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MEDIATING EVERSION:
AN ANALYSIS OF VIRTUAL REALITY IN BODILY EXPERIENCE

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AN ANALYSIS OF VIRTUAL REALITY IN BODILY EXPERIENCE

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"I, Atanur Andıç, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis."

Atanur ANDIÇ

ABSTRACT

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Atanur Andıç

Master of Arts in Communication Studies

Advisor: Assist. Prof. Dr. Eser Selen

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This study is an analysis of perceptual and behavioral understanding of audio-visual mediations from the subject's (user/viewer) perspective. The aim is to analyze the processes in the perception of the content and form of the media as well as how their physical mass are received. In the tracked evolvement of media, the concept of "eversion" by Marcus Novak is introduced to analyze the Head Mounted Display (HDM) media as they are more adaptable to their subjects. Maurice Merleau-Ponty's understanding of perception and existence are being used in defining the notion of experience. The thesis states that the subjects in experience of the HMD media, perceptually, are in control of the narrative while being re-embodied through the spatial elements of polysemous content. In the conclusion, how spatiality of content become a performative value is reached.

Keywords: Immersion, eversion, sensation, experience, medium, virtual reality, Human Computer Interaction, Head Mounted Display.

ÖZET

DIŞA DÖNÜK (EVERSION) ORTAMLAR:
BEDEN ÜZERİNDEN SANAL GERÇEKLİĞİN ANALİZİ

Atanur Andıç

İletişim Bilimleri, Yüksek Lisans

Danışman: Yard. Doç. Dr. Eser Selen

Mayıs, 2016.

Bu çalışma işitsel-görsel ortamların kullanıcı kişiler ile kurdukları algısal ve davranışsal ilişkileri analiz eder. Bu süreçte, çalşma, kişilerin (kullanıcı/izleyici) algıladığı ortamların ürettikleri içerik ve biçimlerini var eden fiziksel bütünselliğe dikkati çeker. Ortamların tarihsel gelişiminde ve oluşumunda Marcus Novak'ın geliştirdiği "dışa dönüklük" (*eversion*) kavramı kişiye göre adapte edilebilen ekran ortamları üzerinden ele alınmıştır. Deneyimin tanımlandığı süreçte Maurice Merleau-Ponty'nin algı ve deneyimı tartıştığı çalışmalarından yararlanılmıştır. Bu tez, öngördüğü algısal boyutta, kişinin, adapte edilebilen ekran ortamları deneyiminde çok yönlü mekansal içerik üzerinden kendilerini tekrardan somutlaştırarak anlatıma hakim olmasıdır. Sonuç olarak, mekansal ortamların ne yönde edimsel bir yapıya sahip oldukları gösterilecektir.

Anahtar Kelimeler: İmmersiyon, eversiyon, duyumsama, deneyim, ortam, sanal gerçeklik, insan-bilgisayar etkileşimi, kişiye adapte edilebilen ekran ortamları.

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List of Abbreviations

HCI	Human Computer Interaction
HMD	Head Mounted Display
LCD	Liquid Crystal Display
CRT	Cathode Ray Tube
3D	Three-Dimensional
2D	Two-Dimensional
ENIAC	Electronic Numerical Integrator And Computer
VR	Virtual Reality
DK1	Development Kit One
OLED	Organic Light-Emitting Diode
FPS	First Person Shooter
VE	Virtual Environment
CT	Computed Tomograph

I. Introduction

We live in a world of mediation. From computer systems, movie theaters, televisions, to art galleries and concerts, people are exposed to a variety of media in diverse spaces. Media, in experience, have become a way of communication that once the subjects exposed to, the information is collected through both physical and contextual spaces. In the examples of sensual media such as painting, photography, television, computer systems, and stereo, the subjects have become viewers, listeners, and finally users in which they observe sensually while exploring the produced and designated content. In most of these mediated sensations the content is meant for a coded structure, which the viewers can establish resemblance through images and the listeners may recognize sound perceptually. Through the media, the sensual information's signification produced through – via Charles Sanders Peirce's semiotics – either as symbolic, iconic or indexical signs (1991).

Since the beginning, the creation of imagery has aimed towards a sensual (re)presentation of ideas and invoke feelings through narrativity. And in such process, the technical, technological, and perceptual modes that mediation communicates with its subjects have become crucial in experience as such contextual information is depended on it. In this process, it is aimed that subjects as viewers/users are in awarenesses of medium's content of production as a representation, which establish the structure of narrativity based on semiotic terms.

In image related or framed media, such as painting, photography techniques, and digital display devices of monitors, the object of medium in its physicality is meant to be sensed at however, the content is produced primarily to appeal viewer's attention. Viewers in perception, are in physical conditions that becomes necessary in experience of mediated content. In experiences of a framed painting for instance, since the medium is consisted of 2D imagery and does not produce light on its own, it is imperative that the viewers adapt both the conditions of physical environment and their own spatial placement in convenience of intended experience. As imaging techniques of framed painting, monitor displays, photographic imagery are mostly conditioned witin the frame, viewers are inclined to follow certain regulations regarding the standing point, perceptual accessibility, lighting, areal conditions, etc. Otherwise, the details of the content may not be perceptible to its viewers. Once the given regulations are being provided, viewers can be immersed in the details of mediated productions. Immersion in such structure is defined as the accomplishment of conditioning of perception in experience. Through the accomplishment of immersion, viewers can invoke certain feelings and experiences through establishing a sensual and semantic relation.

From the beginning of computing by ENIAC system to 21st century computer technologies, the ease of digital interfaces, powerful processings, ergonomic preferences and everyday uses, have evolved and become apparent in both perceptual and functional modes. In such computer systems, users follow conditional principles of perception as they attain knowledge on devices such as keyboard and mouse.

In the media mentioned above, subjects (viewers, users, and players) fundementally separate their sensual focus from physical space to object of medium then have experience of immersion in contextual production. As viewers qualify media as physical objects among their field of perception, they are aswell in perceptual awarenesses of production of content. Narrative-wise, as long as viewers can isolate themselves from the rest of physical space and its objects through establishing spatial conditions, the medium become the primary source as it functionally produce and distribute visual or audial information. But as much as the viewers are in recognition of the object of medium that perceptually comforts and contextually distracts them, there are certain mediated experiments, which has not, yet, taken the ground of proper mediation via the methods of mass production.

These mediations are in appliance of making viewers dislocated in an illusory manner. Perceptively the media do not present themselves as objects of space, but as spatial productions. Starting from the18th century, there have been experiments on media that are meant to surround subjects and make-believe the content of production in perceptual terms. Therefore, the divide between the object and space regarding perception will be explored in the Chapter One. From panoramic and stereoscopic imagery to digital Head Mounted Display (HMD) devices, there is an alteration on perception of designated content that viewers become aware of in spatial manner. The spatiality in the instance of HMD devices, emerge from the aspect of head rotation in which viewers carry these devices on their head producing the same axis of rotation. As the devices of HMD is attached to viewer/user's head, visual and audial content is sensible in every act of head rotation, thus perceive the content in its full sensoira instead of just a physical object among the physical space. Having such spatial freedom in the selection of content, subjects not only become

viewers in perception but also users as they can navigate within the content of production.

Unlike in the monitor display devices, the experience of the production of HMD devices are meant for users/viewers to observe individually. By the aspect of contextual interaction the media have become personalized and expressive in the end. The device surrounds the ocular field of viewers and blurs locating the source of production. In HMD devices such illusion occurs by the apparent distance in between the users/viewers and the device. But in the example of Robert Barker's panorama, it is the construction of physical space as a watchtower that create such illusion in perception. In each of these media, the framing of production is hidden from viewers, and therefore content dominates sensual as well as peripheral focus.

Instead of having the device's physical presence in perception of things, the device function wise is hidden from the viewer/user in act of perception. This functionality of media is in categorization of virtual reality in which the concept of "eversion" (Novak, 2002) can further define such process. It is the emergence of spatiality that brings the eversed movement, which the viewer/user may explore without having sensual knowledge on its content. In visual terms, the spatiality is by the production of 360-degree-view that the viewer/users may explore within. In audial terms, it is the spatiality of sound source that the listeners/users may trace through the distribution of stereo sound in each ear. These spatial information aid in generating the content in close proximity to physical sensation of space by the physical form and function of the medium, which is mostly concealed from the viewer's perception.

In many HMD device productions the content displayed cannot be pre-determined as there is a choice of spatial selection. In experience, every choice is determined and reshaped with the act of head rotation, which then forms the perception of visual and audial content. Since the HMD devices carry the aspect of spatiality, sensual experiences of viewers become expressive and subjective through the aspect of head rotation.

As the content of HMD devices are spatial and depended on the perceptual choice of the viewer/user, the act of performance by the viewer/user becomes implemental. In first person shooter (FPS) games such as *Doom*, the in-game character could only be navigated through the uses of keyboard and mouse actions. Having the same principles, in HMD devices, the subject/user can act on a given spatial environment without the uses of keyboard and mouse devices. The HMD devices produce the navigation of sensual content without having the need to translate with such intention on intermediary devices. It is a value of spatial choice taken by FPS genre of computer games that resembles content production of HMD devices.

