Being (in)Between:
Space and Subjectivity in Video Game Worlds

Leigh Miller
Charlottesville, Virginia

Master of Arts, University of Virginia, 2015
Master of Architecture, Savannah College of Art and Design, 2011
Bachelor of Arts (Hons.), George Mason University, 2007

A dissertation presented to the Graduate Faculty of the
University of Virginia in Candidacy for the Degree of
Doctor of Philosophy in the Constructed Environment

Department of Architectural History
University of Virginia School of Architecture
May, 2020

The Dissertation Committee for Leigh Miller certifies that this is the approved version of the following dissertation:

Being (in)Between: Space and Subjectivity in Video Game Worlds Video Game Worlds

Committee:

_____

Dr. Richard Guy Wilson
Architectural History Department
University of Virginia School of Architecture

_____

Dr. Nana Last
Architecture Department
University of Virginia School of Architecture

_____

Dr. Christopher Ali
Department of Media Studies
University of Virginia

Table of Contents

Acknowledgments

This dissertation was funded by the University of Virginia School of Architecture and the Digital Humanities Fellowship from the University of Virginia Scholars' Lab.

I would like to thank my committee members. Thank you to Richard Guy Wilson for sticking by me during this unconventional undertaking. To Nana Last for encouraging me to take on the topic of video games and for all of her tough love, pushing me along the way. And to Christopher Ali, who has been a constant source of support, both in terms of editing feedback, and for my long term career goals.

Thank you to the UVA Scholars' Lab. Brandon Walsh has been a champion for every aspect of the project since we met in 2018. Arin Bennett's creativity and willingness to problem solve made the virtual reality part of this project possible. Thank you both.

There are several people in my personal life who deserve more than a simple thanks. Each step I have taken in academia has been because of the example my mom, Jane, set when I was a little girl, while watching her complete her Masters and PhD. Her moral and logistical support has been invaluable. Thanks also to my mother in law, Merriman, for her moral support.

Kelly Ritter has been an incredible friend, as we adapted to becoming mothers and PhD Candidates together. I am beyond lucky to know this amazing human and scholar.

Thank you to my children. My son, Aaron, was born just before I submitted the final version of this dissertation. While writing, his kicks and belly squirms were a constant reminder of what really matters in life. My daughter, Ivy, taught me more about how to *be* in this world than I ever thought possible, and for that I am eternally grateful. I hope that one day she will be as proud of me for doing this project as I am of my own mom for all she has accomplished.

And to my husband, Isaac. To say he was supportive would be an understatement. He went above and beyond what could be expected of any reasonable spouse at every turn, from his reassurance, to helping collect video game images, and troubleshoot various aspects of the project with me. It is not an exaggeration to say that I could not have done this without him.

I am humbled to have been given the opportunity to do this. It has been a privilege.

List of Figures

Introduction

Space, Time, Materiality, Place

As the player navigates the avatar to open the lighthouse door and enter a moonlit area, the sky ablaze with stars, Elizabeth explains that there is "always a lighthouse. Always a man, always a city..." and that the lighthouses are all doors. This is a visually striking moment at the end of the video game *BioShock: Infinit*e, where space and time coalesce. The art deco style lighthouses rise out of the ocean water, gently rippling at their bases, with a soft mist enveloping them. The lighthouses appear to go on infinitely, as far as the screen allows, with small points of light glowing atop their spires [Figure 1.1]. The player moves the avatar forward, a protagonist named Booker, who follows Elizabeth, a non-player character (NPC), which is a character coded and controlled by the computer rather than a human player. A stone walkway emerges before them, constructing itself in front of the avatars like puzzle pieces, rising up out of the water so that the avatar may walk from one lighthouse to another. As they enter another lighthouse door, Booker emerges in a similar looking space, and Elizabeth is already standing before him on the other side. Here, it is twilight, a pink glow settles on the scene. The lighthouses look older, using wood and more rustic materials, and the player can see two other avatars who look just like Booker and Elizabeth, similarly walking along wooden pathways that emerge from the ocean water.[1]

[1] *BioShock: Infinite*. Video Game, Developed by Irrational Games, (2K Games: 2013).

Figure 1.1. Art Deco lighthouses in *BioShock Infinite*.[2]

Figure 1.2. Lighthouses in *BioShock Infinite*.[3]

This point in the game play of *BioShock: Infinite* speaks to several of the issues that arise from playing and observing video games. The space of the video game takes a different form than our traditional understanding of what it is to occupy space in the physical world. To begin, space should be thought of broadly, as that which can be occupied. It is a big topic, but has some

[2] MrBlockzGaming, "BioShock Infinite FULL Walkthrough No Commentary Gameplay Part 1 Longplay (PC) [1080p60fps]," YouTube Video, July 24, 2017, https://www.youtube.com/watch?v=My5FK614tGU.
[3] MrBlockzGaming, "BioShock Infinite."

basic qualities. Space is usually filled with material properties. Both video games, as a form of space, and the physical world, as another kind of space, contain elements like objects, people, and animals. In most cases, both have types of environments, containing a range of things like weather patterns, flora, fauna, a sky and stars. The initial difference between digital video game space and physical space is that video games are defined by their coding. The logic of the codes that write the space into being preceded the space itself. It is the abstract matter that forms the media of the video game, in much the same way that paint is the raw material for a painting. The difference is that a painting is a depiction of space, while the codes of a video game take up similar concerns as the practice of architecture as to how to build and construct an entire world that can be experienced from within, and affected by, a player. Coding implies that the space is not preexistent, it is very literally produced. The code is performative--it performs the action of creating space. This in turn suggests that the space in the video games is performative. That is to say that the space itself does work, producing qualities that are experienced by the video game's player or observer. The space puts forth a series of actions that are undertaken by an experiencing subject.

Video games are an object of study at the crossroads of disciplines that shape the constructed environment, and yet they remain largely unstudied as architectural spaces. Like architecture, video games speak to ontological questions of how the player conceives of themselves as being in a space. At the same time, they are a unique medium, in that they are highly immersive, interactive, technological undertakings that present the user with their own attributes of space. A player, or a physical body who intends to engage the game, turns it on and initiates the space to form on their computer or television screen. This might include observers of

the game, who are not involved in controlling the actions of the avatar visible on the screen, but who are also drawn into the game space, either by simply being present, or by participating verbally. The avatar is the representation of the player within the video game space. It is the digital surrogate for the player's body within the space. In some ways, the avatar is also the digital surrogate for the observer, in that it is the only manifestation of the player or observer available within the game space.

Examples like the lighthouses in *BioShock: Infinite* demonstrate three areas that emerge from the space that help to understand how space is functioning as performative. First is the concept of time. Time operates according to its own rules in video games that are distinct from the physical or clock time that governs the physical world. In *BioShock: Infinite*, stepping through one lighthouse door into another area of lighthouses is commentary on the idea that video games present multiple temporalities to the player or observer. Video games are doorways to other flows of time. Second, materiality is used to draw specific associations. In the example of the lighthouses, different materials are used to signal that the player is moving between different locations--one area is made of stone, art deco light houses, and the other is metal and wood, with wooden pathways. Third is the way time and materiality come together to form a sense of place in the video game. The tendency when describing areas is to refer to them as places--the "place" with the lighthouses. The performance of the game space produces temporal and material conditions that combine to create a sense of place within the video game space.

The way in which the video game is or is not a space, the way time operates, the material culture presented by the game, and the way in which the game space seeks the player or observer's mental and emotional investment in it as a place, are analogous concerns to how our

physical bodies experience these effects in the physical world. The video game world and the physical world are usually thought of as discrete entities--the game world made up of a series of images, and the physical world as something that we can touch and experience with our bodies. The video game world is not a substitute or a stand in for the physical world--a video game gun is not lethal the way a physical world gun is. Rather, the video game is suggesting new ways of approaching the study of space and our way of being in two places at once: when engaged with the game space, the player or observer is neither fully within the digital world of the video game, nor are they fully present in the physical world of their living rooms. Space in video games is configured such that the player or observer occupies an inbetween ontological state when they play or observe.

Video game space is a way to understand architecture as performative, meaning "dynamic and transversal."[4] Each chapter of the dissertation identifies performative components of space, time, materiality, and place, and explores them as a series of equations. These modalities are some of the aspects of video games that critically link the concerns of video game space and the physical space of buildings and landscapes, and the way that these elements in video game space draw the player or observer into it in a way that suggests they are occupying both the game space and the physical space simultaneously.

These equations establish one way to consider how the space of the video game is able to produce time, materiality, and place, and to do the work of drawing the player or observer into an "inbetween" ontological state. Space is described as dynamic through the equation

[4] Lukas Feireiss, "New Babylon Reloaded: Learning from the Ludic City," in *Space Time Play: Computer Games, Architecture and Urbanism: The Next Level*, eds. Friedrich von Borries, Steffen P. Walz, Matthias Böttger, (Boston: Birkhäuser Verlag AG, 2007), 218-221. Feireiss issues a call to arms for architecture to once again be understood as performative, the way it was in the 1960's. He identifies video games as a medium that allows for architecture to be performative.

Space=Visuality+Gateways of Significance. The space of the game breaks down the perceived boundary between the video game world and the physical world. Visuality, or the appearance of the game, and Gateways of Significance, or critical junctures within the world of the game and those junctures tha reveal the inbetween, are positions from which the inbetween ontological state is visible.

Space produces temporal conditions within the game that are distinct from time as it passes in the physical world. The equation Time=Distance+Death suggests that time is primarily expressed through the way distances are presented and traveled, as well as an embodied sense of being in the game space, specifically through the way the avatar dies and respawns, returning to a state of gameplay. These elements of game play activate temporalities within the game and the physical world. Within the inbetween state, multiple, simultaneous temporalities exist.

The performative function of materiality is expressed through the equation Materiality=Encounters+Navigation. Space allows for material conditions to emerge, which become the scaffolding for the experience of space itself. It has a distinct tectonic quality. The way the world looks and appears during moments where the player or observer is traveling around the game world as a tourist speaks to the material functions of the game space. It makes the game world come to life.

Space sets the conditions from which time and materiality emerge in the game world, which combine to create a sense of place, as in the equation Place=Time+Materiality. Each element of this equation has limitations, discussed in the context of the designer's role as a mediator of these modalities, and the individual player's experience of them. The way the elements of time and materiality unfold for the player is determined by the designers, which

affects their experience of the game as a place. While these elements work to create a distinct feeling of place within the game space, the ability of the game space to be a place is limited by these factors.

Ultimately, what is significant about these equations is that they suggest the importance of the player or observer's experience of the video game world is reconfiguring the very meaning of being within a space. These equations are one way to understand that video game space presents a multiplicity of being within either world, or between worlds. It decenters the experiencing, human subject--the player or observer--allowing for limitless possibility and reconfiguration of the experiencing subject as they move through each world--the video game world and the physical world--altered by their experience of each. Thus alternative, hybrid subjectivities are produced by the space as the player or observer experiences the flow of time, materiality, and thus place, inbetween spaces.

The importance of understanding the phenomenon of video game space and how this affects the experiencing player or observer's subjectivity is that this media is inevitably affecting the way we approach our physical world. Video game space extends beyond itself, out of the world of the game and into the physical, out of the discipline of game studies and into the field of architectural theory, and out of the world of entertainment to suggest something about human experience. Like other "new media" that came before, cinema and television, for example, video games are often approached with trepidation and fear.[5] They become the conservative scapegoat for mass shootings--for example, playing too many video games was the supposed reason the Columbine killers slaughtered their classmates at Columbine High School in 1999. Annabel Jane

[5] Vincent Mosco, *The Digital Sublime: Myth, Power and Cyberspace* (Cambridge: MIT Press, 2004).

