SENSING ALL SAINTS' BAY AND PARAGUAÇU RIVER

Karla Brunet, UFBA, Brazil / UDK, Germany

ABSTRACT

This paper presents the experience of an art and sensors practice that took place in Bahia, Brazil. *Sensorium* is a research and digital art project that aims to work with three major pillars: technological, environmental and artistic creation. For the technological approach we have researched free software and hardware, DIY practices, open source programming language, sensors and GPS. In the environmental axis we work on notions of environmental aesthetics, place and space and creating ways of perceiving the surroundings. The third approach, the artistic creation, is devoted to the development of aesthetic experimentation and environmental aesthetics on urban intervention, performances and data visualization. The focus of this paper is on the trip from the Baia de Todos os Santos (All Saints' Bay) into the Paraguaçu River to collect environmental data (objective and subjective data). This experience of sensing the river and sea surroundings resulted in a variety of art and visualization pieces. The paper analyses this practice and research, bringing up points of discussion on art practice, free technology and intimate science.

INTRODUCTION TO THE SENSORIUM PROJECT

This paper presents a part of the environmental intervention done during the development of *Sensorium: from the sea to the river* project. It is an extension of different other projects about the sea done at Ecoarte Group, UFBA (Federal University of Bahia), in Brazil and deals with 3 main axes: environmental, technological and artistic. At the environmental axis we worked on the notions of space and place in order to create form of perceiving the environment, focusing on questions related to the water around us. Water situation, uses, characteristics and sensations were relevant to this project. On the technological axis we experimented with free software/hardware, sensors and GPS. On the artistic axis we worked with environmental aesthetics, urban and nature intervention and data art. The term *sensorium* comes from Latin, from sensorial. Here we used it as art being this sensorial apparatus to measure, feel and interpret our surroundings. [1], [2] It is a mix of sensors to capture environmental data and geo-spatial assimilation plus the personal and subjective perception of the artist.

The four phases of the project *Sensorium* involves 4 phases of artistic creation: 1° phase is the creation of a mobile device with sensors to interact with people and place; 2° phase is the performance, the action with local community, the intervention on two sites (Salvador and Cachoeira) and the journey from the sea (Salvador) to the river (Cachoeira); 3° phase is the analysis and synthesis of the data collected, the construction of the data art, the data visualizations; 4° phase is the creation and show of an art exhibition of *Sensorium* project and its process. This paper focuses on the second phase of the *Sensorium* project, on the performance on the environment.

Fig. 1. *Sensorium* device.

After creating the mobile device done entirely with free software and hardware, it was time to go outside and experiment with it. There were three performances with the *Sensorium* device. The first was in Salvador during three days and took place in the historical center all the way to the outline of the city and bay, ending up on the main beach of the city. The device here had a cart to be moved around the city (Fig. 1). Its five arduinos and sensors were held on an open orange box showing in real time the data collected. The sensors measured: air temperatures, humidity, luminosity, gases, noise, water temperature, oxygen dissolved in the water, latitude and longitude. Besides the ear (microphone) to measure the noise, the device also had two eyes. One was a GoPro camera inside the box that recorded the sky and everything that was above it, especially the time people looked into the box. The other was an endoscopic camera, also called a snake and recorded the underground. The people experimenting with the device put the camera on many holes of water sewage, dirty water fountains, manhole, wastepipe, garbage can[…] Experiencing artistically the environment was important in this phase. Besides the urban interventions in Salvador and Cachoeira, it was essential to experience the nature.

Since 2009 we have worked artistically with the sea that surrounds us in Salvador. We developed some video installations, mapping projects, community artwork and interactive installations. Now with the *Sensorium* project we decided to go further away, crossing the whole bay and going upstream on the river Paraguaçu. We went from Salvador to Cachoeira by sailing boat. The idea was to feel the surroundings; to have the direct contact with the water, its landscape and its underworld.

For two days we collected physical data of the environment such as air temperatures, humidity, luminosity, gases, noise, water temperature, oxygen dissolved in the water, latitude and longitude. And also what

we called "subjective data," our subjective notes as the psychogeographers did wandering the streets in the 50s and 60s, we did wandering the water on a sailboat. [3], [4] Our notes were made with pen and paper, photo camera, video camera and audio recorder. This way, we created data storytelling of this journey.

SENSING THE SEA AND RIVER

Arne Naess thinking on nature and human relation to the mountain once said that "[…] the smaller we come to feel ourselves compared to the mountain, the nearer we come to participating in its greatness. I do not know why this is so." [5] Here we applied Naess' feeling to the sea/river instead of the mountain. More than 90% of the participants of the project have never done this journey before. And even though they lived surrounded by water, the great majority have never been on a sailboat before. Therefore, it was very important to them to experience this feeling of being small on the immensity of the sea, to be able to participate in its greatness.