Since the HMD devices emerge the value of spatiality, there must be a consideration of produced space. And since the production carry resemblance to acts of physicality, there is a perceptual involvement of re-embodiment. Through re-embodiment of experience and choice of content selection, the viewer/users may experience within the values performativity. In such experiences, there cannot be a single framing or composition of the content, but a rotational choice of head movements. Narratively, it is not possible to condition viewers in single framing of content. Therefore, each viewer/user has the freedom of performing their own of content in action, as a performance. Since the rotational movement cannot be

perfectly replicated, the content that viewer/user are exposed to become temporal and expressive. As Peggy Phelan states: ‘Performance occurs over a time which will not be repeated. It can be performed again, but this repetition itself marks it as “different.”’ (2014: 146) It is the situational act of performance in-content as re-embodied selves mark such experiences as different. In behavioral and reflexive action, the rotation of head movements generate constant possibilities of expression while experiencing a production. In return, the content becomes performative and intimate in a unique way.

As the viewer/users experience HMD devices in performance, the value that is given to content differs as they explore the content in time. Based on the terminology “perspectivism” (Merleau-Ponty, 1965) used by Maurice Merleau Ponty, the aspect of exploration of content could be defined by an internal and perceptual analysis of viewers. It is the way of looking in a perceptual manner that defines such experience as well as a production. In the HMD devices, the perspectivism of production is dispersed in the use of conveying the polysemous understanding of performativity through head expressions.

The re-embodiment of the viewer/users into various perceptual sensations gives way to the possibility of an experience, which then, can be totalized as a form of empathy. The value of this kind of experience has been thought through in Marshall Mc Luhan’s work particularly to explore how acceptance of such illuson could positively change the understanding of virtual reality devices in experience. (McLuhan and Fiore, 1971)

Aim

The aim of this study is to suggest an understanding in experience of eversive media such as the panorama and other HMD devices, which are to be evaluated more carefully through the analysis of perception by Maurice Merleau-Ponty. When it comes to defining a medium having no perceptual value as object, the experience of production can be misinterpreted as being almost-real because of the production's relation to space. In such experiences, the viewer/users are in perceptual relation with the HMD productions in both virtual and illusory sense of realism. But in acceptance of media in and of themselves, the viewers/users may not have neccesities on the dualities of either 'virtual' or 'real'. Having the supportive analysis by Peggy Phelan, the viewer/users may experience virtual spaces in performative value of experiences. And the theoreticians of Donna Haraway and Marshall Mc Luhan could further resolve the manner of acceptance as these media have capabilities to provide the impression of getting beyond bodily limitations.

Objective

This study examines the aspect of media from the viewpoint of the viewer's/subject's perceptual and behavioral understanding. Through a historical approach and analysis of their functions, selected examples such as *In the Eyes of the Animal* (Marsmallow Laser Feast Group, 2015), "What You See is not What You See" (Selçuk Artut, 2014), and "Mission to Earth" (Lev Manovich, 2005) are provided to explore how the perceptual experience is generated. The main questions this study investigate are as follows: How does the visual/audial media interrelates with human perception of things? How do viewers/users perceive the relation of object and space in

confirmation of presence? Finally, how does certain media assist viewers/users in experiencing the production?

Review of Literature

A selection of media throughout the history of visual media have integral parts in understanding a medium as well as a product. How do viewers expose to visual media and how does the process of perception take action are also elaborated briefly. In Chapter One, the product information, technical details, release dates and certain use of fields in a chronological order, extending from the examples of framed painting, camera obscura, photographic imagery to panoramic painting, stereoscope, *Sword of Damocles*, *VFX-1*, *Rift*. In explanation of computer systems and displays, the supplementary devices of mouse and keyboard are also being given in the terms of functionality and history. The computer game *Doom* will be in focus as a case study on both: how video gaming along with it's media shape the aspect of immersion? In which ways does the computer system enable and act of expression prior to the HMD devices?

Products such as, Theatrophone, *Trains at Hayes*, stereo soundings, Dolby Atmos, and 3D audio will be considered in chronological order to investigate the function of hearing sense in perceptual relation of space and object. Throughout the thesis, the evaluation of certain media and devices such as computer systems, monitor and HMD devices are performed along with the inclusion of audial media as in such experiences visual and audial information are being distributed correspondingly.

Chapter Two explains the value and relation of subject and object, presence and absence in detail. In the first section entitled “The Subject and Medium”, the focus is directed upon the relation of viewer’s perception with visual media such as framed painting, camera obscura and monitor display technology of CRT. From the comprehension to localization of these media as objects are being evaluated in the aspect of immersion. The use of structure is based on Merleau-Ponty’s understanding of how does experience is shaped in sensation of an object. Along with the evaluation on how visual and audial senses take action, the perceptual comprehension of objects of media will be evaluated. From the values of proximity set in between object and its viewers, to the Gestaltian principle of closure by the totalization of objects in single perception are being defined in the process. In the analysis of a medium, these are the values which are integral in the concept of immersion particularly in designating the relation of viewers and object. How do viewers turn in the sensual selection, and provide required space in the sake of immersion will be the leading question to explain and examplify spaces such as a movie theater.

The values of proximity, directed attention, the relation between the object and space and closure will be elaborated through the examples such as the panorama, HMD devices of: *VFX-1, Rift, Sword of Damocles* to 3D audio and stereo sounding techniques. But in consideration of such media, new terminologies regarding “virtual reality”, “realism”, “eversion”, and “adaptation” are being introduced. As these media provide productions in different level of understanding where viewers/users are never in perception of total content as the illusional perception of non-mediation and it’s effects on viewer/users are elaborated. The example of “Artut’s work “What You See is not What You See” is explored through the perception of experience as

the theory is constructed in the existential dualism of presence and absence of an object.

In Chapter Three explains how eversive media give the choices of selection within content. The content of production is in the form of spatiality and therefore, viewer/users are in freewill to select their own choice of content as sensible by leaving rest of content without any awareness. From the partiality of sensual content, viewer/users turn into the expression of selection by their bodily capabilites. This freedom of perceptual selection is elaborated with the perspectivism theory of Merleau-Ponty as it supports the idea of exploration and subjectivity by viewer/users. The aspect of localization however, is being defined by the phenomenological understanding of technology by Don Ihde. To bring the act of contextual selection as a showcase of this experience, there will be the observation of Lev Manovich's "*Mission to Earth*" in detail. This act of continuous exploration is further explained by the theory of perceptual cycle from Ulric Neisser as how the experience is structured based on the cycle of exploration, environment, and knowledge (1976).

As the experience of eversive media get spatial, viewer/users may use such multiplicity in advantage of expression. The analysis of experience is further investigated by the values of unification, performance and empathy. By the advantages of physical expressions, viewers/users virtually re-embody themselves in which the impressions of bodily presence takes place. Having such presence within the production, the theories on performance is evaluated by Peggy Phelan particularly with the uses of expressive value in experience (2004): the lack of total presence of content enhances such understanding of performance in action. Following an understanding of performance theory, the unification of experience is further supported by Mc Luhan's theories on how the experience can be evaluated in

and of themselves as unified. As an examplary case, the installation of *In the Eyes of the Animal* (Marsmallow Laser Feast Group, 2015), is given to support theories of re-embodiment, performance and unification in action.

II. Chapter 1

Technology and Awareness

2.1 Visual Media

In visual terms, painting has been one of the most celebrated uses of artistic production in the history od vision. In Europe, mediations regarding painting were wide spread from the Renaissance period lasted until 18th century. The key remark of the period Renaissance was the creation of conveying visual productions to document and tell a story in expressive methods through such media of sculptures, ceramics, pottery to painting.[1]

A painting on a canvas is consisted of color pigments collected by various chamical origins in nature and their mixtures applied on a canvas surface prefferably made by hemp or cotton substances, which is able to absorb and dry out the color. The contextual visuality however, is based on the compositional value and technique of the production in performance.[2] The composition in definition is “the way in which something is put together or arranged: the combination of parts or elements that make up something.”[3] In a painting, it is the mastery of placing and combining visual elements that is working in harmony to enhance the intended transferrence of ideas and feelings.

Painting as a medium of representation consists of 2D surfaced canvas that exhibits the artistry within a wooden frame to invoke the sensual completeness of the object of medium visually.[4] In perception, the framing of canvas is used in seperation

and prioritazion of painting medium in which viewers can have better impressions on its visual details. The medium of painting establishes an understanding that the depiction on canvas visualizes all there is to see and the rest of its shared sensual space should only be considered peripherally. Based on Walter Benjamin's theory, the framed painting displayed in a gallery has and "exhibition value" where it is to be hanged on a soft colored wall that prefferably has no other visual distractions on it's surrounding conditions (2010). It becomes a production that is to be displayed and therefore exhibited among other things. It is not only a production of interest, but also an object in space that decorates by the aspect of its physicality.

