

Swarm Paintings

Non-human art

(2002)¹

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I have always searched outside the art world the intellectual stimuli to continue working. I believe that the basic principle of creativity consists in the encounter of different experiences and knowledges. But equally for the fact that in the last decades artistic practices tend to rely more and more in self-referential, elitist and circular systems, very dependent of mercantile interests, resulting in a lack of response to new social realities and to significant developments in science and technologies.

Architecture is today much more aware of the implications of new technologies in the future of our everyday life, than visual arts which seem to be unable to see beyond its anecdotal aspects. On the other hand, the 'artistic' components of artificial intelligence (AI) and artificial life (aLife) become everyday more important, giving place to completely new fields of investigation.

From this context, was born the project around the concept of morphogenesis with the scientist in the area of artificial life, Vitorino Ramos. The idea being to create an *organism* capable to create forms without any representational pre-commitment and with a minimum of aesthetical intervention from our part.

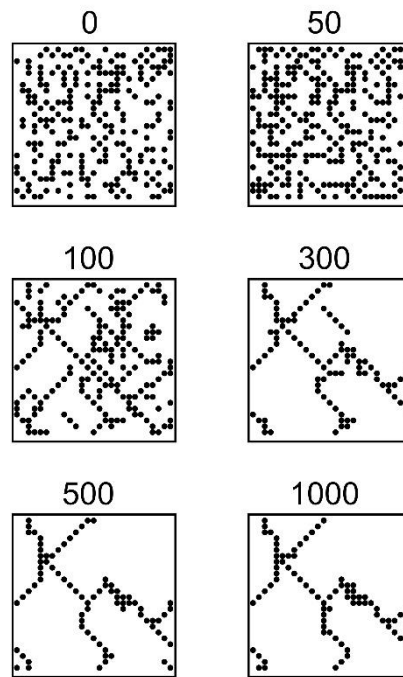
The project differs from others, namely those of algorithmic or evolutionary art, where purely random choices and/or an aesthetic fitness evaluation must be incorporated, through or not the use of pre-constraints. Such experiments are based on a kind of ideal form, determined directly by humans or developed by computers after learning human idiosyncrasies. It differs also from certain proposals of AI, which try to simulate emotions or human sensitivity.

It is undeniable the interest of such experiments, but that is not the purpose of our project. We want to remove, as much as possible, the human factor. Particularly in what concerns aesthetic or ethical subjectivity, taste or style, leaving to the "artificial artist" the task to define its own "art".

It is our intent to depreciate the quality of the "oeuvre d'art", liberating the aesthetic experience from all the moralistic and individualistic mythologies.

For that proposal we are working with "artificial ant systems" or "swarm systems".

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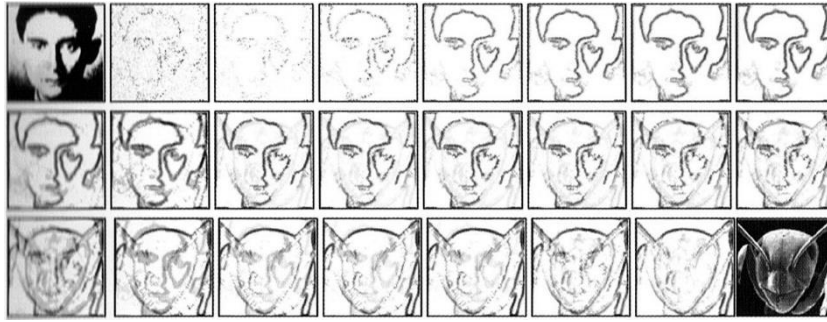


*Colony cognitive maps
(pheromonal fields) for 1000 iteration, on a homogenous image.
Chialvo & Millonas.*

I must confess some incredulity and frustration during the first year of work. Although we reached very quickly some interesting results, it was more difficult to perceive the utility of the exercise. As an artist, I asked often: “yes, it is nice, but what can I do with it?” Typically, I have start by looking at artificial life as a new tool, capable of serving, through its extraordinary combinatory performance, my one specific objectives. In fact, I wanted those systems to perform tasks or solve problems. From that attitude and period, I have developed some interesting architectural projects.

But the overwhelming images that appeared in the screen of the monitor, soon gave place to a feeling of inconsequence in practical terms. Because an artist is essentially a builder, of objects or situations, the virtual reality of the pixel universe appears as an insurmountable obstacle.

It didn't seem possible to undertake any significant conceptual or aesthetic rupture by means of flickering digital images, for very complex and elaborate that they would be. As we can already state by looking at exhibitions and art magazines, contemporary art very soon did integrate such images, in the old logic of fashion and formalism.



One swarm (3000 ants) is thrown to explore Kafka image for 6000 iterations (t).

At t=400, the Kafka habitat is replaced by Red Ant image.

Evolution of swarm cognitive maps (pheromonal fields) is shown for several iterations.

