year's winning team.

<http://www.cse.unsw.edu.au/~claudio>

**SYMPOSIUM INSTALLATIONS**

**Triclops International  
Pond, Wind and Walker**

A performance on the forecourt. Hinting at the primeval stirrings of life, the pond bubbles away in stark surrounds. A strange and unusual form of life enters the scene, its presence, mission or role here is totally ambiguous.

Triclops International was conceived by two self confessed pyromaniacs with a desire to

shock, stun and stupefy any likely onlookers. Since 1993, Triclops' modus operandi has been firmly entrenched in backyard tradition; trial and error engineering being their mainstay of research philosophy and development technique. Their initial manifesto dealt with disaster theory and the creation of mechanised industrial gods. The simultaneous thrill and utter chaos of disaster instilled the impetus for the creation of works like *Unlucky World* and *Molten Godhead*.

Triclops' self developed skills gained from working with electro-mechanical systems of all kinds have led them in recent years to undertake more sophisticated projects in aeronautics, robotics and biomechanical control.

**Mari Velonaki  
Pin Cushion**

Wires emanate from needles embedded in a woman's digital face which is projected onto a latex cushion hanging on a wall. By stroking and pulling the wires, spectators manipulate the face which evolves to their cumulative interactions.

Concept/Interface/Installation: Mari Velonaki  
Graphics/Programming: Gary Zebington  
Sound: Shannon O'Neill

**Biographical information**

Mari Velonaki is a media artist with a performance background. She aims to engage spectators with digital characters in interplays activated by sensory triggered interfaces (breath activation, speech recognition, artificial vision systems). Her work has been shown at Artspace, The Performance Space, PICA, Sciencentre of Queensland, IMA, Ton and Bild Spectakel and Kunstalle Prisma.

**John Tonkin  
Prototype for a Universal Ideology**

The spoken theory of each user becomes the raw material for a process analogous to the genetic recombination of DNA. The audio waveforms are broken down into fragments and rearranged with the phrases of other users. Users can breed different theories together and decide which new recombinant theories survive and consequently how they develop over time.

**Biographical information**

John Tonkin ([www.johnt.org](http://www.johnt.org)) is a Sydney based artist, who began programming and making computer animation in 1985. His current works involve building frameworks / tools / toys in which the artwork is formed through the accumulated interactions of its users. In 1999 Tonkin received a fellowship from the Australia Council's New Media Fund. He is currently working on *Strange Weather*: a grand unified theory, a visualisation tool for makingsense of life.

This project has been assisted by the Australian Government through the Australia Council, it's arts funding and advisory body.

# SYMPOSIUM SCHEDULE

## Fri Oct 27

- 7.00pm Chris Langton (US) Artificial Life: A Millenium Retrospective
- 7.50pm TRICLOPS INTERNATIONAL Pond, Wind and Walker  
15 min performance on the forecourt
- 8.10pm Christa Sommerer (JAP) Giving up Control - Interaction and Evolution  
in the Interactive Art Works of Sommerer and  
Mignonneau

## Sat Oct 28

- 10.30am Mitchell Whitelaw  
11.10am Jon McCormack Metacreation: Artists Using Artificial Life  
(Re)Designing Nature
- 11.50am morning tea
- 12.10pm Dr. Don Colgan  
12.50pm Steve Kurtz (US) Cloning the Thylacine  
The Promissory Rhetoric of Biotechnology in  
the Public Sphere
- 1.30pm lunch
- 3.00pm Michele Barker  
3.40pm Prof. Lesley Rogers Digital Physicalities  
The so called 'Book of Life' and what it means  
for humans and animals
- 4.20pm afternoon tea
- 4.40pm Dr. Cathryn Vasseleu  
5.20pm Prof. Claude Sammut  
6.00pm Discussion session Animatic Regimes  
Quadruped robots that play soccer  
Christa Sommerer (chair)

## Sun Oct 29

- 10.30am Dr. Tom Ray (US) A Wildlife Reserve in Cyberspace  
(remote presentation)
- 11.10am Dr. Nicolas Rasmussen What is Biotechnology?
- 11.50am morning tea
- 12.10pm Prof. Alex Zelinsky  
12.50pm Stephen Jones Seeing Machines  
The Evolution of Artificial Consciousness:  
Re-inventing the Wheel?  
Connectionism, Culture, and Cognition
- 1.20pm Dr. John Sutton  
2.10pm lunch
- 3.10pm Dr. Cynthia Breazeal(US)  
3.50pm Dr. Elizabeth A.Wilson The Art + Science of Sociable Machines  
Helplessness, confusion and error:  
Affects + AI
- 4.30pm afternoon tea
- 5- 6pm Discussion session The Nature of Nature in the Future - Chris Langton (chair)

## EXHIBITIONS

### ARTSPACE

OCTOBER 5 - 28, 2000

43 - 51 Cowper Wharf Road, Woolloomooloo

### OCTOBER 5

#### autonomousAudio

curated by Mitchell Whitelaw

#### IMA Traveller + Breed

Erwin Driessens & Maria Verstappen (Neth)

### OCTOBER 20

#### Life Species II

Christa Sommerer & Laurent Mignonneau (Jap)

### AUSTRALIAN CENTRE FOR PHOTOGRAPHY

OCTOBER 20 - NOVEMBER 19, 2000

257 Oxford St, Paddington

#### Autopoiesis

Kenneth Rinaldo (US)

#### Præturnatural

Michele Barker (Aus)

#### The Tissue Culture and Art Project

Oron Catts, Ionat Zurr & Guy Ben-Ary (Aus)