The most appropriate viewing angle of a painting however, "depends on the horizontal distance between the viewer and the painting, the vertical distance from eye level to the base of the painting",[5] which is left in between viewers and medium itself. The angular placement of painting should be paralel to ground vertically. Rest of visual attractions however, such as the other paintings should leave certain distance in between each other to avoid any contextual distraction. As the production is displayed on a flat surface, the viewers should be able to see the produced content in its entireity. By the perceptual choices of focus, the viewers may explore and be immersed in the details of production however peripherally as the object of medium and its relation with space is always in consideration of perception. After such wide usage of painting techniques and methods, a variety of media has changed the initial functionality of a painting on canvas over time.

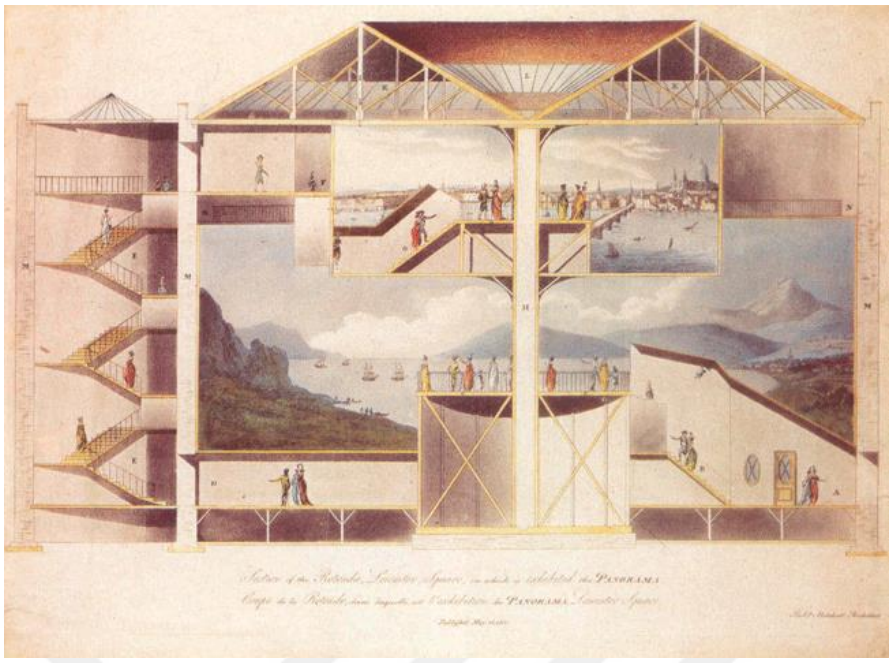

Figure 2.1: Robert Barker, “Panorama”, 1787

As an unconventional approach to medium of a framed painting, English portrait painter Robert Barker introduced the term panorama in 1792. His painting entitled “Panorama” presented in a building that is specified for such method of production (Figure 2.1).[6] Panoramic view in definition is consisted of capturing visuals in the rotational value of a singular point on a horizontal axis and display the surrounding by the means of visual representation.[7] The production method of a panorama in common display terms however, is difficult to exhibit as production demands to be a surrounding rather than a conditioned and framed imagery. Even though panoramic images may use a rectangular framing, the content as the way it was captured can also be placed on rounded placement as with Barker’s “Panorama”. From the way visual data is collected, it assumes to establish a spatial pivot that the viewers may locate themself in production and therefore perceive it in the definition of space.

Barker's "Panorama" was exhibited in a building that is located in Leicester Square in London. The building offers a full-scale realistically painted visualization of London's panoramic view with an impression of a watch tower. The viewers may walk around the circular path of building and see London's panoramic view as if they are actually observing and experiencing the work of art in the environment, which the painting depicts.[8] In this way the painting not only resides in itself as a particular work hung on an unrelated surface, but was experienced in a specificly constructed space along with its polysemous choice of visual interaction as the experience is varied on the spatiality of bodily presence. Instead of presenting the work on a conditioned placement, the painting was exhibited in a way which the viewers can explore wherever demands attention without having the concerns of getting distracted therefore squander their focus.

Similar to Barker's panaroma techique, photography, too, have been invented to depict, document, or represent vision accurately and in detail in through an apparatus: the photograpic camera. In the process of an analog camera, photographic images are produced through capture of vision reflected on camera lens to the film strip that is highly sensitive to light. In completion, the film is processed on chemicals to transfer the value of light on sensitive surface for proper display. The surface mentioned is a rectangular shaped paper material and it can be exhibited in the same conditions with a framed painting.[9]

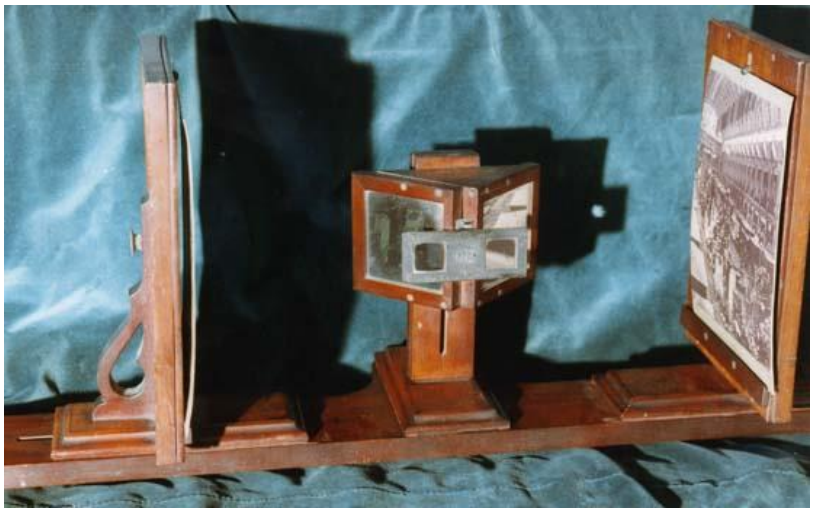

Figure 2.2: Charles Wheatstone, “Stereoscope”, 1838

On the side of photographic imagery, the use of photography and optics to alter the sense of vision had been accomplished in the invention and definition of stereoscope by Charles Wheatstone in 1838 (Figure 2.2). The conventional media of stereoscope consists of two closely identical stereoscopic images that mimics the binocular vision pertaining the human eye and two mirrors – or magnifying lenses – attached to the main structure.[10] During the observation, viewers experience the content of stereoscopic images in an illusory way by perceiving them in a spatial manner as with panorama. It is the first HMD medium in history that make viewers be in the visual depth of contextual presence.[11]

In the critiques about the relation between subjects and medium in 21st century, and mostly in the field of iconic realism of vision, one of the most apparant examples in one’s immersion in a computer play. Computer and other systems relient to computation are in purposes of aiding its users to navigate and process the task at hand. They generate a digital space that enable users to process and store data based on the processing of components of such system.[12] For such computer systems to

function as intended, media and devices establishing an in-between relation of users and computer are required. In common uses of a computer system the devices of, monitor display, keyboard, mouse are being used in navigation of a digital system.[13]

Figure 2.3: Karl Ferdinand Braun, “Cathode Ray Tube”, 1897

In 1897, the scientist Karl Ferdinand Braun invented the first screen monitor device called the Cathode Ray Tube (CRT) (Figure 2.3). By projecting beam of electrons in the colors of red, green, and yellow, through the magnetic field, the surface of screen is scanned with tones of color 60 times per second and therefore produce the constant visual of display in action.[14]

As an important component, the CRT enable viewers to observe and interact with the digital data production in a visual sense. Even though the technology has been progressively improved in 21st century, by the LCD and OLED displays basic principles remain the same. Its construction is most generally in emphasis of screen where the function of device takes place. Having viewers to be immersed into the visual production is also the very reason why screen physically is flat sided to

accommodate the widest field of vision as possible. It is a device that converts visual data gathered from the sources of computer systems into colored lights that produce full imagery of a sensual content. The framing of screen is as well important in determination of how to place the media in relation with seating placements of viewers to have an immersive experience. In such experience, the screen is best viewed under less visual distractions by the environment as with the example of framed painting, and the light of digital screen should be kept as primary to get full attention.

After the invention of the *ENIAC* computer, the need to interact with a digital system has been emerged. In 1946 as an input and output source, the use of punch cards had been used to transfer data from users to computer mainframes. It is respected as the first act of the Human Computer Interaction (HCI) where, the subjects are now in the position of being the users of a medium instead. In late-1970's the first consumer use keyboard called *TRS-80* had been released to public by the collaboration of Apple, Radio Shack, and Commodore companies. Its shape is inspired from the functional formation of a type-writer. With the common *Model-M* release of IBM, the uses of keyboard technologies had been distributed as one of most conventional devices used in history of the HCI.[15]

The mouse technology however, is invented by Douglas Engelbart in 1964 and later developed by Bill English with ball mouse, where the ball is replaced with "the wheels and was capable of monitoring movement in any"[16] direction. A mouse is user operated device, which allows the user to track and navigate around the digital space by the icon of cursor. In common use there are two bottons that users may choose to press in interaction with digital space. It is most commonly attained to one hand in which users can specialize such reflexive control.[17]

In combination of such devices with computer systems, the common knowledge of computer interaction is presented to users. As the computer system's function of giving ways to the interaction with the digital environment, one of its most appearant use can be observed in computer gaming. In such an interaction, the users are turned into players where they can adapt themselves into a given content and narration by experiencing the game consequently. By the use of devices such as the mouse and keyboard, the players may choose to navigate through given actions, in given digital spaces. Interaction wise, the choices of control, command to navigate and decide which and when to use these functions are some of the core features of computer gaming, which generate immersion and also pleasure.

