

CAN A TELEMATIC SYSTEM PROVIDE AN EXPERIENCE IN ART? Art, Science and Technology in artistic experimentation at NANO LAB

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Abstract

Can a telematic system provide an experience in art? The question is not new to artists involved with telematic systems, but it emerged again during the last three years, resulting from research on computer art, science, and telematic systems developed by artists Guto Nóbrega and Malu Fragoso at NANO Lab (UFRJ-Brazil). The idea of a “Telematic Embrace” was introduced by artist Roy Ascott in 2003 and is constantly reviewed with technological development through artistic projects that explore processes of creating artificial interfaces which in some way are connected with natural and organic elements, experimenting on possible hybridization, interaction, presence and context in telematic environments. In this paper, the presentation of practical, experimental and technological procedures are in focus, but also an approach to the subject relating artistic practices and science research in collaboration with other research groups and laboratories. We will be discussing on research strategies between artistic and scientific methodologies towards trans-disciplinary knowledge.

Keywords: computer art, telematic, hybridism, performance, trans-disciplinary

NANO Lab (Nucleus of Art and New Organisms) was created in 2010, at the Graduate Program in Visual Arts (PPGAV) at the Federal University of Rio de Janeiro (UFRJ), by Guto Nóbrega and is coordinated together with Maria Luiza Fragoso (Malu). Both artists have been developing their artistic projects on the processes of creating artificial interfaces which in some way are connected with natural and organic elements, experimenting on possible hybridization, interaction, presence and context in telematic environments. In 2011, NANO was invited to collaborate in two research projects: *Laboratorium Mapa D2*, proposed by Ivani Santana, from Federal University of Bahia (UFBA); and, *Ecotelemedia*, proposed by Kjell Yngve Petersen, from IT University of Copenhagen, Denmark. Both had in common the development of collaborative process based on telematic systems to create artistic performances.

Laboratorium Mapa D2 gathered different research groups from artistic centers at Brazilian universities such as NANO (at Federal University of Rio de Janeiro), Telemedia (at Catholic University of Rio de Janeiro), GP Poética (at Federal University of Bahia), Computação (at Federal University of Bahia), LPCA & Grupo de Pesquisa Computacional (at Federal University of Ceará), and LAVID (at Federal University of Paraíba). All groups were organized into audio-visual connectivity in real time based on Arthronⁱ, platform developed by LAVID (Federal University of Paraíba). The main objective of *Laboratorium Mapa D2*'s lab consortium was to experiment and explore the potential of such technologies for the creation of artistic projects. During the year, twenty virtual meetings were attended by the groups, four Open

Labs were organized with the participation of the public (on line and of line), three workshops on telematic structure and creative processes were offered, one preliminary exhibit was held. A final exhibit by the title *Frágil* was held December first at the Museum of Modern Art in Rio de Janeiro, during the event “Desafios da Arte em Rede” (Net Art Challenges), a preview of Digital Culture International Festival of Rio de Janeiro, organized by Brazilian Ministry of Culture.

NANO worked on a robotic interface named as H.A. with local and remote interaction with performers and public proposed as interface between all agents of the project. H.A. standing for Antropofagic Hyperorganism, is not only a robot, but a mechanism that captures images, movements, actions as data, devours this information and reproduces it inside it’s body as images and sounds. It may also expand this output to anywhere once connected to the net. H.A. is composed of a head with monocular artificial vision, a neck that moves in four directions, a body built of translucent material that expands and contracts like a breathing lung actionable by external and internal stimulus. The interface is also built with movement sensors in mapping environments and interactions, internet protocol for connectivity and video streaming input and output devices (Fig.1 and Fig.2). An Arduino with frequency radio transmitter received the transmission of sound variations through the web and sent it to a wearable interface, which would output the data through four micro-motors that vibrated and stimulated the dancer at four different points on his body. This complex connection allowed dancers to feel the sound intensity of the environment directly over their bodies creating a synergetic experience. Data was flowing between dancers, public, internet, robot in a constant feedback system (Fig.3).

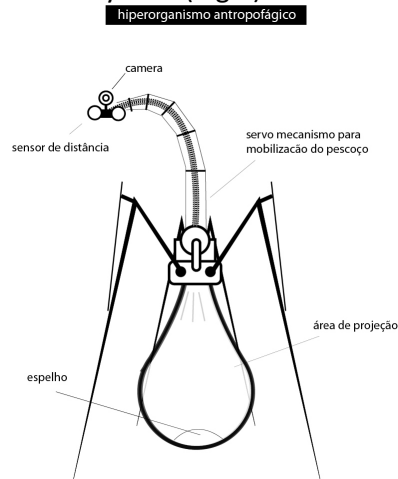


Fig.1 H.A.'s project Fig.2 H.A. at *Frágil* performance, Rio de Janeiro December 2011

