

## **80 Day in Dreams, Mexico 2014**

**This project is a personal initiative, with potential research aimed to observe a transdisciplinary gap, an open collaboration between exploring the world of dreams and neuroscience. The latter contributes to my work with neuroimagery.**

**Working with researchers who are outsiders to the artistic contexts has allowed me to address questions that are beyond the experience of a single discipline.**

**The register: “80 days in 80 Dreams” is the process of a subjective experience of perception, which allows observing the traces of sleep stimulation by daytime experience.**

**The work done by neuroscientist Roberto Toro is fundamental to the study of this process, located at the junction of the mental with biology.**

This presentation consists of three parts:

- 1st. part: theoretical introduction and personal practice;
  - 2nd. part: the method used for this project, and
  - 3rd. and last part, based on the results of these *80 days in dreams*.
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As part of a series of lectures on cognitive experiences in the art field, Mario Borillo writes by way of introduction:

The world of art is the same place of mental activity, both for the creator and for the viewer. An activity whose hallmark seems to be the place given to imagination, dreams, memory, passions, flows of subjectivity. So far refractory or inaccessible to the requirements of scientific analysis, this universe begins to enter into the field of study of cognitive sciences.

As Jorge Luis Borges concludes in his lecture “The Nightmare,” questioning the actual content of subjective experience of sleep is the oldest human activity.

This task is the main contribution of our project to humanist and neuroscientific fields.

In dreams, we live what we see, a model of reality full-apparent as sensitive films of unexpected realities or fragments of a past built in memory. The experience to make sense, to understand what happened, has evolved and has gradually introduced me to an additional observational space, between the world and its representation.

I have dedicated 20 years to the written restitution of these stories. I have held a number of metaphors and emotions, I've written all my dreams in a journal. Memorizing these testimonies has helped me to think about them and to transform them into a sign of mental health.

In general, the metaphorical principle of dream expression aroused an intense interest that has lasted until today.

Every day, systematically, I write down all my dreams, as a habit or a way of life, transcribing the information in detail.

This process of re-writing contributes, first, to prevent losing information, due to the transience of experience, and secondly, to expand my own perception of consciousness in relation to the appearance of the image.

I tie together two ends in language development, two different models of reality, opposed by nature, that put doubt facing the experience of the fantastic, of the possible and the impossible.

If the memory of what happened in the dream unfolds slowly it is because its nature of exchanges opens a passage between the passive and the active, and complements an ambivalent space that removes the barriers of ego, as an act of self-annihilation necessary to introduce otherness.

The process of remembering the dream is to build two models of reality that permeate each other, where the internal air flows to the outside while being penetrated by the external air, placing us between two universes of undetermined and unknown origin.

The creation of this transference—our own language—is inevitably based on a conscious act, but apparently disconnected from the everyday.

The style, in the process of sleep information, is a form of personal and particular creation to dialogue with the world.

My works are not only the representation of my ideas, but a site, an inter-dependent baseboard that seeks to integrate the words arranged opposite each other in the real world, the interconnection of the excitement caused by the dream experience and representation verbal.

Verbal tool and memory allow me to re-experience by describing what moved me. Frequently, this is caused by the presentation of a wound. Then, I can not do this work anyway, because if I rush, most of the time it says “do not touch me,” and rightly so, because if I unfortunately do it carelessly, the wounds aggravate and worsen.

But what if I do not touch it?

Fortunately, my brain has additional tools that allow me to rearrange the stage of the history and the story. I'm not only in first person but in plural. Whatever I could not tell, I I associate to another one, as a way of self-expression. When I can not find the words to say it, my system has the possibility of making a representation of an image with another being.

It is a way to re-take possession of an emotional burden, perhaps caused by a representation of the past in which, without apparent intention, I seek shapes and colors to re-introduce a new image, often a figure of apprehension.

When I do not have the strength to say “I”, because its evocation is unbearable, because I get dizzy or revolted, then I can tell it with third parties. That is how I connect with the other. It is to look at oneself through the other.

The forms of expression constitute a re-organization, a re-presentation that almost always evokes emotion caused by trauma or its opposite. They change the mood of conscious daydreams, they change dream metaphors. Hindsight, morning duties do the repair work.

The functional group is not only the dream and the experience in it, but also the complementary work that frames the story in a one night lapse—I always start with the place and date in which a wake up—willing to maneuver both emotions and metaphors.

This biological and psychological possibility allows me—conditioned by my relationships and cultures, which offer me places to do something with this wound—to transform this lump in process.

To create a useful work out of misery is the best—and encourages me to do it tomorrow again.

I do not carry out this practice for control but as an observer of the world, keeping distance by prudence.

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Since 2011, these images are confronted with the use of encephalographic technology—along with programs designed to create images of the cerebral activity—in order to explore the link between these two representations.

This collaborative project breaks new ground: a means of perception of the idea from the objective reality.

To register my dreams through electroencephalography was a unanimous decision among my friends and colleagues in neuroscience: Roberto Toro, researcher at the Pasteur Institute in Paris; The Neuro Bureau collective based in Berlin; Daniel Margulies, a researcher at the Max Planck Institute group; Pierre Bellec, a researcher at the University of Montreal, and Dr. Reyes Haro, director of the Sleep Clinic, UNAM, in Mexico. The first test was conducted on May 23, 2011 at the Sleep Clinic of the General Hospital in Mexico City. Since then, we went around the idea of stimulating sleep with audio during the paradoxical phase.

We wondered:

- Can the content of the subject's dream experience be modified?
- Can the dream model be integrated to the model of external reality?

We used audio recordings—texts read by someone else's voice—and recycled texts from my files, dreams registered in previous years, which over time have gained considerable influence on my memory. For the first time, sleeping with the system was to some extent tiresome.

