

The Poetics in “Atrator Poético”

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Abstract

The SCIArts – Interdisciplinary Team has been developing art works in the intersection of art, science and technology since 1995. SCIArts was initially formed by four members (Fernando Fogliano, Milton Sogabe, Renato Hildebrand and Rosangella Leote) there also recently two new members joined the group (Gilson da Silva Domingues e Julia Blumenschein). The group also collaborates with invited artists and scientists. In this project, entitled “Atrator Poético” – Poetic Attractor – Edson Zampronha, a researcher and musician, participated with the creation and design of the sound system. This work is based physically on electromagnetism, fluid iron, sensors, images and sounds controlled by a digital system. The audience interacts with images of a fluid iron under the influence of magnetic fields and sounds that change as the process of interaction occurs. The idea behind “Atrator Poético” comes from scientific theories and contemporary technologies that discuss the relationship between man, nature and culture in complex mediation systems in a poetic view.

Introduction

The Group SCIArts-Equipe Interdisciplinar, has been working in the interface Art, Science and Technology for almost 10 years. This activity includes conceptual production, didactic and artistic research. This text, written by the group, focuses on the interactive multimedia installation "Atrator Poético", made in a partnership with the composer Edson Zampronha and presented in 2005, in the Exposição Cinético Digital (Digital Kinetic Exposition), at Instituto Itaú Cultural, curated by Suzete Venturelli and Monica Tavares.

We will describe and comment on some aspects of this production with a conceptual approach, which directs the production of the group, particularly the relation between science and technology, strongly present in this piece.

The project was born of the desire to use electromagnetism, a field of invisible energy that needs the existence of a specific material, magnetic iron, to be visualized. Considering this, *fluid iron* was chosen. It is a material that has magnetic properties and is used as a vibration controller. The use of electromagnetism, fluid iron, sensors, programs that manage the information (sounds and images) and hardware created by the group, defines the structure of the artwork.

Considering the role technology plays in a wider cultural structure, it appears here as a possibility of materializing abstract models that enable us to infer properties and predict the natural process behaviours. In all the researches conducted by SCIArts, the electro-electronic devices were used in order to create a poetica in which physical phenomena, sounds and images in interaction with the audience, will produce a curious and

playful environment that will bring the audience possibilities of reflecting about contemporary questions in a wider scope of concerns such as the condition of existence in a post-modern scenario, contemporary art, the consequences of new technologies etc.

“Atrator Poético”, as the majority of the artworks in Art-Technology, needed to be produced not only by the artists, but also counting on the participation of other specialists. The SCIArts possesses a common nucleus of people but it adds other professionals depending on the specificity of the project. The system used by SCIArts to control its installations was created 10 years ago by the electronic engineer Luis Galhardo Filho and by one member of the group, Fernando Fogliano, who had developed the hardware and software of the system, respectively. As time went by, the system needed other functions, and other peripherals. Therefore, other software had to be developed, with the contribution of other specialists.

In "Atrator Poético" we add one more software in connection with the existing one for a specific management of the sound files related to the sensors, eliminating the necessity we had before of using VCRs and walkmans, which caused several technical problems. The solution used previously was more viable because of the high costs of using the digital technologies available at that moment when the group started their activities.

Although we have obtained success carrying out tasks using this system previously, today we easily find technological solutions that are simple and that allow us to substitute the previous hardware structure. These solutions also enable us to develop more complex projects related to the demand of control and use of sensors. In addition to that, computational languages available currently make possible a bigger complexity when dealing with information to manage art installations. With the production of art installations, our concepts, experiences, and vision of the poetic interactivity are changing, leading to new necessities that demand updates in hardware and software. Considering this, the technology becomes a crucial collaborator to materialize our thoughts that, at the same time, are suffering influences from this technology. When visualizing the possibilities brought, we modify the paths traced previously, creating the dialogue between art and technology.

Complexity Sciences gave way to conceptual advances in areas of scientific knowledge, which allows us to perceive relations of processual similarity between both natural (concrete) and cultural (conceptual) systems.