The computer, primordial soup of the artificial life, is very deceptive when it comes to output. In the monitor all the images, reduced to its condition of pixels, seem similar and equivalent. Over and over again, I initiate the program, drop a set of “ants” randomly in a delimited space (environment) and witness the emergence of a variety of drawings. Lines or clusters, mappings or 3d constructions, depending on the characteristics of the program or the specific parameters and grammar. The result was always exciting, and more exciting when increasing unexpected, that is, less controlled. But the monitor kept on returning this excitement to a kind of virtual normalization.



Chimpanzee Congo at work.

It was thus that after a sleepless night, I decided to break with the monitor and undertake a simple experiment. With the aid of a small CAD/CAM machine and a Japanese brush deepened in gold paint, I redirected the swarm to a white sheet of *Fabriano* paper. A painting emerged, formally similar to post-war abstract art, a children’s drawing or the experiments with the chimpanzee Congo.



SP0001, the first swarm painting
January 2, 2002, 10.45 a.m., acrylic on paper, 30 x 30 cm

I decide to call it Swarm Paintings.

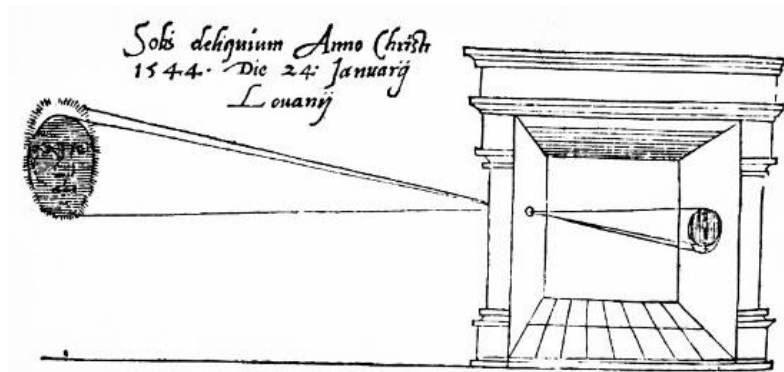
This first painting was a true revelation. Facing these naive scribbles from the swarm, I felt to be in the presence of a conceptual shift. The kind of thing that creates a before and an after. The excitement changed into a vision.

The following step, very laborious and complicated, was to try to limit to the maximum the human intervention. Not only to bind the swarm directly with the painting machine, but also to increase autonomy at the level of the bottom-up methodological design. I am still work on it.

The paintings and drawings reproduced here are the result of this primitive work. The colours and format being still my 'interpretation'. Actually, in this first stage all the works from the artificial swarm are human assisted. But soon they will cease to be.

Anyway, it can already be stated that these "paintings" have very few human characteristics. They do not share practically one of the conditions of (human) authorship. They don't refer to a pre-committed representation, do not assume any emotional pretension or express a particular sensibility, and moreover they don't expect an esthetical or ethical recognition. They also don't affirm a taste, a style or any message.

The similarities with recognized workmanship's are due to the production context. That is, they are defects and not qualities, inevitable at this experimental phase where my intervention is still considerable. The more I will withdraw from it, the larger the autonomy will grow. Tomorrow we will be able to 'give birth' to an artificial life form entirely dedicated to its 'art'.



Camera Obscura, 1544

The use of current artistic categories, such as drawings, paintings, sculptures, is not irrelevant. They are justified by the need of a strategy of recognition for the art world, without which it would not be possible to introduce the questions that really matter. It is important to perceive that the aesthetic experience is essentially 'cosa mentale'.

Trough art history we can trace a consistent tendency towards autonomy. Three moments, corresponding to important aesthetical ruptures, are of particular importance.

The use from Renaissance painters of the 'Camera Obscura'; the 'invention' of the abstraction in the beginning of XX century; and, a little later the appearance of the 'ready-made' by Duchamp.

The 'Camera Obscura' was not the most ancient 'machine' to help artists, but it represents the first time that, in a conscientious and objective way, it was adopted as an instrument of mediation between the model and its representation. Meaning an evident depreciation of the subjective aspects of craftsmanship, and allowing a concentration on the content. The invention of the 'Camera Lucida' and later the photography has contributed decisively to radicalize the process. For example, works, like the one's from Vermeer, would not be possible without the use of a 'Camera Obscura'. They look like photos, because they are human assisted snapshots. If the 'Camera Obscura' helped to concentrate on representation the abstraction finally freed the artist from it. The art didn't need any more to represent a portion of the reality, it become a reality on its own. The subject of art became art itself.

With Duchamp and his 'ready-made' it was the statute of the work of art to be questioned. It didn't matter anymore the aesthetical achievement, nor the skill of the author. The spectator and the context made the art. All the art after Duchamp is a context art, varying only in modalities of contextualization, decontextualization, recontextualization and so on.

Artificial art may be the next rupture. The surpassing of art as we know it.

It is true that at a first glance we can see these paintings as one particular way of output, to be considered in the same plane of an image in the monitor, a print, a digital photography or a

video. However, the essence of these paintings is not in the image, but in the process. Its implications have little to do with the step from virtual to real, even if that is important in itself, but with the consequences that this 'new art' will have in culture and society.



Painting Machine.

