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EXPANDED VIDEO

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EXPANDED VIDEO: CREATING AN ALTERNATIVE REALITY
THROUGH MERGING 360-DEGREE VIDEO AND GLITCH ART

A Master's Thesis

by
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Ankara

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The Graduate School of Economics and Social Sciences
of
İhsan Doğramacı Bilkent University

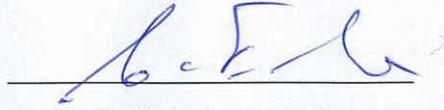
by
MELİH AYDINAT

In Partial Fulfillment of the Requirements for the Degree of
MASTER OF FINE ARTS

THE DEPARTMENT OF
COMMUNICATION AND DESIGN
İHSAN DOĞRAMACI BİLKENT UNIVERSITY
ANKARA

September 2018

I certify that I have read this thesis and in my opinion it is fully adequate, in scope and in quality a thesis for the degree of Master of Fine Arts in Media and Design.



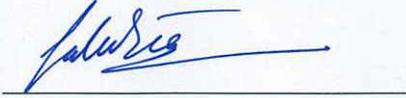
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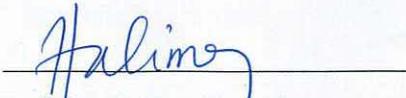
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ABSTRACT

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This thesis investigates the merging of 360-degree video with Glitch Art in a form of ‘Virtual Reality’ experience while creating an alternative reality. The technological development in the field of Virtual Reality made it through daily life. However, this development causes problems such as misidentifying 360-degree video as VR. On the other hand, the rise of Glitch Art aesthetics, what makes it another hot topic of video field. Through merging Glitch Art and 360-degree video, ‘Reciprocal Reality’ project aims to create a VR-like experience while leaving the meaning of it to the spectator, at the same time creating a communication between the artist and the spectator via noise.

Keywords: Communication, Glitch Art, Perception, Virtual Reality, 360-Degree Video

ÖZET

GENİŞLETİLMİŞ VİDEO: 360 DERECE VİDEO İLE GLITCH SANATINI BİRLEŞTİREREK ALTERNATİF BİR GERÇEKLİK YARATMAK

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Tez Danışmanı: Dr. Öğr. Üyesi Andreas Treske

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Bu tez 360-derece video ile Glitch Sanatının “Sanal Gerçeklik” formunda bir araya gelmesini incelerken aynı zamanda bir alternatif gerçeklik yaratmaktadır. Gelişen teknoloji ile birlikte Sanal Gerçeklik giderek gündelik hayatın bir parçası haline gelmeye başlamıştır. Bu hızlı gelişim 360-derece videonun Sanal Gerçeklik olarak algılanmasına yol açmaktadır. Öte yandan video alanının diğer önde gelen konularından biri de oluşturmakta olduğu farklı estetikle “Glitch” sanatıdır. “Reciprocal Reality” projesi video alanının iki önde gelen konusunu bir araya getirerek sanal gerçeklik deneyimini yaratmaktadır. Öte yandan anlamı seyirciye bırakan ve sanatçı ile seyirci arasında gürültü ile iletişim kuran bir eserdir.

Anahtar Kelimeler: Algı, Glitch Sanatı, İletişim, Sanal Gerçeklik, 360-Derece Video

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CHAPTER 1

MOTIVATION & INTRODUCTION

The virtual camera is in our head, and our whole life has taken on a video dimension. We might believe that we exist in the original, but today this original has become an exceptional version for the happy few. Our own reality doesn't exist anymore. (Bodrillard, 1995, 97)

The idea behind this research / project is to create my own reality on a video dimension. As a person who prefers to communicate through images rather than words, I have never cared about being understood. I have always been interested in self-expression and the affect that it created.

To use an object is necessarily to interpret it. To use a product is to betray its concept. To read, to view, to envision a work is to know how to divert it: use is an act of micropirating that constitutes postproduction. We never read a book the way its author would like us to. By using television, books, or records, the user of culture deploys a rhetoric of practices and "ruses" that has to do with enunciation and therefore with language whose figures and codes may be catalogued. (Bourriaud, 2002)

As a videographer who desires to create his own reality, I started to think about the tools I can use. According to Bourriaud; "The artistic question is no longer: 'what can we make that is new?' but 'how can we make do with what we have?'" (Bourriaud, 2002). Which is also the main research question of this thesis project.

Using 360-degree video and the medium of Virtual Reality, are a great way to imitate reality. Another reason behind my desire to work with 360-degree video, was the experiment we did in 2017 with Asst. Prof. Andreas Treske, the coordinator of MFA on Media and Design program at I.D. Bilkent University and Boran Aksoy, who is a fellow graduate student. In this project we collaborated with, the director Daniel Irizarry from Theater Department in I. D. Bilkent University, for the production of a 360-degree video of a theatre play, called “The Madman and the Nun” by Stanisław Ignacy Witkiewicz or Witkacy (1923) (Figure 1). After this production we became more accustomed to the limitations and problems of producing a 360-degree video and VR experiences. While thinking about the limitations, I decided to adapt a critical approach to challenge the medium and learn more about it through experimenting using Glitch Art. As Rosa Menkman writes in her ‘Glitch Manifesto’;

Dispute the operating templates of creative practice. Fight genres, interfaces and expectations! Refuse to stay locked into one medium or between contradictions like real vs. virtual, obsolete vs. up-to-date, open vs. proprietary or digital vs. analog. Surf the vortex of technology, the in-between, the art of artifacts! (2011;11)

The main purpose of using Glitch Art together with 360-degree videos, is to create a questioning in spectators mind through defying the their expectations from a VR artwork / content such as; representation of reality, sense of depth and immersion. In that sense Glitch Art practice is the perfect tool to break these expectations and create a malfunctioning in the flow of information and expectations of the spectator. At the same time leaving the meaning of artwork to the spectators interpretation and communicating through noise.

This paper consists of three chapters except the motivation/introduction and conclusion chapters. In the following chapter, issues and definitions of Virtual Reality, 360-degree Videos and Head mounted displays are addressed, respectively. Following that in Glitch Art chapter, discussions containing definition of Glitch Art, designing glitches and aesthetics of glitches by means of the point of view of glitch theory pioneers like Menkman and Maurizio Lazzarato's interpretations of Bergson's concepts on video are made. Finally, in the next chapter the practical project of the research, which is named as "Reciprocal Reality" is discussed throughly.



Figure 1. 360-degree Production of *The Madman and The Nun*

CHAPTER 2

VR, 360-DEGREE VIDEO & HEAD MOUNTED DISPLAYS

2.1 What is Virtual Reality

“Nature is not only all that is visible to the eye.. it also includes the inner pictures of the soul.” (Edvard Munch)

Virtual reality is not a new medium, however it became popular again with the help of advancement in the technology and the gaming industry. Its also being used widely in various fields like architecture, medicine, and education. The promise of interactivity and immersion is what makes the VR medium popular. Interactivity is accomplished through wearables and controllers or other third party applications. Engaging with a virtual reality experience gives spectators a pleasure through immersion whether its interactive or not. The pleasure is gained through the experience of being taken away to a new, different place regardless the narrative itself. The experience of being taken elsewhere is what we call ‘immersion’.

Immersion as a term is developed from the physical experience of being in water.

We seek the same feeling from a psychologically immersive experience that we do from a plunge in the ocean or swimming pool: the sensation of being surrounded by a completely other reality, as different as water is from air, that takes over all of our attention, our whole perceptual apparatus. We enjoy the movement out of our familiar world, the feeling of alertness that comes from

being in this new place, and the delight that comes from learning to move within it. (Murray, 1997:98)

According to Murray that's immersion in VR. VR directly is an immersive experience. It changes perceptually and takes our attention with HMD and its' accompanying technologies. Despite its' offerings, most of the VR works tries to simulate the real world or create new worlds. The real world according to the imagery of it. The simulation of what humans can perceive with their eyes. As Manovich describes;

It is only this film-based image which digital technology has learned to simulate. And the reason we think that this technology has succeeded in faking reality is that cinema, over the course of the last hundred years, has taught us to accept its particular representational form as reality.(as cited in Dovey, Giddings, Grant, Kelly & Lister, 2009;138)

Real world simulations are still one of the topic of VR contents and immersive environments, this might be accepted as the adaptation and birth period of VR contents. Also, it might be as a process of adaptation for VR consumers to get used to medium of VR. On the other hand, after this adaptation process for users and producers, the content must be challenged. Rather than completely simulating real life, VR content creators challenges the medium and its' facilities with abstraction in contrast to stimulation only.