Bertalanffy called this “Isomorphism in the Science” (Bertalanffy: 1993, pp. 80-86). According to the General Theory of Systems, the existence of laws of similar structures in different fields makes possible the use simpler models that are known, to describe complex phenomena that are difficult to treat. Through isomorphism, it is possible to transfer principles from one field to the other and it is not necessary to duplicate or triplicate the discovery of one single principle in different and isolated fields. If we consider the analogy as a principle of contemporaneity, we realize that new forms for connections appear and more systems and processes, in art as well as in science, show elements of similarity. The paradigm that we consider applicable to the questions related to contemporaneity is the one which tries to describe natural processes, where we find the cultural ones, as the one which emphasizes the relations and diversity instead of individual elements.

The current paradigm that searches the explicitness of the system; the process instead of the object in the artwork is a principle that makes the moment we live and its aesthetic, ethical and logical meanings explicit.

In fact, to focus on the system is to give emphasis to the relations and no more to the finished object, it is to give space to the new possible connections. In "Por um Fio", one of the works of the group, we observe the fluidity of the edges, in "Entremeios I and II", two other works of the group, we observe the empty spaces, however in "Re-trato" and "Des-Espelho" our relational element was the citizen mediated by the Other, by the language and by culture; and, finally, in "Atrator Poético" we emphasize the non-visible forces of the nature.

The projects developed by SCIArts go towards the necessary expansion of art's limits, considering new ways to understand the contemporaneity. The objective of the research that the group has been developing is to find the emergent standard in the relations between the living creatures and the environment. We consider this a vital question, given the vertiginous dynamics that the technologies propitiate in the processes of mediation even more dense and complex. When sharing our points of view we are allowing a pulse of life considering that the discovery of a new cultural and natural standard not only allows the magnifying of the knowledge, it also gives reality another perception.

Art, Science and Technology never had well defined boundaries. The more our nature is impregnated of technologies, more it is natural that art develops in order to reflect the reality lived by the artists at that time.

That is how they materialize concepts in this symbiosis called Art and Technology, Electronic Art, Media Art, Cyber art, whichever the name given. The fact is that the name of the artistic category, given by the critics and theoreticians of the area, does not matter for the artist, but does matter for his *modus operandi*. A data, however, confuses this relation: the reality found in Brazil is that the majority of the artists, which work in this scientific interface, develop equally and mainly the academic theoretical activity, research in their activity field.

Similarly, at the same time s/he produces, the artist turns into an analyst and critic of his work and field. This demands of them accuracy and investigative sense for, through empirical procedures, constructing the conceptual base of their work and the part of their area that most connects to them. Obviously, also, from that viewpoint, it is expected from them a position concerning the technical terms and classification of their artistic product. This position is different from that in the 60's, pointed out by Couchot when he said that "to escape from the diffusion circuits it is not enough, it is also necessary to release oneself from the critic. From now on, it is imperative for the artists to speak about themselves, theorize, explicit themselves directly." (COUCHOT, 2003:115)

The main difference is that it is not the artist and their way of production that are in focus, but the connection of their theoretical model to the developed artistic work. It is not about creating metaphors for which a formal correspondence is conceived, not even the placement of the symbols of thoughts. It is about a connected position to the paradigm that results in artwork, where the aspects of the knowledge are presented as intrinsic, hybridized according to specific convergences, but mainly, it is artwork that sorts out and presents itself in the process, existing as system.

Description of the installation

The project "Atrator Poético" started to be developed in 2003 and was presented in 2005. The first part of production of this artwork has already been described in the article by Milton Terumitsu Sogabe called "Creative Process in Art-Technology"

(<http://www.sescsp.org.br/sesc/conferencias>). The second phase was related to the construction of the software and the specific hardware and began in 2005. The third phase, called implementation, withholds the characteristics described bellow.

