NATURAL ORDER

Audiovisual Installation

Implementing chaos in our cognitive processes

ERIK HASAN GOMEZ GARZA

Student ID: 0764722

Berklee College of Music - Valencia

Music Production, Technology and Innovation

F. Pierce Warnecke, Academic Supervisor

Pablo Mungía, Program Director

July 2017

Contents

i. Abstract

Creation of an art installation that focuses on chaotic phenomena as a better model to understand reality. The main goal of the installation is for the viewer to assimilate in an artistic way the concepts of reductionism, sensitivity to initial conditions and strange attractors and how these can be associated with our daily cognitive processes. In this way, identifying ourselves as chaotic systems.

1. Introduction

One can argue that humans owe their existence to their ability to recognize patterns and be able to predict dangerous situations or catalyze a desired result. This frame of mind has been applied through the years to the point that a sequential and pattern based process is desired in almost every science area of study due to its predictable characteristic and the ability to get consistent results. After million of years of evolution and positive reinforcement by identifying patterns[1] it is highly counterintuitive to strive for unpredictable and non linear phenomena.

It is a personal hypothesis of the author that the cosmological phenomena we understand has been "distilled" by our minds into non chaotic arrangement due to our tendency to organize information in a linear way. An exploration into chaotic systems can show us that nature does not have this linear behavior and although it is deterministic, it is unpredictable.[2]

In nature, a chaotic system is a system that presents the characteristics that could be undesired in our daily lives, such as[3] :

- i) Extreme sensitivity to initial conditions: Also referred as Butterfly Effects

- ii) Unpredictability: Due to the difficulty to know all the initial conditions

- iii) Sensitivity to feedback: As the system that reacts to external input in unpredictable ways

- iv) Fractals : Repeating and scale free. Failure to describe using the reductionist paradigm

However, the internalization of this characteristics in our cognitive processes can open the door for different ways of thinking. Psychology now accepts a linear fashion of development when Freud introduced psychoanalysis and its linear characteristic to our growth[4]. Whether Freud's theories might be true or not, it is not illogical to think that accepting his theory we limit our ability to process information and truncate our capacity to develop new behaviors because we are focused on past experiences that set our personalities . It can be said that we are limited to a sequential order of thoughts, we generate pieces of information and organize them one after the other in a way that we can better understand them. These pieces of information are supported by language and take form of an individual personality or series of actions that fall into the "expected" spectrum of a general behavior.

it is a personal opinion of the author that understanding the link between chaos and psychology is crucial to understand its great potential to describe the human mind. Anxiety comes from an obsessive behavior of trying to fit in our current paradigm the information that we receive, and by trying to control what is intrinsically out of reach we develop a kind of illusion of control to make sense o the world around us. In this paradigm, unexpected outcomes break the illusory control and provoke anxiety[5]. As humans, we are complex systems stimulated day by day by an outstanding amount of input, so trying to distill our behavior in a sequential way can be a feat that will only spur more mental stress.

The main theme of Natural Order is the proposition that developing an identity and sticking with is very important in today's world because it grants us with a predictable and understandable behavior for us, and the ones around us; thus, sacrificing an array of emotions and ideas that lie outside our fixed personalities. Exploring chaos and then extrapolating to different aspects of our lives will allow us to think in a non linear and non sequential way and make cognitive shifts in an easier and more efficient way.

2. Description

Natural Order focuses on chaos in relation to our cognitive processes. Using experimental animation and symbolism, the themes of failed reductionism, sensitivity to initial conditions and strange attractors are represented in an effort to accept our true nature as chaotic systems.