Canadian contemporary artist Char Davies challenges conventional approaches to virtual reality in her work 'Osmose' (1995) (Figure 2). In 'Osmose' she uses semi-abstract and translucent visuals, in contrast to the hard-edged realism of most 3D-computer graphics, it also consists of semi-transparent textures and flowing particles. Another key aspect of 'Osmose' is, interaction through a breathing interface and a

motion-tracking vest. Spectators can navigate through the space created by Davies through controlling their breath and balance.



Figure 2. *Osmose* by Char Davies

Davies defines her works '*Osmose*' and '*Ephémère*' (1998) as immersive virtual spaces and according to her;

I think of virtual space as a spatio-temporal "arena" wherein mental models or abstract constructs of the world can be given virtual embodiment (visual and aural) in three dimensions and be animated through time. Most significantly, these can then be kinesthetically explored by others through full body immersion and real-time interaction, even while such constructs retain their immateriality. Immersive virtual space is thus a philosophical *and* a participatory medium, a unique convergence in which the immaterial is confused with the bodily-felt, and the imaginary with the strangely real. This paradox is its most singular power. The firsthand experience of being bodily immersed in its all-encompassing spatiality is key: when combined with its

capacity for abstraction, temporality, and interaction, and when approached through an embodying interface, immersive virtual space becomes a very potent medium indeed.

As time progresses, interactive artworks have an increasing showcase both in commercial form and in the art scenes, thus making the amount of Virtual Reality artworks also increase correspondingly. However, there are some problems with this medium. The biggest one is the definition of it.

First and foremost “Almost immediately after the new trend began, people started shopping 360° immersive video as VR. It is not.”(Laurel, 2016) The necessary characteristics of VR, described based on the ground setting experiences of VR research and artistic production in the 1980s and 1990s, presented by Laurel(2016):

1. VR needs to have a complete surround environment.
2. VR should follow the affordances for depth perception and motion parallax.
3. VR needs to use spatialized audio, and not just stereo.
4. VR should follow the affordances for tracking the participant’s direction of motion distinct from the direction of gaze.
5. VR should use the participant’s sensorium as the camera.
6. VR should include natural gesture and movement.
7. VR should consider the affordances for narrative construction.
8. VR should follow the principle of action.

All these principles were already known long before the hype of 360-degree movies and head mounted devices like the Oculus Rift. The early VR developers before 2000 already had a deeper understanding of the conditions of immersive environments. VR headsets blind a user to the outside world to present an immersive “virtual” experience that convinces participants through sensory and technical means that they are in fact somewhere else in another “place” (as cited in Aksoy & Aydinat & Treske, 2017: 8).

Although there are known 360-degree videos still marketed as VR. Laurel’s list of VR experiences also sums up the difference between VR and 360-degree video. But what is 360-degree video and is it possible to create a similar experience like VR via using it?

One of the early and successful examples of VR artwork is *The Legible City*, created by Jeffrey Shaw (Figure 3). *Legible City* creates a virtual space navigable through a physical bike. Although it is based on a real city, it's not an entire simulation of it. It's an imaginary version of the city which is built by using 3-D letters. According to Manovich what makes this example a successful one is that; “Shaw foregrounds, or, more precisely, ‘stages’ ,one of the fundamental problematics, of new media and whole computer age as a whole—the relation between the virtual and the real.”(Manovich,2001;260)



Figure 3. *The Legible City* by Jeffrey Shaw

2.2 360-degree Video

360-Degree Videos are a form of video that enable the spectator to look around in a captured 360-degree field of view. It's also known as "immersive videos" or "spherical videos".

Although it's called "immersive videos" when 360-degree videos are watched through a web browser or platforms like Youtube, Vimeo, and Facebook with computers or phones without a head mounted display (HMD) so called immersion loses it's aspects much more, while experiencing the videos because of the distractions either on the screen or outside of it. HMDs are paramount in creating the depth of image through stereoscopic imaging without any visual distractions from the outside. Thus 360-degree videos desperately need the head mounted displays to be able to grant the immersive experience that they promise. Hence the problem of mistaking 360-degree videos with VR comes from that necessity to use HMDs, because most of the headsets are named as VR headsets. Thus, if you're using a VR headset to watch something, then what you are experiencing has to be virtual reality(!).

A great example for this is NBA(National Basketball Association)'s VR livestreams (Figure 4). Although it's called VR, it's not. There is no interaction. It can't track the viewer's gaze, on the contrary the viewer has to track the ball when jump cuts happen. So called VR stream is just a stereoscopic video stream which requires a VR headset, instead of a television, to be experienced. Although there are some problems

with the definition, it's a great experience for those who can not watch a game from the court-side. That's the biggest aspect of 360-degree video, it gives the viewer a chance to experience things that they may not normally do such as sky diving, watching a philharmonic orchestra in front of a conductor between the strings or watching a basketball match like Spike Lee but from another continent.

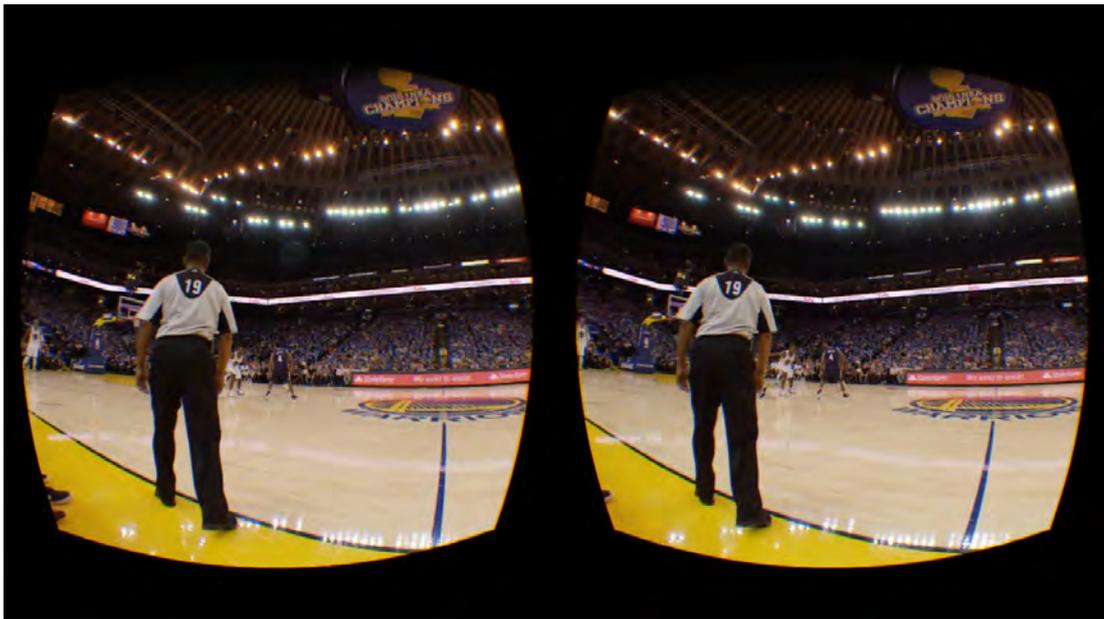


Figure 4. A Screenshot from NBA VR Livestream

2.2.1 Capturing 360-degree video

For capturing a 360-degree video either you need a specific camera or a custom built rig for multiple cameras to capture 360-degree field of view and stitch the footage.

The problem about capturing is the field of view. In the cinema field, the output of production as a movie is a demonstration of what camera sees, which is decided by the director. The out of the frame is not included in the shootings. For example, when shooting a video or a movie there is a crew behind the camera. However capturing in 360-degrees makes it impossible to capture it with a crew who has no role in the

action, as they will be present in the shot. Moreover, the problems of lighting and recording sounds comes into question. The lighting should be hidden in generally. To capture the 360-degree video, lighting should be designed specially which is quite different from cinematic production attitudes. Sound recording is another crucial factor of 360-degree video capturing. The sound has a more important role as the crucial element of narrative. In generally, spatial audio which belongs to 360-degree video field is the leader of user which helps to follow the narrative structure of the content. Because of these, sound recording is one of the hardest element of creating 360-degree videos. To be able to solve this problems and unusual technical facilities of capturing 360-degree video, most of the time you need to put those also in the space of where narrative takes it's place.