Wharton, an architectural historian, is not alone in the argument she puts forth in her book, *Architectural Agents: The Delusional, Abusive, Addictive Lives of Buildings,* that video games are addictive.[6] More broadly, many scholars, like Manual Castells, are skeptical about the role that the "networked society" is having on us as a whole. In *The Rise of the Network Society,* he argues that the internet, consequently used for most video game play today, is creating a *space of flows* in which community, history, and traditional notions of time are lost, and we are decentered.[7]

If the negative assumptions from which video games are usually approached are eliminated, and it is accepted that video games are a part of the space of flows that decenter us, it is an opportunity to consider the ways in which being decentered can be enlightening, and how video games are their own spatial typology. Without a center, space is generative of the conditions that we perceive as filling that space, such as time and materiality, in any number of possible configurations. Space must be restored as the generative thing that gives form to the conditions of temporality and materiality that, in game space, is what we perceive. In video games, it is space itself that generates these conditions because it preexists them. It is not an empty void to be filled, but rather contains all of the coding and algorithms that the player or observer of the game will perceive. Space in video games is a field of infinite possibility because these conditions can be programmed to take on any form. Space comes first. In doing so, space reconfigures the boundary between the physical and video game worlds to create a unique ontological state. The participant exists in-between the physical world and the video game world, suspending traditional notions of time, materiality, and place.

---

[6] Annabel Jane Wharton, *Architectural Agents: The Delusional, Abusive, Addictive Lives of Buildings,* (Minneapolis: University of Minnesota Press, 2015).
[7] Manuel Castells, *The Rise of the Network Society*, (Malden: Blackwell Publishing, 2000).

When space is generative and considered a priority, then space itself drives the creation of all other material and temporal factors that compose the game world and is responsible for disrupting the boundary between the game space and physical space. This allows for an exploration of how the boundary between the physical and game worlds bleed from one to the other to the extent that the separation is almost imperceptible, and for this reason the experiencing subject, the player or observer, within the space is reconfigured. A new type of "you" emerges. Understanding the formation of a subject along a spectrum shows that space itself can construct a subject within the game context. When the boundaries are transgressed, space itself becomes constitutive of the experiencing subject. Game play and the subject playing come into being together within the space of the inbetween--between video game world and physical world.

Scope

The video game industry is massive, with wide consumer appeal. Because games are composed of the same elements of buildings, landscapes, people, and environments that concern architecture, it is one that the discipline of architecture needs to understand. The field of architecture needs to take an active role in the shape of environments and cities that billions of people will experience, even if it is done digitally. This will allow architects and theorists to be proactive in translating those experiences back and forth between the digital and physical, mutually coexisting. The size of the video game industry and the myriad types of games and genres that are available requires some parameters to be set for a study of the nature of space and

the construction of subjectivity within it. These parameters include the specific type of game included in this discussion, the moments of gameplay that are most pertinent to understanding space and subjectivity, their degree of commercial success which suggests their reach, as well as my own experience and access to the games included.

The *BioShock* trilogy of games, from which the lighthouse example at the beginning of this chapter is taken, is part of a group of games that I refer to as having immersive ecologies.[8] An immersive ecology is one in which the world constructed that the player or observer sees and interacts with is a critical part of the experience of the game. While the conditions established by space that puts forth time and materiality in the game world are unique across the medium of video games, it is those games with immersive ecologies that speak most directly to the inbetween ontological state. The specific games included in this study are listed in Appendix 1, which is an annotated gameography. Evaluating select games with immersive ecologies excludes certain types of games, in which space, time, materials, and place function differently than they do when immersive ecologies are present. Among those excluded are puzzle games like *Tetris,* which incorporate the same elements, but they function differently. For example, the space of *Tetris* is flat--the menu interface and the black box in which the puzzle pieces are arranged is a very different type of space that puts forth different conditions of time and materiality. Time in *Tetris* is a major factor of game play as a clock counts down the physical-clock time spent on that level.[9] Advancing from one level to the next by completing increasingly difficult levels is the primary objective. Video game scholars, like Jesper Juul, describe this as a ludic game, one in

[8] Originally released as *BioShock*, Video Game, Developed by 2K Boston, Directed by Ken Levine, (2K Games: 2007).
[9] *Tetris*, Video Game, (1984).

which the rules of the game are the primary mode by which it is experienced.[10] The same is true for games that emphasize violent combat, like first person shooters (FPS). The rules of engagement necessarily override many other aspects of the game as a space that produces a world with qualities of place. The space of the game serves as a battle arena rather than an ecology. Similarly, life-simulators like *The Sims* or *Second Life* ask us to create one to one relationships with the game space as stand-ins for the physical world.[11] Massive multiplayer online games (MMO's), like *World of Warcraft* or *Eve* online, use time and materiality differently still, as they feature the social, cooperative elements of gameplay in ways that are unique to MMOs.[12] Sandbox games, or those in which the player has perceived freedom to explore the world without limits, like *Minecraft* and *No Man's Sky* also function differently.[13] They lack the mediation that ends up being a critical part of an immersive ecology--the interplay between designer mediation and player use. The interactions between these entities and the world of the game, is part of what creates a spectrum of agency, which ranges from the codes of pure logic that are the building blocks of space, human centric models of subjectivity in which the human as control over their surroundings, posthumanism, which acknowledges the human reconfigured by technology, and postphenomenology, which gives equal agency to materials and humans.

It is important to note that not all games fit neatly into these typologies, which is why it is necessary to consider the presence of an immersive ecology broadly. For example, the *BioShock* trilogy is a series of first person shooter games, but they take place in an ecology that, while

---

[10] Jesper Juul, *Half-Real: Video Games Between Real Rules and Fictional Worlds*, (Cambridge: MIT Press, 2005).
[11] *The Sims*, Video Game, Developed by Maxis, (Electronic Arts: 2000-2019), and *Second Life*, Video Game, Developed by Linden Lab, (2003).
[12] *World of Warcraft*, Video Game, Developed by Blizzard Entertainment, (Blizzard Entertainment: 2004) and *Eve Online*, Video Game, Developed by CCP Games, (Simon & Schuster, Atari: 2008).
[13] *Minecraft*, Video Game, Developed by Mojang, (Mojang: 2011) and *No Man's Sky*, Video Game, Developed by Hello Games, (Hello Games: 2018).

labyrinthine, is more than just a battle arena. Although the gameplay itself is largely focused on violent action, the cities in which the games take place are themselves a dominant character and element of the game experience. While immersive ecologies are often role playing games (RPG's) that are largely narrative driven, they do not have to be. RPG's are games in which the player takes on the mantle of a fantasy character, and are almost always defined by a skill-level progression, which is not a requisite for an immersive ecology. These games are often driven by narrative stories, but the focus of the immersive ecology is not the narrative. While the narrative may or may not be compelling, and sometimes factors into the way in which the player moves through the world as they uncover new quests, the narrative is not the primary factor in the way that the game world configures subjectivity. The concept of an immersive ecology is one that is not bound by game type, genre, style, skill level, or narrative structure.

Games with immersive ecologies are the subject of this study because of the way in which they use space to configure time and materiality, and thus place making, for a singular player or a very small number of players. These types of games produce a realm that is explicitly concerned with the way in which the player or observer is within the world of the game space. Espen Aarseth, a video game scholar and narratologist, refers to "virtual environments," in that the player is embodied in the world of the game through the use of an avatar.[14] Immersive ecologies suggest something more specific. It is the way the world of the game consumes the player, much in the way a virtual environment might, but it is also emphasizing the ecological component of the game space--the back and forth relationships that evolve between physical player or observer, and the content of the world of the game space. These are video games in

[14] Espen Aarseth, Solveig Marie Smedstad, and Lise Sunnanå, "A Multi-dimensional Typology of Games," in *DiGRA '03 - Proceedings of the 2003 DiGRA International Conference: Level Up*, vol. 2. (2003), 48.

which architecture and landscapes are central to the gameplay experience, rather than an emphasis on racing against the game clock, or engaging in battle royale style combat. In an immersive ecology, the environments have some degree of agency in their own right to affect the way the player sees and experiences the world around them.

Studying immersive ecologies necessitates looking at a range of moments of gameplay. Studying the nature of the inbetween state that exists between virtual space and physical space requires that moments where this relationship is visible are evaluated. This is most often in the in-between moments of game play themselves. This means looking at the visual style of the game, moments when the game spaces are loading, the game maps and modes of travel between points in the world, the conditions for death and regeneration in the game space, wayfinding devices, the way in which in-game histories and game lore are revealed, the types of interactions with non-player characters (NPC's) and non-human characters, like dogs and horses, and the game menus and way in which the player interfaces with the game world.

All of the games chosen as examples of immersive ecologies for this study are lauded within the game community as either commercially successful, like *Red Dead Redemption 2*, or for its artistry, like *Gris*.[15] This also results in a cross section of games that were produced by major studios, as well as smaller indie games. This way my sample was not limited to the way major production companies, with lots of resources at their disposal, handled things like menus, load screens, and hyper-real graphics. All of the games in this study were produced between 2005 and 2018. Between 2005-2006, the three main home console companies released the seventh generation of game consoles. In what became known as a phase in the "console wars,"

[15] *Red Dead Redemption 2*, Video Game, Developed by Rockstar Games, (Rockstar Games: 2018), and *Gris*, Video Game, Developed by Nomada Studio, (Devolver Digital: 2018).

Nintendo released the Wii, Microsoft released the XBox 360, and Sony released the Playstation 3. This period brackets the earlier phase of the games used in the study because of the ability to use blu-ray technology seen in the Playstation 3, which made it viable to have much larger sized worlds in games than had previously been seen. Since the early 2000's, the technology was available for video game worlds to render in what appeared to be three dimensions, which meant that the player could move through a world with depth, rather than across the screen from left to right, as in platformers like *Super Mario World*.[16] Blu-ray technology meant that the size and scope of these three dimensional worlds became massive, if not slow to load, as more data could be fit onto a game disk, and the degree of realism that could be achieved radically increased. With this came a level of hyper-real looking games, and the expectation of it as almost synonymous with a games ability to be immersive to a player. *Red Dead Redemption 2* was released in October of 2018, and is the most recent game evaluated. Because it was so critically acclaimed and commercially successful that it requires inclusion.[17]

The video games selected for this study are games that I have played myself, and have observed others playing, either in person or by watching YouTube videos.[18] The games evaluated are *BioShock* (2007), *Fable II* (2008), *Dear Esther* (2012), *Journey* (2012), *BioShock: Infinite* (2013), *Witcher 3: The Wild Hunt* (2015), *Horizon: Zero Dawn* (2017), *Red Dead Redemption 2* (2018), and *Gris* (2018).[19] Each of these games are examples of immersive ecologies that also

---

[16] *Super Mario World*, Video Game, Developed by Nintendo EAD, (Nintendo: 1990).
[17] *Red Dead Redemption 2* grossed $725 million in its first weekend of sales, making it the most commercially successful opening weekend in entertainment history. "*Red Dead Redemption 2* Achieves Entertainment's Biggest Opening Weekend of All Time," Business Wire, October 30, 2018. https://www.businesswire.com/news/home/20181030005459/en/Red-Dead-Redemption-2-Achieves-Entertainment%E2%80%99s-Biggest
[18] Watching YouTube videos of video game play means that gamers have dedicated channels to posting videos of their gameplay. This means that they mirror their screen, so to a viewer the video looks just like it does to the player.
[19] *BioShock*, Video Game, Developed by 2K Boston, Directed by Ken Levine, (2K Games: 2007), *Fable II*, Video Game, Developed by Lionhead Studios, (Microsoft Game Studios: 2008), *Dear Esther*, Video Game, Developed by

represent different modes of being with the space of the game. Different relationships with NPCs, objects, and visual styles ask the player to reconfigure their expectations formed by the physical world and accept the space of the game in different ways. Each uses different techniques to create a sense of "being" in the world. While playing the games was informative, it was by watching them that the most interesting observations were made. Playing the game has the effect of being too immersive--I became lost in the world and forgot to notice the trees for the forest. By watching the game and observing, I was able to pause and rewind, take screenshots, and thoughtfully consider the elements of time and materials being produced by the space in a way that I could not when playing myself. The different experiences that come from playing a video game versus observing one are striking. Playing requires you to become absorbed in the act of being in the world--traveling around the world as a tourist, surviving combat, solving puzzles, and navigating the space. Observing allows you to look at the way the whole of the game functions together, and to see relationships that emerge from elements of game play that are otherwise consuming.