2.1 Video

The video is an experimental animation composition focused on object's interaction symbolism. The video is projected in 3 different panels making allusion to our current reductive paradigm. The panel setup is exploited by intermittent imagery in each of them and a full continuous projection at the composition's pivotal moments.
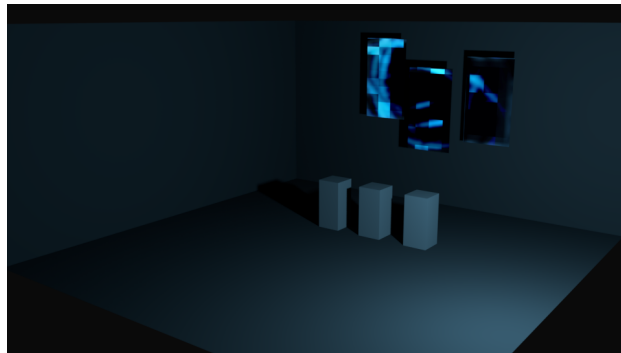
Figure 1. Installation 3d model. Video mapped to 3 screen and 3 stands for smaller screens.

2.2 Audio

Created using software synthesizers, analog synthesizers and composed specifically for the video, the music enhances the rapid changes and contrast of the images. Subtle harmonies, sequences , noise and glitches are used to generate focal changes and keep the viewer at the verge of sensorial saturation.

The main tools for the audio creation are field recordings and analog subtractive synthesis using the Dave Smiths Instrument Prophet 08'. Native Instruments' Kontakt was also used extensively to create sound effects.

Figure 2.Bill Viola, Martyrs (Earth, Air, Fire, Water), 2014. Photograph: Peter Mallet

2.3 Interactivity

3 small screens at the viewer's reach that are touch sensitive. When the user touches the screen in the far left, the screen at the far right plays a video as a representation of chaotic phenomena. Screen number two is inside a box that when is closed flashes red, green and blue colors intermittently, and when the box is opened the screen displays a noise pattern. These screens are controlled with Arduino through a MacBook Pro. A total of two computers and one Arduino is being used for the implementation of this screens.

3. Innovative Aspects

Art installations have been considered to emerge in 1957's with Allan Kuprow's environments.[6] The concept is quite broad in a way that it encompasses many artistic trends, but it can be said that the main characteristic of an installation is its use of the space of exhibition. Natural Order is influenced in the installations of artists such as, Bill

5

Viola, Ryoki Ikeda and movie directors like Darren Aronosfky and Stanley Kubrick. Innovation in Natural Order comes from the mix of these different influences and its intrinsic creative characteristic. Chaos has been an active element in art for years, in the works of artists like Jackson Pollock[7], Francis Bacon[8], Michael Kinder[9] and in the creation of Fractal Art.

Focusing on the the characteristics of chaos theory artists have been able make peace with it and use it to their advantage. Natural Order focuses on chaos as the main study, proposing a new mental paradigm of non linear thinking. Difficult to conceive even for the author, it is of great importance to deliver the message standing at the current paradigm with an effort to change it.

As a personal matter for the author, creating an installation was a novelty for him and during the length of the year he was able to participate in 4 art installations including Natural Order. With a project like this he was able to find the level of depth and focus he was looking in other past artistic endeavors. For him, focusing on this art genre means a deeper knowledge in sound design, science, video creation and philosophical aspects of art and the field of study.

4. New Skills Acquired

The medium of an art installation was chosen precisely for the wide array of skills needed for its fulfillment. The level of depth that can be acquired is the subject of

study is; in most cases, higher than creating content for mass distribution. The tools and skills related used for the completion of Natural Order were:
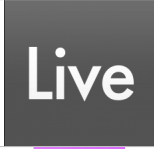
| SKILS(TOOLS)		IMPLEMENTATION
Analog synthesizers		Sound creation
DAW (logic pro x, ableton live and pro tools)		Audio processing, recording and editing. Sample and midi implementation
Premiere Pro		Video editing, creation and processing
After Effects		Video color grading and processing . Video mapping
Vue E-on Software		3d Video creation
Blender		3D sculpting and video creation
Max MSP		Programming for particle system generation and video control and automatization
Unity		Used to create a virtual gallery to show the installations that were created during the year
Arduino		Interactivity and control of the 3 small screens
Sketchup		Creating 3d graphics and sketches that describe the installation dimensions and aesthetics for delivery to the venue.
Photoshop		Image creation for video implementation and the installation promotion.
InDesign		Written reports and proposals

Table 1. Tools and way of implementation

5. Unexpected challenges

Due to the fast development of different skills that could potentially be applied to the installation, one of the biggest challenges was keeping an interest in the subject while keeping a congruent aesthetic. Because this project was elaborated in a period of 8 months approximately the rate of skill evolution surpassed that of creation. This is an excellent thing as an artist, however, it can attempt against the artwork when the artist wants to try different aesthetics in the same piece. This was unexpected and dealt with by generating parallel projects to tame the urge of putting the new skills to the test.

