

21st Century Brazilian Computer (Experimental) Art

Tania Fraga

Institute of Mathematics and Art of São Paulo
R Dr Cesário Mota Jr, 454, S 1401
São Paulo, Brazil, 01221-020
tania.fraga@gmail.com

Maria Luiza Fragoso

University of Rio de Janeiro
Escola de Belas Artes, Av. Pedro Calmon, 550,
sala 618, Cidade Universitária, Ilha do
Governador, Rio de Janeiro, Brazil, 21941-901
malufragoso@gmail.com

Abstract

In this essay is presented the emergence of (Experimental) Computer Art in Brazil, its historic contextualization and general developments. This kind of art, immanently connected to computers, emphasizes sensory, poetic and aesthetic experiences inter-mediated by computational devices, which became also the artworks support/media. It is an art focused on the trilogy: artists, computers and public. The Art Institute at the University of Brasilia created and promotes Computer Art courses, exhibitions and the theoretical-practical methodologies described here, such as the concept of meta-installation. Since then we here propose to examine this artistic production which, in our view, expresses an emergent Brazilian identity in contemporary art.

Keywords

Brazilian Computer Art, meta-installation, University of Brasilia

1 Introduction

Sometimes a flickering thought points to something that has floated shapelessly in our mind giving it meaning, making us understand that such an apparently thoughtful moment had a cathartic significance. As a bolt of lightning such happening brings an exhilarating sense of joy and clarity. It was something similar to this that drove us to write this essay related to a blossoming experimental Computer Art in Brazil. An art related with sensory experimental experiences; an experimental art, strong, bold, eager to explore its technological environment as its support, breaking boundaries, appropriating scientific concepts, rethinking and contaminating them with poetic and aesthetic values.

First we will begin with a brief introduction to the emergence of Computer Art in Brazil, nominating some of the pioneer artists and

events. Secondly, a description of how the related art works are integrated into specific exhibition spaces by applying what Tania Fraga introduces as meta-installations. Some examples are described and illustrated. The idea of different kind of spaces for innovative works of Computer Art have been projected and mounted. Aware of the risky task we propose, this essay has begun to delineate the field's profile as a symbolic feedback into Brazilian Computer Art. Finally, we point to some possible developments of such art.

2 Historical Contextualization

In Brazil, around the year 1987, a small group of artists and scientists named Infoesthetica Group¹, began to explore an art form that was emerging at the time, in which sensory, poetic and aesthetic experiences would be inter-mediated by computers. These computers acted as devices capable of responding to procedures, such as processing and answering interactors² requests, and, at the same time, were the artworks support/media. Such procedures characterized the artworks proposed at that time in very specific ways, and required from the artists programming knowledge to “break the codes”[1]. Their main goal was not the development and research on computer science algorithms but to acquire this type of knowledge in order to create meaningful sensory, poetic and aesthetic environments. Such art was referred to, at that time, as Numeric Computer Art or Cybernetic Art.

The Brazilian group did not come up with those terms or definitions. They were already in use by artists such as Bernard Caillaud (France),

¹ The group: Aloisio Arcela, Bia Medeiros, Homero Picollo, Paulo Fogaça, Suzete Venturelli and Tania Fraga.

² This term was coined by the theoretician Arlindo Machado.

Waldemar Cordeiro (Brazil), Yoshiro Kawaguchi (Japan) Paul Brown (UK), Hebert Franke (Germany), Nicholas Schoeffler (Hungary), John Whitney (USA), Lilian Schwartz (USA), Frieder Nake (Germany), to quote just a few. Theoreticians such as Arlindo Machado (Brazil), Lúcia Santaella (Brazil), Vilém Flusser (Czechoslovakia-Brazil), Philippe Queau (France), Edmond Couchot (France), Roy Ascott (UK), among others, had also written about this emergent art form.