2.2.2 Directing and Cinematography in 360-degree Video

Directing actors in 360-degrees environment is not that different from a cinema production, however directing the audiences' attention is a whole other problem. Since there is no framing or reverse shot there is no cinematography in the real sense. The most important thing to create a successful 360-degree content is to be able to manipulate the spectators attention to the preferred points of interest. The only interactivity allowed in this form is to be able to look around and even that has to be limited in order to accomplish a successful storytelling. The audiences' attention can be manipulated through spatial sound design or with the help of a camera movement. When it comes to the camera movement it has to be smooth and well planned to prevent motion sickness. Although the aim is not different from a movie or video, the challenge is greater when the spectator has the freedom to look around the image.

While working with a 360-degree video, one of the most common problems in directing and shooting is the movement; either the camera movement or to be able to move in the space. The spectator wants to move through the space when they put the HMDs on, however it's impossible to do it because the camera only captures the image and not the space.

There is no way to move through the image and interact with objects or subjects.

Unless it uses Computer-Generated Imagery (CGI) and if it is, then it becomes a VR not a 360-degree video.

2.3 Head Mounted Displays(HMDs)

Head mounted displays are the apparatuses which are used to show or execute the 360-degree video and VR contents. Especially, the spread of HMDs is directly related with the rise of Virtual Reality contents and gaming industry. With the help of technological improvements and manufacturers like 'Oculus VR' and 'HTC'. (Figure 5). However, first head mounted display was invented by Ivan Sutherland who describes the fundamental idea behind it as, "presenting the user with a perspective image which changes as he moves." (Sutherland, 1968; 757) HMDs are an essential part of virtual reality experience because it is the headset that makes the illusion of space perceivable for users.

Although the heavy HMD actually only supplies the visual field with images, it creates the suggestive impression of full-body immersion in the virtual environment. The feeling of being in the images, produced by the spatially enveloping visual impression, is thus amplified.(Grau, 2003;198)



Figure 5. An Example of HMD

The spread of VR contents both as a commercial purpose and artworks, in addition to that the birth of related technologies leads to forming research about usage of HMDs. The research tries to understand how much the magical immersive medium and its contents can be included in people's daily lives. In a research on audiences, which was conducted by BBC to investigate the VR usage in homes across the United Kingdom, the problems of HMDs were unfolded through the experiences of users. According to the results of the research, to be able to implement the usage of VR in our daily lives there are issues that are needed to be solved. These issues are;

Safety and security – some audiences were concerned about being shut-off from what's happening around them.

Social norming – some were anxious about feeling stupid in front of friends, or self-conscious about their appearance, hair and make-up.

Physical space – often audiences weren't in the right physical situation – sitting down on a sofa after a long day or lying in bed is not conducive to an experience which necessitates turning around and looking behind you.

Proximity of headset – the headset needs to be conveniently available. Many of us will have hundreds of potentially entertaining distractions in our homes; however, it will tend to be the ones which are the most visible / proximate / easy to engage with which we use. If a headset has been put away on a shelf, in a cupboard, or under a bed, it will not be front of mind.

Social interaction – for some audiences the insular / individual nature of the experience was off-putting as they preferred connecting with others either digitally or in physical space. (Fiennes, 2017)

In the case of the VR artworks or marketed contents as VR, these problems may differ because of the circumstances. For example, proximity of headsets are not an issue in the case of VR installations. However, “few can travel to expensive installations and exclusive institutions...Outside of commercial arcades and theme parks, university or corporate research departments, immersive VR is hardly accessible to most of us.” (Dovey, Giddings, Grant, Kelly & Lister, 2009; 109). The other issues identified as ‘safety and security’ or ‘social norming’ are tried to be solved through the properties of installations. To be able to do that VR artworks pursue two routes. Either they use the HMDs or not, according to the type of the work. The ones which don’t use HMDs create Virtual environments in a space with the help of the projectors to solve the issue of security. On the other hand, the ones that use HMDs either isolate the spectator or put the spectator to the actual space where the spectator’s physical body exists. To be able to do this, artists use sensors and/or cameras to track the spectator with the help of a computer which at the same time renders the virtual space.

Which brings us to another limitation of HMDs that was not mentioned in the research because of the difference between the headsets used in the research and VR artworks using headsets. While VR artworks mostly use high-end technological headsets like ‘Oculus Rift’ or ‘HTC vive’, this research uses another form of headsets which is called either ‘cardboard’ or ‘VR box’. Those headsets contain two lenses to create the stereoscopic image and a mount to put a phone in as the display. On the

other hand, the problem with the high-end products is the necessity of a computer. Although manufacturers announced that they are working on stand-alone head mounted displays, they are not out there yet. In most of the VR experiences, spectators wear a backpack in addition to the large headsets, which reduces the availability of the artwork and the quality of the immersive VR experience, as it gives the spectator an anchor to the real world.

CHAPTER 3

GLITCH ART

3.1 Glitch Art Discussion

“Mistakes are the portals of discovery” (James Joyce)

Glitch by the definition of the word is a sudden, usually temporary malfunction or fault of equipment. It represents the errors in the age of information. If we talk about fault of equipment and temporary malfunctions, video is a great example for that.

Especially, the early video tapes. In video tapes a glitch can occur more easily even a little dust particle can create a sudden noise, black screen or shift in color (Figure 6).

These unwanted errors and malfunctions became wanted with the art practice.

‘Glitch Art’ is the practice of errors either digital or analog through corrupting digital data or manipulating electronic devices.



Figure 6. An Example of VHS Glitch

An early example of glitch art is 'Magnet TV' (1965) created by Nam June Paik. In his installation Paik places a magnet on top of an old TV in order to bend the data which creates an abstract imagery waves of noises (Figure 7).



Figure 7. *The Magnet TV* by Nam June Paik

However the word definition is not working correctly to define 'glitch art' works.

Hence there is a lot of discussion going on around what glitch art is and isn't. Since it involves failure and error, throughout the process of glitch art, the undesirable becomes desirable. In addition to that, the classification of artworks is almost impossible, it's mostly done by the technique or the process involved. One of the biggest distinctions is made by Iman Moradi. While defining glitches in his dissertation Iman Moradi (2004) separates glitch artworks into two categories such as; glitches as 'Pure Glitches', which also called 'Wild Glitches', and 'Glitch-alikes', also defined as 'Designed Glitches'. In her book 'The Glitch Moment(um)', Rosa Menkman describes "the 'glitch' as a (actual and/or simulated) break from an expected or conventional flow of information or meaning within (digital) communication systems that results in a perceived accident or error." (Menkman, 2011)

If information and digital communication systems are involved in the question of what glitch is, that brings 'The Mathematical Theory of Communication Model'(1948) of Shannon and Weaver into consideration while defining 'glitch' (Figure 8). According to the model of Shannon and Weaver, message goes out from the source of information through a transmitter which encodes the message to a signal to transfer it through a channel. While signal goes through the channel to reach the receiver, it encounters with the noise at the same time because there isn't any channel without a noise, that's the point where 'signal to noise ratio' becomes significant. As a result of that, decoder/ receiver gets a signal with noise. At this point it's all up to the capability of the decoder to transmit the message to it's

destination as it's supposed to be. Finally the 'feedback'. If the signal to noise ratio is decoded correctly then the feedback probably will be an expected one. However, if the noise is greater than the signal, it will surpass the signal and the feedback will most probably be an unexpected one. Therefore, the flow of communication/information is interrupted. The feedback given is an interpreted one, thus the meaning of noise depends on the decoder.

