

BIOART IN LISBON

by

Henrique Garcia Pereira

hpereira@alfa.ist.utl.pt

At Galeria António Prates, in Lisbon, a new exhibition, under the general title of BIOART, was held from 23.09.2005 to 18.10.2005, encompassing artworks of the following authors: Suzanne Anker, Harold Cohen, Leonel Moura, C.E.B. Reas, Ken Rinaldo, Christa Sommerer & Laurent Mignonneau.

The point of this article is to give a short and personal introduction to the BIOART subject, in order to put the Exhibition into context and compare a number of lines of reflection raised by each creator's work.

All the artworks presented in the exhibition are bio-inspired, corresponding to A NEW KIND OF ART that can be positioned under a unique umbrella that comprehends the recombination of explicit and implicit biological sources working through algorithmic processes and digital technologies.

The innovation brought about by this recombination draws equally on hard sciences and on soft cultures, putting forward a new ontology of the artificial.

The main case to be made when discussing such an ontology is how to generate life as an artistic expression, by challenging the new media technologies and pushing them to their limits.

Trying to summarize in a few words the common subject of the exhibition, I would say, in systems theory terms, that a biological mechanism is captured (or simulated) by some kind of information processing device that produces an aesthetic output, which is the artwork.

It is clear that this exhibition contributes to bridge the gap between the old fashioned C.P. Snows' TWO CULTURES, that are now linked by strings of zeros and ones, stemming from digital technologies.

The hybridization of the living with the artificial is collapsing previously separated categories of western thinking, in particular, the mind-body split, which is a legacy of Descartes that was kept alive for centuries to justify industrial capitalism ('bosses vs. workers' as an analogue of 'mind vs. body'¹).

BIOART contributes to liberate us from the hierarchical top-down model that tends to exploit the *difference* between human beings. By the same token, it queries the putative human neurotic superiority that has given rise to a perverse and massacring relationship with Nature.

In particular instances, as it happens with some of the Suzanne Anker's sculptures (Figure 1), there is an intermixing of natural form and digital media. In another set of artworks, which take their inspiration from biological iconography, Susan deals with the link between Genetic Sciences and Information Technologies. In particular, in Fig. 2, chromosomes function as a cellular script brought to visualization by high-powered microscopes.

¹ A.C. Danto (1999) *The Body/Body problem*, University of California Press, Berkeley



Figure 1 – Origins and Futures IV (Suzanne Anker, 2004), rapid prototype sculpture, pyrite, plexiglass, installed on floor (122x183x15 cm)



Figure 2 – Codex Genome (Suzanne Anker, 1998-2000), silkscreen and acrylic on frosted mylar (183x183cm)

Through the novel features conveyed by digital media, the new form of life that is shown in the exhibition is not “*life as it is*”, but “*life as it could be*”, according to the celebrated dictum of Christopher Langton², one of the founding fathers of a new branch of Artificial Intelligence devoted to artificial life research.

Along the same lines and quoting Harold Cohen, I could say that: “*The real revolution doesn’t have to do with making life easier, it has to do with making a new life possible*”. In this endeavor, the poetics of art allows to grasp contemporary life in its whole complexity and provides new tools to transform it, placing artistic processes in the heart of the contemporary society of knowledge.

Cohen’s computer program - AARON - is now thirty four years old, which makes of this artscientist one the outstanding pioneers of the application of Artificial Intelligence in the arts.

The successive improvements that Cohen has performed in his program were fuelled by his symbiotic relationship with the machine that produces important “*things to be thought about*”; things that would have been inaccessible to him without the outputs provided by his program.

Cohens’ work raises an important question: from the enormous variety of different artworks produced every day (in fact, every night³) by his program, how to select which are to be kept and which are to be dumped?

² *Artificial life, an overview*, Ed. C. Langton, The MIT Press, 2000.

³ Before going to bed, Cohen launches his program. When he awakes the following morning, a wonderful (an enormous) set of different artworks were produced.