Space

Video games with immersive ecologies represent a cross section between a world of infinite possibility, and a space of mediation and control. They offer possibilities in terms of what they might become, and are limited by imagination and the technological capabilities of the machines

---

The Chinese Room, (The Chinese Room: 2008, 2012), *Journey.* Video Game, Developed by Thatgamecompany, (Sony Computer Entertainment, Annapurna Interactive: 2012, 2015, 2019), *The Witcher 3: The Wild Hunt*, Video Game, Developed by CD Projekt Red, (CD Projekt: 2015), *Horizon: Zero Dawn,* Video Game, Developed by Guerrilla Games, (Sony Interactive Entertainment: 2017), *The Elder Scrolls V: Skyrim*, Video Game, Developed by Bethesda Game Studios, (Bethesda Softworks: 2011).

on which they are run. They can offer any number of spatial possibilities, timelines, and material conditions that make up the experience of the game world. Yet, what we see before us that constitutes that world is chosen by a team of designers and producers. They are deliberate, highly mediated worlds that, although they often suggest free will and choice, are actually quite limited by the decisions made by the design team.

The chapter discussing space does so in the context of the equation Space=Visuality+Gateways of Significance. It suggests the performative nature of space, as it generates the conditions of time and materiality that are experienced by the player or observer. The visual aspects of the game are the first, and most obvious impression the game space will make on a player or observer, drawing them into the world of the game. Gateways of Significance mark critical junctures within the game itself. These are two places where the boundary between the game space and the physical world are visible, and the function of the inbetween area, where subjectivity is reconfigured, can be evaluated. The equation understands space as dynamic.

The space is infinite, but expressions of it are mediated, which brings up a larger issue of agency within the space. Agency, in this sense, refers to the way in which people or objects intervene in the space to have an effect on the conditions of that space. Agency is a critical component of an immersive ecology, and it refers to the choices made by the design team in manifesting the conditions of the space. It is the degree to which the player has an effect on that space, by being present in it and interacting with it. It refers to buildings, objects, and non-human actors in the game space, and the way in which they have the agency to affect the experience of the game.

This agency can be understood along a spectrum of subjectivity. Each of the elements of game play that speak to the inbetweenness of the space are really seeking to understand how the subject--in this case the experiencing player or observer--is mutually constructed by the game space and the physical space. It is this back and forth flow between the space that has an effect on the subject as an actor with agency in the game space that constitutes the experiencing subject. In this case, the spectrum is delineated by human centric models of subjectivity, like Heideggerian phenomenology, on one end, and postphenomenology on the other end, in which all material and non-material objects are assumed to have an equal amount of agency. Even further along this spectrum is the pure logic of coding, which is the raw matter for the space to exist. While important, coding itself as a process related to the formation of a subject remains outside the scope of this study. Different game circumstances create different points along this spectrum, or varying degrees to which they ask the player or observer to be individuals experiencing the game, or to be one part of something larger as the game world is navigated and viewed. This experience, in turn, forms a feedback loop that alters the subjectivity of our physical ontology. There is reciprocity in this experience.

It is by putting the matter of space first, as the generator of all other conditions, that allows for the consideration of the construction of subjectivity with the inbetween ontological state. The inbetween state exists as one in which the player or observer is neither fully present in the physical world, nor are they able to fully occupy a digital space of the game in a way that is equivalent to physical presence. It is the site where the experiencing subject is reconfigured, and where multiple, simultaneous temporalities and materialities flow. The space of the game world must be generated before any other factors that constitute the experience of the game can be

manifest. Too often in architecture and planning theory, space is understood as an immutable and unchanging void to be filled by our lived experience of places, which provide texture, variation, and gives space meaning.[20] Understanding immersive ecologies in video games reverses this--space comes first, and place is a product of the way time and materiality combine according to the rules established by space.

The boundary between the physical world of the living room in which the player or observer sits, and the digital world of video games seen on the computer or tv screen, is transgressed in unique ways. Heidegger's concepts of raum and locale are useful as a starting point for considering how this transgression functions. In his essay, "Building, Dwelling, Thinking," Heidegger discusses that raum is a boundary. It is unique in that a boundary is not something that encloses a space, like the walls of a room, but rather something from which space extends outward, like the horizon. Locale is the term he uses for place, which is associated with human cultivation of a specific area. Locales pull people inward, toward them. This inward-outward interplay between raum and locale is useful in the context of video games. The space of the video game world expands outward from the perceived boundary of the screen, while the locale of the game space draws the player or observer inward. The construction of the subject, in this context, is the extent to which they are called into the world of the game. Raum suggests a multitude of ways of being in space, called across a boundary from which space expands infinitely. This is the key moment in how we think of space in the game world--as a multitude of possibilities. Those possibilities, the way in which we are called across the

[20] For example, see Martin Heidegger, "Building Dwelling Thinking." *Basic Writings From Being and Time (1927) to the Task of Thinking (1964)*, ed. David Farrell Krell. (New York: Harper & Row, 1977), 356, and David Harvey, "Space as a Key Word," in *David Harvey: A Critical Reader,* eds. Noel Castree and Derek Gregory, (London: Institute of Education, 2004).

boundary to the locale, or the place, within the game, manifests as specific temporal and material conditions within that multitude.

Space as the primary driver for temporal and material conditions reconfigures the way in which we understand place, not in terms of physical proximity, but rather in terms of a field of possibility.[21] They are a space in which new types of subjectivity can be explored based upon the particular configuration of time and materials that are manifest by the space. In the game space, the experiencing player or observer becomes a subject-object hybrid through this back and forth feedback loop. The player or observer is a subject in that they are affected by, and have an effect on, the game space, but are simultaneously a digital object within the game--an avatar appearing on the screen in some form, interacting with other digital objects.

The feedback loop of subjectivity is vital for understanding the way space functions to produce a multitude of possible conditions from which time and materiality emerge. Vision is the first function of space, ordering it. When seen in the context of the feedback loop between the game and physical space, the space is decentered--there is no unified sense of space from which to begin or return. It is a flow. Without a central point, the space remains a field of possibility, though it is ordered by the way that it appears to the player or observer. This refers to the style of the game, and whether it is a hyper-real imitation of the look of objects in the physical world, or an abstract representation of anything from objects to physical conditions, like gravity. Fidelity to physical world objects and conditions is not a requisite for vision to order space. This is because in the context of the spectrum of subjectivity, visuality is one aspect of how the space can be understood. The experience of the physical body as it transgresses the boundary between game

[21] Manuel DeLanda, "Real Virtuality," in *Computational Design Thinking*, (West Sussex: John Wiley & Sons Ltd., 2011), 142-148.

and physical space and exists in the inbetween ontological state is a combination of material realities, of which vision is the first, but not the only way space is perceived. The player or observer's way of looking changes as they are within this space.

Time

Embodiment is of central concern. The physical body cannot enter the space of the game, and yet the player or observer is within the space of the game as it produces the conditions that make up place. To take up the issue of embodiment in game space is really to consider the way in which time functions. Heidegger suggests that ontologically, we understand time in terms of our bodies. Our final ontological state, the completion of our Being in the world, or our Dasein, is our death. Time is embodied as we progress towards death--our finitude marks our Being in the world. Alternately, physical time is understood in terms of a clock. The passage of time in these measurable, predictable increments is also closely linked to the notion of history broadly, as days, weeks, and years. Each of these measures of time, as embodied or as units, contributes to an understanding of time in game space, but does not consider the way in which time itself is a function of space.

The action that time performs in a video game is to activate the space of the video game, which stands in contrast to physical clock time. This contrast creates the flow of multiple, simultaneous temporal conditions within the inbetween state. The equation Time=Distance+Death breaks game temporality into two categories that demonstrate temporal conditions as activating space. Distance and the perception of crossing distance relative to time

activates the space of the game world itself. The conditions of the avatar's death in the game space act as a beginning, condition rather than an ending, as in the physical world.

Time in the video game space refers to, at its most basic level, the way in which time is perceived as elapsing within the game, which is different than the way physical clock time elapses in the physical world. In games like *Red Dead Redemption 2* or the *Witcher 3: The Wild Hunt*, game time cannot take up an equivalent amount of physical clock time. This is seen when traveling across the game world. It takes less time for a distance to be traveled in game space than it would take physical clock time to travel its physical world correlate. The game maps offer ways of compressing space-time, for example, by allowing the player to fast travel across the world, by selecting a point to travel to, clicking a button, and arriving at that location. Movement is the embodiment of time.[22] Death in game space is a beginning, rather than an end, as in the physical world. It enacts the inbetween--it is simultaneous death to the avatar, analogous to physical death, which is immediately transformed into something else in the logic of video game space. Death in the game space activates different modes of temporal possibility, activating time itself.

As space produces time, both become fluid, rather than fixed points of reference. Space in the game opens a range of possible configurations of time that may emerge. As time flows in between game space and the physical world, which is governed by the clock and by our bodies, synchronic and diachronic time can coexist. When we decide to engage with a game, we willingly suspend physical clock time. Physical space is dominated by habitual time, in which we fragment past, present and future. Game time is proleptic, in that we anticipate what might be

[22] Henri Bergson, "Time and Free Will," in *Key Writings,* ed. Keith Ansell Pearson and John Mullarkey, trans. Melissa McMahon (New York: Continuum, 2002), 49-77.

coming next as we encounter people, places, and objects in the space--often anticipating combat sequences. The past, present, and future of what has been in the physical world, and what might be in the video game space, bleed together in the inbetween interval of time between game space and physical space. Death is relational, just as time is in the inbetween state. Understanding death from the physical world gives it meaning within the game, but the ability to respawn and the conditions for returning to the game after the death has occured modify subjectivity. The game death connects time with the experiencing subject.

Materiality

Materiality is what makes the game come to life. It refers to both the literal bitmapping of textures onto digital geometry that help the physical eye understand the material represented--it is the combination of textures and colors that make grass look like grass, stone as stone, metal as metal. It also refers to a set of expectations for how we think these materials should behave. The player or observer approaches the game with the experience of these physical properties. It is how the player or observer understands that rock is hard and can be smooth or rough. Based on physical experience, the expectation is that grasses and bushes should move out of the way when we bump into them with our digital bodies, but that the metal point of a sword will cut through our digital bodies. Finally, materiality refers to a set of cultural conditions evoked by the game space. The player or observer understands familiar cultural references. In *Witcher 3*, it is easy to see the Viking inspiration in the buildings and ornamentation within the island chain of Skellige. Materiality, as a product of space, serves more than the function of emulating temporal artifacts,

but works to configure the player or observer's subjectivity within the space.

Materiality is the structural support for the space. It is what the player or observer thinks of when they picture engaging with the game. Materiality as a tectonic structure is suggested by the equation Materiality=Encounters+Navigation. It is the way the player engages with material objects and NPC's, and how the player orients themselves within the space. Materiality in the inbetween moments of game play allows the player or observer to become a tourist in this alternate world. Materiality makes the inbetween state hard to discern, as it pulls the player into the world of the video game.

Often, game materiality is understood in terms of its physical world counterparts. This is usually conflated with a material's verisimilitude. Annabel Jane Wharton, an architectural historian, broadens the discussion around the use of video game objects and material encounters, so that they have some degree of agency beyond the designer or the player. Yet their ability to be agents is conflated with how closely they resemble objects from the physical world, and how they act as models, or stand-ins, for those objects. If they are not replicas of the physical world, they are reduced to images without spatial function.[23] This position radically limits the understanding and function of materiality in video game space, and its significance for the physical world.

The material conditions have a role to play in shaping the world itself. Because materiality is a product of space, and vision is only one way of accessing space, and thus the material encounter, the material object does not need to replicate an object from the physical world. If space is a field of possibility, then the material conditions are a reflection of that. They

[23] Annabel Jane Wharton, "Models' Acts: Analog to Digital," Lecture at the University of Virginia, (November 16, 2016).

are part of a larger system of meaning. As they take shape they contribute to the world of the game. The material conditions and choices made by the designers in creating those material conditions are but one manifestation of what they could have been. They are part of a multitude of possibilities. The player can then select objects to interact with in order to gain an understanding of the world or participate with it. This forms the digital tectonics of the game space.[24] The interactions that are possible, unique, and at times unpredictable, between different materials in the game space are the scaffolding for the experience of the space. These are things like the way the camera cuts through the landscape, revealing up close the bitmapped textures that make up the grasses, moving through them in ways that are unfamiliar based on our physical world understanding of how grass should behave. Materials orient the player or observer within the game. In *BioShock*, the player or observer begins to understand where they are and what is happening around them as they encounter and collect objects.