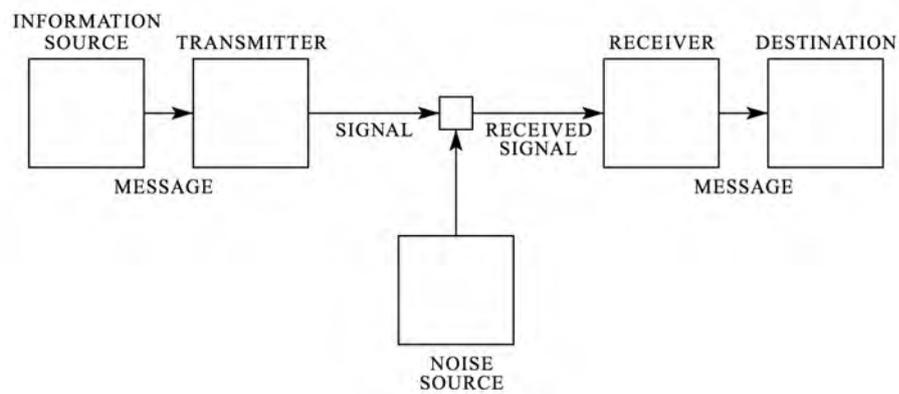


Figure 8. Shannon's Communication Model

Decoding process is crucial when it comes to defining the artwork or its' message. Since the word 'glitch' is a technical term, when it comes to defining glitch artworks most of the artist and audience/spectator focuses on technical problems or aesthetics of it, however there is also the semantic problem of the communication between the artist and the spectator. Wild or designed glitch, it does not matter how. As Curt Loninger states in *GLITCH/READER* (2011);

I have mostly been examining the phenomenon of "wild glitches," but my observations are equally applicable to "domesticated glitches," because both glitches ultimately and finally "run" not on computers, but on human

wetware in real-time. Both glitches are experienced by humans as a spike or a surplus of affect. (Meaney, et al, 2011)

Moreover, this is not just for glitches, it is applicable for every artwork. Since every artwork sends a signal, either decodable or not, it's up to the receiver / spectator to interpret. This decoding process needs the active engagement of the spectator. "In the end, the glitch is a subjective phenomenon. There is no unequivocal cultural definition of glitch, as there is none for noise, because in the end, what glitch is and what glitch is not is a subjective matter." (Menkman, 2011;63)

In addition to that, another discussion going on about glitch art, in which the spectator plays a crucial role in, is that either the glitch art has 'critical materiality' or not. While for Menkman, critical materiality is the essential part of glitch art genre, Michael Betancourt argues that; "The critical rupture described by theories of 'glitch art' claim that the 'glitch' reveals both the material foundations and processes of digital media, yet these dimensions *only* appear when an audience member chooses to interpret the glitched work critically—i.e. *actively* engages it." (Betancourt, 2013)" Furthermore he states that the critical meaning of a glitch work depends on similar works. Which brings us to Theodor Adorno's book of '*Aesthetic Theory*' where he states that "every artwork is inherently critical because art violates the functional demands of bourgeois society"(Adorno, 1970). Another important thing to consider is that an artwork is as inherently critical as the context in which it belongs to, in addition to similar works. Like in the example of Marcel Duchamp's 'Fountain' (1917). What makes this argument paradigmatic is glitch art's need for another form or medium to work on. In other words, noise needs a signal to interrupt the flow of

information and while this duality of signal and noise creates an indeterminacy, perception of this flow of information is what makes the work critical if the spectator actively engages with it.

Henri Bergson defines perception as a relation between flows of images. As Maurizio Lazzarato states that this relation between flows introduces a time of indeterminacy. He argues that “video and information technologies function according to the same principle: they cut into the streaming of flows, producing an interval that allows for the specifically machinic organization of the relation between signifying and asignifying flows.”(Lazzarato, 2007;93) This idea is also applicable for glitch art. This application creates new layers which are born from a desired error and allows the spectator to think on those layers as a part of streaming flows and in addition to that the spectator creates their own layers of meanings outside of the flow according to their perception.

3.2 Designing Glitches

“Designing Glitch” is a great tool to create indeterminacy in communication. It deliberately allows to change the signal/noise ratio by creating noise from the signal itself. By designing glitches, artists can also design the amount of information perceived by the spectator. If the artist chooses to totally alter the signal, then he/she can create the indeterminacy. At that point perception becomes crucial. “When we perceive, we contract our past to bring it into contact with our perception; when we remember, we dilate it in order to place ourselves at its different levels.” (Lazzarato, 2007;104) Thus active engagement of the spectator is inevitable to identify the

signal via perception and memory. What creates this indeterminacy in communication is Bergson's theory of temporality; "at each instant time slips itself into a pure present and a pure past. "(Lazzarato,2007;105) If we identify past as a signal and present as a noise then signal becomes the actual and noise becomes the virtual in the Bergsonian sense. According to Lazzarato, "In reality, perception is always already memory. We only perceive the past, says Bergson." (Lazzarato, 2007;101). However if the ratio of noise is greater than the signal, the result will be the virtual becoming the actual. And according to Deleuze;

Subjectivity is never our own, it is time [. . .] The actual is always objective, but the virtual is the subjective: at first it was the affect, that which we experience in time; then time itself, pure virtuality that splits into affecting and affected, 'affection of the self by the self' as the definition of time (as cited in Lazzarato,2007)

So, if noise becomes signal, in other words virtual becomes actual, the perception/ decoding of the message shifts to subjective. Thus that's why glitch art is a matter of subjectivity. As a result of that, the communication between the artist and the spectator diverges from one individual to another. If the decoder can separate the noise/virtual from the signal/actual then glitch can be identified as it is. As an example to clear this up, lets say that there is someone who talks too fast and there are people who are listening to her/him. In this case, it's almost impossible to understand what (s)he is saying. Thus they try to come up with a meaning from what they understand. At that point the result of decoding process has an infinite number of possibilities.

3.3 Glitch Aesthetics & Abstraction

“It's not what you look at that matters, it's what you see.” (Henry David Thoreau)

What glitch process creates or does is abstraction at the core of its aesthetics. This abstraction process is a different one from the abstraction in the sense of traditional painting. In traditional painting, creation of abstract compositions are accomplished by the visual language of form, color, line and shape. However, in the case of abstraction through glitch art techniques, we can't talk about a visual language because it uses the language of the machine, which is either the data or the signal. The visual language of abstract imagery which we can read, is formed by the reaction of pixels to the manipulation of signal/data. As in, 'The Language of New Media', Lev Manovich states that;

In retrospect, the shift from a material object to a signal accomplished by electronic technologies represents a conceptual step towards computer media. In contrast to a permanent imprint in some material, signal can be modified in real time by passing it through a filter or filters. Moreover, in contrast to a manual modification of a material object, an electronic filter can modify the signal all at once. Finally, and most important, all machines for electronic media synthesis, recording, transmission and reception include controls for signal modification. As a result, an electronic signal does not have a singular identity — a particular state qualitatively different from all other possible states. (Manovich, 2001;132)

Although glitch aesthetics is mostly defined as aesthetics of failure, it's much more complex than that. The term failure only works and is identifiable in terms of communication between a human and a machine. However, in the case of communication between artist and the spectator;

media technologies based on electronics (such as the telegraph, telephone, radio, television), and digital computers employ the coding of

messages or “content.” And this, in turn, makes possible the idea of information—a disembodied, abstract and universal dimension of any message separate from its content. (Manovich, 2013;133)

Glitch aesthetics also represents aesthetics of complexity, in addition to aesthetics of failure. Glitch aesthetics represents the complexity of the real world, the random encounters or experiences we live throughout our lives. Thus glitch ‘abstraction instead recognizes the essential complexity of the world.’(Manovich, 2007;10)

CHAPTER 4

THE PROJECT: RECIPROCAL REALITY

4.1 “Reciprocal Reality”

“But my dear man, reality is only a Rorschach ink-blot, you know.” (Alan Watts)

“Reciprocal Reality” is a video installation which aims to create an alternative reality experience similar to a VR experience, using 360-degree video and glitch art with a critical approach (Figure 9). Reciprocal by word definition is ‘given, felt, or done in return’. Which represents the concept of communication between the artist and the spectator. In sense of the hidden message given by the artist and given or felt in return by the spectator. Thus the aspect of reality and meaning of it changes according to what is felt by the spectator, in other words the reality changes according to their perception. In addition to that, another reason behind the name reciprocal also comes from the “Reciprocal System of Physical Theory” which has been found by Dewey Larson. According to the “Theory of Reciprocal System”, the physical universe is consisted of one component, and that component is motion. The idea of this theory of Reciprocal System represents the alternate reality aspect of this project, in which movement is the essential part of the composition.

