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ABRACE, ANPAP e ANPPOM em parceria com a UFRN

Recent Projects of Poéticas Digitais Group: 2010/2012

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1. Introduction

> The cognitive sciences also show that the traditional and systematic opposition between scientific rationality and artistic sensitivity, scientific objectivity and artistic subjectivity do not justify themselves. Science and art are two activities that show differences and similarities. There are similarities in the process of creation or invention/discovery and on the role of emotions in these processes. Differences regarding the role of emotions and the empathy in receiving the works of art, and communication of scientific knowledge, as well as the effects that these works of art and knowledge have on each other and society. The objectives of science and art are not the same (Edmond Couchot 2012). [1]

Many of the art works in the field of the so-called "New media" have highlighted its own functioning, its statute, producing facts and offering processes, showing themselves as potencies and conditions of possibility. Works are not only shown for fruition in terms of visuality, or contemplation, but also carry other requests to experience them. Other requests of dialogue and hibridations[2] at several levels, and also with other references and knowledge, including programmable machines and/or feedbacks, artificial intelligence, states of unpredictability and emergency systems controlled by an artificial expansion of the perception field, manners of

[1] Les sciences cognitives montrent encore que la traditionnelle et systématique opposition entre rationalité scientifique et sensibilité artistique, objectivité scientifique et subjectivité artistique, n'est pas fondée. La science et l'art sont deux activités qui présentent à la fois des différences et des similitudes. Des similitudes quant aux processus de création ou d'invention/découverte et quant à la fonction des émotions dans ces processus. Des différences quant à la fonction des émotions et de l'empathie dans la réception des œuvres d'art et la communication des savoirs scientifiques, et quant aux effets que ces œuvres et ces savoirs exercent sur chacun et sur la société. Les finalités de la science et de l'art ne sont pas les mêmes." COUCHOT, Edmond. *Les sciences cognitives et la recherchedans la création artistique et l'esthétique*. Keynote presentation at the conference Arte_Pesquisa: Inter-Relações, UNESP, 09/10/2012, to be published in the journal ARS.

[2] Peter Anders proposes the term "cybrid space" for new relations of hibridizations and cybernetic, which hybridize languages, connect new spaces, and therefore the environment sums the properties of cyberspace.

feeling expanded, between the body and technology, in mixing the real and virtual technology as an updater poetics potential.

Art has been constituted as a place of exchange and contamination and has certainly never been away from the scientific and technical knowledge. The art practices and processes have the capacity of adjusting the interference, being able to assume the entry of variables that come from the context, not supposing the extinction of their specificities, but must increase their capacity of absorption and reorganization. Art is an open system that also considers the question "and why not?"[3] However, among the difficulties in the realization and management we could point the use and understanding of specific structures, new interfaces and devices[4] of different inherent poetic interventions. Also, difficulties that often start in the strangeness of the use of digital tools and their operating logic. These difficulties currently dilute, regarding the use, and become recurrent in the everyday use of machines, interfaces and utilities, such as computers, browsers, DVDs, digital cameras, mobile phones, GPS, bank tellers, subway, bus, presence sensors, etc.

However, artistic works go beyond these appearances and pages of programming code, besides the devices and interfaces and eventual charms and findings. There is also the discussion they bring and subtlety that they incorporate, the necessity of new vision, listening, touching and doing in other conjugations[5] [5]