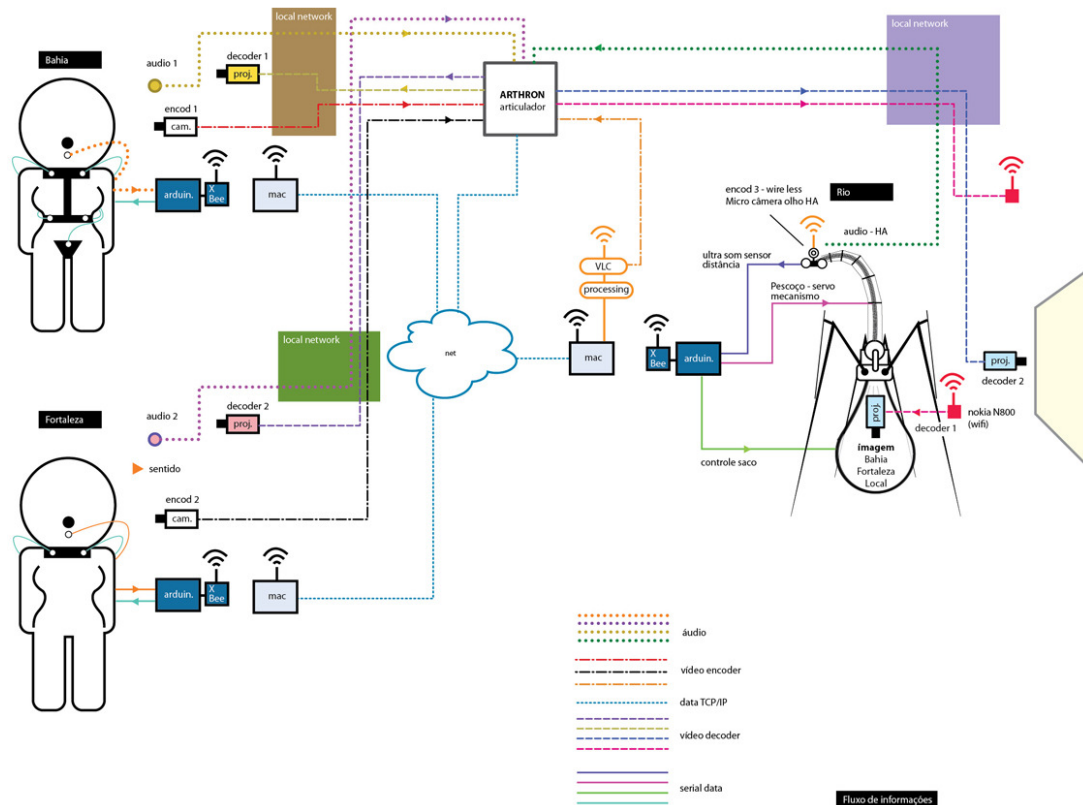


Fig.3 – Telematic environment at *Frágil* performance

During *Frágil*'s performance, H.A. became as important as the dancers in action, attracting the attention to its body movements connected to the images projected on a screen. It gave the sensation that it would start moving around, as the others were. The telematic environment involved all dancers and, in many ways, connected the overall actions in Rio, and from Rio to Ceará(BR). The public would be looking at images projected without the certainty from where they were originated. There was no direct participation of the public in the telematic system, although it absorbed the public's presence and was perceived by all.

Ecotelemedia is an international endeavor of a collaborative research net called *The aesthetics of global connectivity: exploring design strategies and networked technologies of distributed sites through artistic processes* proposed by Kjell Yngve Petersen from IT University of Copenhagen. It lasted the whole year of 2011 and was coordinated by Petersen, Guto Nóbrega, from NANO (Brazil), and Kenneth Fields, from Central Conservatory of Music in Beijing (China). In April, each of the coordinators invited other collaborators from their research institutions to attend a meeting held at NANO lab in Brasil. A symposium on *Telemediations: exploring esthetic paradigms in hybrid ecology* was held, together with workshops on methodological approaches and open labs. The main objective of *Ecotelemedia* was to establish some methodology for artistic research, focusing on an esthetic paradigms resultant from telematic environments. Emphasis was on experimentation with natural and artificial systems based on collaborative experience through visual and acoustic performances aiming an emerging ecology.