I would dare to approach that question from Popper's viewpoint: a hypothesis holds until it is not denied by evidence. In this case, the 'hypothesis' is an artwork to be kept or dumped and 'evidence' should be negotiated between the artscientist and the users as something that conveys "*wonder, interestingness and novelty*"⁴.

This process implies a significant symbiosis between man and machine, that redefines the nature of human-ness itself, as Cohen puts it.

Rather surprisingly when we look only at the outcome of their experiments, there is an underlying principle that links the artworks of Cohen (Figure 3), Moura (Figure 4) and Reas (Figure 5).



Figure 3 - 05129 (Harold Cohen, 2005),
Pigment ink on paper, 114x228 cm

⁴ Simon, H. (1996) *The Sciences of the Artificial*, The MIT Press, Cambridge, MA, p. 162



Figure 4 – Seed Marilyn (Leonel Moura, 2005),
acrylic on canvas, 130x130, installation view

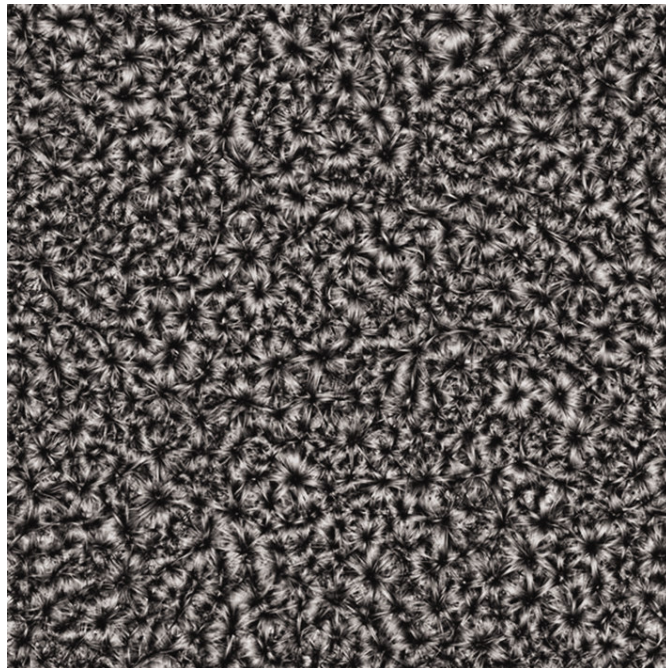


Figure 5 – Process 26 (C.E.B. Reas, 2005),
inkjet print on Hahnemuhle Proto Rag, 88.9x88.9 cm

In fact, even though the objects produced are radically different, a common line of thought can be disclosed, when the work of these three artists is looked at under a conceptual perspective.

If I elaborate on the fundamental nature of Cohen, Moura and Reas work, I can consider that the basic idea behind it is that artworks may emerge from the interaction of a set of autonomous agents that evolve according to a few number of simple software rules. The biological analogue of this interaction mechanism can be seen as the collective behavior of eusocial insects.

The outputs produced by algorithms behind Moura and Reas's work are based on swarm intelligence and outputs in both systems will vary from run to run, even when the same set of parameters is fed into the software. Moreover, a small change in one parameter leads to completely diverse outputs, as expected from 'chaos' theory (in fact, they are dealing with complex non-linear dynamic systems).

Since AARON contains a database and a set of rules that enables it to produce sophisticated drawings without assistance from the artist, Cohen's approach is more similar to the 'classical' methods of AI than Moura and Reas's, which embrace resolutely the new bottom-up model that is characteristic of artificial life.

Nevertheless, the three approaches lead to an increase in complexity, as it happens when biological and evolutionary models are applied to the creation of these new bio inspired art forms.

Apart from the ‘internal representation’ flavor that can be spotted in Cohen’s work, the difference between these three approaches lies in the nature of the agents chosen to perform the action: for Cohen and Reas, the agents are incorporated in the software and the output is printed from a computer screen; for Moura, the agents are autonomous robots that produce the artwork directly on the canvas, as sizeable and material stuff.