There were eleven persons in the group doing the water cross trajectory from Salvador to Cachoeira. Their backgrounds vary from artists, programmers, oceanographers, musicians, filmmakers, community workers, public servants, sailors, divers, designers, professors and students. Each person had his/her own way to sense the environment. The trip last two days, it took eight hours on the first day to reach Maragogipe and almost five hours the second day to arrive in Cachoeira. For some to be outside when it was raining, having no place to shelter was a challenge. For others, the idea of not having a proper toilet or being hours under the strong sunshine was a challenge. Time here also had another perspective. When planning the trip we decided on a two-day journey; some of the participants didn't believe it would take that long. They were used to going from one city to another in less than two hours by car, so why by boat is it necessary to have two days? They could only understand that when they were on the water. One said, "Now I got it" when there was no wind and the boat drifted off aimlessly (Fig. 2).

Fig. 2. Scene of the first day on the boat..

On the boat journey time was stretched and did not have the same speed as in the city. Here observing nature, feeling the places, "doing nothing" made the clocks work slower. It related to the slow movement, to a new perception of life. Kevin Hamilton and Katja Kwastek in "Slow Media Art – Seeing through Speed in Critiques of Modernity" proposed some categories to the slow media art: Duration / Deceleration, Local / Sustainable, Disruption / Irritation / Mediation, Abstention / Ineffectiveness, Remoteness. [6] The *Sensorium* journey was an example of the slow media art. We could fit in more than one of these categories but the first one is the most suitable one. We had an enormous deceleration of everyday life. This action of data collection on the nature was completely different than the one on the city. Here our worries were weather, wind and tides. Not controllable variables, we had to learn how to wait: wait for the wind to pick it up on the first day when we stopped and drifted off aimlessly. Wait for the high tide on the second day to be able to leave Maragogipe and not have the boat stuck on sandbars. There was nothing we could do to accelerate, only wait for nature and feel smaller as Naess citation earlier.

Our device had a screen so we could visualize in real time the environmental data measured. We also collected images, videos and audios to record our experience of this space journeyed through in order to later recreate the notions of place and the perceived surrounding. There were environmental aesthetics on the relation of the onlooker and the environment, the onlooker and the device, the device and sensors, the data and its visualization and the habitat and the device. David Rothenberg, in *Deep Technology Revisited*, gets the concept of "deep ecology" and applies it to technology creating a new concept of the relationship of nature and technology. The author shows that the importance of nature in our lives is not in opposition to technology as many ecologists thought. Technology makes us understand better the limits of nature and depend more on it. For Rothenberg "[…] those who love nature ought to take technology more seriously, since it connects us more to nature, rather than separating us more divisively." [7]

The experience of two days sailing and recording data of this environment made us understand better the nature that surrounds us. We could see which parts of the sea and river had more oxygen in the water and discuss how this affects the ecosystem. At the same time we could dive in the water, see its "hidden" under world, feel its magic.

In some locations the water was a blue appealing postcard: everyone wanted to dive in, mix with it, be part of it. In other locations the water was muddy brown: there were bottles, plastic, garbage floating. Despite of the disgusting look, we dove in and tried to perceive its nature (Fig. 3). We perceived the bay and river with technological sensors and with our own bodies.

GEO-SPATIAL AWARENESS AS ART

Awareness of the geographical space was an important point of this boat journey. The aesthetical experimentation of the place

took place in the way we moved from one city to another, drifting on the bay and river. Our knowledge of the space was enlightened and enhanced as a Michel de Certeau tour. [8] In contrast to a map, a tour is a narrative form of representation of a place, while the map refers to a determined place without mentioning the notion of movement. Our geo-spatial awareness was based on the movement, on the going; Certeau talks about the walking wandering in a city. Here we wandered on the water surface. Not as a single individual but as an entity, a concise body formed by a group of people.

With the act of sailing, exploring the place, we created a map of the journey. It is a data map of what we collected, it is the representation of our movement. The arduino GPS recorded our latitude and longitude every five seconds, this way drawing a line on an empty space of the screen. This line could be seen later on the art pieces *Caixa Preta do Sensorium (Sensorium Black Box)* and *Eletroviagemgrama (Electrotravelgram).* GPS has been incorporated as a medium for art since the 90s and got popular as locative media art in the beginning of this century. Artists appropriated this geo location tool to create new maps, new perspectives of the geographical representation. [9]

In 2012, Gavin MacDonald published *Moving Bodies and the Map: Relational and Absolute Conceptions of Space in GPS-based Art* analyzing this sort of artwork after 10 years of its popularity. Gavin said "Geographers and social scientists have argued that geospatial technologies are contributing to new understanding of space as relational and of cartography as processual and performative rather than representational."

Fig. 3. *Paraguaçu river mouth.*

Nowadays, the process of walking, the movement and the performance in the space makes us understand better the territory and its relationship to society, politics, ecosystem and social issues. The *Sensorium* journey had this intention. It made us rethink the notion of space on the All Saints' Bay and Paraguaçu River. The group got aware of the polluted places, of its beauty, of the emotion of seeing river dolphins for the first time, of the dangers on the

water, of the different timing out at sea. It created an emotional bond of the people and this region. The experience of these two days sensing the sea and river got imprinted on their lives.