In recent years, I'm awake much of the time during sleep. Quite often, dream and reality are not opposed, but become very similar. I know I have a job to do during dream. Before sleeping, I prepare myself to remember the dreams. What determines the reality of the dream experience is intangible. My method is reduced to pay attention and be focused;

both before sleeping as during the experience, my tools are pencil and paper. My diaries are formed by a series of writings marked by the notion of chronicle, defined by visual and conceptual objects that allude to a boundless experience. An exercise of impossibility.

That same year, 2011, with Roberto Toro, we designed a protocol to compare the encephalography record with the description of my dreams, establishing a bridge through short-term auditory stimulation.

Our apparently simple protocol involved two not so simple things:

1. The idea that the subject—myself—is not completely disconnected from the environment during sleep and that my perception can be integrated into concrete reality, and
2. An application for real-time detection of REM sleep periods, in order to isolate the periods of sleep within the night cycle, so that when the systematic analysis recognizes that the subject entered the paradoxical sleep, it plays sounds to get mix them with the story. Then, to analyze only the phases of paradoxical sleep and not all periods involving sleep architecture. A logic economy of means which, however, meant a greater challenge.

The system we got for the EEG records was a commercial wireless headset, of 14 channels, based on international 10-20 system, referenced below the ear, which includes an interface between the brain and a computer in Mac environment (Objective-C language using XCode).

Emotiv Epoc with its research platform proved to be a closed programming system, which did not allow us to include, as we wished, another electrode for eye movement.

Roberto designed an alternative application to the Emotiv Epoc control panel device that randomly activates audios overnight. This application, InDreams, records the precise time when the word is heard and files it in a list, so to determine whether, among the registered words, these sounds could seep into the story.

The first five testing attempts failed to interfere the narration with audio. The workaround was to take the last few minutes of brain activity registered by the computer system and the device in order to relate it with the last scene of the dream remembered just before waking.

In 2013 we were invited by the Neuro Bureau to the Brainhack Unconference in Paris, where we exposed the problem of REM identification.

Although so far the use of this data is aesthetic, we want to bring out something a little more serious, but due to the independent nature of this initiative, we lack the financial means for another technology.

We proposed that for 80 consecutive days we were going to put my body along with the drawing of a machine and to measure it with electroencephalography, to observe what the dream narrative reveals. Complementing these two lines of description, in search of a denser idea, may advance the understanding of what happens in the brain during the phase of paradoxical sleep while I sleep.

The context prevails before action. The trip began on March 18, 2014, with the commitment that, at some point throughout these 80 days, we would intervene the dream plot. Every night for 80 days, I recorded the brain activity, detailing memories of my dreams in my journal and daytime activity on a journey, stating the precise time that I changed activities during wake in order to complement the double dream record: electroencephalographic monitoring and stories.

By day 23, the pressure of time left its mark on the dream story. Influenced by the external agent, the audio powered by the computer was present, along with a series of dreamlike emotions interconnected with day emotions, including our protocol in the head device that records brain waves. A splendid moment for my brain quadrants.

Once the conditions were harvested, Roberto analyzed them to describe the frequency spectrum of the electrical activity and to detect phase synchronicity between the electrodes records. Thanks to programs that break in successive sections of 1 mm thickness cut laser, he could reconstruct the three-dimensional model of dream analysis, indicating the exact point at which the auditory stimulus was produced, that is, one in which the times of electroencephalography and narrative intersect.

The composition designed to observe dreams and to attempt to stimulate them with audio involved two seemingly divergent spheres, for the register and representation of the dream experience, for 80 consecutive days.

The project left us four registers:

1. The diary: it chronicles the memories of all my dreams. It includes the hours spent sleeping with the Emotiv Epoc device—those paragraphs in italics—; the times in which audio integrated itself into the plot and the experiences it invoked in memory, the fact of sleeping with a protocol and a machine, looking at what happens inside the private space.
2. A schedule: daytime activities described in clear and concise way, of the day's activities. More than 2000 proposals, the potential to establish possible correspondences between the times of EEG register and dreams.
3. The laser-cut reliefs: represent the single image produced by the computer, in which the auditory stimulus joined the dream. This bas-relief was exhibited days later, during the conference Human Brain Mapping in the art exhibition *Sidewise in Time* at the Hamburg Convention Center, curated by Elena Agudio, along with other artists reflecting about brain activity. Three prototypes of matches, the last two ends: part of the register and the last scene of what the memory reported were exhibited at the China National Convention Center, in Beijing, at the conference of the Organization for Human Brain Mapping (HBM), in 2012.
4. The EEG raw data, the diary and the itinerary are freely accessible at the site [dreamsessions.org](http://dreamsessions.org) for neuroscientists, philosophers, artists, designers and anyone working with data processing.

The detection of REM periods in real time and the reproduction of sounds at that precise moment exceeded our possibilities. It is not impossible but it involves having a better quality signal. Our intention is to persevere and to achieve a way to record dreams. With the support of trained researchers, we want to work with the study of REM implications on the consolidation of dream memory.

Personally, this experience opened up a new territory, another possibility to explore dream consciousness and the observation of the world, in terms of expression and understanding of what happens. I am convinced that to understand what happens in the brain while dreaming it is not enough to look at it from only one perspective and that there

is nothing better than what you do for your mind. To understand it more deeply it is necessary to relate it to another meaning, it is necessary to move to other perspectives.

The use of a device and a machine that are modulated between them and that can interact with human nature offers new possibilities. The machine is a new space to measure these effects and art serves to show these changes.

Despite the enthusiasm provoked by that the great amount of data generated by the machine, it does not compare with the sensible wealth that we own. Questions like: What is the reality of dreams made of?, have yet not been resolved.