As materiality is a product of the game space, it serves to locate the player or observer in time by applying unique relationships to travel and navigation. In many games with immersive ecologies, the player has some degree of latitude to travel around the world, exploring and experiencing the world of the game in between moments of narrative progress, violent action, or informative cutscenes. The ability to be a tourist in the game requires ways of understanding where one is in space that is distinct from the physical world, such as the mini map. It is this experience that best articulates the materiality of the game space, as the player or observer wanders and surveys the world.

Being a tourist in the video game space, seemingly free to explore the world, viewing

[24] Neil Leach, David Turnbull, and Chris Williams, "Introduction" in *Digital Tectonics*, eds. Neil Leach, David Turnbull, and Chris Williams, (West Sussex: Wiley-Academy, 2004), 4-12.

landscapes and taking in different cities and groupings that have their own unique atmosphere, also speaks to the degree of perceived volition within the game. When playing or observing the game, often the feeling is that we are free to wander and move around. The reality is that the player is still bound by spatial limits. Literally, this means the extents of the game world--though the game might appear massive and endless, like in *Witcher 3*, it still has edges that cannot be crossed. Further limitations are put in place in many games with immersive ecologies. For example, in some situations, the player cannot leave certain areas of the game map until they have completed certain quests, or achieved a specific skill level. Material encounters are a tool used by designers to limit the ability of the player to move freely, despite the appearance otherwise.

Place

Temporal and material conditions combine to create place within the video game space. Space generates those conditions, and place is a product of them. Place in a video game is not a geographic area within the game, but is the way in which the video game presents a logic of experience as temporal and material conditions converge. The ability of the game space to be a place is thus limited only by the temporal and material conditions themselves. Just as time and materiality operate according to the specific logics of the medium of the video game, place, too, is reconfigured in this context. It does not mean a specific culture or point in diachronic time. As space extends outward from the boundary between the digital and physical worlds, the place within that space draws the player and observer of the video game inward to it.

The equation Place=Time+Materiality speaks to more than the convergence of these modalities, but to the way in which each modifies the concept of place. The importance of this convergence is the degree to which a place is able to form in the game space, limited by designer mediation and player or observer experience. Place is performative in that it is the expression of the physical subject coming together with their representation on the screen, the avatar. As this occurs in the inbetween state, the experiencing subject is reconfigured as a new type of subjectivity--as multiple possible "you's," when talking about an individual player or observer, or a hybrid "we," when discussing the link between physical player and digital avatar.

Place is limited by the agency of the designers, players, and worlds themselves, when considering the way in which the subject is constructed through the interplay of the digital and the physical worlds as in a feedback loop. Video games are highly mediated worlds. The designer's control all of the functions that manifest as products of space. Once the game has been released, those functions are used by the player and viewed by observers. It is important to recognize that the designers have agency--the way temporal and material conditions are sequenced and unfold before the player or observer is at the discretion of the designer. Yet it is the player's understanding of those temporal and material encounters that co-authors the space. Foucault's author function recognizes the agency of the author, or in this case, the designers, but it is the player or observer experiencing the game that has primary agency to co-author the experience of the game world, as they interpret their experience of the spatial conditions.

One of the ways this manifests is in the way the game builds a sense of community. Temporal and material conditions combine to create community, or to draw the player or observer into racial, religious, and factional conflicts that exist as part of the narrative drama of

gameplay. In *Witcher 3*, the game emphasizes dialogue and response options that will have a ripple effect in the way the game narrative progresses. The more immediate effect of this dialogue is that it attempts to create community, as the player, via the avatar, talks to NPC's and learns about them, the conditions of their lives, and the cultural groups and values of which they belong. It is through these dialogue sequences that quests emerge. These quests serve as the impetus for moving deeper into the world of the *Witcher*, both as a traveler in the world, and as the player or observer learns more about the lore of the game.

The primary way that the relationship between designer, player or observer, and spatial conditions as agents is seen is in the way the player interacts and interfaces with the game world. Menu interfaces are where the limits of the game space's ability to be a place are laid bare. It is a moment in the game where the limits of the game space's ability to be a place bumps into the perceived boundary between the digital and physical worlds. The player is drawn out of the world of the game, into the inbetween space, as they interact with the game's functions to determine how they want their experience of the game to manifest. The menu is a place of possibility, where the designers have given the player tools to set the rules for how they want to experience that space. This could be any range of things, from the direction the joystick moves to control the camera, or where the avatar looks, to which weapons or skills are available to the avatar to be used in different circumstances.

The menu interfaces speak to the privileged vantage point of the player within the world of the game. They are posthumanist moments of game play, in that the menu is a recognition of the way a physical, embodied player must interface and control the way the game manifests before them. It recognizes the limits of the body, and the role that the technology of the game

itself plays in shaping the subjective experience of the game as a place. The manu interface modifies our physical body as it is able to manifest in the game as an experiencing avatar--as a digital object. It also reveals the shortcomings of calling the areas in game space places, because this technology is dependent on the privileged vantage point that we have as players and observers; as outsiders to the world of the game. Our ability to be in it depends on our being outside of it, able to control it, with privileged information and vantage points that NPC's in the game space do not have access to.

Space→Time+Materiality=Place

Fundamentally, video game space is asking its audience to reconsider the nature of space, time, materiality, and place within its context. The broader significance of reconfiguring preconceived notions about what these modalities imply has an impact on the way research into digital and virtual worlds itself may be conducted. If digital space can be understood as space itself, then it becomes a place in which research about that space can happen.

For example, this line of inquiry has implications for using virtual reality technologies to create space in which to conduct research. Using the Neos Metaverse, I am working to build a place for research that continues these types of ontological questions about what it means to be in space when the subject is reconfigured by technology. Neos is a user friendly, free online game design engine, or makerspace, for virtual reality applications. The benefit of a metaverse is that it allows for community collaboration and creation of creative tools. Once one member of the metaverse creates a tool, that tool can be shared and freely available. The same can be said for

data and information comparison. Once one member creates a world, that world can be made accessible to any, or all, members of the metaverse.

I am building a world in Neos to extend and test these ontological theories. In its current form, it is a series of four "worlds," represented by floating, marble-like spheres, which correspond to the four main chapters of the dissertation. Each world contains a series of additional world-spheres within it that are repositories for the images and video clips that led to the formulation of the equation for that part of the dissertation. The worlds are clearly labeled with their defining equations and constituent visual materials, and also contain audio clips that define key terms and explain the ideas behind the space. The user is free to explore each world, simply by double clicking the sphere, in any order they like. This lets the user make their own connections between the visual materials, and in effect reformulate the equations. It also uses the defining feature of Neos--its ability to create worlds--to maximum effect.

The Neos project is a repository of the data, in this case video and image samples, used for my research. Is it also a proof of concept, that suggests the fine line between user volition and designer mediation, who in this case is myself. The goal is to allow users to explore the space, drawing their own conclusions about the material, without being overwhelmed or left not knowing what to do or where to go. Some degree of guidance is necessary. Lastly, the space seeks to show how digital humanities can start to use space itself to do research and compare data that will drive the research itself.

What an immersive ecology reveals about the nature of being within a space, or a place, will continue to change and evolve with new uses and new technologies like virtual reality. For the time being, the technology itself remains an inhibiting factor--the headset of a VR console is

clunky, heavy, and claustrophobic, and creates, or limits, a different way of being in space. For now, studying video game space with immersive ecologies is the most pertinent way to consider the ways in which the modalities of time, materials, and place are created by space within immersive ecological systems.

The issue of the nature of space and what it produces must be prioritized. In video game space, the subject is decentered, and without a center, the space becomes a phase space of possibility. Within that space of possibility, any number of temporal and material conditions may emerge. Time in game space operates according to its own logics, as the player experiences travel around the landscape of the world. Space-time is compressed. It is when the player dies and respawns in the world that time is truly activated--the multiplicity of time and its myriad of possible forms is visible. They are possible futures, alternative pasts, or pure fantasies. These possibilities take shape and come to life as material encounters in the space. The player or observer approaches the game with a set of expectations about how materials should behave, but are willing to suspend those expectations to accept the manifestation, or the way the world of the game has taken shape, as material conditions before their eyes. Together, time and material conditions, as products of space itself, combine to form place. Place draws the player into the game, and as the space expands outward, is the site of reconfiguring and forming new modes of subjectivity. Instead of understanding the video game world and physical worlds as discrete entities, this study suggests that the veil separating them is quite thin. It disrupts the notion that there is a singular experience of either world, and that by engaging with this medium, the very nature of space itself, how we define it, understand it, and live within it, is radically shifting from a set of lived, singular experiences, to a multitude of possibilities.

Chapter 1

Intersection of Space: Video Games+Architecture

On their surface, architecture and video games both appear to have a reflective quality. The constructed environment of buildings and landscapes is a mirror to a society's values at a particular place and time. Similarly, many video games with immersive ecologies appear to be a fictitious environment, though they are also composed of the same types of building and landscape elements that make up the physical world. Each is fundamentally composed of space--there is an intersection between how the field of architecture approaches the study of digital space, and how video games approach the study of their medium and, as a result, the study of the digital space that makes up the space of the game. Exploring the ontological overlap between architectural theory and video game studies asks that the field of architecture take the study of video games seriously as a medium that has the power to contribute to discourses on how space is produced, its effects, and methods for approaching it. The disciplinary overlaps between these two fields compel an understanding of how the space of the video game might be approached, and the way it is understood expanded. By understanding approaches taken to the study of each, it is clear that a new way of looking at the cross section of these fields needs to be developed that broadens the audience of video game studies to include architects, and for architects to begin to grasp the far reaching implications for how interactions with video games are reconfiguring the way we think of ourselves as in a space. This cross section shows a mutual

interest in issues of agency and subjectivity in space.

Video Games

What Games Are

Video games have only existed since the 1970's, becoming pervasive in the American consciousness in the 1980's. The modern video game first emerged during WWII as flight simulators. The first commercial use of video games was the 1961 release of Spacewar!, developed by students at MIT. Arcade games mainstreamed in the 1980's with Atari, a system that brought games into our homes. The moment that games came into our homes on computers or generally affordable consoles marks a critical shift in gaming. As console technology improved, so did the graphic capabilities, resulting in a wide range of visual styles and a greater degree of visual realism that was achievable.[25] In 1983, the video game industry crashed commercially, largely due to market saturation. In 1985, Nintendo released the Nintendo Entertainment System (NES) console that ushered in a reinvention of the industry, and with it, higher quality games. This led to the first of many console wars in the early 1990's, as Sega challenged Nintendo for a slice of market share.[26] As more companies, like Sony and Microsoft introduced the Playstation and Xbox, respectively, new generations of console wars followed. Each brought with it new technologies and new modes of approaching the game.[27]

---

[25] Luke Plunkett, "A History of Video Game Graphics," Kotaku, 2014. https://kotaku.com/a-history-of-video-game-graphics-1661368568

[26] Blake J. Harris, *Console Wars: Sega, Nintendo, and the Battle that Defined a Generation*, (New York: Harper Collins, 2014).

[27] For a history of gaming, see Devin C. Griffiths, *Virtual Ascendance: Video Games and the Remaking of Reality*, (Lanham: Rowman & Littlefield Publishers, Inc., 2013) and Ian Graham, Ronald Shaw and Barney Warf, "Worlds of Affect: Virtual Geographies of Video Games," *Environment & Planning A*, 41 no. 6, (June 2009): 1334-1335.