Movement in this alternate reality is constant and achieved by abstraction with the help of glitch art methods, over a 360-degree video footage, which includes live action footage captured by a camera movement. (which is explained furthermore under the 4.4 Process subchapter) Through this abstraction process, since the sense of depth is created via stereoscopic image and faux space is destructed, spectator's desire to move in the image is deprived from her/him, whereas the spectator moves inside and also with the image.

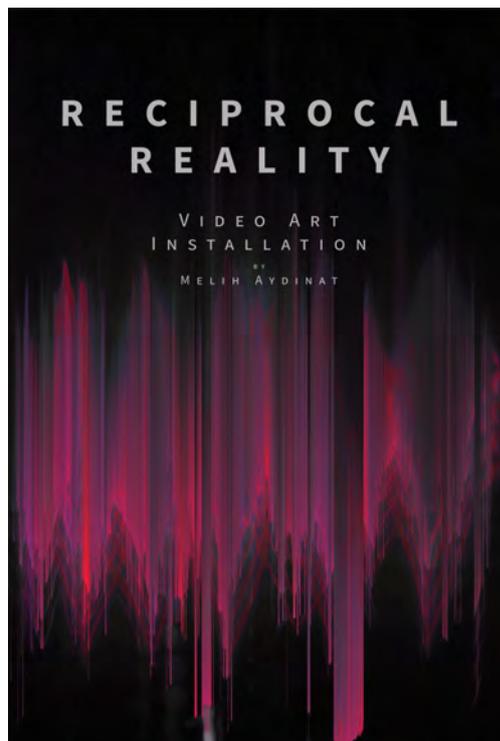


Figure 9. *Reciprocal Reality* Poster Design by Melih Aydınat

The word definition of reciprocal represents the communication between the artist and the spectator. Playing with the signal to noise ratio and sending noise as the signal is what makes this artwork indeterminate and critical reciprocally (Figure 10).

What I mean by this is, if we revisit the previous chapter, where the Bergsonian concept of perception is already memory and depends on the past. It also becomes subjective according to the spectators past. The definition of the work as a VR becomes dependent to the spectators knowledge and awareness of the medium itself. If the spectator is aware of the fact that the work is not a VR artwork, than the critical approach can be identified by the spectator. However, if the spectator has no idea about VR, 360-degree videos, HMDs or Glitch Art then the definition of the alternative reality would solely belong to her/his past experiences and ‘memory’. Through this mental engagement with the work, to identify it, the passive audience becomes active.

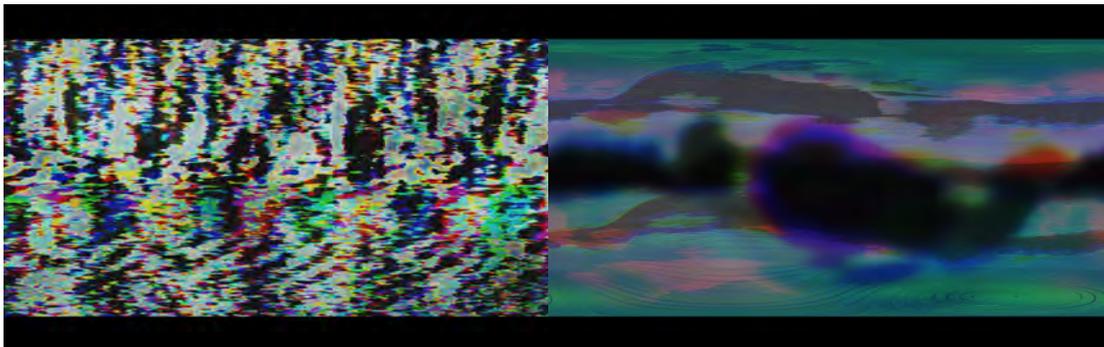


Figure 10. The Visual Examples of *Reciprocal Reality*

Another crucial point to keep this definition process reciprocal, is the use of sound. Any sound which is identifiable and realistic will trick the spectator to think that the hidden layer contains the source of that sound. To avoid this misidentification and sooth the disturbing effect of constantly moving, depthless abstract imagery, the soundscape is built from a combination of ambient sounds and binaural beats/theta waves. Use of theta waves has two reasons; firstly because of its soothing effects and

to speculate reality on another level. Secondly, theta waves refers to sounds that has frequency range of between 4-7 Hz which occurs in human brain during meditative, hypnotic or sleep states.

The video installation set up in the gallery space on a pedestal, with one VR headset made out of plastic, with an iPhone in it (Figures 11,12,13). Using as little visual clues as possible around the installation, in order to not create an expectation and intervene the audiences 'perception', because of "every 'memory' is also an anticipation of the future, an action. If, on one hand, memory is able to conserve, to accumulate, on the other it works as a force capable of affecting, of producing images and of acting." (Lazaratto, 2007;96)



Figure 11. *Reciprocal Reality* in MFA Exhibition



Figure 12. *Reciprocal Reality* in MFA Exhibition



Figure 13. *Reciprocal Reality* in MFA Exhibition

4.2 The Reason Behind Choosing the “360-Degree Video”

It all started after the production of ‘The Madman and The Nun’. We experimented with a 360-degree camera and saw what we could and could not do. The biggest downside of this experience of being in a theater play, was not being able to move through the play. Although that was impossible, most of the spectators who experienced the play in 360-degree with the head mounted display tried to move through the image at the exact moment they put the headset on. Because the image they saw was a stereoscopic one and they were inside it. So the initial reaction was to wander around the image. For a huge amount of the spectators, this was their first encounter with the medium and it was also the first content that I have created in 360-degrees. Although the challenge was great, I wanted to pursue this path a little more and create a better experience. Hence I decided to work on VR and 360-degree video for my M.F.A thesis project. Just after that decision all the questions started to come one by one.

As a filmmaker, I wanted to create a VR film. However, every single story idea I had did not necessarily need to be on VR or 360-degree. Every time I asked myself if this makes any difference, my answer was “no”. In addition to that, the tools I had and the necessary know-how to create a virtual space with a software through computer generated imagery was not enough. Although these were not the end of the world type of problems and could be solved or done somehow, the questions I had were never ending. The possible solutions that I came up with were either using computer generated imagery instead of a 360-degree video, which I strictly rejected

because I wanted to capture the moments as they are, or getting rid of the head mounted display and creating a 'virtual environment' as an installation. However those are not exactly the solutions to these problems, but more like an escape from them. I realized that I needed to do more experiments with it. I needed to try more and fail more to be able to understand the characteristics of the medium and the essential principals of it. Hence the movement in 360-degree video became my core problem.

4.3 The Reason Behind Choosing The Concept of “Glitch”

“I found I could say things with color and shapes that I couldn't say any other way-- things I had no words for.” (Georgia O’Keeffe)

All through my life, I could only see the problems or errors within a given situation or a system in an obsessive way. As a result of this, either a lot of questions or hesitation were created. If it creates questions then to be able to solve these questions, the need to understand them emerges and my personal method of understanding and learning starts with deconstructing and/or destruction. In other words heuristic approach of trial and error. Errors and mistakes are great tools to learn from. If those are the only things that you can perceive, this creates an endless cycle of hesitation, especially when creating something. Although the errors we make are mighty tools if wielded, they can also get in the way of self-confidence.