In Cohen and Reas approaches, where computer simulation is used, a more diverse combination of parameters is permitted, since there is no significant delay between the launching of the experiment and the output production (Cohen produces dozens of artworks during one night sleep, whereas Moura produces only one). Conversely, in Moura’s approach, the slowness of the process (taking one to four hours) give the viewers time to follow the ‘work in progress’. During the experiment, the art users have the benefit of experiencing the emergence of peculiar patterns and, eventually, to be driven into surprise and novelty.

On the other hand, Cohen and Reas begin their artworks from scratch with an internal piece of code which sets the system to evolve, whereas Moura uses a ‘seed’ to initialize his experiments.

The use of a physical ‘seed’ – in this case Warhol’s Marilyn – to be ‘distorted’ by Moura’s painting robots results from a digression from his initial concept, in the same lines as Reas is continuously changing his representations (from an extended pixel to a line, for instance).

When the Painting Robots Project started⁵, a random initialization procedure was used: the first step consisted of leaving randomly a drop of ink in the canvas by a certain robot. Then, a new robot was attracted to that ‘seed’ and accentuated it by a positive feed-back mechanism contained in its chip. In Moura’s artworks presented in the exhibition, the initial random ‘seed’ was substituted by a pre-defined structure – in this case, a picture of Marilyn. But, in a second step, the same positive feed-back mechanism is applied, provoking the blurring of the seed, exactly through the same program that enlarged the random drop of ink used in former works.

Ken Rinaldo’s installation – Augmented Fish Reality (Figure 6) – is the most impressive of the whole exhibition, given the amount and diversity of disparate elements interacting and communicating during the experiment.

These elements consists of a biological basis (fish and plants moving inside four bowls) that drives a set of robots containing the bowls and evolving in a loosely fenced environment. In addition, the robots’ course of action is also affected by human presence (the exhibition viewers), that interacts with fish emerging relationships, controlling the robots accordingly. Small lipstick video cameras mounted under two of the bowls image the interior of the fish bowls as well as humans, and these images are projected onto the walls of the installation, giving the viewers a sense both looking to the interior of the tanks and feeling as if they are immersed in the tanks.

⁵ Moura, L. and Pereira, H.G. (2004) *Symbiotic Art*, Ed. Institut d’Art Contemporain, Collection Écrits d’artistes, Villeurbanne, France