It is thus important to understand that we are not speaking about a machine that paints more or less randomly, that evolves on a surface by chance or based on a set of instructions. Although this is an interesting experiment, following the critical and radical attitude of Pinot-Gallizio, inventor of the 'pittura industriale', the Italian artist of the fifties that created a 'machine' (human assisted) that spread energetically paint on rolls of canvas, later to be sold by the meter at the more appraised Art Galleries. Manual ability or sensibility didn't matter. Art aimed for automation.

The robotic component of the 'swarm art' is also of little significant. The chance or combinatorial aspects even less. In fact, these works emerge from artificial ants, through a process of deposition/evaporation of pheromone. Some draw trails (where more pheromone, means more paint), others define clusters or build 3d objects.

When we look at one of these paintings, with its own materiality, we are not in the presence of chance, informal ink spots or the result of an accident in my studio. We see in fact the plastic expression of an (artificial) life form. An ant-swarm capable of registering its existential activity, in a delimited ambient and during a certain period of time. The product of a global behaviour

made of multiple and simple individual behaviours. A bottom-up approach through the abolition of the top-down (human) artist.



SP004, 2002, acrylic on paper, 30 x 30 cm

It is certain that we still need somebody and a context to disclose these works of art. The 'artificial artist' depends, not only of human assistance, but also of a curator and probably also a dealer. But in the 'swarm art' the essential decisions for the emergence of the forms belong entirely to the ant-swarm. The autonomy is demonstrated. Therefore this 'art' cannot be attributed to any human being, even not to the author of the algorithm. That is, the programmer creates the 'DNA' of the 'artist', but not the work of art.

The notion of life in the label 'artificial life' attained a vast consensus in the contemporary science. The life from aLife share a significant number of characteristics that are recognized as defining life itself. Morphogenesis, the ability to generate forms, and reproduction, the capacity to survive death, are two constants of any life list definition. Not by chance the definition of art is also coincident in these two items. The capacity to generate (new) forms is inherent to the art process. And there is no doubt that the fact that art works survive our death, constitutes one of the strongest incentives for any artist. As the Portuguese poet Camões said, we would all like to be among those "whose immortal deeds have conquered death's oblivion".

Life pursues through art its main objectives: evolve and reproduce. If we accept some features of life in artificial life, there is no reason why not to call it artificial art.

Richard Dawkins states that the difference between human art or design and the extraordinary forms that we encounter in nature, is due to the fact that the first are born from a mental project, while the second result from natural selection. Cultural and natural selection do not work in the same way.



SP008, 2002, acrylic on paper, 30 x 30 cm

However, the dominant trend of contemporary art still relies on two total subjective values: talent and sensibility, which are not established through any analytical process, but on the base of historical and social consensus. It is the community involved with the production, circulation and fruition of art that determines the value of a particular work of art or artist. Art that nobody is interested faints. The one that pleases to a great number prospers and occupies the Museums and the collective imaginary. And, such as in nature, a bizarre mutation rejected first, can in determined circumstances give place to a future consensus. Think about Van Gogh.

The separation between 'artistic forms' produced by non-human life, be it natural or so called artificial, and those made by human artists is no longer justified. The extreme anthropocentrism that characterizes our culture is not clever, nor productive. The nature is bursting with extraordinary works of art that we should appreciate, as such, in order to enrich our environment and existences. We must open our mind and adapt to a new vision. The esthetical experience is present everywhere and is not an exclusively human behaviour. For example,

beauty, so important for any definition of aesthetics, can today be translated by 'fitness'. That is, the level of adaptation of an organism to its environment. A greater fitness, or beauty, means a superior capacity of survival and reproduction. Refusing to accept all the possible forms would result in a limitation of our own capacity to increase fitness.



SP012, 2002, acrylic on paper, 30 x 30 cm

One such change of paradigm will lead inevitably to an enormous explosion of creativity. When our Museums will have human workmanship's aside with non-human art (organic or artificial), the process of human aesthetic evolution will speed up.

The survival of forms will be more complex and competitive. Typically, self-centred subjective matters, as authorship, sensibility or taste, will tend to be irrelevant. Functionalism, a reductionist approach to possibility, will lose significance. The altruism will be understood for what really is: a strategy of egoism. Discretionary and moralistic arguments will be eliminated.

The recognition that life, intelligence and art are everywhere, will give the humans the humbleness needed for a full integration in a universe where we are not more than a peculiar evolutionary expression. It is good and very liberating to have the conscience that after our extinction life will continue its way. And probably, even more pleasant to know, will be the fact that we will leave as inheritance forms of autonomous life, very complex and able to develop on its own, from codes of DNA that we had manufactured. Once again, simply, we will survive death, not as individuals, but as an awareness species.

The series of drawings, paintings and sculptures based on 'ant-swarm systems' designates, in the specific context of artistic recognition and practice, a radical change of paradigm for humanity, through the assumption that life, intelligence and art can be freed from obsolete constraints and preconceptions. In its supposed triviality and naiveté, 'swarm art' represents a contribution for understanding the changes in course and to illuminate the fascinating creative explosion about to come. A new vision for a cooperative, co-evolutive and autonomous existence.