It is important to point out that Brazilian computer artists have suffered strong influence of the Brazilian theoreticians quoted above – mainly the art critique and curator Arlindo Machado, the semiotician Lúcia Santaella, and the Czecho-Brazilian media philosopher Vilém Flusser – who have been instigating artists about the experimental potential of computer technologies. Flusser lived in São Paulo for 30 years. His articles inquired about the role of artists and philosophers in post industrial age in contemporary society, pointing to the possibilities of technical objects³ become “carriers of meaning” and the transformation of “people into designers of meaning in a particular process” [2].

The name, Numeric Computer Art, was frequently questioned, mostly because at the time there was a need to insert computers into the art practice in a *softer* way, maybe as *media art*, or *electronic art*, or *web art*, even *Internet art*, among others terms. Other Brazilian art groups also begun to work⁴ with computers, but some of them did not approach it's insertion in such a strict sense⁵, meaning that the procedures and processes of computing were explored conceptually, or instrumentally, but not always immanently by going after the 'breaking of codes' themselves.

In this essay we assume the term **Computer Art** to determine the specific artistic production in discussion. We consider such art as immanently connected to computers, which are active agents in the following trilogy:

1. Artists, the ones who conceive fields of actions creating customized software and

hardware, and environments where sensory, poetic and aesthetic experiments happen as expressive, affective and cognitive events;

2. Computers (or an environment of microchips, sensors and actuators), that process data answering requests and filtering actions according to their programming;

3. The public, designated as interactors, who are the ones causing changes into the computers environments, provoking answers to such actions.

This visceral trilogy is immanent to the ontological and epistemological Computer Art set up.

It is also important to state that “experimental art has had a strong role in Brazil maybe because the art market did not offer significant possibilities for artists that did not follow the current paradigms. Some of these experimental artists were so radical that they were, during their life, strongly rejected by the mainstream Western art. For example, the today incensed artist Lygia Clark⁶ was almost expunged from Sorbonne, in France, in the 70's, because she dared to experiment with visceral body sensations and feelings using ordinary materials such as onions skins, pebbles, plastic bags, among others, having the participants bodies as supports for her work” [3].

The pioneer artist Waldemar Cordeiro began to use computers in visual arts in Brazil by the end of the 60's⁷ [4]. He was part of the Ruptura and the Concrete Art Poetry Groups in São Paulo. In 1971, he showed his computer artworks at the exhibition Arteônica [5] and presented a manifest

⁶ It is a pity that she is dead and can not acknowledge her own success.

⁷ See:

http://www.itaucultural.org.br/aplicexternas/enciclopedia_ic/index.cfm?fuseaction=artistas_biografia&cd_verbete=3529

<http://www.cibercultura.org.br/tikiwiki/tiki-index.php?page=Waldemar%20Cordeiro>

<http://www.mac.usp.br/mac/templates/projetos/seculoxx/modulo3/ruptura/cordeiro/bio.html>

http://www.acervos.art.br/gv/artistas_brasileiros/bio_wcordeiro.php

<http://www.pitoresco.com.br/brasil/cordeiro.htm>

Accessed April 11th 2010

³ Flusser in his book *Writings* used the expression technical images.

⁴ Mainly Gilberto Prado, Milton Sogabe and Artemis Moroni.

⁵ Regina Silveira, Júlio Plaza, Augusto e Haroldo Campos, Moises Baumstein, Sandra Rey, Diana Domingues, Silvio Zamboni, Carlos Fadon.

with the same name influencing many Brazilian artists. He said on that occasion that “in Brazil, Computer Art found methodological background in Concrete Art” [6]. In 1972, he created the Arteônica Centre at the Art Institute of the University of Campinas, UNICAMP [7], which has had a pioneer role for the development of algorithmic art research in image generation [8].

In 1994, after much struggle, these ideas begun to be more generally accepted by the Brazilian art community and the first Brazilian art graduation program, focusing these issues, was created at the Art Institute of the University of Brasília, in Brasília, capital of Brazil. Other artists such as Gilberto Prado, André Parente, Milton Sogabe and Diana Domingues also accepted the challenge and a few years later were also coordinating researches in Computer Art at the states of São Paulo, Rio de Janeiro and Rio Grande do Sul.