Figure 2.4: Id Software, "Doom", 1993

In 1993, the three-dimensionality of gaming experience has started to be played with the science-fiction horror game entitled *Doom* (Figure 2.4). It is among the first games which utilized the digital space in 3D where the players can navigate not only

through 3D environment but also can experience the depth of field for the first time in a video game. Because it is an FPS game, the players must make use of 3D environments, its objects and characters to do strategic planning and kill enemies that makes threat to their goal.[18]

Regarding *Doom* the understanding of spatial environment of computer games has advanced into exploring the digital space in relation to perceiving the actual space. In experience, the players embody a character of whom they are responsible for digitally. By having certain attributes over their in-game character, the players use devices of keyboard and mouse to control the reflexive state of action. The keyboard device in the case of *Doom* is responsible for making the character move in multiple directions and take actions such as running, jumping, reloading, changing weapon, crouching etc. The mouse, on the other side, is responsible for making the character direct towards somewhere and use two of its buttons for either aiming or shooting. For these devices to work accordingly in the desired motion, the collaborations of monitor and sound systems are as well needed in sensing related actions and its space in digital. For the reason as a FPS game, the visual and audial data is taken from the view-point of in-game character. For instance, the mouse action of head rotation effects the visual and audial data simultaneously. The keyboard however, is responsible for certain key actions and movement in the direction of character in which visual and audial spatiality can be presented.[19]

Once the experience of such devices and their relation with the visual and audial senses are in accordance, the player's immersion and experience take place in the game. Through the utilization of computer media, the players can immerse themself in digital spaces. In such immersion, players re-embody themselves by having control over the character's bodily action to be in the position as the character

is. As players are needed to embody the in-game character through bodily capabilities, the conditions of physical environment, hardware and software requirements, and the player's physical and mental conditions are just as important.

Along with the computer scientist Ivan Sutherland who invented the first digital HMD device *The Sword of Damocles* in 1968, the experiments on inventing and developing HMD and other virtual reality devices had been increased in the 60's and 90's.[20] One of the first successors of an HMD device in the field of virtual reality (VR) is Forte's VFX1 Headgear.[21] It is a device that was being marketed in 1995 by the company Forte Technologies. It was one of the first succesful and consumer level products that satisfy viewers to sense the intended experiences. The device consists of three main parts. The main part is a headset that viewers need to wear as helmet with 263 x 230 pixels dual LCD screen, stereo speakers along with built-in sensors used for pitch, yaw, and roll actions that gather the data for tracking the viewer's head movements.

Figure 2.5: Oculus Company, “Rift”, 2016

In 2012, the Oculus VR Company had made an appearance on a Kickstarter campaign by releasing an HMD device “Development Kit 1” (DK1) that had funded by individuals who supported the company to make progress and soon made significant growth along with the backing of companies such as Facebook and the Microsoft. The 2016 version of HMD device that was made by Oculus VR is called the Rift having the specifications of two OLED 1080 x 1200 resolution displays, the refresh rate of 90 Hz and low persistence with high-quality lenses (Figure 2.5). This HMD device carries an additional headphone that has 3D Sound Effect technology by manipulating the stereoscopic sound gathered by the positional tracking of viewer’s head. For the tracking, there is an additional hardware of transmitter that captures the HMD device from a distance as it determines HMD device’s rotational and positional tracking in more accuracy. The commercial version is expected to be released by the end of 2016 along with the games and works created by supporting game and production companies.[22]

In overall evaluation of media such as framed painting, camera obscura, monitor display technologies, the media are not measured by only the quality of production and functionality of medium but also of space where it is presented to viewers. In this respect, such media turn in the perception of objects where viewers need to perceive and comprehend the medium as well as production within. But, the HMD devices, as well as panorama, are in the categorization of virtual reality where their function placed in closeness to the spatiality of realism in perception. In the digital systems of HMD devices such as *Sword of Damocles*, *VFX1*, and *Rift*, the systems are by the circular process of the user, Tracking (input), Application, Rendering, Display (output), and back to the user. (Jerald, 2015) In such systems, the perception of virtual realism occurs by the simultaneous tracking capabilities of media where the exploration of content repeats in the circular process mentioned. As with the media of framed painting and monitor displays, sensual abilities of viewers are meant to remain on the sensation of work but is enhanced and surround the peripheral. In the cases of HMD devices, as the content of production do not totalize and created not to be localized by a single source in the perception of viewers, “what mattered” in an understanding of experience becomes “their existence, not their being on view.” (Benjamin, 2010: 225) Through such elaboration, the HMD devices shift the relation of viewer and medium into a spatial value of works as viewers experience the production in different aspects of expression taken by the computational methods of 3D computer gaming.

In HMD media, by the creation of difficulty in separation of production as object or space, the matter of importance shifts from having needs of placement and object value in an exhibition to subjective experiences of polysemous content in which viewers may only define their understanding of production.

2.2 Audial Media

As a sensual experience, the sound is among the most primary senses of human perception. Because of the physical conditions of human ears, the sound field is mostly set in a wide area of surrounding space. In certain frequency and depth of acoustic space, the ears can identify and locate sounds that are coming from a certain source. In the sensation of binaural sound, space, and its objects are presented to the subjects of listeners by the produced sources. Listeners in the process, give these sounds a spatial attribute where they also can confirm their spatial and physical presence alongside it. On each audial information, the distance of the space may be perceived by the listeners. By the surround hearing ability, listeners become aware of their environment and experience the space by being parts of it. In a performance where the production of sound is primary such as a concert, listeners are located in the best spatial conditions to experience about sound in binaural conditions. (Avan et al., 2015)

The sound production as an expression technique had been produced and distributed over many changing media. The media of sounding fundamentally based on the conversion of tonal values into analog or digital data contained and produced in the mechanical or current distributions of stereo. Sound media such as any record player, can (re)produce sound as long as the media is functional and there is an information of sound embedded on attained format. For the sake of immersion, sound performances must be in the sensation of a source having a certain degree of tonal quality. Therefore, the depth of sound, quality, tone and production should be recorded and performed in careful consideration of distribution.[23]

Figure 2.6: Clement Ader, “Theatrophone”, 1881

After the invention of the telephone in 1876, the concept of generating sound transmission has arisen along with the experiments done with stereo sounding techniques. In 1881, the first stereo development had been made by Clement Ader in his work “Theatrophone” (Figure 2.6). He initially placed sound transmitting media in between the performance area of Paris Opera Building and the surrounding buildings. The medium, theatrophone, however, was separated into two parts as output and input, which are connected each other through cable transmissions. While the input part is collecting and transmitting the data of the performance, the output section contained two speaker systems that participants hold near to ears to invoke the feeling of presence as demonstrated. Instead of having a monophonic hearing in which there is only a single channel of data transmission, listeners through binaural

hearing capabilities have a surrounding stereo in feeling a presence of produced space.[24]

In 1935, Alan Dower Blumdein had invented the patented stereo sounding techniques along with its distribution of the short movie *Trains at Hayes* (Blumlein, 1935). The stereoscopic aspect of the film fundamentally based on moving an image of a train coming from the right edge of screen ending on the left side and speakers producing the sound according to its location simultaneously. The movie comes to knowledge as a pioneer of stereo sounding in a cinematic environment as well as first multi-channel recording and producing technique. In experience, the film offers an enhanced understanding of production in spatial terms where the visual and audial information is not fixed but distributed on two sides.

The idea of Stereo first patented in 1874 by Ernst Siemens and later developed by Thomas Edison to be in the shape of a speaker. The stereo speaker is a device that converts electrical data into mechanical sound production. It reproduces the sound of electrical data in the form of vibrations to dissipate in the physical surrounding environment. “Speakers are used in all types of communications and entertainment equipment such as” the television, computer, movie theater, and other sound production systems.[25] In such uses, stereo systems are spatially placed on the right and left side of the visual attention where it can invoke the feeling of surrounding presence as with the *Trains at Hayes*.[26] After the invention of such stereo devices, the stereo sounding experiments in the 21st century have aimed towards their uses in surrounding systems of cinema, home entertainment as well as computer systems with technologically advanced stereo speakers.[27]

In the cases of visual and audial data collaborations, subjects must establish a relation between the visual and audial cues to have a complete set of experience. In

gaming experience of *Doom*, it is crucial that players hear and determine the environmental objects nearby through the direction of the character.

The production of 3D sounding by Rift, provide a stereophonic audio that stimulates the physical positioning of space in a game environment. But to see the object of the source in 3D gaming, the in-game character must be in a directional position of the object to see visual cues as well. Otherwise, the object of the source will always be anonymous in the terms of sensual presence.