I met Glitch Art in 2016 through a friend who suggested me an app called ‘Glitché’. While I was experimenting and playing around with it, I realized that I could use this method of destruction to create aesthetically pleasing compositions from the failed

photos that I took. Which seemed like the perfect recovery from the self-doubt that these failed experiments caused. Re-cycling mistakes through destruction was my approach to glitch art making and that is the thing that fascinates me and makes me want to pursue it more. To put it in a different way, I started to hide the failed message via surpassing the signal with the noise. During this time I learned different methods and continued to experiment. The more I experimented, the more I started to foresee the results. Even though randomness is an essential part of the glitch process, most of the results can still be foreseen because of the process itself. “The glitch artist and the ‘wild glitch’ collector are their own curators at every turn -- deciding which outcomes to keep and which to ignore.” (Cloninger, 2011:39) This curation and endless exploration process is what makes the artist familiar to the process and gives more control over the medium. (Figures 14,15,16,17)



Figure 14. A Failed Photo

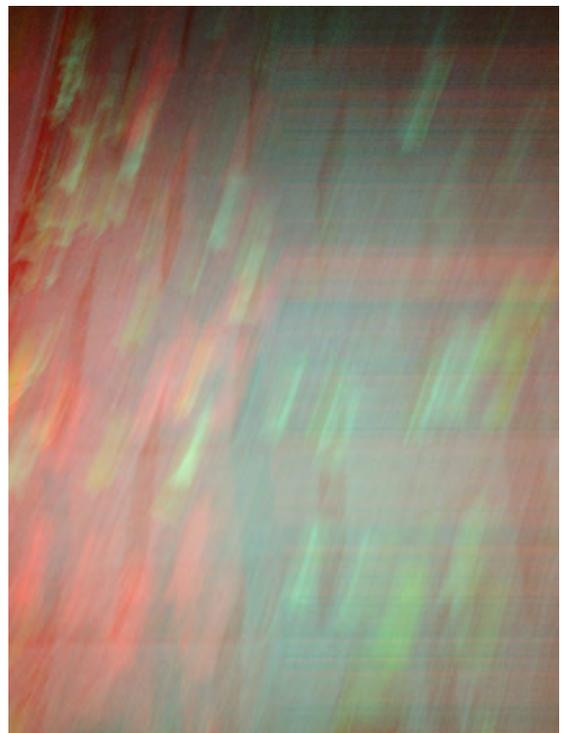


Figure 15. First Manipulation

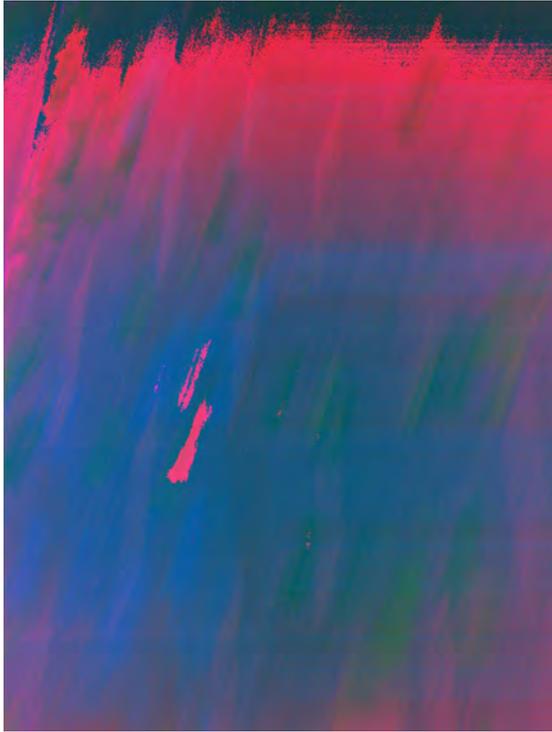


Figure 16. Second Manipulation

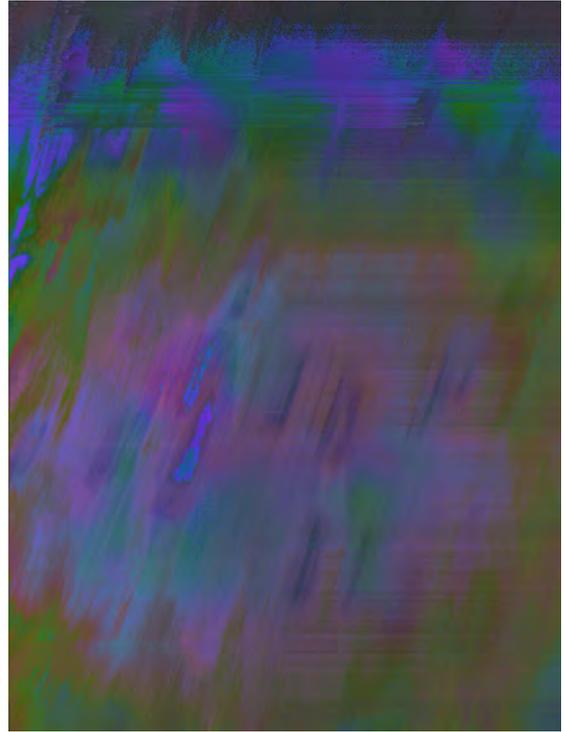


Figure 17. Final Manipulation

While re-cycling old images and experimenting with glitch aesthetics, the process becomes more complex, therefore the images become even more abstract. Noise itself turns into the signal and the feedback I get becomes diversified. What's surprising to me was the range of this diversity. Even though sometimes there isn't any message, the noise itself is enough to communicate with the spectator and get feedback. The feedback I get, changes with every individual. And what creates this diversity of feedbacks is the decoding process of every individual. In other words the effect which is created on the spectator. The feedbacks I get and the interpretations of the works, gives a lot of information about the individual that experiences the work. Because the signal that is sent is just a designed noise, the decoding process and the meaning of it lies solely and exclusively in the spectator. After that, the next step for

me is to design noises to make them more specific through a context or with the help of small clues like sound.

4.4 The Process

In Glitch Art, the process plays an important role because of its randomness and lack of control. Designing glitches and deciding which results to use to create the desired effect needs a lot of experimentation. I tried different methods before I found the result that I wanted to inflict upon my spectators. Most of the glitch methods involve file conversions/compressions and treating a format like another. For example 'hex editing' was my first experimenting with the footage that I have captured in 360-degree. Hex editing is opening an image or video file with a computer software called hex editor, that allows for manipulation of the fundamental binary data that constitutes a computer file. By opening a video or an image file with hex editor, you're opening it as data which is a readable form for a computer. With this method you can distort a file in multiple ways such as, copy/pasting, deleting some part of the code that makes up the file, replacing binaries or adding some random data in it (Figure 18,19). While experimenting with hex editing, I couldn't get the result that I wanted because either I was corrupting the file to the point that it was imperceivable even for the computer or the effect of manipulations were not enough to hide the signal via noise and the form and content of the video remained perceivable for a human consciousness.