In 1995, Fraga presented her PhD research with the exhibition *Stereoscopic Simulations* at the São Paulo Museum of Image and Sound and in 1996 she organized the first online Internet exhibition for the International Visual Semiotics Congress held at São Paulo Catholic University, PUC-SP. In 1995, Domingues curated the exhibition *Art of the XXI Century* at the Museum of Contemporary Art of the University of São Paulo and in 1999 a portal at the Mercosul Biennial in Rio Grande do Sul. In 1997, Daniela Bousso curated the exhibition *Mediações* at Itau Cultural Institute aiming to “take out art from its conceptual towers and from the ascetic modern domain in order to allow it to dialogue with the public” [9]. Latter on, as director of the Museum of Image and Sound she created the first Brazilian media lab and instituted, for the first time in Brazil, an artist-in-Residence program for young artists.

Since 1997, the Brazilian Itau Cultural Institute has had a leading role in the field of Computer Art. It has been showing and awarding artists working with art and technology and has promoted very important international art and technology biennial exhibitions named *Art.ficial Emotion*. Many artists quoted in this essay have won awards and commissions from this institute.

A second generation of artists, working with art and technology, was rising around the years 1996-2008: Anna Barros, Carlos Praude, Cleomar Rocha, Daniela Kutschat, Douglas de Paula, Dulcimira Capissani, Edgar Franco,

Eufrazio Prates, Francisco Marinho, Guto Nóbrega, Gisele Beilgman, Ivani Santana, Kátia Maciel, Lucas Bambozzi, Lúcia Leão, Luisa Paraguai, Luiz Duva, Lygia Saboia, Marcos Bastos, Maria Luiza (Malu) Fragozo, Martha Gabriel, Raquel Kogan, Raquel Zuanon, Rejane Cantoni, Rosangela Leote, Sandro Canavezzi, Silvia Laurentis, Simone Michelin, Valseli Sampaio, Wilton Azevedo, among many others. Some of them are not specifically 'code breakers' but explore computer systems in collaboration with programmers.

Theoreticians Priscila Arantes and Monica Tavares, Art Historian Nara Cristina Santos, curators Francielle Filipini, Wagner Barja, Paula Perissinoto, dance curator Maira Spangero, following Machado, Bousso and Santaella's leadership, have begun to investigate this specific type of art. Even curators such as Christine Mello who used to work only with Video Art has organized exhibitions including Computer Art installations.

2.1 Meta-installations: study-case

Meanwhile, at the University of Brasília, what used to be a small biannual meeting was transformed in an annual International Congress always held with a Computer Art exhibition. The theoretical practical methodologies developed to set up such exhibitions and subsequent results from these experiences were the triggers for this essay.

In 2004, during one these annual congresses quoted above, which commemorated ten years of the University of Brasília graduate art program, the exhibition $\geq 4D$ (*Greater or Equal to 4D*) was held at Bank of Brazil's Cultural Centre in Brasília. For that occasion Tania Fraga and Wagner Barja curated the show and Fraga introduced the concept of meta-installation, where the focus of almost of all works was interactivity. The idea was to create space-time dialogues among these artworks, and not a set of separated independent installations. The meta-installation project for $\geq 4D$ not only gave an organic coherence to the exhibition's space but integrated the art pieces exploring their poetic proposal. The architecture of the $\geq 4D$ exhibition was conceived mirroring virtual reality technology navigation's models. “The meta-installation consisted of works by artists and researchers working mostly with this type of art. These works breach the architectural space-time structure,

creating tunnels of events that allow the public to dive into their content; they ensure the non-linear nature of the routes through the meta-installation, reconfiguring the architectural space of the galleries, re-directing the gaze and the modes of perception of those moving through it” [10].