The installation was presented in a space of 5.50 x 8.76 x 3.60 m, defined by ratios that favoured acoustics; therefore 8 speakers are distributed in the environment. The room is all dark in order to keep the visual attention only to the essential, and at the same time that makes the sound information more evident. A long sound is heard even before the environment is noticed. When entering the room the audience will see a round stage of 1.80 m of diameter and 60 cm of height, however what is more perceivable is the circular surface in which an image is being projected. In the back of the room there is a totem, with a cube of glass and a spot of light.

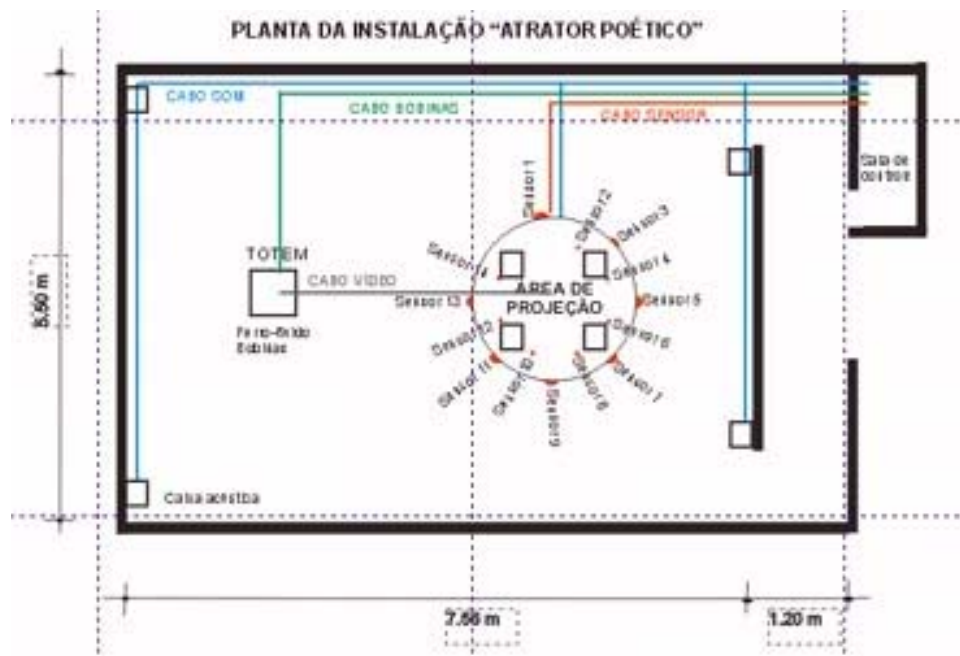




Photo: Fernando Fogliano

The round stage contains 14 sensors, 4 sound boxes and a stretched fabric that serves as surface for the projection. On it there is a mirror in 45° of inclination and a projector, connected to a camera installed in the totem. This camera is located on a container with fluid iron, under which is located a system with 14 electromagnetic bobbins. When activated, the sensors send a signal to a computer that manages these signals, connecting the bobbins and executing the archives of sounds that correspond to each sensor during a time determined by the program. The fluid iron draws the magnetic field formed by the bobbins, producing protuberances in the surface of the liquid, as crowns of different forms.

The fluid iron is technically called colloidal suspension of magnetic micro particles, and, when in a magnetic field, it lines up instantly abandoning its initial positioning. Having the field removed, the material returns quickly to its original state. This property of the fluid iron presents two aspects that are interesting and that we have been exploring in "Atrator Poético", which means, the plasticity of the forms of the material when under an electromagnetic presence and the possibilities of change that it is subject.

Such forms, however, when projected, as a consequence of light and magnifying, eliminate the reference of the magnetic field losing its visual allegiance. They appear as species of rosettes with differentiated gradations of tones and sizes that, for always being in movement, send to the interactors (operating audience) the idea of micro organisms' volcanic tops, star systems, bubbles blowing up and even fecundation. The relation with these forms, although it does not exist in fact, appears according to the interactor's repertoire, that enjoys the experience at the beginning without actually guessing the nature of the forms. It is only in the next moment that the connection between the projected images, the space and the sound totem is established, being able, from there, to construct a new perception of the projected forms.