Data sensing art

Out of this "sensing journey" on All Saints' Bay and Paraguaçu River came a variety of art and visualization pieces. They were presented in an art exhibition at the Museum of Modern Art of Bahia in 2013.
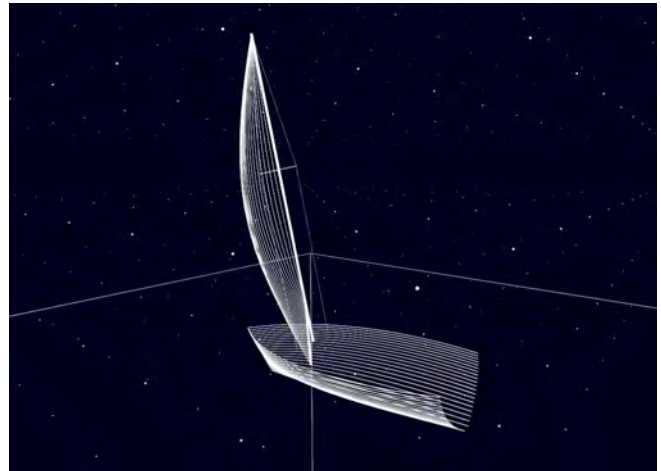

Fig. 4. *Vento em Popa* (Steady as she goes).

Caixa Preta do Sensorium (Sensorium Black Box)[1], *Eletroviagemgrama* (Electrotravelgram)[2], *Sensorium em Correlações* (Sensorium in Correlations)[3], *Vento em Popa* (Steady as she goes)[4], *Explorando Sensorium* (Exploring Sensorium)[5] and *Vídeo Mapa* (Video Map)[6] intended to blur the limits between art and science. They show the scientific data in a more intimate and sensual way. [10] Data of oxygen dissolved in the water became abstract soft floating bubbles in *Caixa Preta do Sensorium*. And air temperature data creates a new sequence to the frames of the videos based on heat in *Sensorium em Correlações*. For us it was a great challenge to reach the balance between information and poetics. [11] Due to the museum's restriction of not allowing us to produce more immersive installations, we had to struggle to create something informative at certain points but not forgetting the aesthetic abstraction of the data. All the decisions were taken by the group. Everyone who was part of the boat journey collaborated on the creation of the pieces and was responsible for different parts of the exhibition. It was precisely a group show.

In conclusion, we had a sensorial experience of the journey with our bodies and our technological device. This resulted in a set of structured raw data that was analyzed and felt. Yes, we tried to feel the data observing it, seeing what it wanted to communicate to us. And out of all, we created an aesthetical and complex form of presenting it back. Hoping to evoke in the public some perceptions we could feel when sailing on the bay and river.

REFERENCES

1. C. A. Jones and B. Arning, Sensorium : embodied experience, technology and contemporary art, Cambridge, Mass.: MIT Press : The MIT List Visual Arts Center, 2006, p. 258.

2. B. Bolt, Sensorium : aesthetics, art, life. Newcastle, U.K.: Cambridge Scholars Pub., 2007, p. 244.

3. G. Debord, "Introdução a uma crítica da geografia urbana," 1955. Online. Available: http://www.rizoma.net/interna.php?id=143&secao=anarquitextura.

4. G. Debord, "Teoria da deriva," 1958. Online. Available: http://br.geocities.com/anopetil/teoriaderiva.htm.

5. A. Naess, "Modesty and the Conquest of Mountains," in The Mountain Spirit, M. C. Tobias and H. Drasdo, Eds. Woodstock: The Overlook Press, 1979.

6. K. Hamilton and K. Kwastek, "Slow Media Art – Seeing through Speed in Critiques of Modernity," in Techno-Ecologies II. Acoustic Space #12, R. Smite, A. Medosch and R. Smits, Eds. Liepaja and Riga: RIXC and MPLab, 2014.

7. D. Rothenberg, "Deep Technology Revisited," in Techno-Ecologies. Acoustic Space #11, R. Smite, E. Kluitenberg and R. Smits, Eds. Riga: RIXC and MPLab, 2012.

8. M. Certeau, The Practice of Everyday Life. Berkeley: University of California Press, 1984.

9. K. Brunet, "Mídia locativa, práticas artísticas de intervenção urbana e colaboração," Rev. Comun. e Espaço Público da UnB, vol. 1/2, no. XI, pp. 211–222, 2008.

10. R. Malina, "Intimate Science," 2013. Online. Available: http://malina.diatrope.com/2013/05/03/intimat-science/. Accessed: 23-Nov-2014.

11. G. Legrady and R. Simanowski, "The Art of Mapping Statistics: Interview with George Legrady," Dichtung-digital, 2005. Online. Available: http://www.dichtung-digital.org/2005/2/Legrady/index.htm. Accessed: 23-Aug-2013.

ENDNOTES

1. Url: http://ecoarte.info/ecoarte/2013/10/blackbox/

2. Url: http://ecoarte.info/ecoarte/2013/11/eletroviagemgrama/

3. Url: http://ecoarte.info/ecoarte/2013/10/correlacoes-barco/

4. Url: http://ecoarte.info/ecoarte/2013/10/vento-em-popa/

5. Url: http://ecoarte.info/ecoarte/2013/10/explosensorium/

6. Url: http://ecoarte.info/ecoarte/2013/10/video-mapa-sensorium/