Therefore, the structural organization of the exhibition environment was designed to stretch the concept of installation, generally used for contemporary works of art, where each artist produces and organizes his or her micro space individually. This organization aimed to unveil the significant aspects that were being trans codified into sensations, which could be felt and shared. “In general, the works on display cluster images, sounds, tactile sensations and movements, as the outcome of collaborative processes among the artist, the public, the machines and the many minds whose intelligence is embedded in them”. Human and artificial intelligence were united to create a symbiotic communion among the interactors' mind, artists and machines. The exhibition was held in two galleries. The “tunnels of events in the upper gallery wander through fields of possibilities contained within the synthesis of images, sounds, abstract concepts, tactile sensations and possible isomorphisms among these categories. (...). The lower gallery offers a hybrid telluric field where images of synthesis and material culture blend, breaking through the barriers of what is normally called the real” [11].

The artists at this exhibition were: Bia Medeiros, Chico Marinho, Daniela Kutschat and Rejane Cantoni, Diana Domingues, Gilberto Prado, Luisa Paraguai, Lygia Sabóia, Margarita Schultz (curator presenting the work of a collaborative Latin America group⁸), Malu Fragoso, Silvio Zamboni, Suzete Venturelli and Tania Fraga. These artists stand out for their innovative and original proposals, mainly in terms of exploring the potential of computer languages, extracting and deploying new poetics.

Computer languages were not created for artistic expression, but some artists have subverted their use, allowing the appearance of new art forms. Human sensorial apparatus enables 'aisthēsia'⁹. When artists create different ways of perceiving the world, intermediated by computational devices, they are re-inventing

'aisthēsia'. Meta-installation's design provided this experience consequently promoting aesthetics.

The works displayed at the exhibition represented and integrated boundaries, amalgamating music, as well as visual and scenic arts, with a broad-range of scientific areas. By showcasing this type of production this exhibition valued the pioneers who faced unimaginable difficulties in developing their output, placing Brazil and Brasilia in a leading position within the international Computer Art community

Bellow, Figures 1, 2, 3 and 4, a sequence of images of the $\geq 4D$ project.

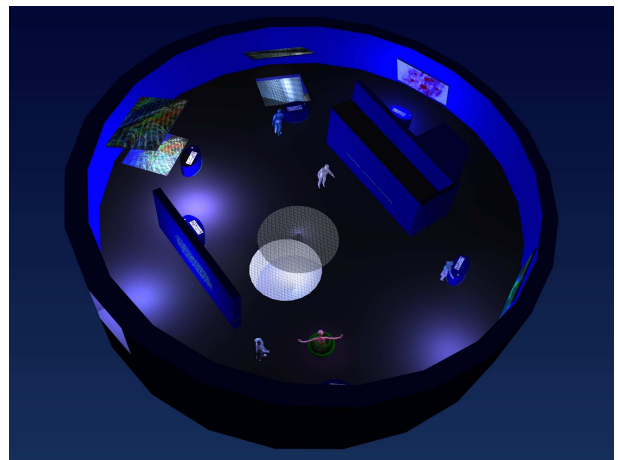


Figure 1: Upper view of the first floor

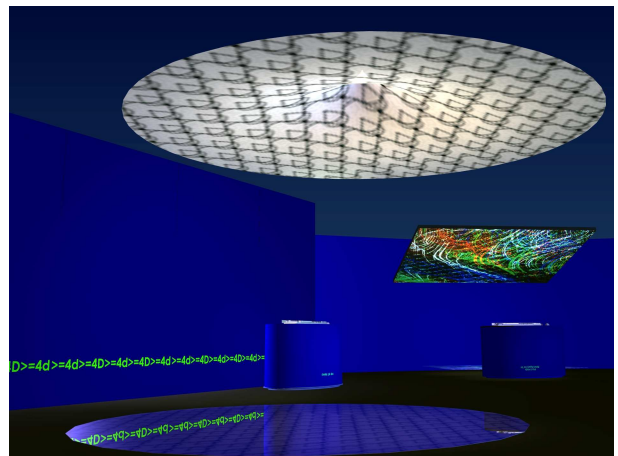


Figure 2: Simulation: Simetrias (Lygia Saboia) and Op-era (Daniela Kutschat and Rejane Cantoni)

⁸ The Colaborarte Group

⁹ 'Aisthēsia' from Greek.