Twelve sonorous files had been produced with differentiated times, varying from 5 to 27 seconds. Each sound is related to an electromagnetic bobbin (solenoid). Each bobbin remains active for the same time as its related sound. Thus, the times of the images become different, and when all are activated the images disappear in differentiated times, making new interactions possible.

Interactivity

The interaction in the installations that use computer as a media to manage information happens through an interface that is devices that send some information to a program (input) and this program returns (output) another information that can be visual, sound, printed or simply an electric impulse. The interface is generally a kind of sensor that detects some action or transformation in the environment. We can have since sensors that send only one electric pulse, to those that function as potentiometers, informing differentiated degrees, such as temperature, weight, distance etc.

The computers, as many other materials and equipment, are produced industrially. But when the artist acquires one of them, s/he transforms it, adapting it according to the projects. The experimentation is a constant attitude of the artist and the history of Art demonstrates how the materials, equipment and processes have always been modified extending its potential and subverting its initial functions.

The computer generally comes from the factory with entrances for mouse, keyboard, microphone, web cam, scanner and exits for monitor, printer, speakers and projector. However, as it has happened with Video art, artists have modified and invented some types of interfaces to fit their specific projects, coming up with modified mice and keyboards to suit the artwork necessities, as video cameras that catch the image and that, through the software, become themselves the interface, a visual sensor with many possibilities.

The way these interfaces are materialized many times defines great part of the artwork poetica. For example, in Edmond Couchot, Michel Bret and Marie-Hélène Tramus's artwork – "La Plume et Le Pissenlit" –, in which the microphone makes the blow in the image possible, contributes a lot for the artwork poetica.

In "Atrator Poético", there are two kinds of sensors: of movement and proximity. They are placed in two differentiated places, one in a visible form on the surface of the image and the other hidden under the stage. The purpose is to create a kind of voluntary interaction and also an involuntary one, therefore we realized that the commitment of the audience could be enriched when offering an element of uncertainty. In "Atrator Poético" the images appear when the interactor moves the hand close to the sensors located in the surface, but it is possible to see that also images and sounds appear without voluntary action, because the audience walks and brings into action six sensors hidden in the bottom of the projection area.

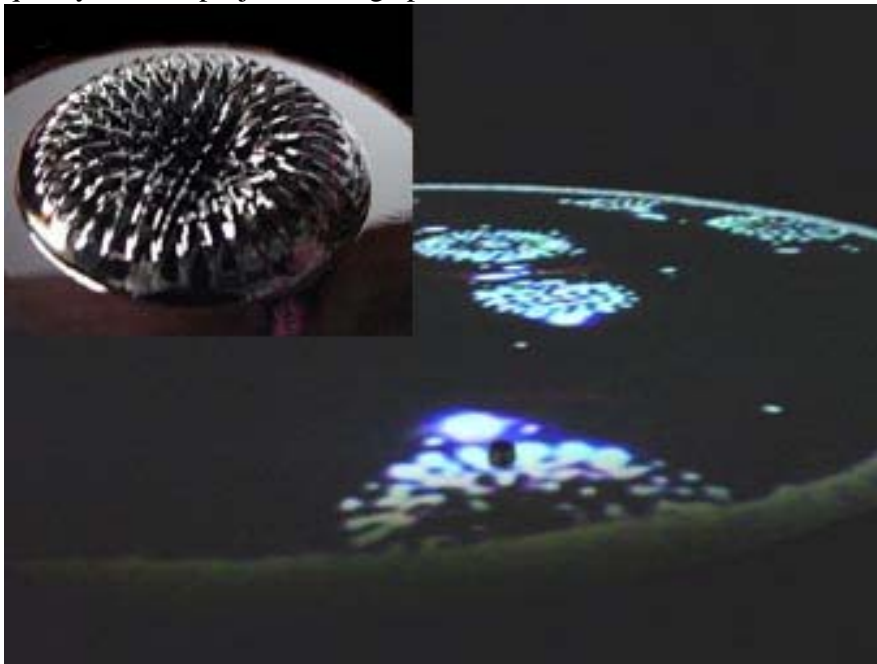
When the interaction is reduced to a single reaction of the installation for an action of the audience, the interactive relationship becomes poorer. The dialogue is consumed soon. The other extreme point occurs when the interactive relationship is so complex that the audience can not, at any moment, realise the internal logic, only acknowledge that it is provoking something. An intermediate situation was chosen, thus, resulting in the definition of type, number and location of the sensors in this art installation.