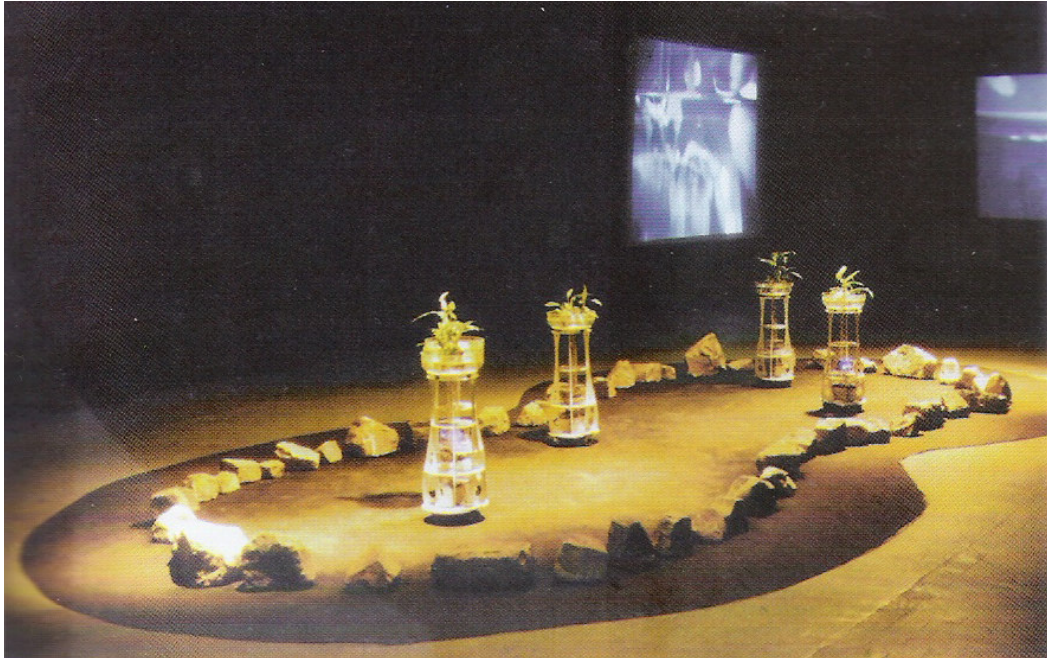


Figure 6 – Augmented fish reality (Ken Rinaldo, 2004), installation view

In Sommerer & Mignonneau's work, one output of which is shown in Figure 7, the interaction with the 'user' is emphasized. In fact, the user directs the production of the artwork through a 'text-to-form' editor by inputting messages, whose syntax specifies the parameters that command the artificial beings to be created (Figure 8).

The parameters, given by text and their combination, influence form, shape, color, texture of the 'creatures' that emerge from the process. As there is great variation in the texts sent by different people, the creatures themselves also vary greatly in their appearance and behavior.

The written text provided by the user is the analogue of the 'genetic code' that drives biological evolution, which is simulated by the complex adaptive systems that inspire the process. This gives rise to a course of action that includes feeding, mating, growth and dead.



Figure 7 - Sommerer & Mignonneau (2000), Life Spaces II

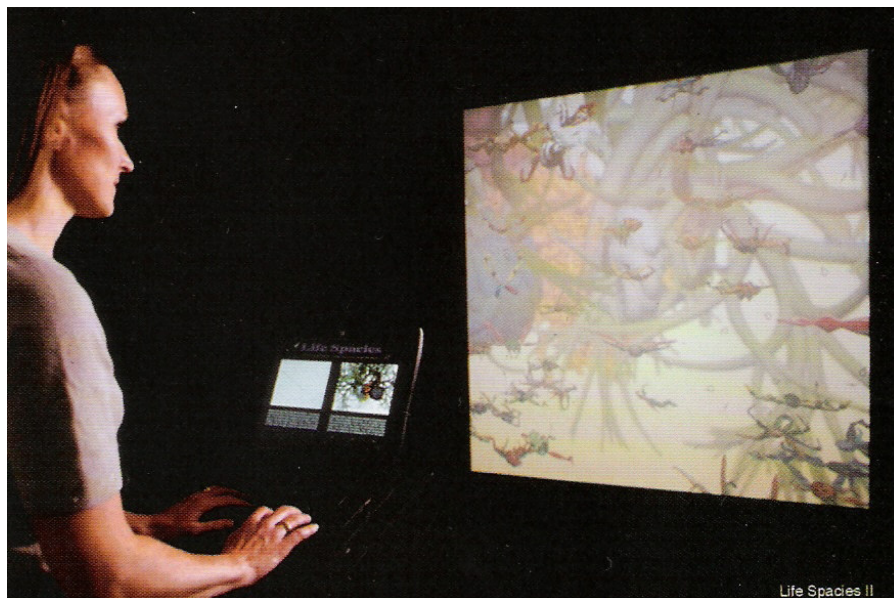


Figure 8 – User creates and feeds creatures and watches them interact

Based on the criteria of materiality and interactivity, it is possible to link the work of the previously discussed three authors (Cohen, Moura and Reas) to the later two (Rinaldo and Sommerer & Mignonneau), as well as to distinguish their procedures.

Along these lines, I would say that the biological source is implicit in the former group and implicit in the later (being such a source given by a 'material' living animal in the case of Rinaldo and by an immaterial code for Sommerer & Mignonneau). The outputs produced are ephemeral for Rinaldo and sizeable for Moura, whereas, for the other artscientists, they are printed from a computer screen). From the interaction with the 'public' point of view, Sommerer & Mignonneau situate such an interaction mainly in the input, Rinaldo during the process, and Moura after the work is performed.