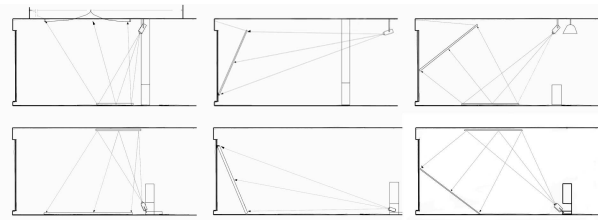


Figure 3: Lay out of six different artworks



Figure 4: Vestis by Luisa Paraguai

Since 2008¹⁰, a set of exhibitions named *EmMeio* have gone forward with projects having similar approach to $\geq 4D$. *EmMeio* is translated literally as *InBetween* in Portuguese but *meio* also means *media* creating a playful game of words. They have been conceived and produced with the support of the Art Institute of the University of Brasilia and the Brasilia Republic's National Museum.

The concept of meta-installation has been applied for these exhibition spaces in such way that the proposed set ups have allowed the emergence of new meanings resulting from space-temporal relations created among art pieces, re signifying the original proposal of the artist or artist's groups¹¹. The curatorial approach to these exhibitions begins by defining the physical space

¹⁰ We also have had international researches participating in these exhibitions and events such as: Brian Kane, Maida Withers, Margarita Schultz, Oliver Grau, Raúl Niño Bernal, Tanya Dahms and Chantal DuPont.

¹¹ Of course the exhibition guidelines are accepted by the artists beforehand who must agree with these approach although we accept their opinions and suggestions when they are present at the exhibition montage, which we strongly try to do in a self organized way. Since our budgets usually are very low only with the artists collaboration we have been able to mount these exhibitions.

of the exhibition, so to say, all areas designated for the artworks, which will help create an architectural design that consequently promotes a sort of self organization for the montage. Also, the process of selecting the artworks for the exhibition has been related to the concepts of meta-installation and self-organization. In the case of the *EmMeio* shows three areas have been available:

1. Indoor museum installation's space for audiovisual artworks with and without Internet connection;
2. External space, outside the Museum (a big white cupola for night projection presentations);
3. Two auditoriums, used for concerts, performances, music and VJs shows.

Following, in Figures 5, 6, 7, 8, 9 and 10, we present *images* from these exhibitions.