However, the "Atrator Poético" does not work in its best way when the audience interacting with the installation is very big, because images and sounds are activated

uninterruptedly. When a pause occurs and the images start to disappear the result becomes more interesting. The situation of the interaction seems to provoke in the audience the need of touching desperately the artwork – what was forbidden for a long time.

The majority of the installations still suffer from similar problems, concerning big amounts of simultaneous interactors. Some installations eliminate this characteristic, when a single person can interact each time and the others are observing, as the artwork of Couchot, or when the amount of interactors is limited naturally, as in the artwork "Boundary Functions" of Scott and Sona Snibbe of 1998 (<http://www.snibbe.com/scott/bf/>), where a stage delimits the area for the participants. The artwork proposes that the existence of a personal space is related to the others.

Another part of interaction that happens in "Atrator Poético" is the image with the fluid iron. Despite the fact that the camera captures the movement of the fluid iron, the projected image does not reproduce the referent, acquiring particular characteristics, for the technological specificity of the camera used. The dark image with some points of light of the forms of the fluid iron and the colour produced in the system brought part of the poetic quality that the projected image possesses.



*One of the forms
of the fluid iron
and projection*

The dialogue created between the substance of fluid iron and the projected image also creates the dialogue with the audience, when observing and interacting with the image and the sounds, noticing

that something happens in the totem, and when contacting the movement of the fluid iron, discovers the system that generate the images.

The fluid iron is activated by the interaction of the audience with the image, but at the same time, the image has as a reference the fluid iron, creating a deadlock of who is generating what.

A present characteristic in the SCIArts works is the non-abandonment of the materiality of the artwork, despite the use of the digital technology. The matter, either in form of equipment, objects or constituent material, is always dialoguing with the digital processes. In "Atrator Poético", the fluid iron, substantial matter, constitutes the artwork with image, light and the sound.

It is desired that the audience realize the sound relation with the images. This perception requires, however, a high level of sensibility, what makes it difficult for people

to reach it in its totality, once the sound possesses a different characteristic of the image and frequently overlaps, modifying the sonorous result as in a composition that modifies itself intentionally and the images are visualized separately. This relation of the image with the sound can lead the interactor to a synesthetic experience.

The possibility of composing the sound through the sensors exists, in fact. When setting the sensors in motion the corresponding sounds are heard. But the possibility of hearing the result as a simple “collage” of sonorous events was not the purpose of this installation. The use of sophisticated tools for the sonorous writing and treatment, as well as the use of the concepts developed recently by psychoacoustics, was fundamental for the result to be essentially musical, although resulting from an interaction.

Synthetically, three different resources for the production of the sounds were used: one material, one harmonic and another syntactic.

The sonorous material used is entirely proceeding from metallic pieces that are used as percussion instruments, either beaten or frictioned, producing continuous and short sounds.

The fact that they all are made of metallic matter establishes an important poetic relationship with the fluid iron. The generated sounds were transformed in such way that it was possible to notice the quality of the material (metal) without noticing which object was used to produce it. For example, it is possible to notice that the sound is a sound of a metal object, but it is not clear that it is a bell.