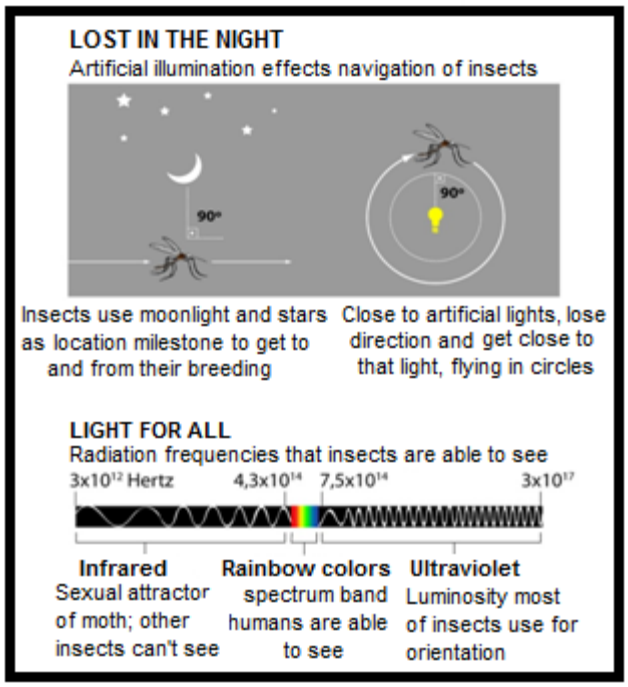
The technology (such as science) is not neutral, inert or innocent. However, we cannot forget we live in a world surrounded by technological devices and interfaces. Personally, as an artist, I see their use as a choice, a possible choice that could not be replaced by any other. The technology makes part of my universe of references and experiences. To me, it plays a fundamental role, but it is not that determines the work or process. The relation is another; it is a partnership. It is the work / issue that points out what is necessary, indicates bonds, hybridizations, vectors. Each work is a process; each work is a dialogue. That is my approach as an artist; trying to exploit these possibilities is somehow creating

[3] Introductory text to the seminar Y+Y+Y Arte y ciencias de la complejidad (Arteleku, Y+Y+Y Arte y ciencias de la complejidadd). Available at http://www.arteleku.net/programa-es/y-y-y-ciencias-de-la-complejidad. Acessed in 13 nov. 2012.
[4] The device allows the integration of several heterogenous elements, making it possible for artists to have more freedom. Thus, the device can be both the work's concept as an instrument for its making. About the device see DUGUET, Anne-Marie. Déjouer l'image. In: *Créations électroniques et numériques*. NÎmes: Edition Jacqueline Chambon, 2002.
[5] About the theme see also Monachesi 2005, and Santos 2009, both listed in the references.

suspension zones, opening reprieves, and dreaming about the world we live. The objective of this text is to present some recent experiments of poetic projects such as *Desluz* (2009/2010), *Amoreiras* (2010/2012) and *Encontros* (2012).

2. Desluz

Insects use the moonlight and stars as location milestone, maintaining in constant angle to get to and from their breeding.[6] With the artificial light of our light bulb, insects get confused, trying to get closer to the sources of lights, flying in circles, forming clouds, attracted by the light in endless rounds. The light that attracts them is the ultraviolet, wavelength the human eye cannot see, but that is a potent sexual attractor of insects. The moths are attracted by the infrared light wavelength that our human eyes also do not see, but for them it is a potent sexual attractor. Then, electromagnetic frequencies are perceived covertly, through the ages, under the moonlight or electricity, perpetuating the survival of the species.