Games themselves are often thought of in terms of typologies and genres. Popular gaming websites and reviewers refer to games as "sandbox," or "FPS horror," which denotes both a style of game play, as well as the broad category of style and feel. The problem with this, especially when it comes to games with what video game scholar Espen Aarseth refers to as "virtual environments," is that they tend to include "too many, arbitrary, incompatible, or overlapping categories."[28] Aarseth advocates for classifying games based on spatial movement, like "Space, Time, Player-structure, Control, and Rules."[29] This remains a broad understanding--the term "virtual environemtns" emcompasses a wide range of games, including more than it excludes. Within that, the category of "Space"groups games according to things like geometrical versus topological, and dynamic versus static environments.[30] In "Generic Structures, Generic Experiences: A Cognitive Experientialist Approach to Video Game Analysis," Andreas Gregersen argues that game theorists have been too specific in their categorization of games, and advocates a more general approach to classify games with virtual environments in a way that elucidates their themes. Classifying games by genre is a way to "bridge the gap between game ontology and player experience" and create a media specific theory of games.[31]

Gregersen does not equate genre with setting; he argues for a Wittgenstein approach to game classification, advocating grouping games according to player activities. He uses *Red Dead Redemption* as an example to demonstrate the way in which classification by genre begins to

[28] Espen Aarseth, Solveig Marie Smedstad, and Lise Sunnanå, "A Multi-dimensional Typology of Games," in *DiGRA '03 - Proceedings of the 2003 DiGRA International Conference: Level Up*, 2 (2003): 48.
[29] Aarseth, "Multi-dimensional," 48.
[30] Aarseth, "Multi-dimensional," 49-50.
[31] Adreas Gregersen, "Generic Structures, Generic Experiences: A Cognitive Experientialist Approach to Video Game Analysis," *Philosophy and Technology*, 27 no. 2 (2014): 159-175.

elucidate themes that translate across multiple games, and even extend beyond the media to television, music, and literature. *Red Dead* is a Wild West role playing game (RPG) that the player embodies through the use of an avatar seen in the third-person. It uses classic western tropes, such as cowboys, horseback riding, sheriffs, and train stations in its world creation.[32] Gregersen argues that this is vital to the player's sense of agency in the world. These generic symbols reinforce narrative themes expressed as player choice, such fight or flight, honor and dishonor.

Alternatively, Mark Wigley, an architectural theoretician, sees games not as occupying their own genres per se, but rather as reflections of architectural typologies. In "Gamespace," Wigley writes that "To choose a game is to choose an architecture, to pull it out of the world and perfect it by turning it into your whole world…."[33] While different games certainly express broad architectural types, video game worlds have much more that constitutes the experience of the game and the construction of the world than simple architectural codification. It can be useful to acknowledge architectural typologies, but those types should be thought of in terms of the specific work they do, the way in which the player moves through the world, and the player's agency to move through that world. The types of environment experiences possible in a game vary widely. These include but are not limited to neo-medieval (the *Witcher* series), outer space (*Mass Effect* series), futuristic science fiction (*Borderlands* series), dystopian (*BioShock* series), historical (*Assassin's Creed* series), post-apocalyptic (*Fallout* series), and sandbox games (*Minecraft*) that simply exist as a plane of creation and exploration. As Wigley suggests, they can be a type of codex of architecture, however this borders dangerously on categorizing games

[32] *Red Dead Redemption*, Video Game, Developed by Rockstar San Diego, (Rockstar Games: 2010).
[33] Mark Wigley, "Gamespace," in *Space Time Play: Computer Games, Architecture and Urbanism: The Next Level*, eds. Friedrich von Borries, Steffen P. Walz, Matthias Böttger, (Boston: Birkhäuser Verlag AG, 2007), 484.

stylistically. Wigley asserts that video games are "a space that compresses the logic of all other spaces into itself."[34] It is an understanding of games as purely visual, without understanding what within them might constitute space, or the modes within which that space operates.

Games offer a specific type of historical methodology by providing worlds in which themes can be explored as a sort of provocation. Much of game scholarship has focused on historical games as a typology, reading them as a reflection of popular appropriation of historicity. Vinicius Marino Carvalho seeks to demonstrate the way in which historical themes emerge across radically different settings and genres.[35] He uses the *Mass Effect* series, a futuristic outer space game, as his primary case study. He demonstrates that history is developed similarly across many game types, but that the player's experience of that history is unique. Like Gregersen, Carvalho identifies common tropes that occur in the science fiction genre, but then extends them to demonstrate the way games often explore particular relationships to history. Themes that are familiar to the genre include scientific progress and the evolution of society, monitoring by a more advanced society, and transhumanism and ethics. In *Mass Effect,* as in many games, technology presents as a possible antidote to the human condition of disease and death. The main character in the game is resurrected as a part of something called the Lazarus project, using technology to bring him back from the dead, creating a cyborg. The game is commentary on a literal posthumanism. Anxiety over this technology in our contemporary society is reflected in the morality choices the player makes throughout the game. As the player progresses, the main character's scars from the resurrection either heal quickly when the player chooses the moral high ground, or alternately, cause the avatar's skin to fall off revealing the

[34] Wigley, "Gamespace."
[35] Vinicius Marino Carvalho, "Leaving Earth, Preserving History: Uses of the Future in the Mass Effect Series," in *Games and Culture* 10, no.2, (2015): 127-147.

cyborg underneath.[36] Carvalho argues that the popularity of the cyborgian "renegade" character in the game and in cosplay demonstrates that fans are more sympathetic to the cyborg than game authors realized.[37] Alternatively, the renegade version of the character might suggest a desire to explore moral corruption.

Ryan Lizardi suggests that the historical setting of games offers explorations of alternative histories. In "BioShock: Complex and Alternative Histories," Ryan Lizardi argues that games have the potential to be "thought-provoking and complicated texts."[38] Lizardi uses the *BioShock* trilogy of games to suggest that the function of games extends beyond entertainment to allow for exploration of concepts, or in this case, alternative histories. History, as he points out, is often complex and is never clear cut. Games like *BioShock* are opportunities for designers, historians, and players to explore alternative possibilities for history in a context that is not reductive. Lizardi invokes Tolstoy to say that alternative histories are "illustrative because historical writings can never demonstrate 'absolute inevitability [or] knowledge of an infinite number of spatial conditions."[39] Games are thus a way to resist historical determinism. While his focus is on *BioShock*, he references a number of other extremely popular games to reinforce his point, including the *Assassin's Creed* series, in which the player is transported to Jerusalem during the Crusades, Florence during the Renaissance, and several other historical times and places, and *Fallout*, which suggests a world in which nuclear war had actually happened in mid-twentieth century America.[40]

---

[36] *Mass Effect*, Video Game, Developed by BioWare et. al., (Microsoft Game Studios: 2007, Electronic Arts: 2008).
[37] Carvalho, "Leaving," 130-134.
[38] Ryan Lizardi, "BioShock: Complex and Alternate Histories" in *Game Studies* 14, no. 1, (August 2014).
[39] Lizardi, "BioShock."
[40] *BioShock*, Video Game, Developed by 2K Boston, Directed by Ken Levine, (2K Games: 2007), *Assassin's Creed* [series], Video Game, Developed by Ubisoft Montreal, (Ubisoft: 2007-2018), Fallout [series], Video Game,

How Games are Approached

As a field, video game studies emerged in its own right in the early 1990's. Game scholarship itself can be grouped into three phases. Game ontologies have focused on the debate between ludology versus narratology, positions that until recently have been seen as occupying opposite ends of a spectrum. The first phase understands video games as primarily a narrative medium. Many scholars argue that the main function of a game is narrative, and that the story is the driver for the logic of actions within the game world. The second phase challenges this, and posits that games are defined by the rules that govern the actions possible within them, seeing them as ludic. The rules of operation and the structure of the software is what governs the world and how the player sees themselves within it. These oppositional viewpoints have been described as a "war" in which scholars must come down on one side or the other. Current scholarship recognizes that the increasingly complex nature of these spaces requires both narrative and ludic considerations together. The current phase of game scholarship is a search for methods of understanding and approaching games, which is distinctly lacking in substance.

The narrative structure of games is a major focus of scholarly work on the subject of virtual game space. Relatively early in the formation of the field of game studies, in 1994 Espen Aarseth recognized the implications of virtual game worlds on narrative studies. In his essay "Nonlinearity and Literary Theory," he uses examples from video games to suggest that they are the first medium capable of expressing a truly nonlinear narrative.[41] He defines nonlinear

Developed by Interplay Entertainment, et. al., (Interplay Entertainment: 1997-2004, 14 Degrees East: 2001, Bethesda Softworks: 2004-2018).

[41] Espen Aarseth, "Nonlinearity and Literary Theory," [1994] in *The New Media Reader*, eds. Noah Wardrip-Fruin and Nick Montfort, (Cambridge: MIT Press, 2003), 761-780.

narrative as one in which multiple paths through the story exist that cannot be accessed simultaneously. It was also in this essay that he first employed the term *ergodic* literature to refer to narratives that require work to understand. He describes that "Games…are often *simulation*; they are not static labyrinths like hypertexts or literary fictions. The simulation aspect is crucial: it is a radically different alternative to narratives as a cognitive and communicative structure. Simulations are bottom up; they are complex systems based on logical rules."[42] For Aarseth, the participatory nature of video games central to their nonlinearity, as well as what makes games unique as a distinct medium.

Aarseth's definition of text implies that games are open to hermeneutic interpretation. In the early 1990's, the player typed textual commands to move the avatar in the space. He uses the example of the first multi-user dungeon (MUD) developed by Richard Bartle at MIT in 1980. Actions were made by typing a word-command; "PICK UP," "UNLOCK," and so on. It is in this way that Aarseth argues for the fundamental textuality of games. In a multi-user context like Aarseth's example, there is not one author—each player contributes to the action. In a spin off game called TinyMUD, the players could create their own textual descriptions that added "their own landscapes to the topography of the MUD." Tiny MUD started in 1989 and went offline in 1990 because the database became too large, made up of "132,000 user-defined objects."[43] Aarseth's early assertions that games are fundamentally texts applied in the early 1990's, but today the interaction between player and image is much more complex.

Often, meaning in video games is understood as deriving from their ludic elements, or their rules of play, operation, and structure. This is a position often at odds with those who argue

[42] Aarseth, "Nonlinearity."
[43] Aarseth, "Nonlinearity."

that games are primarily narrative in function. Jesper Juul argues that video games should not be considered narratives at all. Juul is a self-described ludologist, which he defines broadly as one who researches video games. He is well known in the field of games as both a designer and a theoretician. In his essay "Games Telling Stories? A Brief Note on Games and Narratives," he argues that video games non-linearity is a critical component in the process of immersion in the game space. However, it is because of their nonlinear and thus participatory nature, which Aarseth argued makes them narrative, that Juul argues they are not narrative. Juul's essay reads as if it is a direct rebuttal to Aarseth. While he acquiesces that games usually contain narrative elements, ultimately they are not narratives because time functions differently in games than in traditional narratives like movies, theater, and film. By this he means that game time passes differently than physical world time, and while engaged, the player often loses track of the physical world's time. For Juul, the time structure of a video game is a critical aspect of immersion. This is what makes the reader/viewer relationship formed by games different than in a traditional narrative.[44]

Understanding games as a unique medium was critical in the early days of the field of game studies, and was characterized by this now passé debate between ludologists and narratologists. Ludology argues that games are characterized by the rules that govern game play, while narratology finds the interactive nature of the story to be a game's defining characteristic. Aarseth clarifies the relationship between ludology and narratology by suggesting that the type of adventure games the debate took up are actually "ludo-narratives" that are equally dependent on their rules and their narrative possibilities. Aarseth insists that the divide is not only

[44] Jesper Juul, "Games Telling Stories? A Brief Note on Games and Narratives" in *Game Studies* 1, no. 1 (2001).

unproductive, but resulted from a misunderstanding due to mediocre scholarship on the part of narratologists to reevaluate and adjust their models to adequately describe games that are inclusive of ludic elements.[45] To this point, Aarseth makes an interesting observation based on Wittgenstein's *Philosophical Investigations* that "games" cannot be defined formally. What we think of as computer games are not games at all. Based on his narrative model for the ludo-narratological study of "games," he says they should be understood simply as "ludo-narratives."[46]

Current video game scholarship is often concerned with how game scholars methodologically approach the medium. Aarseth's discussion of games as ergodic, or even as ludo-narratives, is really doing something methodologically that has been overlooked or lost in the years since the narratology versus ludology debate passed by. He is suggesting something about volition and mediation in game space. Although narratology should not be considered a methodology, Aarseth offers useful considerations that help establish the possibilities for the game world. Narrative unites the cognitive and ludic experiences within the game and provides a structure within which themes emerge. He describes a number of different narrative structures; there is no single mode of narrative. He describes in narratological terms the nuclei, or kernels, which are events that define the particular story, and satellites, which are the supplemental events that create the discourse. Among the narrative structures he identifies are the linear game, which is fixed kernels with flexible satellites, the hypertext-like game, using *Myst* as an example, which has a choice between kernels but fixed satellites, and the "creamy middle" quest game, citing

[45] Espen Aarseth, "A Narrative Theory of Games," in *International Conference for the Foundations of Digital Games*, (2012): 129-133.
[46] Aarseth, "Narrative," and Jesper Juul, *Half-Real: Video Games Between Real Rules and Fictional Worlds*, (Cambridge: MIT Press, 2005).