Moreover, the sounds were then all sharpened in order to compose a long chord that is constantly present in the installation. This chord was obtained through the analysis of the spectre of a metal bar being percussed. Recent results of researches carried out by us in the field of psychoacoustics show how the analyzed spectre can be transformed to generate a chord of great harmonic complexity. Given the private properties this chord is perceived as a unit when it is heard, but it is broken up when restrained by the memory, what constitutes a tool of great importance in this installation. The recorded sounds had been then all sharpened in the specific frequencies of notes of this chord, what gives to the audience the sensation of coherence (perceived as unit of the sounds around this chord) and constant variety (resulted from the non-retention of this chord by the memory and result of what sounds are heard in that certain moment).

Finally the used syntactic resource is directly related to the possible types of interaction in the installation. Besides the traditional experiences with music and the recent studies of musical cognition, this topic in particular considers the most recent experiences in the construction of instruments from different interactive interfaces (REIBEL, 2000), but with a strong incorporated syntactic component.

The adopted solution was to use a set of sounds that loops with 17'30 ", and that does not react to any interaction and is constantly present. This sound possesses in itself a musical syntax that, in this art installation, appears as a deep structure that generates coherence with all the sounds overheard. Over this deep structure, there is another intermediate. It has five sounds related to the involuntary interactions.

These sounds are longer than the sounds of voluntary interaction, and blend, mostly, to the sounds from the deep structure. They are as musical segments in themselves that emerge from a deep structure and draw events that create great variety. Finally, it has seven shorter sounds related with the voluntary interactions. These sounds react in a clearer form with the interactions of the audience. They are as surface ornaments that acquire sensible musical meaning in function of the specific moment when relating to the deep and

intermediate structure. In this way, the voluntary interaction integrates strongly to the set of heard sounds, generating great listening variety and wealth.

Conclusion

We have shown here, from the presented artwork, considered as procedural and detainer of systemic properties, the conceptual elements that have contributed for its accomplishment.

The process concept, now associated to the system concept, is also widened and encloses the part, before as receiver, today as co-creator and the called interactor or interactant. Therefore, in a cyclical and infinite chain, the artwork exists before its insight, during its production or "materialization", together with the interactor and even after its closing to the audience, as a developed and analyzed concept described here. We see, then, "Atrator Poético" as an artwork that is process in itself. Thus, we cannot separate the events in process to the finished piece. It continues in construction upon the presence of the interactor and upon the development of thoughts that surround it.

Therefore, although it seems to be in distinct parts, it is about moments more or less detachable in the time, where the distinctive measure applied here, it has mainly the purpose of establishing an easier way to look at the artwork. However, it cannot be considered, or analyzed, without the perception of this procedural dimension, that involves several levels.

The insight, configured by the port of the new media of production, appears as a resolution for connections, as solved in shape. In fact, for the expressed alterity of the interaction artwork-creator we incorporate aspects that modify the initially imagined proposal, up to the moment when the artwork reaches a first level of materialization. From there we state that the artwork is not considered something finished anymore, but a system in continuous process of construction by the presence of the interactor-creator, the fruitive-interactor and in the construction of the thoughts that are established around it.

The inter-actant is accepted in this level, recreating and recomposing the form of artwork that is now supported, basically, by the system and by the connective possibilities established by the similarities between the several logical models. Art, Science and Technology are unified incorporating the producing subjects and the interfaces, which means, "The subject transferred by the interface is, from now on, much more a *path* to that subject." (COUCHOT, 2003:275)

The figure of the author is confused and reconstituted in the co-creation. This is the current keyword in the work of SCIArts. It has been expressed since the first discussions, among the members of the group that has directed projects, remains during the assembly, is re-presented during the exhibition, where the co-creator turns into the interactant, and is updated in the analytical process of the artists, developed during and after the exhibition.

Everything strengthens the idea of the work of art as a system, more complex and more connected to the paradigm of our time, and the artist as a producer of knowledge integrated and adjusted to the complex net, and as a result of that capable of generating emergency patterns. In this case, aesthetic patterns. Obviously.

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