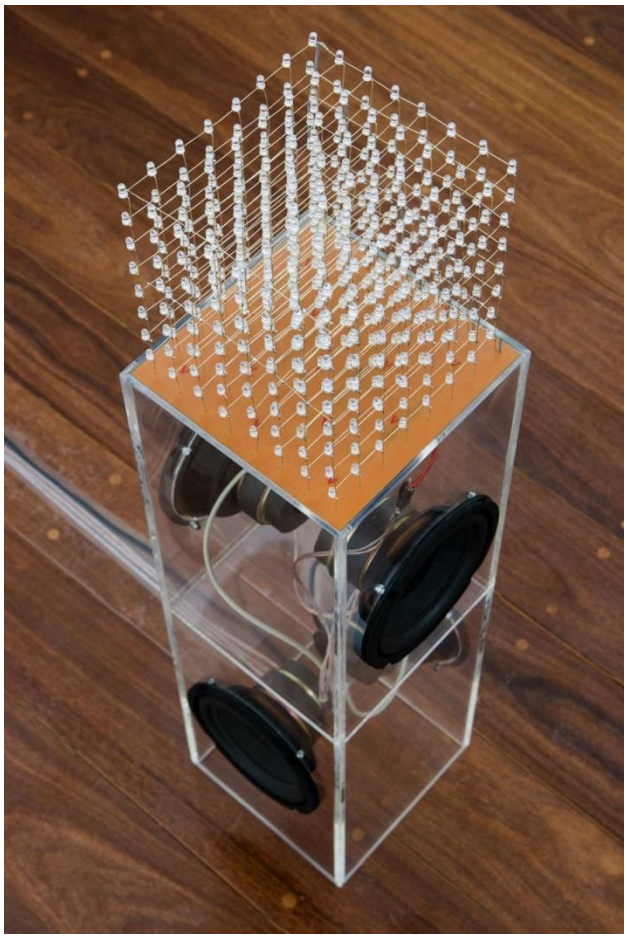


Inphografic based on illustration published in Folha de São Paulo newspaper, 04/21/2009

[6] BARGHINI, Alessandro. Antes que os vagalumes desapareçam ou influencia da iluminação artificial sobre o ambiente. São Paulo: Annablume, 2010.

We have in the exhibition space a cube of transparent Leds (8X8X8) that emit infrared light, and speakers that respond simultaneously to flow passersby, in another place, regions of red light houses as attractor, concealing veiled one game seduction. Changes in flow of passers in the red light area is captured by a camera located on top of a building, recording a top view of the area, a network, a mesh that scans an area and a stream of passersby. The acquired information simultaneously feeds the system installed in the exhibition. This system comprises a cube of Leds that emit infrared light, an Arduino board is responsible for the relation between analog and digital data, and two computers will process and manage all data (Input and output). Therefore, the data sent by the remote external flash on and off the lights in the cube of exhibition, generating movements and flows. This process is dynamic, simultaneous and in real time. Meanwhile, in the exhibition space nothing is seen or heard, but the body perceives these other frequencies. The lights apparently remain transparent and dull and without speakers, emitting audible sounds to humans.

We state that the Leds cube lights are not in the visible spectrum of our sight, which requires some additional device to be seen. In this case, we count with the cameras of personal mobile phones of the visitors of the exhibition. It just focus on the cube of Leds with the cameras of mobile phones that the visitor start "seeing" a whole cloud movement that represents the flow of passers areas captured by the camera remotely and transmitted in real time.



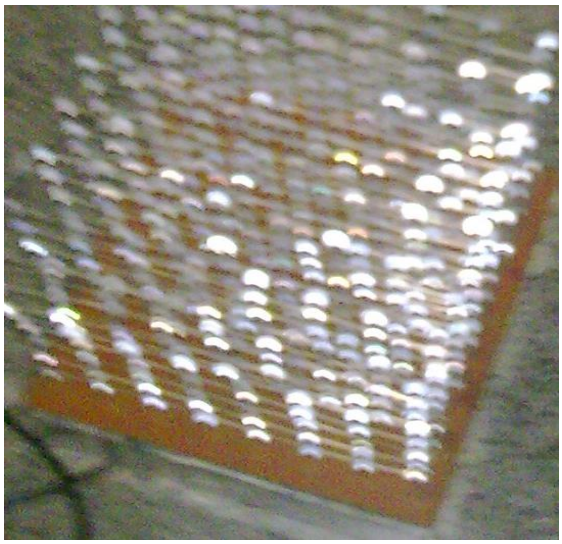
Desluz –Luciana Brito Gallery, São Paulo, 2010 (photo: Érika Garrido)

Desluz is a non-light as an intense desire that burns but does not illuminate, it feels but it can not be seen, as an Ícarus overshadowed in searching of sun and wings melting in the way that conducts but does not arrive. The light only becomes visible through the cameras of mobile phones that move around the cube transparent Leds, a stripping operation than the eyes can´t see.