Oblivion as an example, which gives the player a choice between kernels and has flexible satellites. Aarseth goes on to describe a variety of landscape structures, essentially level designs, like linear corridors, hubs, and open worlds. While Aarseth is right to incorporate landscape in his discussion of narrative, he does not draw landscape and narrative together in a meaningful way.[47]

Many game scholars still understand games as texts to be read. Their understanding of video games are as semiotic systems that should be understood using textual analysis. The appeal of textual analysis is that it accounts for the cultural context surrounding the game and the images presented on the screen, but the pitfall is that it reduces games to either a set of visual symbols, narratives, or rules that should be unpacked, rather than as unique spaces with their own attributes, full of ontological possibility.

Jesper Juul suggests as recently as 2005 that textual analysis is a legitimate method for understanding games. He refers to Janet Murray's "reading" of *Tetris* as an allegory for work-life in the 1990s, teaching us to clear our desks as quickly as possible before anxiety sets in from the never ending onslaught.[48] The majority of the examples Juul uses are text based from the early days of gaming, demonstrating that game studies still commonly tries to understand games as texts.[49]

Clara Fernández-Vara is one of the most recent examples of game scholars continuing to advocate for textual analysis. The introduction to her 2015 book *Introduction to Game Analysis* is a methodological study that insists on textual analysis as the most useful way to approach game studies. This is in keeping with Aarseth's early suggestion that games are texts that require

[47] Aarseth, "Narrative."
[48] Juul, *Half-Real*.
[49] Juul, *Half-Real*.

a hermeneutic approach. She simplifies textual analysis as reasoning that is either structuralist, which she defines as generalizing based on examples, or post-structuralist which she says is open ended, considering multiple perspectives. At the same time that she criticizes structuralism for failing to account for cultural specificity, she declares that her book uses a structuralist approach to textual analysis, choosing to emphasize the ludic rules of designing a game and that govern game play itself, over the narrative content.[50]

In their 2006 article, "Game analysis: developing a methodological toolkit for the qualitative study of games," Mia Consalvo and Nathan Dutton point to the limited methodological approaches taken to game studies. This essay is still one of the only examples of a game scholar dealing explicitly with the issue of how to systematically explore video games. Ultimately, their method fundamentally rests on textual analysis, which limits the scope of how they understand video games as more than symbolic. They discuss the use of a "gameplay log" to characterize the need for a nuanced approach to studying games. By this they mean that scholars need to use textual analysis to look at game elements like menu interfaces, health gauges, nested menus, the player choice in calling menus up, and objects that are needed for the player to advance. By interface they mean "any on-screen information that provides the player with information concerning the life, health, location or status of the character(s), as well as battle or action menus, nested menus that control options such as advancement grids or weapon selections, or additional screens that give the player more control over manipulating elements of gameplay." This allows for the study of information presented to the player, choices available, and analysis of the information withheld. Consalvo and Dutton call for the creation of an

[50] Clara Fernández-Vara, *Introduction to Game Analysis,* (New York: Routledge, 2015), 117-172.

"interaction map," which is a way of charting the choices available to the player in terms of when and how the player may interact with other characters.

A conceptual reading of video games is needed to look at video games holistically, especially when evaluating their spatial functions. It is critically important to evaluate several of the moments that Consalvo and Dutton points to, like menu interfaces, because they are often overlooked and yet essential to how the player is within the video game. However, one obstacle in their method is that since this was written in 2006, games have become so massive that it would be prohibitive to map every character interaction. In this way, players, observers, and game scholars are never feasibly able to access the "full text." They ask scholars to record the dialogues they encounter, guided by their research questions, in order to analyze how much "freedom" of interaction is allowed to the player, and what impact that has on the shape of the game. This is, of course, mainly narrative--choices usually present different narrative outcomes, as opposed to spatial. Gameplay log refers to the "world" of the game, which they refer to as "nebulous." The point of this approach is to understand what "messages" are within the game.[51] It is still fundamentally a narrative, textual approach, combining ludic elements of game play like menu interfaces and dialogue options, and reducing the space of the game to a shell filled by other types of interactions and symbolic visual or narrative texts.

Carvalho offers a method by which to approach video game studies by first identifying a game's themes, and then extending them to a broad history that is both a reflection of shared history and an exploration of an individual's proximity to it. His argument is that game history parallels real historical attitudes, and is common across games, reflecting certain colonial

[51] Mia Consalvo, Nathan Dutton, "Game analysis: developing a methodological toolkit for the qualitative study of games," in *Game Studies*, (2006). Jesper Juul in *Half-Real* also uses textual analysis as his primary method. This is notable, as this book and Juul himself are often regarded as foundational texts in game studies.

associations, evolutionary trajectory and westernized notions of tiers of civilization. Most interestingly, given the technological advances that make games possible, non-linear narratives more and more complex, and the worlds they constitute increasingly vast, the most notable theme that Carvalho points to is the role of technology in shaping history and the ability of individual actors to affect that history. He uses video games to counter Baudrillard's assertion that history has become meaningless. Carvalho quotes Claudio Fogu: "the past is not quite *represented*, but *simulated*."[52] Reflecting on history through the medium of games allows for a synthesis of history and memory in new ways—to "provoke" memory, as well as the way in which historical events are written and presented. In games, Carvalho refers to this as "plot responsiveness to player agency."[53]

Architecture

Like video game studies, architectural theory went through a period where the idea that buildings are semiotic texts to be read dominated discourse. Architecture is a discipline deeply invested in questions of space and materiality, with a history of hermeneutic, structural, and textual analysis methodologies, and is an example of how different approaches to the study of space could also be useful for understanding game worlds. The direction that architectural theory took since the mid twentieth century, when buildings were seen as narrative, provides useful insights for how understanding the complexities of video game space might evolve beyond textual analysis.

In the 1960's and 1970's, architectural theory suggested that buildings were texts to be

[52] Carvalho, "Leaving,"142.
[53] Carvalho, "Leaving," 143.

read.[54] As such, architectural theory was deeply invested in structuralism, much like Fernández-Vara uses structuralism in her 2015 book. In architecture, examples of this are found in the work of theorists like Rosalind Krauss in “Notes on the Index” and “Grids,” and Peter Eisenman’s early architectural explorations with his House projects in the 1970’s. Architectural theorists, such as Mario Gandelsonas in his 1979 publication "From Structure to Subject: The Formation of an Architectural Language," looked to Claude Levi-Strauss to understand the underlying forms and structures of architecture that were culturally ubiquitous and inevitably privileged western ontology. Gradually, architecture moved away from understanding buildings as a language, and towards the incorporation of larger social systems as they shape the built environment. Examples include the work of Michel Foucault on panopticism and spaces if difference, in “Of Other Spaces: Utopias and Heterotopias.” By the time Jacques Derrida was translated into English in the late 1970’s, the approach and pedagogy of architectural design thinking moved away from the binaries and cultural homogeneity of structuralism. Derrida’s *Of Grammatology,* translated into English in 1979, was impactful for the architectural movement known as Deconstructivism. His friendship and collaboration with Peter Eisenman and Bernard Tschumi on projects like Parc de la Villette in the late 1980’s and early 1990’s marked a distinct shift in the approach taken towards architecture as a practice as well as in theory. Suddenly, the performative aspect of architecture was emphasized over its communicative function.[55]

This shift towards performativity goes hand in hand with understanding space as a dynamic system, which is useful for applications in video game space. As computer aided design

[54] This notion is most famously recognized as taking off with the publication of Robert Venturi, *Complexity and Contradiction in Architecture,* (New York: Museum of Modern Art, 1977), originally published by the Museum of Modern Art in 1966.
[55] Jacques Derrida, *Of Grammatology* [De la grammatologie], trans. Gayatri Chakravorty Spivak. (Baltimore: Johns Hopkins University Press, 1976).

became not just more commonplace, but its capabilities more powerful, architecture's interest in systems thinking has taken on an interest in morphogenesis. Morphogenesis in architecture is the way in which the complexities of biological systems can be used as inspiration for understanding the complexities of parametric and algorithmic modeling. Morphogenesis is interesting in the game context because it accounts for algorithmic modeling that generates space. The goal is to understand the forms of organisms as more than a result of natural selection and heredity, but as influenced by forces acting on them as a set of systems. For the built environment, morphogenesis has meant that digital forms are seen as a result of systems of algorithms that behave in ways that are often unpredictable, despite the designer's intentions. Achim Mengis, demonstrates this in both his architectural practice and theory. With this type of computational design, algorithms are written to allow for parametric inputs from the designer to simulate things like wind, gravity, site position, and materiality. Within the given set of parameters, the computer then generates a form. These same environmental factors are of concern in video game space. Understanding them as dynamic systems respects the complexities of the spatial systems put forth by video games, and even that the designer's intentions to model the space only extend as far as the algorithms used to generate them can be predicted and controlled. These environmental forces simulated in the game, including building materials, affect how the user is able to interact with and understand the rules of the game world. An example of this would be randomized fight sequences in a game like 2017's *Horizon: Zero Dawn,* in which fight sequences are generated by algorithms, rather than being pre-choreographed by the designers, so that fighting the same character is never the same twice.[56] Applying the biological turn to digital architecture largely

[56] *Horizon: Zero Dawn,* Video Game, Developed by Guerrilla Games, (Sony Interactive Entertainment: 2017).

focuses on algorithms and the possibilities for computational design to generate forms based on parametric inputs from the designer.

Morphogenesis is particularly pertinent to game studies when considering the material aspects of the game world. As architectural theorist Neil Leach points out, in nature there is no distinction between structure and material—both work to support the object and to generate its mass. In 2004's *Digital Tectonics,* Leach discusses that digital architectural methods should acknowledge the materiality of the virtual world. He refers to this as digital tectonics. He draws on the work of Manuel DeLanda and Giles Deleuze to suggest that tectonics, or support structures, and digitization, have collapsed into each other. Leach argues that the digital world can and should be thought of in terms of material tectonics. Digital tectonics is a paradigm shift for thinking about architectural culture in which algorithmic models and the real materiality of tectonics can digitally coexist.[57] The emphasis is on the ability of digital materials as tectonic structures to be dynamic. In this way, form emerges from within the possibilities of the structure based on its material properties. He says this is a type of emergence. For Leach, this means the interactions of the computer's operations—of small components coming together.[58]

Emergence is a concept familiar to game studies as well. Juul was the first to refer to emergence as a way of categorizing games. Broadly, emergent games are those that begin from a small set of rules that, through gameplay, yield multiple possible outcomes. This is in contrast to games of progression, which emphasize progression and achieving goals. Emergence can also refer to game play in ways that the designers cannot predict and do not intend. He says that a lot

[57] Neil Leach, David Turnbull, and Chris Williams, "Introduction," in *Digital Tectonics*, eds. Neil Leach, David Turnbull, and Chris Williams, (West Sussex: Wiley-Academy, 2004), 4-12.
[58] Manuel DeLanda, "Material Complexity," in *Digital Tectonics*, eds. Neil Leach, David Turnbull, and Chris Williams, (West Sussex: Wiley-Academy, 2004), 14-21.

of control within the game world lies with the designer because they set the ludic rules for game play, which Juul sees as defining the structure of the game. He argues that undesirable emergence makes the game less fun by exploiting rules or loopholes, and so game designers strive for systemic level design which allows for emergent game play in a way that accounts for desirable emergence. Although the game is structured by the rules, Juul notes that the play is the interaction of three things: the rules, the player's pursuit of a goal, and the players competence with the strategies of play.[59] As recently as October 2019, Joan Soler-Adillon, an interactive media scholar, suggests that the term emergence is too vague. Emergence as open-endedness needs to be understood as distinct from ontological concerns--that is to say whether emergence is actually a part of reality, or whether it is just a construct. Emergence and openness should not be conflated.[60]

Considered in the context of architectural theory, game play can be understood not in terms of rules or emergence, but by how the game is actually used by the player independent of designer intention. In this way, games can be seen as dynamic worlds in the way architectural theory sees generative forms. The player input has effects on the game world, and in turn, the game world affects the player's sense of self and ontology even after the game is switched off. Leach suggests emergence as part of the core structure of architectural theory as the way in which digital tectonics operate.[61] Leach's reading of digital tectonics that are expressed as material interactions within the computer provide a positive reading of Juul's suggestion that emergence is somehow antithetical to the rules that define game play. Architecture's

[59] Juul, *Half Real*, 88-91.
[60] Joan Soler-Adillon, "The Open, the Closed, and the Emergent: Theorizing Emergence for Video Game Studies," in *Game Studies* 19, no. 2, (October 2019).
[61] Neil Leach, "Swarm Tectonics," in *Digital Tectonics*, eds. Neil Leach, David Turnbull, and Chris Williams, (West Sussex: Wiley-Academy, 2004) 70-77.

understanding of emergence modifies the already existing concept in video game studies, making it about the possibilities for unique and unpredictable material interactions.