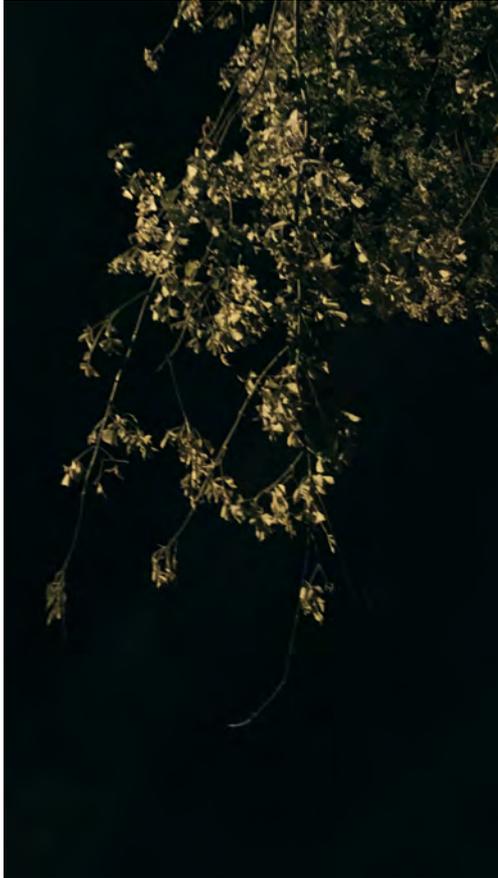


Figure 18. Original Image Captured

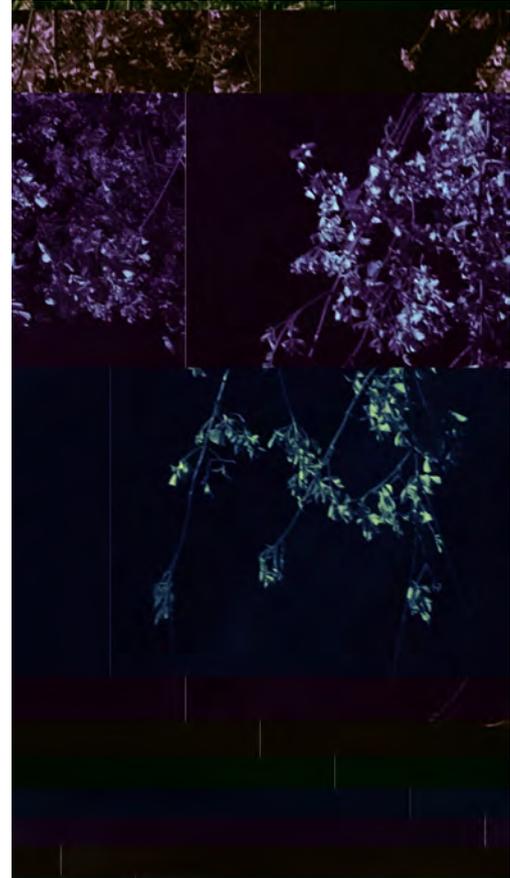


Figure 19. Hex Edited Image

Another method used in glitch art to distort a visual file is ‘data bending’. Data bending is a way of manipulating a media file format. For example, manipulating image or video formats like jpeg, avi or mov in a computer software designed for another type of media format like the sound editing software ‘Audacity’. ‘Audacity’ is one of the most common tool for data bending an image or video because it’s an open source software and also allows the user to import visual formats as data files. Data bending a video and an image works differently in ‘Audacity’. Video files are more fragile and you need to keep yourself away from editing the starting and ending points of the files. You can edit like a sound file using filters and effects or just copy-pasting some parts or cutting away, each action gives different results. Data bending

the video files also gave me similar results as the hex editing did. To be able to create moving abstract compositions just from camera movement or the movement of objects/subjects in the frame, it required a similar approach to a flip-book or stop motion.

The process of editing and creating visuals of 'Reciprocal Reality' consists of different steps (Figure 20). The first step is exporting the video file as image files frame by frame, using a video editing software. After that, those image files need another conversion to data files in order to import them to 'Audacity'. To be able to do that there is another open source image editing software called 'GIMP' which is a free alternative of Adobe's image editing software "Photoshop". However, the biggest reason using 'GIMP' rather than 'Photoshop' is, "GIMP's" flexibility while opening a file format. 'Photoshop' is more picky on the formats and after a process of manipulation of file through 'Audacity' 'Photoshop' can not open the file directly without any other conversions. On the other hand, GIMP offers a lot of settings, while both importing and exporting a file which creates more choices and different results to glitch process. After converting every frame into data format, the next step is importing them into 'Audacity' and experimenting with editing the image like sound files (Figure 21).

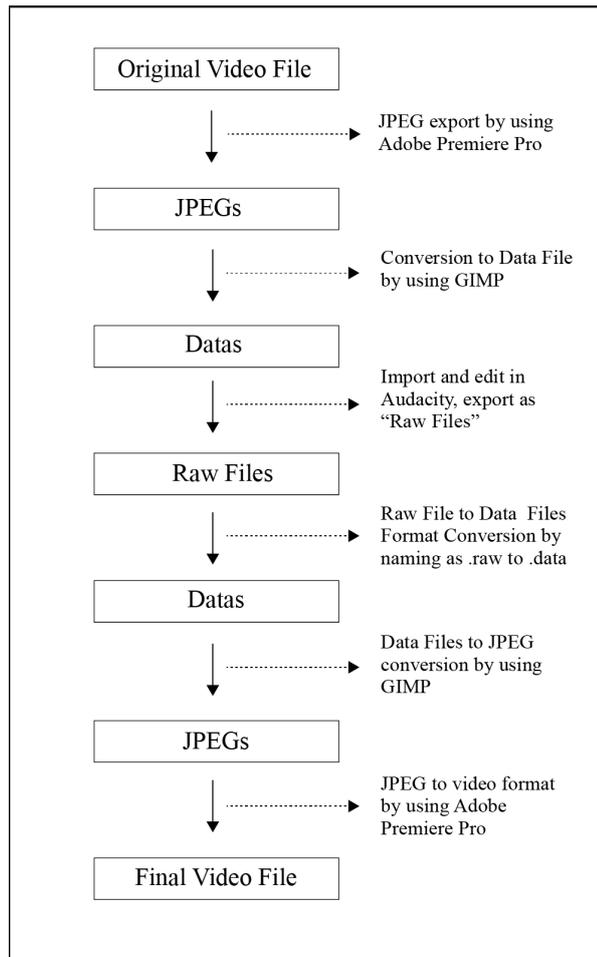


Figure 20. Flowchart of the Process

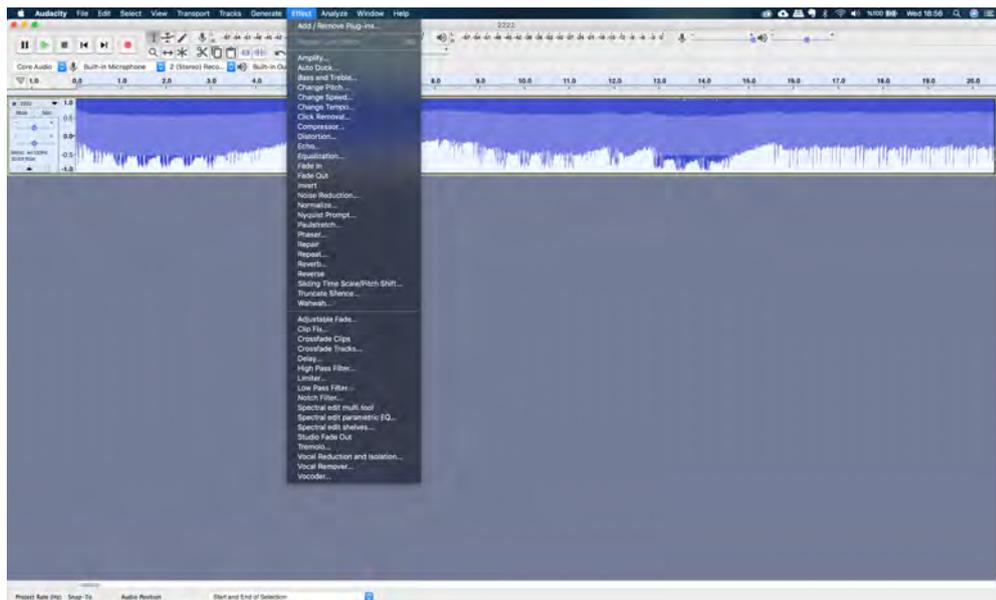


Figure 21. Audacity Databending Process

Since every choice you make at any point of this process gives different results, in order to take control of the process and achieve the same result for each frame and create a moving composition by just the movement data in the image, you need to be aware of every parameter you change and it is crucial to record that process step by step in the same order. After countless experiments and different manipulation process recipes, I decided on the two results that I wanted as the final product. Finally, applying the same manipulation process to each frame it comes back to conversion of '.raw' files exported from 'Audacity' back to '.data' files and afterwards converting those data files back to '.jpeg' files via 'GIMP' and the final step is merging '.jpeg' files back into the video format (Figure 22).