The work is about the discovery of the invisible, our temporary places, our streams and grids, layers that overlap slightly and attract us without seeing and betray our hidden meanings and so apparent and bring to light our desires in endless pursuit to follow stars.

Desluz –Luciana Brito Gallery, São Paulo, 2010 (photo: Érika Garrido)

The work was shown at Espaço Piloto Gallery from 16 to 30/SEP, #8.ART, UnB, Brasilia and a new version at Luciana Brito Gallery in São Paulo shown at Expandida Gallery curated by Christine Mello from 5 to 20 April of 2010.



Deluz: movement of passerby by thecamera of mobile phone

The *Poéticas Digitais* Group, in this work, was made by[7]:
Gilbertto Prado, Silvia Laurentiz, Andrei Thomaz, Rodolfo Leão, Maurício Taveira, Sérgio Bonilha, Luciana Kawassaki, Claudio Bueno, Clarissa Ribeiro, Claudia Sandoval, Tatiana Travisani, Lucila Meirelles, Agnus Valente, Nardo Germano, Daniel Ferreira and Luis Bueno Geraldo.

http://poeticasdigitais.net/projetos/desluz/index.html
http://poeticasdigitais.wordpress.com/principais-trabalhos/

[7] For more on *Desluz* and *Amoreiras* see also Prado 2010.

3. Amoreiras

Five small mulberry trees were planted in large vases in São Paulo city, in response to pollution that begins to be deposited on their leaves, moving in order to get rid of dirt. The capture of "pollution" is made through a microphone that measures the variations and noise differences such as symptom of several pollutants and polluters. The sway of the branches is caused by a "motorized prosthesis" (wrapped around the trunk of each tree, the prosthesis vibrates causing movements in leaves and branches). The observation and ripening behavior of "trees" are allowed from the algorithm of the artificial learning. Throughout the day, the trees vibrate in dialogue with the variation of pollution factors, in a dance of trees, prosthesis and algorithms, making the apparent swinging and poetic, sometimes (non) voluntarry-machinic, sometimes driven by its own swing of wind on the leaves.

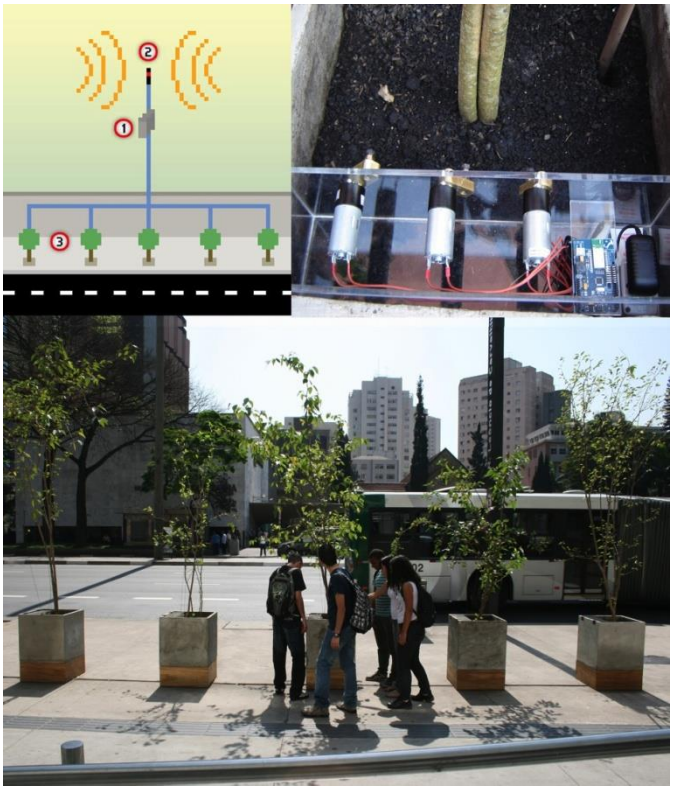
When the first morning sounds, a "tree" responds to pollution that already starts to put on their leaves, moving to get rid f dirt. Higher the noise, honking of the engines, car horns and voices of the transients on the street, the more the "tree" swings.