6. Expected challenges

Creating something novel out of an unknown artistic genre was an expected challenge. Challenging the first ideas with Berklee's professor F. Pierce Warnecke helped sculpt an idea that was current but with a strong reference point in art. To have a better understanding of the actual state of the art, several opportunities offered by Berkelee College of Music - Valencia we taken, this opportunities allowed the author to work on more audiovisual installations

6.1 Interference Patterns
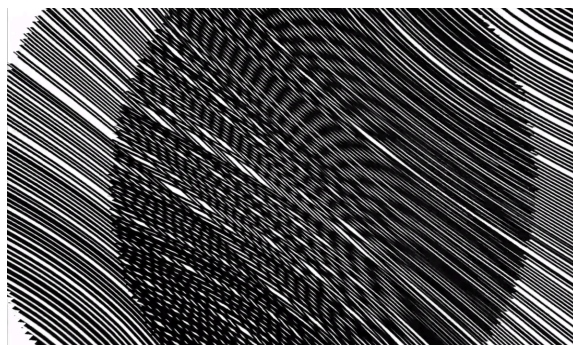
Figure 3. Screenshot of "Mirror", one of the videos shown at the installation

8

This installation was presented in Galleria Gnration in Braga, Portugal. It was a team artwork where Brentons Stokes, Yu Lu, Matt McIntyre and Hasan Gomez created a study on Moire Patterns. Lead by F. Pierce Warnecke, this installation was shown for two months and consisted on an achromatic set of videos accompanied by experimental ambience and glitch music.

6.2 Proem
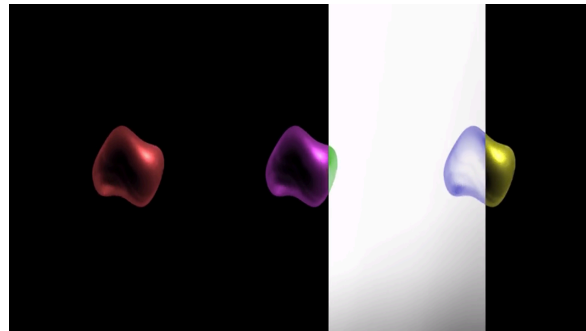
Figure 4. Still of the video section of "Proem"

Elaborated by Hasan Gomez, Proem was featured in En Vivo! Fast Forward and also shown in Galleria Gnration as the winner of a competition held in Berkelee College of Music sponsored by the gallery. This installation is a 3 tier study that proposes scientific research as an introspection tool . It is arranged as a video mapped in a triptych and a photo gallery.

6.3 Perspectivas Sonoras

Sound installation presented at the Science Museum at City of Arts and Sciences. Studies the dissonance between sonic and visual perception created by a visually apparent array of equidimensional metal objects. For the viewer the only thing that can give a real clue about the objects dimension an position is the sound stimulus.

This is a team installation as part of the Art Installation class lead by F. Pierce Warnecke and formed by Guy Schneider, Luis Diaz, Andres Mira, Esteban Gomez, Daniel Kleffmann and Erik Hasan Gomez.

Figure 5. Cover photograph of the proposal for Perspectivas Sonoras and promotional flier.

7. Future Ramifications

The tools acquired (shown in table 1) throughout the development of Natural Order offer an enormous depth and potential for complex video creation. A sense of artistic promotion and professionalism when delivering an artwork have been also added to the amalgam of acquired skills. All of this will catalyze a better understanding

of what is expected of a modern day artist and will also generate opportunities to share Natural Order and different pieces in different venues. Natural Order is a breakthrough on the life of the author's artistic life.