Video Games + Architecture

How We are In Games

The primary intersection between architectural theory and video game studies is to consider them as both fundamentally spatial, or taking up the issue of the way we are within a space. Architectural spaces are lived, physical spaces that we fill an occupy with our bodies. The spaces of buildings and landscapes that make up the constructed environment encompass a wide range of visual, auditory, and rhythmic experiences. Henri Lefebvre discusses these constituent parts at length in texts like *The Production of Space* and "Seen from the Window."[62] Not dissimilarly, video game designer and theorist Ian Bogost describes in *How to do Things with Video Games*, that video games are media ecologies in which environment design, narrative, music, and sound effects work together to be transportive. He calls for a "media archaeology" to uncover game details and expound on their significance. He refers to games as having "simulated texture;" music and sound effects add to the character of the world making it an "interactive model of experience."[63] Interactivity, as well as the suggestion that the worlds of the games are models, are two components often discussed by game scholars and architectural historians as they relate to player and spatial agency and volition.

---

[62] Henri Lefebvre, *The Production of Space* [1974], trans. Donald Nicholson-Smith (Oxford: Blackwell, 1991), and Henri Lefebvre, "Seen from the Window" [1992], *Rhythmanalysis*, trans. Stuart Elden & Gerald Moore (Continuum, 2004), 27–37.
[63] Ian Bogost, *How to Do Things with video games,* (Minneapolis: University of Minnesota Press, 2011), 148.

The way Juul describes rules, which he says are the fundamental structure of the game and player experience of that world, is the opposite of the way architectural theory wants to see the world in the biological turn. He describes emergent games as having a large "game tree," or possible outcomes and game variation. While this may account for designer intention, it does not account for the player's agency or the real virtuality of non-human material objects in the game worlds. Juul describes that emergence is asymmetrical with few rules and a lot of variety of play. [64] This can be extended and understood through the lens of digital architecture to see that the game worlds flow from designer, to player, to non-human objects.

Henry Jenkins is attempting, to some degree, to do a type of media archaeology that Bogost puts a fine point on. As a media scholar, Jenkins argues in "Narrative Spaces," that the level design is more important than the character development. Memory is central to this idea. Using the example of Disney World rides that he applies to video games broadly, he infers a ludic stance that the mechanics of the game play are part of what makes the experience of the world memorable, and the semiotic associations with the world make the experience meaningful, even as the memory of the narrative fades once the experience is over. This essay uses a wide range of examples, from board games like Monopoly and the experience of landing on someone's real estate, to Disney World attractions. Jenkins writes that the attractions "map our preexisting…fantasies."[65]Disney imagineers use "environmental storytelling," imbuing the physical space with narrative elements, letting the space tell a story. The attractions do not tell literal stories, or replicate stories exactly, but rather they create an atmosphere, a feeling, which he says is similar to the way environments in video games operate.

---

[64] Juul, *Half Real,* 75.
[65] Henry Jenkins, "Narrative Spaces" in *Space Time Play: Computer Games, Architecture and Urbanism: The Next Level*, eds. Friedrich von Borries, Steffen P. Walz, Matthias Böttger, (Boston: Birkhäuser Verlag AG, 2007), p57.

Jenkins sees the world of the video game as narrative in its own right, which he refers to as "spatial stories;" that is a specific type of game that privileges spatial exploration over plot development, driven by movement across a map. The environment itself, which he describes as a type of emergent storytelling, must drive the character towards a goal. He distinguishes two types of game narratives: unstructured narrative, or the realm of player control, and the prestructured narrative that awaits discovery. The game world is thus an "information space, a memory palace." He has no additional explanation or reference for memory palace. Perhaps he means memory in that the embedded storytelling relies on our memories and fantasies from which we can draw meaning. Later he comes back to it to suggest a memory palace is a space in which the player works to discover and decipher details that inform the plot.

Jenkins says that game designers are not storytellers, they are narrative architects. At the very end of the essay he references urban planner Kevin Lynch's 1960 study, suggesting that planners take into account the narrative potential of cities. People within the space discover it and write their own narratives through memory. Jenkins suggests that this is something that game designers can learn from planners. Lynch suggests the planner's job is to create spaces that have "poetic and symbolic potential."[66]

Architectural historian Annabel Jane Wharton takes up the issue of agency within game space. Agency, she says in *Architectural Agents: The Delusional, Abusive, Addictive Lives of Buildings,* is an architectonic issue--meaning a structural concern. She defines architectonics in games as the "buildings and landscapes of digital contexts [which] recognizes the virtuality of structures coincidentally with their visual persuasiveness," or, as agents.[67] This is an interesting

[66] Jenkins, "Narrative," 60.
[67] Annabel Jane Wharton, *Architectural Agents: The Delusional, Abusive, Addictive Lives of Buildings,* (Minneapolis: University of Minnesota Press, 2015), 152.

appropriation of an architectural term, usually used to describe the structural elements of architecture, used as a critical expression of the building's form into the context of gaming. This would suggest that the buildings and landscapes of the digital are critical to the game's form so far as they serve a ludic function—architectural structure becomes the structure of the rules in game play.

Wharton argues that buildings in the material world have agency independent of their designers or occupants. A designer might have a use in mind for their building, but over time its use is likely to transform. Additionally, the building provides shelter and affects things like wind patterns regardless of whether or not it is occupied. In this sense, Wharton refers to buildings as "architectural agents." In her discussion, she includes the video game *Assassin's Creed*, in which she describes the digital model of Hagia Sophia as a space with agency in that it is persuasive and convincing as an accurate model of the physical world building.[68]She argues that video games are quasi-agents. Wharton acknowledges the "erosion of the boundary between technology and the body."[69] Wharton suggests that physical buildings should be thought of as bodies, or as agents that have effect, in which she includes the virtual and video games. She adopts the definition of "agent" from chemistry; "nonhuman entities—spatial objects—that have an effect on their animate environments, independent of intention."[70] She clarifies this definition relative to digital worlds to say that "immersive" sites, including video games, are quasi-agents because "their immateriality resists the somatic body, memory slips away from them. They may

[68] Wharton, *Architectural.*She also means that this space has agency in that it is a site of addiction, citing that video games are often addictive. Arguing the validity of this point is beyond the scope of this paper. Whether or not video games are addictive has nothing to do with their agency, their visuality, or their materiality, algorithmic or otherwise.
[69] Wharton, *Architectural,* xxvi.
[70] Wharton, *Architectural,* xiv.

manipulate humans but not animals. They are quasi agents."[71] She is unique in that by ascribing a measure of agency to the virtual world she allows it to be the generator of knowledge.

Vision is of central concern to several scholars, and how it relates to the ability of the video game space to be immersive. Wharton describes the "visual persuasiveness" of games, which is to say how carefully they depict copies of recognizable elements from the physical world, and convince the eye that the digital representation is an adequate stand in for the physical thing. Gillian Rose, a cultural geographer, takes up video game imagery in terms of ocularcentrism. She makes a distinction between vision and visuality. She defines vision as what is seen with the eye. Visuality is culturally constructed—it is what we see, how we are able to see it, what we are allowed to see, and what remains unseen. In the digital age, she identifies a breakdown in the modern maxim that seeing is believing. Digital images not only proliferate, but can lie and are easily manipulated—truth is no longer inherent in an image.[72] She invokes Jean Baudrillard's concept of the simulacrum, which is to say that the distinction between real and unreal has dissolved. It is not a requisite for images to have a real or truthful correlate in the world. Digital images are changing the very nature of visuality.[73]

James Ash, a geographer deeply invested in video game scholarship, describes that video games are a series of images on a screen that move in a way that makes us believe we, as the player or observer, are moving through a space. The game console redners a series of images in

---

[71] Wharton, *Architectural,* 218.
[72] Gillian Rose, *Visual Methodologies: An Introduction to Researching with Visual Materials,* 4th ed. (London: SAGE Publications Ltd., 2016). While it is outside the scope of this dissertation, I would challenge Rose that images have never been honest. Early Renaissance artists invented perspective, which is a visual trick. Painters flattered their patrons in portraits, court painters going so far as to alter portraits to suggest paternal lineage. Double exposure has been a compositional device in photography specifically used to elicit an illusion for almost as long as photography has existed as a technology.
[73] Rose, *Visual*, 2-5.

quick succession that gives the appearance of three dimensional space. Ash's observation that games are images is correct in the sense that they are highly immersive and convincing as a space. He suggests that the screen acts as an interface that combines with the narrative to inform our conception of where we are in the virtual world.[74] In "Emerging Spatialities of the Screen: Video Games and the Reconfiguration of Spatial Awareness," Ash argues that game geography is not understood in terms of real spatial geometries, but rather as a series of two dimensional images that are manipulated by the player to appear as if they created a three dimensional world. The screen is important as the site of the images. The screen is the "connective plenum" between the player's cognitive function and the images that appear to make up the world. Ash describes the screen as the "site which alters the relation between thought and movement and thus the status of the body's collective phenomenal field" that has the ability to alter the player's physical and cognitive state—the screen is the site of phenomenological engagement.[75] Additionally, the body is able to locate itself within the space, or within the images, because the player is holding a remote and pressing buttons to activate the space. Ash refers to this as existential space, or space that is understood by the user's bodily knowledge.[76] The problem with putting so much emphasis on the screen as a mediator is that it limits the scope of the world to just what is seen on the screen at a given moment. These worlds exist on servers, any part of which can be accessed by anyone around the world at any time, often simultaneously with other players occupying different parts of the same world. The game world cannot be restricted by the screen; it exists independently of an individual player.

---

[74] James Ash, "Emerging Spatialities of the Screen: Video Games and the Reconfiguration of Spatial Awareness," in *Environment and Planning A* 41, no. 9 (2009).
[75] Ash, "Emerging," 2106.
[76] Ash, "Emerging," 2106-2108.

Despite the appearance of images, Ash shifts his position in his later work to take up the issue of agency, and suggest that all objects in the game world are equal in terms of agency to any object in the physical world.[77] In his 2015 book *The Interface Envelope,* Ash argues that video games are *interface envelopes*, or ecologies of objects that fold space and time. Images are no longer constitutive of space, but is it the folding of space and time represented by those images that constitute space itself.[78] He understands this through what he describes as post-phenomenology. Ash focuses on the agency of objects which are manifest not just as images, but as ontologically real. He gives equal importance to the algorithms that make up the game, the images that present the objects, the objects themselves, and the player experience. Not only is Ash reinserting the visual, but by doing so he is bringing the body back into the discussion of digital structures that both video game studies and digital architectural theory lack. [79] The problem is that Ash falls into the trap of equating digital and physical materiality in a flat ontology, or one in which all elements are assumed to have equal agency. This negates the very real material differences between the physical and digital worlds. These differences include authorial agency and designer intent, and strips space itself of its media-specific attributes.