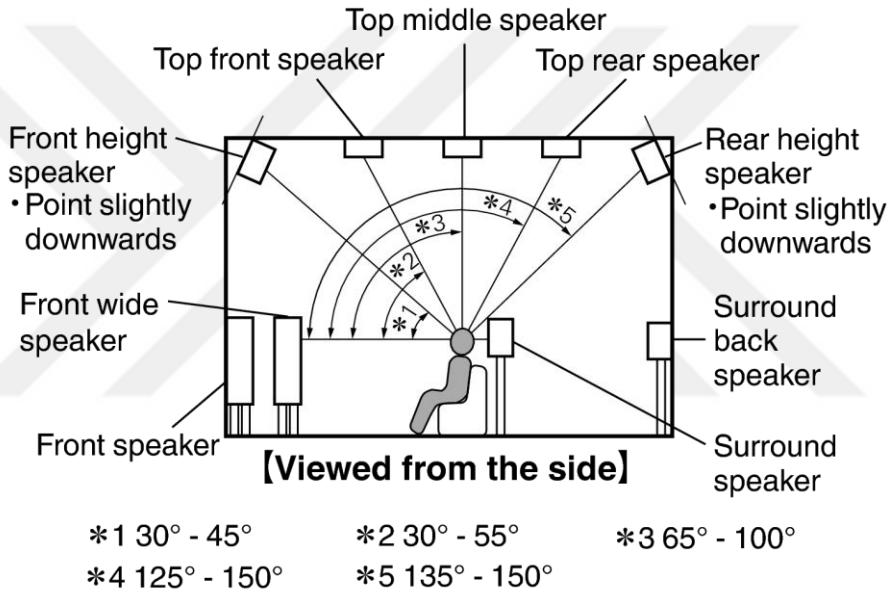

Figure 2.7: Dolby Laboratories, “Dolby Atmos”, 2012

In the case of a movie theater, the sounding techniques are much immersive for the reasons of their spatial advantages and production. In the use of acoustic surrounding, high-quality sounding systems such as Dolby Atmos invented in 2012 by Dolby Laboratories provide viewers a variety of sound information coming from various locations in the provided scene (Figure 2.7). Similar to the example of Trains at Hayes, Dolby Atmos provide a positional value of content but is now limited to

left and right. It provides a distribution of audial information in overall space of movie theater through placing speakers in various positions. In the experience of a movie, viewers not only place content in 2D framing but can sensually hear them spatially. Dolby Atmos, therefore, is a 3D sound system that is placed on the overall parts of the theater space to provide a wide field of sound sources.[28]

In the example of the Rift, having 3D stereo sounding determines the positional value of head tracking capability and produce sound accordingly. As in visual, the audial data acts in the same principles. The direction of viewer's head is what changes the sound material depending on the production. In the case of a video production, the Rift provides an interactive capability to the experience in contrast with the movie theater. The visual and audial cues are in constant change depended on the head motion of viewers.

From the start of first stereo sounding media such as theatrophone and *Trains at Hayes,* the productions become more adapted to the sensation of spatiality in the perception of listeners. Just as visual media use the perceptual alterations of visual sensation through certain devices and media, stereo sounding as well constructs spaces in which listeners may localize the content of production in experience. By the production, listeners may localize the sound sources depending on where they stand instead of assigning every sensual element in a single direction. Regarding value, stereo sound can also not be placed in single placement but is experienced in total understanding of space in which the rest of audial information becomes irrelevant and unavailable to perception.

III. Chapter 2

Production and Perception

3.1 The Subject and the Medium

Humans are conscious of space and objects through the capabilities of bodily sensations and their interpretations of the mind. Immanuel Kant's theory of "two-stage truth", claims that humans sense objects by the sensual information gathered as formless substances. (Dicker, 2002) In Kantian understanding of how we gain knowledge, the objects among space appear and be distinguishable to subjects through the sensual capabilities of their five sense organs: touching, smelling, seeing, hearing and tasting. (Ibid.) From there it is the evaluation of mind that privileges to define such object as it is. The unification of such immediate process brings the definition of experience to be called perception.

Through perception of objects and their environment, subjects provide the knowledge of realism and therefore existence. In such state of knowledge, subjects can define and confirm what is seen regarding spatiality, object information and its relation to themselves. (Ibid.) The spatiality in this context is concerned with the values of time and space in which the sensual information can be verified by the perception of things. Once certain spatial definitions are made, the perceptual experience of objects become an objective knowledge of reality which turns out more convenient to define and value objectively.

In the instance of sensations hearing enable listeners to pick the surrounding audio and attribute them both perception and spatiality through the stereophonic value of audial information gathered. “Similar to stereoscopy, stereophony is based on combining information in the brain from the two ears, creating a robust illusion that confers the stimulus a special character of perspective known as three-dimensional (3D) depth and localisation.” (Avan et al., 2015) Sound originates from the localization in hearing sensation occurs as the “right and left side correlate so well that they can be ascribed to a single, definite object.” (ibid.) As the sound is produced by a source, its intensity changes through closeness and particularity take function and therefore assist listeners localizing the object’s and their presence in the act of sensation.

As a major sense, seeing is one of the most fundamental and primal ways to comprehend about space. Through light, color information of objects may become apparent to viewers in the sensation of what is distinguishable. To determine the object’s spatial value regarding distance and size, binocular vision becomes necessary. Through binocular vision, viewers involve depth of field in sensing the space and it’s objects as “[d]epth is perceived when the visual stimuli (such as distance, size, or shape) from each eye are compared binocularly, or using both eyes.”[29] Choice of focus, however, is based on how eyes can clarify the assigned object by the visual analysis of its borders and visual content to exclude it from the rest of environment. By the act of focus, the interaction between object and subjects take place as the experience is produced. Regarding spatiality, viewers use the advantages of binocular vision to locate objects by their relative sizes in a depth of field to value the source of information in return.[30]

According to Merleau-Ponty, the object perceived comes forward along with its sensual qualities on what the object is (1982). In the cases of the monitor display, framed painting, and photographic image viewers are in sensual awareness of media's physical attributes and content. As a given attribute, "the thing that stands out as the core item within vision does so against the background (field)" (Ihde, 1986: 38) and in the uses of such media, viewers prefer to give their attention to objects among other things located in the same environment. In determining the value of an object, having peripheral consciousness of spatial environment and confining its borderlines generates such media's presence as well as experience. In Gestaltian principle of closure, objects make their claim on being an object of their own among the sensual choices of selection through the separation of foreground and background relation. It is through the localization, background, and foreground relationship, principle of closure, and Kantian knowledge of things that assign what an object is and is not.

Taken the examples of the monitor display, framed painting, and photographic image the impression of object's totality is produced by the stereopsis of vision and hearing in which the visual presence of an object is supported by perception. In understanding mediated content, the identification of medium as it is and perceiving the content as produced take priority on the experience of immersion. These content of media are constructed according to being visible in a single act of vision.

In Gestaltian principle of closure, the object holds off its wholeness in the eyes of the viewer by revealing "themselves only gradually and never completely; they are mediated by their perceptual appearances." (Merleau-Ponty, 1965: 7) Therefore, even if the object of the medium is partially visible to subjects, it does not fully show it's wholeness as a transparent being. Viewers may never know the object's totality

but only assume to generalize by its sum.[31] As the intention of medium and devices is to be visible only on the part of production where should take the most attention, the rest of its totality is to be left aside by the perception of viewers such as the corner sides, inside mechanism or the back side of the display.

In the limitation of such physical apparatus, vision makes the path in the focus of content as viewers grow sensual interest. In the media of monitor display, framed painting, and photographic image, the concealment takes place by the spatial tactics of placement in making it sensed only by the content of production, not by the physicality of the medium itself. In visual terms, the object should be in the distance where binocular vision can easily focus. In audial terms, the sound should be produced in a stereophonic way where it addresses both ears in experience. In these terms, perception generates the knowledge of an object and its relation to space. Viewers in perception, consider the objects of media: monitor display, framed painting, and photographic image ready to be immersed in production contextually.

As the medium is in the field of sensation, viewers are in obligation to adapt rest of their surrounding conditions for the sake of immersion. The media of monitor display, framed painting, and photographic image very much depend on the spatial variables of standing environment. Through the analysis made, viewers may assume to only have capability of perceiving the content of production by the adjustments prepared mentally, physically and environmentally to gain the most immersive adaptation.

The term “immersion” is defined as an “instruction based on extensive exposure to surroundings or conditions that are native or pertinent to the object of study.”[32] In this context, it is the attribution of medium presenting the content production being depended on to it’s spatial, and conditional aspects. Viewers in

experience must be guided by certain spatial regulations to have the best sense experience in production. For instance, in the cases of the monitor display, framed painting, and photographic image it is by the perceptive conditions of lighting, the spatiality of viewer and medium, as well as spatial clarity in the separation of an object of a medium. In a place like the art gallery, viewers must adapt themselves in the shared space by following certain regulations of proximity and dress code, in avoidance of any inappropriate action.

For a video production, however, the most specified and preferred location is a movie theater as it is constructed only for the best viewing experience. The seats of the theater, as they spatially locate where viewers must observe conditioned content should offer the most convenient experience by placement and comfort. Viewers, in this case, are placed on a conditioned location and expected to observe production where they are isolated from the rest of viewers seating next to each other. Instead of having certain spatiality independent from viewers, the medium now has the advantage of conditioning its viewers in attributed location. The screen dimensions, are placed by the viewer's visual field. The sound distribution, however, takes advantage of theater's architectural resonance as the stereo speakers provide the surrounding sensation. By conditioning the spatiality of viewers, the production is preferred as a very immersive experience. The produced sensual information becomes primary among the space of theater and therefore viewers have more potential to expose and immerse themselves into the content of the production.