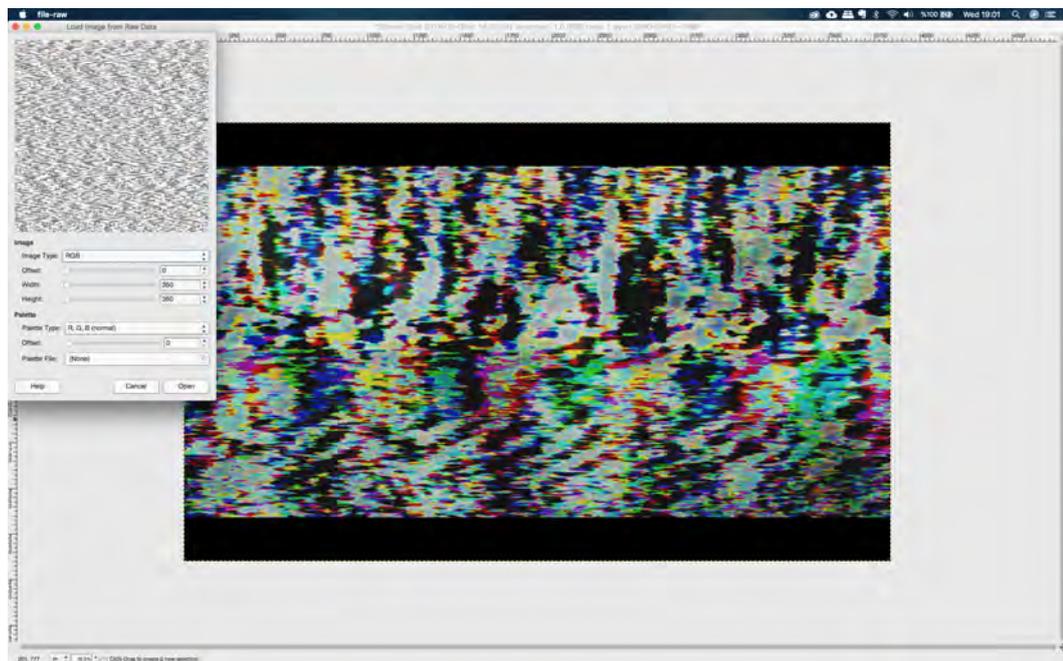


Figure 22. File Conversion Process on *GIMP*

4.5 The Feedback

Over the course of the MFA exhibition, the feedbacks I got from the spectators were diversified as it was initially intended. As stated by John R. Pierce in “An Introduction to Information Theory”; “information increases with increasing complexity” (Pierce, 1997;248). In case of “Reciprocal Reality” project, the increase in the information is not just through the abstraction and complexity of the given audio-visual space but also through the number of individuals experiencing the work. Every individual has their own perception and memory which contains the complexity of their being. Each and every individual spectator that I’ve talked after the experience came with the questions or interpretations revealing informations about their backgrounds or knowledges.

The discussions with the spectators who had enough know-how about either VR, 360-degree video or glitch art, revolved mostly around why and how questions. Especially with people who are interested in glitch art, the discussions we had were longer than the others because of the discussion of glitch process and approaches to glitch art. For example while talking with one of our departments instructor after the experience I’ve learnt that he is also creating videos with glitch techniques such as data moshing which is the practice of using compression artifacts in digital video. At that point the whole conversation was about process and our individual approaches.

The ones who had no idea about glitch art or VR or 360-degree video were mostly amazed by the aura of it and were trying to identify it through a resemblance like abstract paintings or looking through a kaleidoscope. One of the most interesting

question that I got was ‘Which psychedelics that I used?’ However, the most shocking one for me and also unexpectedly the most common one, was that remarkable amount of the spectators thought it was interactive. They thought that the visuals were changing according to where they were looking, even though that was never the case and it was never implied. In that sense there was an illusion of interactivity for some of the spectators which can be only accomplished by immersion. And finally a direct feedback from Boran Aksoy (personal communication, June 27, 2018):

It made me dizzy. May be the problem is about my perspective. All my encounters with the medium of VR, results as dizzying experiences. The above and below part makes me feel like going in deep when I looked at. Seems like the image tries to pull me in. Maybe it is like traveling without moving. The sound and the image tries to call me to go somewhere. I feel like I will reach somewhere to meet with something, someone. May be after finishing watching, I would be in a place that I want to be. It is like a bus of astral travel. It is not too much meditative, but it feels like a temporal-spatial traveling machine which makes the trip comfortable even if its head spinning.

Aside from direct feedback from the spectators I also had the chance to observe them during the experience. As in the researches about head mounted display you can easily see that the spectators definitely felt insecure about putting headsets on. As you can see in the previous figures of exhibition most of the spectators holding the HMDs either because of the weight and size of it or the need to hold on something. Most of the people didn’t try to walk or move, some of them didn’t even look around and a vast majority of people did not even turn their backs. On the other hand, the subjects that moved their heads and turned around did this either too much or too fast and became disoriented and lost their balance.

Another quality that changed for each spectator was the duration of watching because the video was always in a loop without any significant clue of beginning and/or end. The duration of the experience changed for each individual. According to how much they immersed or how much they felt insecure while they were experiencing it. Although the duration of the video was two minutes and nineteen seconds most of the spectators experienced it around four or five minutes. On the other hand the ones that didn't like or interested are mostly putting HMDs back on the pedestal after few seconds. The ones give up earlier also the ones who refuse to put the headphones on. Which results as omitting a crucial part of immersion, the soundscape of the project. Without headphones and sound it is almost impossible to create an immersive experience because the sounds and noises from the actual world creates an anchor for them and keeping them away from immersion to the Virtual environment.

CHAPTER 5

CONCLUSION

After my introduction to glitch art in 2017, it seemed like the closest medium for me as a media artist and student. Glitch art was the perfect blend of expression and secrecy, the latter being the decisive factor for me. The chance to communicate with people, who I may or may not know, under a veil of secrecy was the real reason that I took to glitch art. And by giving people a chance to get away from actual world as much as possible by immersing them in a totally non-traditional form and getting their feedback about this totally foreign concept gave me a better understanding about Virtual Reality as a medium.

This research project was really helpful form to learn more about creating an immersive VR experience and the medium itself through imitating and challenging it, with the help of 360- degree video and glitch art. At the same time creating a reality that belongs to myself and answering the question of “how can we make do with what we have?” (Bourriaud, 2002). Moreover, both written part and practical part offered a deeper understanding of the tools I used. Moreover, The Bergsonian concept of perception and memory provided a useful theory to further understand the communication between the artist and the spectator, and the role of noise in this

communication. The communication process starts with the artist and the work through a computer. For every input I gave to the computer I got a different output. This communication continues until I got a result that I want to keep. After that the experience of the spectator comes into equation. At that point the spectator witness the result of artist's communication with a computer. What spectators got from that is, a result of communication between the work and the spectator. Which creates the final communication between the artist and the spectator via perception of the work in other words the decoding of a noisy signal. Although there is not a direct message because of the signal noise ratio, the feedback I got as an artist from the spectators helped a lot to learn about the medium. Like in the notion of interactivity in Virtual Reality. Even if I thought interactivity was an indispensable part of immersive virtual experience, that was not the case it's not a must have property to create immersive experience. However, interactivity brings immersion on a whole new level when it's used wisely.

One of the challenges was the time consuming frame by frame editing process. However, it was also an essential part to create a moving composition from the video layer and to hide the information of that layer. The biggest challenge was with the installation. The problems of using the HMDs called 'cardboard' or 'VR Box' with a phone became my problem as I initially challenged them. The hardest part was to keep the phone charged up in order to keep the video loop going. Finally, the sound was not satisfying because instead of spatial sound it was stereo which takes a lot from the experience. With spatial sound it could be more immersive and also interactive.

This project was exhibited at I.D Bilkent University, because of that to some degree, it got the critical response which was initially aimed. However, if this installation is exhibited in another place where the spectators are more familiar with the medium of VR, it could get more critical and beneficial feedback, instead of the feedback that it got from the aura of the abstract imagery. In other words, the message could get decoded more accurately. As a result, the question of ‘Why?’, as a feedback could increase in number.

If it were just a 360-degree video, the spectator would be expecting a direct message and it would be impossible to create an illusion of a virtual reality experience, because the limitations of 360-degree video would be visible and as a result of that the experience would be ineffective. Moreover, if it was an interactive artwork, the focus of the audience would be solely on the interactive aspect of it and the characteristics of the alterations on the image, just like playing a game.

To further experiment with this concept, implementation of interactivity can be considered. The experience can be expanded to an interactive virtual environment. Since it will take a place in a room or a space, it can be experienced by more than one spectator at the same time to reveal a hidden message through interactivity, which will allow to experiment and observe spectators interactions with each other via interactivity with the work.

This thesis was written on glitch art and immersive video fields. “Reciprocal Reality” is a form of these theoretical fields as a product. This project sets the audience free via the unique attitude of the artist. While it creates a direct communication between the artist and the spectator, it does not impose any message to the audience which gives us a chance of totally objective communication and takes any preconceived notions. For the future, I will definitely work in the field of glitch art and keep sending noisy messages out there trying to find new meanings interpretations and different dialogs.

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