8. Conclusions

Natural Order entertains an interesting idea about our current cognitive process paradigm. For the author a sequential thinking behavior is more present every day and even though it is highly reliable it is not exciting or interesting. Our brain behavior as a chaotic system opens up the possibility for novel behaviors that bring different perspectives understanding any field of study.

In a broader sense, the author has found a niche where he can develop his ideas in a profound level and will continue doing so in this artistic genre. With the completion of Natural Order and the other works previously talked about, his artistic voice is reaching its maturity through the application of the vast array skills acquired during this year.

End Notes

1. Mark P. Mattson, "Superior pattern processing is the essence of the evolved human brain," *Frontiers in Neuroscience* 8 (2014): , doi:10.3389/fnins.2014.00265.

2. StanfordUniversity. YouTube. February 01, 2011. Accessed June 01, 2017. https://www.youtube.com/watch?v=_njf8jwEGRo&t=2966s.

3. "What is Chaos Theory?" Fractal Foundation, , accessed July 09, 2017, http://fractalfoundation.org/resources/what-is-chaos-theory/.

4. S. Ayers, "The Application of Chaos Theory to Psychology," *Theory & Psychology* 7, no. 3 (1997): , doi: 10.1177/0959354397073005.

5.   Bruce F. Chorpita and David H. Barlow, "The development of anxiety: The role of control in the early environment.," *Psychological Bulletin* 124, no. 1 (1998): , doi:10.1037//0033-2909.124.1.3.

6. Tate, "Installation art – Art Term," Tate, , accessed July 09, 2017, http://www.tate.org.uk/art/art-terms/i/installation-art.

7. "Martyrs," Bill Viola, , accessed July 09, 2017, http://billviolaatstpauls.com/martyrs/.

8. Richard P. Taylor, "Order in Pollock's Chaos," Scientific American, , accessed July 09, 2017, https://www.scientificamerican.com/article/order-in-pollocks-chaos/.

9. "Francis Bacon: The Man Behind The World's Most Expensive Work Of Art," Visual News, April 07, 2014, , accessed July 09, 2017, http://www.visualnews.com/2014/04/08/francis-bacon-man-behind-worlds-expensive-work-art/.

Bibliography

Mattson, Mark P. "Superior pattern processing is the essence of the evolved human brain." *Frontiers in*

　　　　Neuroscience 8 (2014). doi:10.3389/fnins.2014.00265.

StanfordUniversity. YouTube. February 01, 2011. Accessed June 01, 2017.

　　　　https://www.youtube.com/watch?v=_njf8jwEGRo&t=2966s　　　　.

"What is Chaos Theory?" Fractal Foundation. Accessed June 01, 2017. http://fractalfoundation.org/

　　　　resources/what-is-chaos-theory/.

Ayers, S. "The Application of Chaos Theory to Psychology." *Theory & Psychology* 7, no. 3 (1997): 373-98.　d o i :

　　　　10.1177/0959354397073005.

Chorpita, Bruce F., and David H. Barlow. "The development of anxiety: The role of control in the early

　　　　environment." *Psychological Bulletin* 124, no. 1 (1998): 3-21.doi:10.1037//0033-2909.124.1.3.

Tate. "Installation art – Art Term." Tate. Accessed June 01, 2017. http://www.tate.org.uk/art/art-terms/i/installation-art.

"Martyrs." Bill Viola. Accessed June 02, 2017. http://billviolaatstpauls.com/martyrs/.

Taylor, Richard P. "Order in Pollock's Chaos." Scientific American. Accessed July 09, 2017.

　　　　https://www.scientificamerican.com/article/order-in-pollocks-chaos/　.

"Francis Bacon: The Man Behind The World's Most Expensive Work Of Art." Visual News. April 07, 2014. Accessed

　　　　June 01, 2017. http://www.visualnews.com/2014/04/08/francis-bacon-man-behind-worlds-expensive-

　　　　work-art/.