The new, smaller trees do not know how to handle this environment noises and moods. They do not know how to rock to scare the dirt of the city - are the "newbies". But they are able to learn and in response to the environment through survival.

Amoreiras is a project of autonomy, artificial learning, nature and environment. Five small mulberry trees recently planted, which cultivate red berries, cylindrical compound drupes, inflorescences of juicy texture, tangy and pleasant flavor, which ripens in spring time. The tree has heart-shaped leaves, cogs,which is food for silkworm, flowers in catkins and dark red fruits nearly black, edible in natural and highly prized for jams; mulberry, black mulberry. They are trees of forbidden plantation in the avenues of cities due to pollute the streets with leaves falling in manholes and fruits that attract birds and indelibly stain the sidewalks and clothes of passers-by.

Each of the five blackberry trees has an implanted prosthesis: a device aims to supply, correct or increase a compromised natural function, and, therefore ensure their survival. Prosthesis of metal, rubber and acrylic connected to small engines and an arduino board – all of them are installed in the young stem, which will

vibrate in dialogue with the variation of pollution factors. Each tree has a similar prosthesis, which varies, however according to their peculiarities and anatomy.



Mulberry trees – systems, engines and work on Paulista Avenue, São Paulo, 2010

Throughout the day, the "learners", initially clumsy, start reacting with more autonomy in relation of incoming pollution data, swaying when there is too much noise (which will be a beacon to know the level of pollution) and resting when the threat is lower. By the late afternoon, differences in their behavior are noticed, which shows they are learning and maybe having a dialogue with each other, exchanging data in a dance of machinic prosthesis, rods, rubber and leaves.

The citing below makes part of a study of Biondi and Reissmann (1997) in respect to the relation of trees with the pollution of big cities:

> According to Harris (1992), leaves, trunk and branches are the main parts of a tree, which can help the observer to differentiate one from another healthy tree that has suffered some disturbance. Trunks and branches may have low effect when have few leaves, exudation and large holes. The appearance of the budding twigs or branches in the main trunk may suggest a sudden change in environmental conditions, structural injury, illness or excessive and/or incorrect cuts. **The problems with air**

> **pollution are observed soon in the leaves because they the parts that present the most of symptoms caused by this factor**. The symptoms are highly variable, they are usually dependent on the types and state of growth, the type and concentration of pollutants, of the extent of exposure of moisture, light, temperature, wind and other factors Heart (1980) (Emphasis added).

We still quote:

> **The parameters used to evaluate the urban trees are still very subjective**. In agriculture and forestry, the evaluation of the performance of trees is determined by their respective productions based on criteria related to the quality and quantity according to your objectives. **However, in the urban area, the criteria used transcend these qualitative and quantitative values because the engagement with the aesthetic values is much higher and more difficult to quantify due to the emotional and psychological factors.** Nowadays monitoring the urban trees have been done in compliance and measurement of variables that may not be informing the good performance of trees. **Thus, it is urgent to search for other practical and precise parameters to facilitate the urban trees maintenance** (Biondi & Reissmann, 1997) (Emphasis added).

Within this Project, one of these possible parameters for maintaining urban trees would be the notion of autonomy, present in the learning process among the cyber trees, strapping fake and motorbikes with their "pacemakers poetic". A proposal involving artificial learning art, environment and new technologies, a dance of leaves and swing of trunks that shows in a poetic way the swing, sometimes (in)voluntary-machinic, sometimes the effect of the wind itself.