3.2 The Concepts of Eversion and Presence

In the cases of Panorama and HMD devices, object of interest presents itself to viewers by the means of spatiality, not as a particular object that viewers must be aware of. As these media and devices change their appearance and make more suitable viewer adapted experiences, the use of different terms becomes necessary. The term “virtual reality” by the definition is “an artificial world that consists of images and sounds created by a computer and that is affected by the actions of a person who is experiencing it.”[33] Its functional purpose is to create spatially realistic experiences in the presence of a mediated productions. The medium shapes into an illusory understanding of presence in concealing the type of production method and revealing the content in a spatial manner. The experience becomes virtual where there is a simulation of such space. It is the closeness to the sensation of physical spatiality that shapes the perception of the medium. This virtuality may present itself in different sensory mechanisms including the visual/audial media and devices. By the concept of real, however, a perceptual illusion is emphasized, and its relation with authenticity is concerned. As the virtual refers to media wise simulation of actions, the real refers to the authenticity of sensual experience. The reality in the case of virtual, “is to communicate the application content effectively to and from the user in an intuitive way as if the user is interacting with the real world.” (Jerald, 2015: 90) The use of titles for subjects, however, become problematic as in the experience of an HMD device, subjects not only are viewers of content but users within such space, therefore it is appropriate to use the title viewer/users.

The term adaptation is used in the function of media being depended on viewer/users. Its functional ability is based on the attributes of viewer/user's senses and therefore body.

Once the subject's perception of how the content and space interlaced, the concept of "eversion" emerges to establish a spatial understanding. (Novak, 2002) Eversion in this context is an act alteration in the aspect of viewers perception. HMD devices instead of being an object in which the physical display is perceived by the source, the perception of display dissipate itself as source and becomes a space perceptually. It "signifies a turning inside-out of virtuality, casting outward of the virtual into the space of everyday experience." (Novak, 2002: 311) The HMD devices, therefore offer an experience of production in the everyday experience of space. It is the boundaries blurred that defines such production method as eversive not by the reason that it is digitally produced.

In the panorama example, viewer/users are in observation of large paintings of a landscape in eversive perception of contextual space. In the comparison of a framed painting, photographic image, and monitor display the object of medium is not in clear seperation with its environment but has been merged with the space. By the method of display, viewer/user's aspect of understanding of object as medium had being altered. Viewers in this case are not being directed at a single source, but being in observation of surrounding just as looking through a watchtower. Through the eversion of medium, the perception of content becomes a performative act. As the content and source of production can not be localized, viewers turn in the conditions of understanding and exploring its totality. The object becomes the space of a rounded circle where they can wonder. It is the concept of spatiality of product that resembles the HMD devices.

Since 70's the idea of virtual realism has been using the technology of HMD devices as prior because of their functions of digital as a closed system and taking the seeing and hearing senses into full control. In the example of a stereoscope, viewer/users perceive content of production in an adapted manner of space, and it's objects within. The depth of field by the aspect of focus is also the reason why the medium of stereoscope alters the sense of vision and be counted as a virtual reality experience. The lenses enable vision to perceive images in a total understanding of space by dispersing the cues such as the corners of medium or production as the closure that determines the object as it is. The image dominates the focus of vision as well as it's peripheral therefore making it an eversive experience within. Using the outer aspect of the image and the lense assist, viewer/users can choose to perform contextual selection within.

In more sophisticated HMD devices such as VFX-1 and Rift, the understanding of perception regarding eversion remains the same. It is a system where the images have been replaced with OLED displays and changed by the rotational direction of viewer's head. Instead of having a physical imagery, digital systems get the advantage by the tracking capabilities and (re)producing such imagery. The media along with the displays are attached to the head of viewer/users. As with the stereoscope, the physical parts of media is invisible to the perception of viewer/users but the display. Therefore, every performative and reflexive head action are done within the limits of the content of production as with the in-game experience of the game *Doom*.

In an adaptation of a Rift device to *Doom*, the navigation of mouse which rotates the visual field of character is transferred into the Rift. And by the side device of the device named "Touch" which is expected to be released by the Oculus

Company by the end of 2016, it will be possible not being conditioned to the device of the keyboard in control of navigation. Touch is a device that viewer/users may navigate controllers by hand gestures and carry the device in any 360 directions. Instead of having conditioned on keyboard and mouse, the experience of gaming may enhance itself. Because in this case, viewer/users not only observe the visual and audial senses as in video productions but are allowed to be interacted in such space in physical terms. Touch device even grants viewer/users to visualize the hands in the action of experience since the device is tracked by the same tracking device. But even in Touch, viewer/users are needed to have access to key navigation, to perform certain actions. Therefore in the current situation, in the gaming experience of Doom, there must be a collaboration with both simulations of bodily expression and use of navigation through keys gestures.

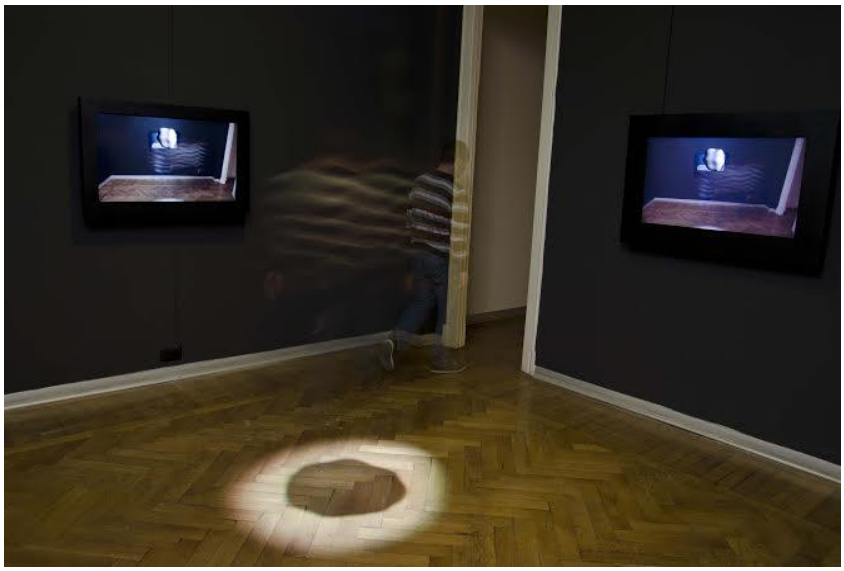

Figure 3.1: Selçuk Artut, “What You See is not What You See”, 2014

"What You See is not What You See" (Artut, 2014) is an augmented reality video installation made by Selçuk Artut in 2014 (Figure 3.2). It is an installation where there are four screens placed on four sides of the room and a projection directed to the floor in the cross-section. The installation is organized in a dark room in which the viewer/users may walk. The projection at the center is aimed at the middle ground by projecting a shadow image of an ambiguous shape which is in the state of continuous fluidity. The screens display live video recordings taken simultaneously in their visual direction by giving the impression of a mirror. And in some perspective, they function as evidence of what is visible is, therefore, present in shared space. The screens from all angles show the ambiguous shape that appears to the viewers in the middle of the room. In perception, viewers experience the evidence of the unidentified object by the shadow on the ground and the reflection on LED displays. Even if the projections and displays support the theory of presence, viewers are still unable to localize the ambiguous object in physical reality.

Based on such example, the media of HMD produce objects of their own in context and give sensual evidences of their spatial presence only to be recognized by its viewer/users. Therefore, the performative in-content experience is sensually available only to its subject/users and cannot be reproduced to be exhibited. As the installation concerns the viewer's in-determination of what is real and virtual, the HMD devices as well blur the sensual line of perceiving an object, space and content. In return the HMD devices generate a similar aspect of confusion, dislocation and in-determination in experience.

In any HMD product, it is the content that viewer/users are in an awareness of despite their critique of the experience's attachment to perceptual reality. The Viewer/users get in the situation of dualism where they both localize an object in

content and knows it's truth as virtual at the same time. The ambiguity of presented shape addresses the problematic of defining what it is. In continuous fluidity, the shape has the advantage of becoming. In such becoming, what is definite is the fact that it is a being. A being that viewer/users are unable to understand the conditions of physical identification. Based on these perceptual experiences, "[w]hat appears does so as a play of presence and a specific absence-within-presence." (Ihde, 1986: 41) It is the value of perceptual dualism in between presence and absence on the object of device, that brings out the elements of spatiality as well as performance.

When it comes to perception, the sensual information that viewer/users collect – in determining background and foreground, proximity and totality, presence and absence, physical and virtual – benefits identification in a binary manner. In perception, the perceptual truth on what is the object and how it relates to environment assist viewers being in presence and awareness of perceptual reality as truth. In experience of a production such as a monitor display, viewers turn in the influence of narration. And in the sensible presence of a medium, viewers can understand the illusion and appreciate as a production. But the problem further expands in the aspect of HMD devices where function contradicts knowledge.