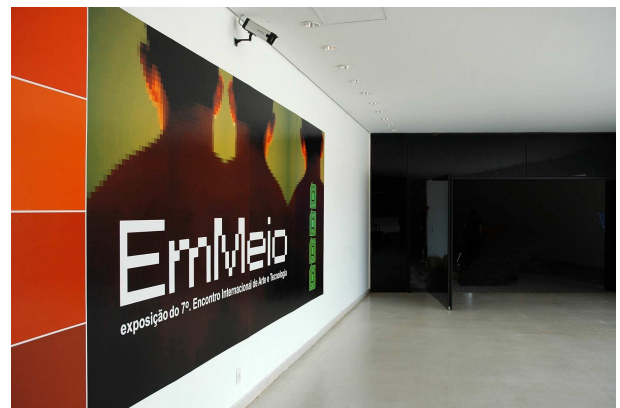


Figure 5: *EmMeio*#1, exhibition entry hall, 2008



Figure 6: *EmMeio*#1, installations, 2008

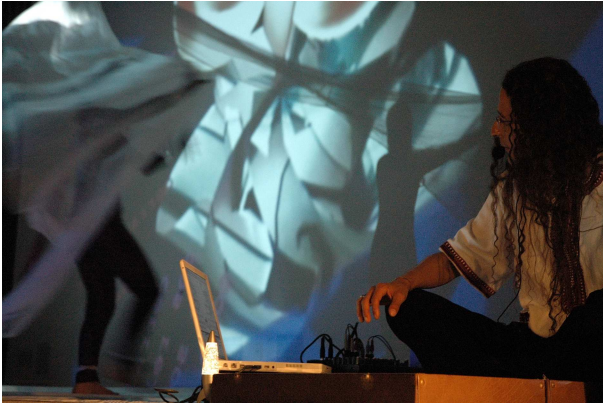


Figure 7: *EmMeio#1*, performance by Eufasio Prates, 2008

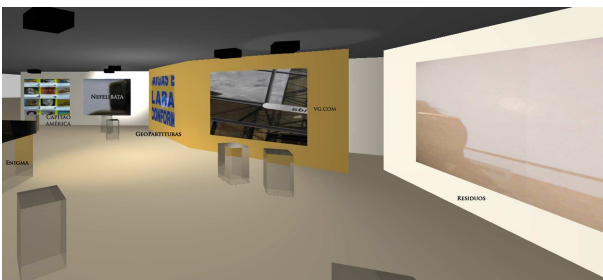


Figure 8: *EmMeio#3*, set up design, 2011



Figure 9: *EmMeio#3*, set up design, 2011

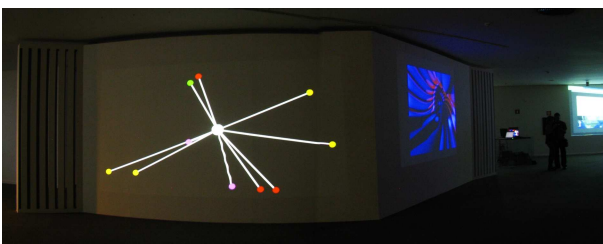


Figure 10: *EmMeio#3*, panoramic view, 2011

EmMeio's curatorial approach desires to bring together some of the main aspects in Computer Art research and production in Brazil, with projects such as:

- 1 Artworks using computer as tools to create images of synthesis, sounds,

photographic and video-graphic images, interactive or not;

- 2 Artworks conceived to be broadcast through the Internet;
- 3 Open space for participation and self-organization using video conference software.
- 4 Music shows, performances and VJs having computer art as background for their work.

3 A Visionary Dream?

The present essay aims to begin a reflection on Brazilian experimental Computer Art and artists' processes pointing to a field of different possibilities for artworks produced through computer coding. What is the difference between them and other means of creating art? Seeking this differentiation does not intended to enhance the value of one while depreciating the other, but rather to understand the singular aspects that characterize them [12].

At a time like the present, experience leads us to seek a better understanding of the foundations and possibilities of Computer Art looking for the convergences and divergences it propitiates with other art forms [13]. Art in general deals with expressive poetic sense experiences and so does Computer Art. But Computer Art deals with mathematical concepts in order to achieve poetic expression within the perceptive field of human sense and affective experiences. More specifically Interactive Computer Art deals with responsive affective and sensory fields containing sets of sense experiences interpreted as signs and expressed as processes. These sets establish different relations allowing many differentiated readings in different moments of their responsive repertoires. Repertoires whose kaleidoscopic capacity open them to successive and varied interpretations [14].

The sensory stimuli establish a complex network within the sensory and affective fields creating possible organizations that may not have been predicted by the artist-programmer. It is as if the interactor is allowed to to play and experiment with a finite set which has limitless boundaries. Therefore Computer Art becomes much more than Combinatorial Art. It becomes virtual realities.

As illusory sense impressions and representations it points to a classical art tradition while going after programmed actions, perceptions and sensations it approaches Constructivism,

Concretism and Minimalism art movements [15]. Within such context notions such as reality, virtuality, visibility [16], and affect must be revised [17].

The virtual worlds are arbitrary creations of human minds and the interactors attribute a meaning to them in their own minds evoking a labyrinth of representations. The attribution of a 'real' experience to a virtual object creates very interesting ambiguities and also allow a lot of misunderstandings.

The setting of virtual objects and the 'existence' of virtual worlds emerge from the sense impressions they produce as subjective sensations since the perceptions result from illusions. These subjective sensations are nothing more than mental connections. Maybe these connections are the bound that entwines mathematics and art. The sense experience the interactor experiments and its subjective sensations are facts leaving one generally in awe. The comprehension of this emerging sensory order re inventing 'aisthēsia', as the result of numeric relations and functions, is a mystery we may never understand.