The behavior of each tree is autonomous and is given in response to the intensity of the sound, also being influenced by the "personality" of each tree. The capture of sound is directly done by a written patch in Pure Data, which sends the information to the main application, developed in Java, via OSC. However the "personality" of each tree is defined by two variables, chosen at the beginning of each day, that define how much each tree will try to emulate their partners and how much their behavior will be disturbed randomly.

Each tree has an algorithm that determines how to turn their engines (via arduino) according to thesound activity. In general, the higher the noise, the greater the activity. It is important to emphasize additional rules, such as the intensity and extent of vibration, so that the movement is smooth or the limiting time, period in which the trees can swing without them being damaged.

First, the algorithm is "not used", which leads to "nonsense" behaviors (for example, the trees swing even without noise). A learning algorithm monitors the database and constantly observes the behavior of each tree, comparing it with the

sound activity, and attempts to adapt the algorithm so that it can act in a similar way. That is, the learning algorithm tries to make each tree to reach the same level of activation than the other at a given sound intensity.

To do the algorithm of the mulberry trees we are guided by the principles of game of life, by John Conway. That is, we have a set of simple rules, which give rise to a complex result.

However, we should observe the final behavior is not specified by the rules, despite deriving from them.[8]

What we do is to apply principles of neighborhood to self-assessment process of the mulberry trees, it means: the behavior of both (or only one, if the mulberry is at one end) adjacent mulberry trees have a weight greater than further mulberry trees (which could facilitate the occurrence of behaviors with possible combinations of the start of engines).

All algorithms cited above are initially programmed in Java running on the computer.[9] Due to the limitations of arduino processing and its inability of storing data, the board will only be used as an interface between the developed application in Java and engines. It also has been used the MySQL database in order to file the behavior of each mulberry tree throughout the exhibition and a small monitoring system, written in PHP, which is started by the application in Java, in case of mistake.[10] When started, the monitoring system sends e-mails to the members of the group, reporting the mistake occurred.

[8] In other words, on the project algorithm there is no specification for "gliders" or "blinkers". There are only the four basic rules of Conway, wich work the principles of the neighbourhood. For initial information about the game of life, see: http://en.wikipedia.org/wiki/Conway's_Game_of_Life.
[9] The part done in Java on the Project Amoreiras programming was carried out with the use of NetBeans and the following libraries: JavaOSC <http://www.illposed.com/software/javaosc.html> RXTX <http://rxtx.qbang.org/wiki/index.php/Main_Page> Useful Links : NetBeans <http://netbeans.org/> JDK http://java.sun.com/javase/downloads/index.jsp.
[10] About the structure of the database used by the programming of the Project, some adding references: SQL <http://en.wikipedia.org/wiki/SQL> MySQL <http://dev.mysql.com/doc/> phpMyAdmin <http://www.phpmyadmin.net/> XAMPP <http://www.apachefriends.org/en/xampp.html>

Amoreiras –detail of the poetics prosthesis, 2010

In practice, the expected result is as follows:

- Trees will swing alone, from time to time according to ambient noise in order to get rid of pollution in their leaves.
- Trees will act initially arbitrary and throughout the day will also engage each other, coming to an emerging syntony.

Some highlights:

- All trees are young and each of them is treated as an individual. Their engines and prosthesis boxes are similar, but not identical, adapting each of them in a suitable way without hurting them.
- At the end of each day, the "personalities" of the trees are changed randomly in order to restart the learning process. This prevents that from the first day, all the trees are "locked in tune" and do not change their behavior anymore; on the contrary, allows them to build emerging cycles and rhythms and continue searching different approaches with each other, as in a dance of leaves and trees, with their poetic prosthesis which rebelates against soot amid urban barbarism.
- As the trees of the city agitated to show the dirty air (Dimenstein, 2010), reminding us of the danger they live and the situation we helped develop.