Fig.5 Rehearsal for *Ecotelemedia*

An optimized telematic system was planned in order to connect multiple actors (humans, plants, machines) in a relatively coherent way during a specific time period for the performance. NANO's proposal was to create sounds from a hybrid organism, composed of a plant and a computer system programmed to transform the variation of electric conductivity on plant leaves. An interface was developed in which three plants worked as organic sensors creating three different channels of data used on the process of creating sound. The connection occurred between Brasil (NANO and Ivani Santana from Bahia), Annika B. Lewis (Washington – USA), and our partners in Copenhagen and Beijing. We can affirm that one of the main coherence factor was the sound feedback created by the digital arrangement of multiple data sources sent to computer stations using *Pure Data*. Other data was shared through OSCⁱⁱ protocols, and audio connection between Brazil, China and Denmark was done by *Jack Trip*ⁱⁱⁱ. Data sources were: accelerometers from iPads and iPods used by two performers; two hybrid systems with plant and GSR (Brazil and Denmark), each of them with three plants; and a Cilia digital controller (Fig.4). Between 5th and 9th of September an intensive laboratory workshop was held at IT University of Copenhagen that resulted on the first public *Ecotelemedia* event, in which all participants were sharing the same location. On October 25th the performance occurred through telematic environment.

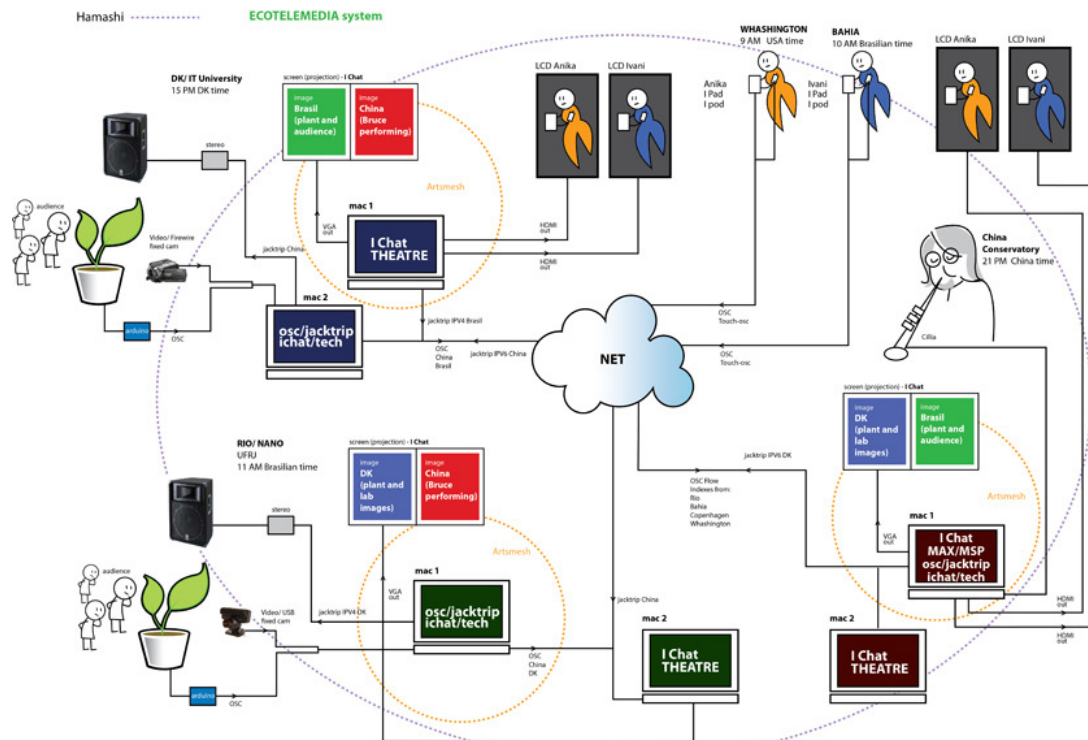


Fig. 4 – Ecotelemedia system

First Stage feedback

One of the most impressive sensations observed from the artistic telematic performances was the state of incomprehension of the presented complexity. Maybe our limited consciousness regarding the complexity of the system and its operations is a condition to experimenting the performing act. The experience is sensed very differently from different points of view such as: the artists engaged on the actions, the director of the actions, technicians commanding the software, and of course the public. There were rehearsed plots being performed but the telematic environment tends to constantly propose an opening to the unpredictable.

An immediate impulse from the directive base of the spectacle is to avoid this “unpredictability”, establishing a minimum of control over the general performance. However, if we believe that telematic situation enhances the vitality of an aesthetic experience, then, this experience must allow the telematic environment to infiltrate the work of art. Only then, the mediated embrace will be able to begin to modify our perception. Maybe this is an aspect of what Roy Ascott (ASCOTT, 2003) refers to as *cyberception*.