In the exposure of an HMD device, the viewer/users are in continuous determination of such identification. The viewer/users both localize and de-localize the production in the aspect of perception. The object is "what I perceive, but as soon as we examine and express its absolute proximity, it also becomes, inexplicably, irremediable distance." (Merleau-Ponty, et al., 1969: 8) Once the experience of HMD devices produces a missing element in perceptual or technical terms, perceptual understanding of spatial illusion becomes problematic in an adaptation of senses.

Immersing oneself is based on having focused on an object of medium and establishing a perceptual awareness in return. Therefore, for immersion to take place viewers must identify the needed structure as an object and act accordingly. It is the perceptual localization of object of a medium that viewers relate. But in observation of an HMD content, immersion brings such mentioned aspects of concern and dualism regarding separation and identification of object and space relation. It emerges the creation of duality in an example of what is perceptually real and virtual. In this context, for an immersion to occur there must be a sensible object to be immersed in. In such aspect, Selçuk Artut's augmented reality installation relates with viewers as it concerns the localization of objects. But defining such type of production as eversive, the experience may re-evaluate by only means of experience in a performative value. The media has "inherently intended to mediate between the invisible world and or own senses, they open up entirely new aspects of interface and expression." (Novak, 2002: 316) As mentioned, eversion is not concerned with what object of medium contains but how it surrounds the viewer in return. It is the perceptual relation of virtual and real that establishes such concept as it is.

IV. Chapter 3

Sensible Experiences

4.1 Exploration and Perspectivism

In experience, based on de-localization of eversive objects such as HMD devices, panorama, 3D stereo sounding techniques, viewer/users turn in pursuit of what takes their sensual attention within the content. In the case of HMD devices, the content presented is in the form of an omnispherical space that spatially places subject/users right in the middle. In such structure, subject/users can only perceive content by their rotational direction leaving the rest of surround unseen in single perception. So in the flow of data stream, the information presented to viewer/users can only sense partially. All the contextual information, however, is placed in expectation of collecting viewer/user's sensual awareness. But as viewer/users are in necessities of selecting sensual information as primary, the rest of contextual awareness is left as a noise of background. In stereo sounding techniques such as Dolby Atmos and 3D stereo systems, the sounds heard from surrounding demands an instant attention depending on the intensity whereas the visual information presents information only as viewer/users are already in such awareness even peripherally.

The sensation of content in the cases of HMD productions turn similar in perceptual analysis of physical space that once the content becomes a surrounding space; all the sensual sources become objects to perceive instead. And as with space,

it’s contextual totality never unites in single perception as with the content of framed painting or a monitor display. But in the aspect of eversion, “[w]e do not need a totality to work well.” (Haraway, 1987: 310)

In these devices, the prioritization of virtual objects in content is crucial as viewer/users determine the flow of narration. Since the content displayed exceeds field of vision, the viewer/user’s act of navigation determines the sensation that is displayed. In such experiences, the content of narration is not to be understood and perceived neither by a single perception nor definition, therefore, it becomes fluid and polysemous. The content in examination “neither unifies nor totalizes” (Deleuze et al., 1983: 43) but is only assumed by its parts.

As any perceptual object in space holds it’s totality hidden therefore making itself examined and defined partially, the term “perspectivism” (Merleau-Ponty, 1965) is being used to define such process. By perspectivism, viewers inspect the object by it’s parts and conclude it’s definition as they continue a sensual investigation. It is the “lived perspectivism of perception accounts for the realistic appearance.” (Merleau-Ponty, 1965: 34) And by realistic appearance, it is an ongoing (re)constructed form and definition of what the object is and how it relates to the environment. In such (re)construction, it is the act of exploration that changes the structure of form as well as a definition in which viewers are in desire to perform.

In HMD devices, the act of perspectivism is held by the rotation of head movement that functions in the exploration of content. Through the multiplicity of sensual information in an omnispherical space, the content displayed featured to be explored by viewer/users. In the aspect of perspectivist knowledge, the content presented has the potential of being polysemous, since what is displayed as well as

the flow of sensual information depends on the viewer/user's preferences. Because "when one speaks of perspectivism of knowledge, the expression is equivocal." (Merleau-Ponty, 1965: 6) The contextual information becomes a performative act that viewer/users express in the process.

The viewer/users are henceforth, in constant analysis of a spatial environment as in the structural theories of "perceptual cycle" by Ulric Neisser. The perceptual cycle systematizes how viewers evaluate what is perceived and how perception and cognition continuously form a relation. The schemata are based on the cycle of "Exploration, Environment, and Knowledge". (Neisser, 1976) As the sensual perception of environment takes place, viewers use their knowledge of such sense data based on their cognitive memory and explore the given information in the means of experience and the process continuous. It is a cycle where viewers are in continuous relation with what they sense and how they perceive. In such process of perception, viewers are not satisfied with what they acknowledge as reality or truth, but constantly in a desire to re-shape the environment through explorations as with the perspectivism. As the exploration expands, the definitions attributed to spatiality differs.

Lev Manovich's video entitled "Mission to Earth" from his *Soft Cinema* (2005) is a relevant example in which the theories of perspectivism and the perceptual cycle could further be examined (Figure 4.1). *Soft Cinema* is a type of audio-visual production that is displayed on a monitor. It exhibits some layered narratives audially, visually, and textually where the experience of the work can be multiplied.

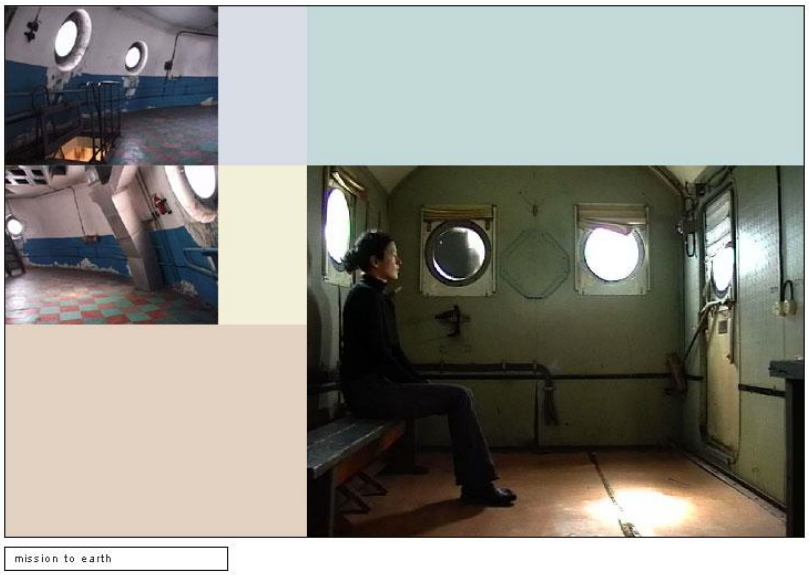

Figure 4.1: Lev Manovich, “Mission to Earth”, 2005

The production of soft cinema is needed a software application that collects an ever-growing database of visual data. The database categorizes videos that share the similar understanding of visual and arranges them accordingly to the keywords in the given timeframe of production. The chosen videos for given certain timeframe can be displayed in estimated three videos at a time. The videos and texts shown, are arranged based on the grid system of the display which is also produced by the software. In experience, viewers are in the realization of multiple videos arranged on the display, the support of a voice narration, textual information floating in the parts of display and colored shapes that support the understanding of both grid and certain theme. “Mission to Earth” “is a science fiction allegory of the immigrant experience” of a woman where she is in observation of a foreign place. In narration, her thoughts and behaviors are being narrated audially where the visuals are being distributed to

the scene displayed. The “multi-frame layout” of the screen, is the related immigrant where she is in comparison to both home and earth.

In one of the scenes, the voice over narration of the immigrant woman who wonders around the city through her car is radially and textually presented where video frames categorized in street shots are being displayed simultaneously. The video shots in this example could be taken from videos that contain the presence of a car, road, street, or buildings. As with narration, viewers in experience, are also in the determination of visual choice of production by considering all displayed visual choices and preferring one as prior. Viewers are not meant to remain where they presently observe but to compare and wonder around other video frames that takes visual attraction peripherally.

As with the concept of perspectivism and perceptual cycle, the visible in the display are multiplied where viewer/users may perceive the narration in given sensual choices. Each constant change in eye direction creates a new way of exploring and therefore affecting by the scenery. Given the freedom of sensual information to viewer/users, the method evokes a non-linear way of understanding a production in which it could not be pre-determined, re-produced or even valued. In such spatial content, “meaning flows interactively as data is generated, recalled and reassembled by users.” (Brown, et al., 2011) In the systematization of soft cinema, the sensual information displayed are in complete control over the software, and not in viewer/users. This means that what is planned to be displayed, is based on a certain algorithm of software matrix that intelligently determines the visual production. It is designed by leaving no way of determining its choice of sensual selection for certain timelines.

The act of performance based on the expereince “Mission to Earth” experience is a type of exploration as viewer/users could not pre-determine what to perceive as well as how to react. Therefore in the first time of experiencing the production, viewer/users are perceptually only left with spatial choices of interaction within the content. The visual multiplicity “is an absence of meaning full of all meanings.” (Barthes, 1977: 42) The production in this context may not be in a certain direction of narration in content, but could offer a space where any perceptual interpretation is possible.