The *Poéticas Digitais* Group, in this study is composed by Gilbertto Prado, Agnus Valente, Andrei Thomaz, Claudio Bueno, Daniel Ferreira, Dario Vargas, Luciana

Ohira, Lucila Meirelles, Mauricio Taveira, Nardo Germano, Sérgio Bonilha, Tania Fraga, Tatiana Travisani and Val Sampaio.

http://poeticasdigitais.net/projetos/amoreiras/index.html
http://poeticasdigitais.net/projetos/amoreiras/index_en.html

Amoreiras – Avenida Paulista, São Paulo, 2010 (photo: Carol Godefroid)

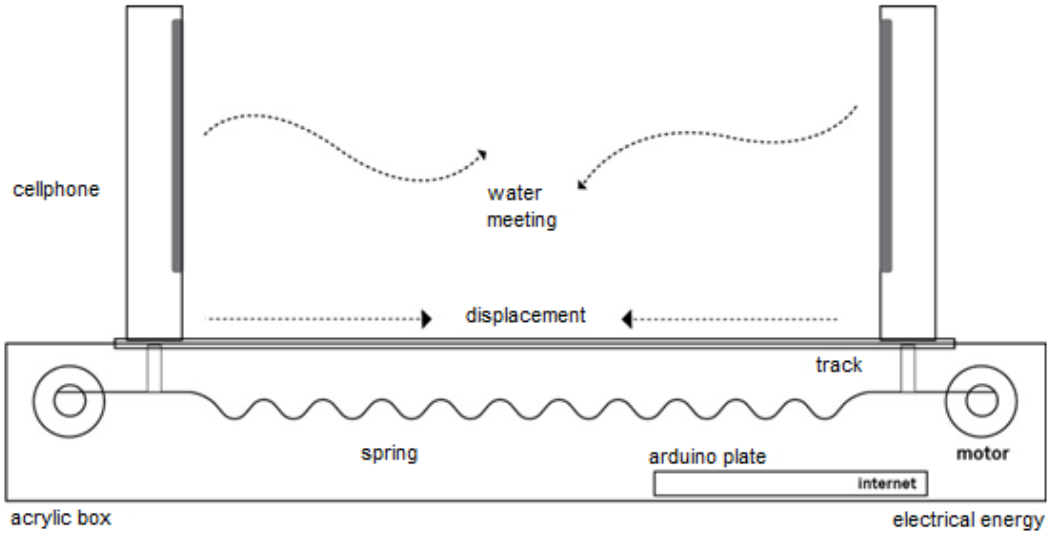
The project was selected for the *Emoção Artificial* (Artificial Emotion) Exhibition 5.0, Technology Art Bienal of *Itaú Cultural* that was held in São Paulo, from June 30th to September 5th, 2010. It was also exhibited during the III show 3M of digital art – Technophagy curried by Giselle Beiguelman in the Tomie Ohtake Institute, in São Paulo, from August 15th to September 16th, 2012.

4. *Encontros*

> From here we can see much water and sky, constellations of trees and impassable lianas. Landscapes, as they should be, endless. Lethargic as time flowing between a dive and a whistle.
> From there it is seen the time that lasts in wrinkles and the yellowish nets as the guts of a *tamoatá*.
>
> *Oriximiná*, *Óbidos*, *Trombetas*, *Jarí*, *Santos de Santarém*, which hide from the sun in 24 hours in the tanned skin of the rustic and treadbare velvet robes of *santeiras*. The soft touch

of hand-maidens of grin that bewitch the porpoises, feed us with candies and leads us to the river bottom, in no return.

The experience of the river is flowing, brown or black, insurmountable, individually, in a deep that does not let you see the imaginary streams.