Clearly one can point out which were the elements of the telematic experiences that dislocated the experience from an artistic realm to scientific/technological/pragmatic positions such as: differences within each group's technological environment, meaning hardware and software; and differences between connectivity quality, given the budget of each research group, which inevitably provoked long hours of discussions over technical details. In the other hand, cultural differences were inevitably a matter of misunderstanding

but, differently from the technical problems, efforts and time involved in understanding concepts and approaches were extremely gratifying to all involved. Unfortunately, time spent on technical problems overpasses greatly conceptual and esthetic discussions. Regarding *Ecotelemedia* project, at some point, a discussion on individual's approach to artistic procedures and productions was at stake, but it never became an issue that could spoil the entire project. Technical problems seemed to be a constant issue jeopardizing the project at any moment. These overwhelming technical restrictions are still today a drawback to artistic experimentation in computer/telematic/technological art.

Approaching art and science

Both projects, engaged by NANO lab. had the premise of believing in building a trans-linguistic cultural geographic telematic communication system. Experiences revealed the sensation of being at the edge of mysteries and revelations. Collective presence “really” happened, it was not a projection of our minds, and, for some moments, we could feel that it was flowing and growing. The idea of a plant-machine-human interaction definitely enhances our capacity of perception. Not only because we can clearly visualize the plant interaction, but because the experience provides to all involved a renewed state of consciousness. One in which the human end of the system is more generous and open to understanding life and nature, a premise from the origins art.

Some of these ideas were discussed at the Planetarium Collegium 11th Consciousness Reframed Conference, organized by Espen Gangvik, in Norway two years ago, in which the title of the conference was “Making Reality Really Real”. At the present we realize how limited is our comprehension of what is “really” happening when immersed in a telematic system. In this sense, we believe that artistic experimentation is “drawing” lines that create maps, schemes, models, even systems that transform the telematic experience from pragmatic scientific experience, or even commercial situations, to poetic, aesthetic ones.

Artists from different fields (visual arts, dance, music, theater, etc.) are emerging into a trans-disciplinary methodology of research, in which mechanical, electronic, and computer systems are merging into hybrid systems, not only physically, but also esthetically, providing innovated forms of perceiving and expressing reality. Sometimes, in the process of creating fields of experimentation, art, science and technology become so close in this process of investigation that it's almost impossible to distinguish between each area of research. Scientist, as artists, seem to be at a stand point in a stage of abstraction, in which “the spirit adopts information voluntarily obtained from intuition in real space, unattached to immediate experience, and even in declared controversy with primary reality, always impure, always unformed.” (BACHELARD,---,---). If scientific experience used to counter play common experience, immediate tautological conclusions and definitions, contemporary technology, with the velocity of computer mathematical operations transformed in forms, sound and sensations, led immediate experiences to the status of key elements in scientific research, nowadays constructed on social based investigations.

According to Boaventura Souza Santos, in post-modern society all scientific knowledge seeks common sense constructs. All knowledge is based on self-knowledge, and it must be

recognized as local and total.

Scientific environments are adopting humanistic conceptions from social sciences as “catalist” agent towards the fusion between natural sciences and social sciences, situating the person as author and subject of the world, center of knowledge, but differently from humanistic tradition, places what we define as nature in the center of the person.(SOUSA SANTOS, 1988:16) (review this end)

Although science representatives have engaged in understanding social sciences and artistic processes of creation and knowledge construct, there is still an enormous distance between those methodologies. The experimentations described above pointed the need of larger budgets in art laboratories, maybe by exposing this specific artistic production and obtaining financial support from scientific institutions. In his sense, artist should invest in methodological discussions with a variety of partners from the large spectacle of technological development and scientific research. An infinity of technological tools are available today for artistic experimentation but, differently from technical tool, technology demands methods and knowledge that is unfamiliar to the artist. Thinking a methodological model for the above projects was our biggest challenge.

Conclusions

When we try to answer the title question “Can a telematic system provide an experience in art?”, looking back at the overall experiences of the last year's work, we can affirm that: telematic systems are unquestionably effective in collaborative processes; subjectivity arises proportionally with the artists improvisation over technical difficulties; it is an error to create strong expectations based on traditional artistic experiences; openness to unthinkable sensitive and esthetic experiences is fundamental; proportionally we seem to be in a stage of development in which some part of this effort is some what frustrating. But in all project's experiences there are moments in which the system (and we mean: human-machine-computers-plants-places-time system) provides an environment of immersion and the sublime state of the art can be felt. The answer is yes, telematic systems can provide an experience in art. Our next question is: how can hybrid organisms (human-plant-animal-machine) enhance the vitality of an aesthetic experience in telematic situation?

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- i “A Arthron is a sytem that facilitates artistic performances that apply multimedia representations combining virtual and real spaces in real time” (2005).
 - ii Open Sound Control is a communication protocol between computers and other sources of digital data for networks (Cf. <http://opensoundcontrol.org/introduction-osc>).
 - iii High quality system for audio streaming without compression for networks (Cf. <http://code.google.com/p/jacktrip/>).