4.2 Towards a Sense of Unification

The HMD devices complexify the nature of perception as viewer/users are in conditions of an illusion. Perceptually such devices do not present themselves as objects of perception, and the content does not totalize itself as definite. But in the light of perspectivism and exploration within content, the content turn into spaces where it is only defined by experience. For the reasons that the HMD devices do not have the value of framing of production, the content becomes inseparable in the viewer/user’s relation with space. For there is no framing or conditioning in experience, there remains the freedom of sensual performance as “the disappearance of the object is fundamental to performance.” (Phelan, 2004: 147) In such contextual framework of an HMD device, the production is in every intention of performance as its content is omnispherical.

To get performative experiences from the productions of HMD devices, the content has to be lived through in perceptual and physical terms because the experience of a product is rather what is lived in temporary behavioral and perceptual

conditions. In the case study of Doom, as the viewer/users are in control of an in-game character, the HMD devices grant not only to perceive the space of digital in spatial terms but also to make themselves re-embodied perceptually. In such perceptual re-embodiment of viewer/user's experience, the expressive methods of performance take action as in having rotational head gestures by the device Rift, and hand gestures by the device Touch. In the experiences of gameplay, viewer/users re-embody themselves in the actions performed by both sensual feedback and key navigations. And in the HMD example, the sensual feedback further expands in viewer/user's environment through the performative value of action. In such performance, the viewer/users become unified in single experience as "Every form of consciousness presupposes its completed form." (Merleau-Ponty, 1908)

Regarding understanding how experience can be completed, there needs to be a brief re-evaluation of perception. In fact, in visual terms, what viewers visually see of an object is never complete perceptually regarding totalization. Through perspectivism and perceptual cycle, objects demand a constant care and desire be explored at. In perception, there is no totalized and objective value of an object since from the angle of viewing to the spatial and even emotional conditions there remains variables in addition to sensual experiences. Therefore, to evaluate and define the value of completeness in experiences, there must be an acceptance in the unification of all variables as parts of the experience.

In the aspect of media such as HMD devices, a unity of experience does not limit itself in the illusory understanding of object but "on the contrary is recognized by the fact that it is not obtained by a restriction of the milieu." (Merleau-Ponty, 1908) It is the unified value of all variables but not by the lacking elements that viewer/users desire to.

In Marshall Mc Luhan's theory of "Medium is the Message" the concept of unification could be further elaborated. Mc Luhan defines the experience of media as the way they are sensually perceived. He establishes a relational degree on how medium and its perceptual relation with viewers construct experiences in a unified sense. It is the way that media communicates with its viewers that produce the experience of production as the unification of both contextual narration and production method that brings such experience. As with the inclusion of visual media such in the examples of framed painting, panoramic imagery to HMD devices, there is always a production of content that is generated or placed on medium functions to distribute the information to viewers sensually. It is therefore assumed that, the content is perceived only by the capabilities of the medium itself and that there is no possibility of separating the content and medium from each other. And as far as the understanding goes, the medium matters on how viewers expose and interpret the given content. How content presents itself to viewers, is also the end-product on how the experience shapes. In the critiques of personal consequences as experience, the scale of understanding should be defined by medium's own perceptual value. Through each evolution in the technology of mediation, the perceptual understanding of media differs as well as the very definitions that lead way to the acceptance of unity.

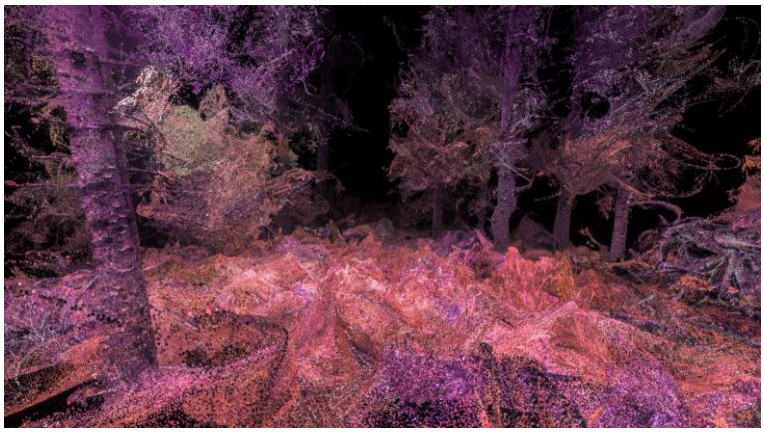

Figure 4.2: Marsmallow Laser Feast Group, “In the Eyes of the Animal”, 2015

“In the Eyes of the Animal” (2015) is an interactive outdoor installation by Marshmallow Laser Feast Group for “AND Festival” (Figure 4.2). The installation consists of a custom-made HMD device that allows viewer/users to experience various animal-eye views of the forest Grizedale in the United Kingdom. The 360-degree video is collected and adjusted by Lidar and CT scanning of the environment through air-drone media. The scanning techniques capture and digitize the environmental data into particles for the impression of each animal view. The HMD device uses 3D Audio Engines along with positional tracking of visual and audial sensories to provide the sensation of virtual reality. Additionally, the medium SubPac is used to collect the bodily resonations of animal subjects and adapt to bodies of viewer/user’s as a wearable for tactile part of body immersion. In total experience, the viewer/users are in an audial, visual and tactile sensation of the presence in the collected digital space of the forest.

In this HMD device example, viewer/users who investigate the provided content are in wonder of space where they turn in the impression of looking through an animal’s sensual views of a forest. In comparison with human perception of things, viewer/users are exposed change in their visual and audial senses in return.

The spatial elements such as objects in space are very much different from how they look in the human sense of description. In the example, the appearance of a tree is not defined by the contours and physical elements of its surface but in particles where the object radiates its pollens over the surrounding. In the sense of performative value, “our experiences are organized not by real objects and relations but by the expectations and meanings objects have for the body’s movements and capacities.” (Grosz, 1994) It is a production that prioritizes the value of performance to enhance the sensation of re-embodiment.

This re-embodiment of the self establishes a way of empathy where the viewer/users may experience space from the spatial perception of another. In the case of given example, the choice of space selection enables viewer/users to be exploring space through the animal’s sense view, instead of viewing the animal from a far distance. In HMD devices, instead of perceptually viewing the body of the animal and creating a compositional value of its relation with the environment, it gives sensations from the viewpoint of such animal. By the sensual (re)embodiment, viewer/users can not visualize their body or personality just as “I know very well that I will never see my eyes directly and that even in a mirror.” (Merleau-Ponty, 1965: 29)

The viewer/users, in experience, are incapable of visualizing their virtual body but only experience space through such bodily presence. In experience, “it is not an image itself that embodies a particular meaning in interactive context, rather it is the process involved.” (Brown, et al., 2011) It, therefore, creates the experience of being the animal itself. The production by the performative value of experience depends on how viewer/users sense space and may, in fact, be someone else in return.

V. Conclusion

From the start of earliest examples of mediations in the history of sensory media, subjects are in concern of creating media that assist transporting the messages they wish to broadcast. In the concerns of legibility and production, the narration must interact with the aimed viewers in provided grounds. For that reason, there must be an inclusion of spaces as well as the object of the medium into the production. Throughout the history, there has been the exploration of media that shape the way of understanding in the concern of content and repercussion on viewers exposed. In the media of framed painting, monitor display, photographic images, etc. the mediation is produced in the means of immersion that viewers are expected to expose in best conditions possible. Whereas, in the mediations of the stereoscope, VFX-1, Rift, stereo sounding, Theatrophone, panorama, etc. such obligatory conditions are not in concern, but viewer/users are already in the presence of experience by the eversion of the medium. This eversive movement is not brought to attention with technology but in consideration of production types which are sensible.

As the sense of medium changes our perception of viewers-object-space relation, the viewers/users turn into a dualistic understanding of realism. In such concerns, this study suggests an understanding of unification of viewers-object-space relation in an awareness and experience as a whole with its content which is inspired by Merleau-Ponty's theory of perceptivism. By these mediations, viewer/users can

be in improbable ways to perceive things that bring new methods and understandings to the experience.

As an outcome, the viewer/users can also experience the sensible information in the highest empathy possible. These mediations propose a polysemous understanding of production in which viewer/users may be in the choice of performance and acceptance. As viewer/users are in more bodily freedom the more they may feel present. The produced narration turns into space where viewer/users appropriate the conditions as own. In this instance “the technological becomes cultural, and the immersive becomes everted.” (Novak, 2002: 312) It is not a newly introduced but still progressed space where there is the possibility of sensing out of our body.

Each medium of eversion may overcome another obstacle in the fantasy of having “the ultimate empathy machine” as the artist Chris Milk stated but, in each case, there is a definite progress on both advancing through technology and re-establishing the prejudiced understanding of viewer/users in the experience of virtual reality. In such an experience, the “technology can attribute, not just to the functional, but to the expressive and emotional textures of people’s lives.” (Hansen and Kozel, 2007) And in the acceptance of experience as mediated, illusory, virtual, and produced, subjects are left with pure bodily experiences that they may, in fact, have the chances of being something or someone else.

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