The support for computer artworks is also material but their technological settings are characterized by a system of applications that will perform the work. This system trans-codifies signals into subjective sensations using numerical, logical and symbolic languages. The resulting work of art is the combined product of tasks coded through these languages and stored in computer records. "If we wish to feel the texture of a painting by Pollock, we would damage the painting, as it was not created for this purpose. A Pollock working through computer codes in a technological setting created for this purpose could offer the public the feeling of touching these paintings. It may be argued that in this case, the work would lose its visceral aspect – a fact that seems to be a constant in the nature of art, as whenever something is gained, something is also lost. However, the loss is for the artist, selecting one medium to the detriment of the other. Meanwhile, the public gains a possibility of experiencing both alternatives, should this hands-on experience be available" [18].

4 Conclusion: Reverberations

In Brazil nowadays we see the blooming of hack labs and garage labs and many universities have begun to focus on Electronic Art and a few in

Computer Art. The fields of architecture¹² and design¹³ have also begun to focus on these ideas. As an example of the opening of the art field to these issues we may quote the engineer Marcos Cuzziol¹⁴ PhD thesis at the School of Communication and Arts of the University of São Paulo, presenting proposals "for the creation of a new mathematical model for 3D games, inspired by the Everett interpretation of quantum mechanics" showing through practical examples "how this new model could generate 3D games that adapt automatically to user specific skills, and how this new model could facilitate the creation of truly interactive story lines" [19].

In South America we also see the awakening of such approach in Argentina, Chile and Colombia under the leadership of Jorge la Ferla, Ricardo Dal Farra, Margarita Schulz, Iliana Hernandez Garcia and Raúl Niño Bernal, to quote just a few.

It is important to note that as the field of Computer Art is firming up, in-depth reflection is required on the issues related to its reverberations within society. Certain philosophers affirm that art is something that remains. Paradoxically, art produced through computer coding is ephemeral in its material aspects and, with the advent of interactive technologies, the role of the interactor alters the established system of relationships since the participation of the public is one of the core issues of this type of art. The character of the re-invented artwork alters its process of coming into being each time it is enacted.

Magnetic records and even digital versions of these artworks are perishable. However, the computer program that runs them is recorded in hard copies that, like theatre plays and music scores can be decoded, provided one has the knowledge of the computer languages they were written. Consequently, they can be re enacted and reinterpreted, just like musical scores or theatre plays. These interpretations may appear different to future public, just as old scores sound different on our instruments today.

¹² For example the Brazilian architect Gilfranco Alves is developing prototypes of models for movable architecture using Arduino boards.

¹³ The Brazilian designer Arlindo Stephan also defended a thesis related to similar issues [21].

¹⁴ Marcos Cuzziol is a Brazilian winning game programmer and is the Director of Itau Lab at Itau Cultural Institute.

The artist is as creator of metaphors clustering hypotheses, conjectures and intuitive perceptions, without the intention of demonstrating them, as scientists do. However, when studying art history, it becomes clear that many concrete artists intuited the possibilities we are living at the present time. The art produced through the programming of computer codes we are dreaming of today will perhaps shape a near future.

Obviously, the skill resulting from manipulating computer languages trans-codified into feelings and sensations is still very limited. Brazil may play a leading role in this field due to the rapidity with which Brazilian society has been absorbing the changes prompted by the development of computer technologies. Brazilian artists have been challenged by theoreticians to develop new identities for a society which desires development and access to technologies and the benefits they bring to contemporary life. Computer Art may become one of the answers for these quests.

As it was said before, the University of Brasilia was pioneer in developing research projects in this area. Its Master of Arts degree – offered for more than a decade – was the first art course in Brazil to discuss and focus on these issues and an undergraduate bachelor degree in Computer Art is in process of governmental approval. This type of research answers to the commitment that guided the establishment of Brasilia as a hub of contemporary values, appreciating the blend of Brazilian culture with the arts, while fostering an integrated development.

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