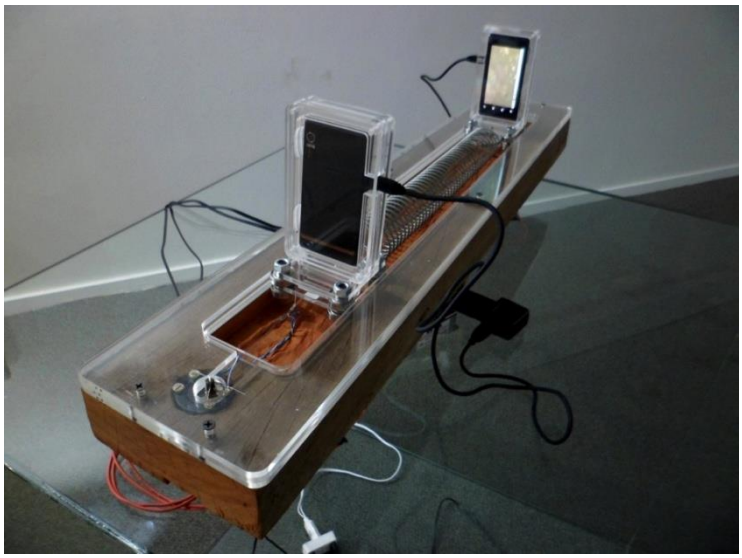
Encontros – work functioning scheme

Two mobile phones devices display on their screen, a video sequence composed of water flows in two different shades. On one hand, we have the predominance of water in black and the other, brown color.

Meeting of the waters, the confluence between the rivers Negro and Solimões

Meeting of Waters, 2010

When receiving real time information about the changing tides and also the volume of searches for the word "meeting" on the Internet, the devices begin to move slowly over the rails of the device created. The spring, at the same time it stretches, strains, delimiting the space and the current flow/motion. In these moments, it will be possible to notice a slight mixing between the waters and the impossibility of simultaneously meeting.

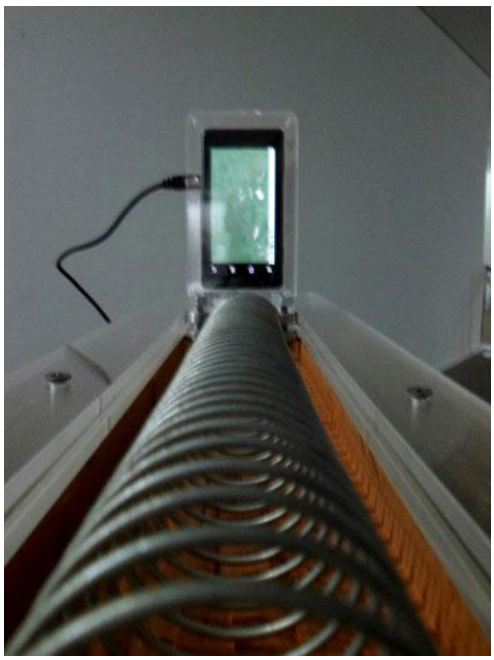


Encontros - National Museum of the Republic, Brasília, 2012

Short videos were produced by artists traveling through the Amazon River.[11] The arduino plates will be programmed to allow exchange/send data and video to

[11] Gilbertto Prado and Claudio Bueno got images of Rivers of the Amazon region during the expeditions "Projeto Água" coordinated by Val Sampaio.

mobile phones. The system will search information online in order to reflect the changing tides and moon phases in contrast to the flow access to the word "meeting" in several languages. Thus, the movement of engines will be activated, the tension of the springs and the consequent displacement of mobile phones.



Encontros, National Museum of the Republic*, Brasília, 2012*

The Poéticas Digital Group in this Project is formed by: Gilbertto Prado, Andrei Thomaz, Agnus Valente, Clarissa Ribeiro, Claudio Bueno, Daniel Ferreira, José Dario Vargas, Luciana Ohira, Lucila Meirelles, Mauricio Taveira, Nardo Germano, Renata La Rocca, Sérgio Bonilha, Tatiana Travisani and Val Sampaio.

http://poeticasdigitais.net/projetos/encontros/index.html

The Project *Encontros* was exhibited in the show EMMeio#4, in the National Museum of the Republic, in Brasília, curated by Suzete Venturelli on October 2012.

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