Video games are post-phenomenologcal in that they have "the potential to refigure our understanding of the relation of the body to the world."[80] James Ash and Paul Simpson discuss post-phenomenology in terms of post-structuralism, relating it to the work of Gilles Deleuze, Jacques Derrida, and Emmanuel Levinas, who they claim extended the lens of phenomenology to include the subject. Post-phenomenology has the potential to reconcile ontological issues with

[77] James Ash. *The Interface Envelope: Gaming, Technology, Power*. (New York: Bloomsbury Academic, 2015).
[78] Ash, *The Interface.*
[79] Ash, *The Interface.*
[80] James Ash and Paul Simpson, "Geography and Post-Phenomenology," in *Progress in Human Geography* 40, no. 1 (2016): 49.

questions of agency by focusing on the relationships between subjects and objects without giving primacy to one or the other. They write that there are:

> ways in which self and world, or objects themselves, devolve or appear in the relations they enter into. Rather than starting with a subject and object correlate…we are to start with the *relations* themselves, or the givenness of the world itself, and treat anything that appears as secondary to this fundamental implications/givenness. Taking this further, other strands of post-phenomenology recognize the autonomous existence of the world outside of the ways that it appears to humans ...These developments provide a tool kit for interrogating the world in its very alterity.[81]

The reunification of subject and object is taken up by the phenomenological project, which James Ash modifies to explore cultural production through the interface envelope. A post-phenomenological lens allows Ash to account for the agency of non-human objects, and emphasizes the cultural specificity and commodification of video game worlds.[82]

Ash argues that game environments are interface envelopes that fold space and time to manipulate users into a constant "now," ignoring memory associations and speculations about the future. By this he means that perception is not one linear moment, but a series of folded moments of differing and overlapping lengths.[83] This is done to keep users emotionally and physically captivated so that the game company can make a financial profit. This happens when players pay subscription fees, buy extra objects for in-game play to advance or gain an edge over other players, or by purchasing games that are part of a series. Ash calls this cognitive capitalism, which he sees as the next phase of capitalist development. By arguing that interface envelopes

[81] Ash and Simpson, "Geography," 62.
[82] Ash, *Interface*.
[83] Ash, *Interface*, 139.

are composed of objects that are real, is imbuing them with material, historic, and thus politically charged qualities. To be "real" is to be historical and thus political. Ash is trying to avoid the politicization of this theory by suggesting a theory of technicities through which the objects communicate and by which the body's ontology can be understood.[84]

The flows of agency are directly related to digital materiality. In his effort to bring the body back into the discourse of virtual worlds, Ash argues that the virtual world must be thought of as materially real. This is because the physical body understands the virtual space in terms of objects that have interactions in the virtual world. Literally, this means the material maps laid over the game geometries that communicate information about the object to the player. Further, this means the algorithms that model things like gravity and friction which determine the rules for the interaction of objects within the game world.[85]

Two things are of critical importance in terms of agency and materiality. The first is that both the algorithms and the objects seen and understood to be objects are models, regardless of whether they have a direct correlation in the real world. Secondly, those objects which have agency are not inviting new ways of seeing, but rather offer new ways of being in the world that extends beyond vision alone. At a recent talk by Wharton, I asked what happens to the power of the video game model if it does not have a 1:1 correlation to something in the real world, as is the case with her example of Hagia Sophia. She responded that if the game is abstract, then it is no longer a model and is simply an image.[86] This questions the relationship between agency and model manifest as material objects versus images. Wharton is absolutely correct in her

[84] Ash, *Interface,* 145-147.
[85] Ash, *Interface*.
[86] Annabel Jane Wharton, "Models' Acts: Analog to Digital," Lecture at the University of Virginia, (November 16, 2016).

observation that video game architectures are models. Using the historiographic approaches of digital architecture as well as Rose's concept of visuality, games do not need to have exact correlates in the real or material world. Most games do have correlates in the world at the algorithmic levels, which are direct models even if the visual representation is an abstraction. For example, in the game *Journey*, the algorithms model sand, stone, and gravity in a way that the player understands as sand, stone, and gravity even though those elements are visually abstract. The avatar in the game is understood as a correlate to a human agent, even though the figure is highly abstract and has the ability to float and fly. If games are not understood as merely images, it is clear that all video game worlds are models, regardless of their abstraction, with full agency. This agency dissolves the distance between the game space and the player because of their interactions as part of a system including both the physical material world and the virtual.

How the Game is Presented

Many game scholars and architects alike are interested in the systems that produce the video games, and understand them as consumer goods. However, what makes these spaces as distinct is that, while the games must compete in a capitalist system as products, people are still the ones participating in and affecting the space as agents. People play, observe, and interact with these worlds, carving out their own spatial niche, staking their own claim in the space, and creating their own places by doing their own work. This is only possible because of the way the games reconfigure traditional notions of time and materiality. Games are accessible to people globally, across cultural groups, but most play on local traditional cultures which does not keep them from being popular, and part of a multi-billion dollar industry.

Gillian Rose sees digital images, including video games as manifestations of power

relations. She says that this suggests a diachronic approach to images, because in order to manifest power they must be historically specific. Digital images are a form of cultural production, which she defines by quoting Stuart Hall as a concern with the "production and exchange of meanings."[87] The visual is thus a form of cultural production, and the study of visual materials is to decipher meaning. This recognition is laudable, however her way of understanding these power relations draws upon the passé approach of compositional analysis, taken from art history. For Rose, compositional analysis is to critically observe the way in which the components of the image are arranged, including color, content, and knowledge of the image's production, in order to suggest possible meanings.[88] She suggests that compositional analysis is the preferred methodological approach for scholars interested in the phenomenological aspects of a game. She points out that digital images have created a "broad concern for the experiential."[89] Thus much of her argument for the use of compositional analysis uses video game screenshots as evidence. This acknowledges a critical component of the video game image that textual analysis is not equipped to account for; that is embodiment within the space. However composition and image production alone cannot adequately describe the effects of the image on the occupant of the video game world, or the effect of the game player on the digital world being occupied. While images are still something to be read, Rose sees that they can be understood as sites of social difference and social power relations because of the multiple ways of looking that digital images invite and the wider culture of which they are a part and circulate.[90]

Neil Leach is one architectural theoretician weighing in on this connection. Referencing

[87] Rose, *Visual,* 2.
[88] Rose, *Visual,* 61-66.
[89] Rose, *Visual,* 9.
[90] Rose, *Visual,* 17-21.

Slavoj Zizek's *A Plague of Fantasies* and Marc Augé's *A War of Dreams,* Leach suggests that we are entering into a new phase of consciousness that is dominated by dreams and fantasy in his essay "Virtual Dreamworlds." Virtual reality is part of this new consciousness; it is a model for reality. Leach argues that to apply to architecture, fiction must be broadened to "fictionalization of culture." Leach makes the connection from fiction to architecture though advertisements and "computerized representations" that blur the distinction between "fictional and non-fictional, virtual and actual, and an erosion of the hegemony of the physical." For him, video games are part of the process of consumption and advertising.[91]

Leach's emphasis on advertisement and consumption as the primary manifestation of fiction and the link between video games and architecture devalues the possibilities of fictions and alternative consciousness, and trivializes digital ontologies. To condemn these spaces as simply products of "advanced capitalism" is not a useful exercise—the fact is that they exist as interesting spaces in their own right. At some point we must stop describing places and experiences like Las Vegas, and by extension, the Italian and Chinese restaurants that Leach references as artificial and inauthentic, and accept them for what they are—a different type of authenticity in a context that is separate and distinct from the original that inspired it. No one who sees the Eiffel Tower in Las Vegas or Disneyland thinks that it is the real thing, or even a stand in for the real thing. Rather, people are happy to accept it in its specific context, as part of an experience that is its own.[92]

Understanding approaches to digital architectural space helps to push game studies to think spatially, and game studies helps architecture to move beyond the conception of buildings

[91] Neil Leach, "Virtual Dreamworlds," in *Beyond Form: Architecture and Art in the Space of Media*, eds. Christine Calderón, Omar Calderón, and Peter Dorsey, (New York: Lusitania Press, 2004,) 130-141.
[92] Leach, "Virtual."

as algorithms stripped down to their parametric and formal possibilities. The existing approaches to understanding video games, from both disciplines, can do more to understand the games spatially. The landscapes, buildings, sights, and sounds that make up the physical world are discussed by Henri Lefebvre, and in a similar vein, Ian Bogost discusses video games as media with similar elements, such as environment design, music, and sound effects that together transport the player into the world of the game.[93] Understanding Lefebvre and Bogost together suggests that video games are more than semiotic systems, and texts to be read, as if they possess the same attributes as the physical world. While they are composed of images that can be read, a more comprehensive approach to understanding them as space is required. The late twentieth century approach to architecture's performative potential, as seen by the influence of Jacques Derrida's philosophy, can serve as a model for video game studies as spatially dynamic systems.[94] Neal Leach is one architectural theorist considering the relationship between architectural materiality and its role in digital space.[95] His suggestion that architecture must recognize the materiality of the digital world is not dissimilar to the way in which architecture must also recognize the spatiality of video games, while the structural, tectonic qualities of the digital are one way for video games to benefit from architecture's understanding of space as dynamic.

New categories of space, time, materiality, and place begin to understand the wide range of spatial, ontological possibilities presented by video games. As Andreas Gregersen suggests, game theorists have been too narrow in how they classify games.[96] The result is that too often, the field of architecture and theory has neglected to study the spatiality of games. Mark Wigley, for

[93] Lefebvre, *The Production* and "Seen," 27–37, Bogost, *How*, 148.
[94] Derrida, *Of*.
[95] Leach, Turnbull, and Williams, "Introduction," 4-12.
[96] Gregersen, "Generic," 159-175.

example, reduces games to reflections of architectural typologies, suggesting video games are merely reflective, rather than formative.[97] Rethinking categories by the logics and actions involved in how they enact and perform space is one way to broaden the focus and impact of video game scholarship for the field of architecture.

[97] Wigley, "Gamespace," 484.

Chapter 2

Space=Visuality+Gateways of Significance

The solitude of the video game *Dear Esther* is striking, and results in anxiety as one plays or watches the game, as if waiting for something to jump out at you, although it never does.[98] In this game, the player wanders around an apparently deserted island. It is strikingly beautiful, though desolat, as the player explores the island's shore lines, grassy hiltops, an abandoned cottage, wreckages of ships, and a series of caves [Figure 3.1]. The player or observer never sees any part of an avatar, which is a stand in for the player's body. The player or observer of the game experiences the world purely visually. The player can interact with some objects, like letters, an old can, and a flashlight, but you still do not see a hand that reaches out to pick them up, nor do you have any use for objects. The goal is simply to be in the world of *Dear Esther*. As the player explores, they pass thresholds in the landscape that trigger a narrator's voice to read letters. Slowly, the game's narrative unfolds. The narrator, whose belongings are what we encounter, lost his wife, Esther, when she was killed by a drunk driver in a car crash, and through the letters, is giving a voice to his grief. The experience is somber and lonely. When letters are not being read by the narrator, the island is quiet, with only the sound of waves in the distance and the unseen avatar's own footsteps. As the player progresses around the island, it becomes an increasingly psychedelic experience--it is as if you, the player, through the avatar's experience, are losing your

[98] *Dear Esther*, Video Game, Developed by The Chinese Room, (The Chinese Room: 2008, 2012).

mind, presumably as Esther's husband did. We find out through the letters that Esther's husband cut his leg and it is badly infected. The player enters a series of caves, and finds candles lit, and scrawling phosphorescent drawings on the walls with no trace of who left them [Figure 3.2]. Night falls, and there appear lit candles all over the beach, with no clue as to who lit them. The only other person the player encounters in the entire game appears at this point--a shadow, barely visible, far away up on a cliff, too far away to reach, and could very easily be overlooked. The game gently steers us up a pathway, along which someone, likely Esther's husband, wrote passages from the Bible along the cliff face, and lines like, "and as he was proceeding on his journey." The only place left for the player to go is up a radio tower at the top of the island. At this point, the player loses control, and the unseen avatar jumps. The field of vision falls toward the ground, and at the last moment, begins to skim the surface of the ground, flying low over the water and around the island. Death is the inevitable outcome of this journey, though it is unclear that death is what occurred. The ending is ambiguous in that the player's role as an avatar is unclear. The perspective of who the player is supposed to be embodying is questionable. The way the avatar's body appears to fly just before hitting the ground makes the meaning of the narrative and the experience of the island is confusing, and the avatar's motivations for jumping are not explained.[99]

[99] My theory is that the player is meant to be taking on the role of Esther's husband, hearing the letters in his own head, and whose mental state is flimsy at best. He is wandering around in a state of madness, which we see as we go through the caves, at one point seeing a vision of what looks like a hospital room, perhaps where Esther died. Toward the end, the letters reveal that the protagonist plans to kill himself. The spectre on the cliff is either Esther's ghost, or the idea of the drunk driver who killed her in the car crash, haunting the protagonist. In the end, he jumps off the tower, overcome by grief and solitude. After he jumps, we hear a whisper, "Esther," and as the screen goes black and the game ends, "Come back."

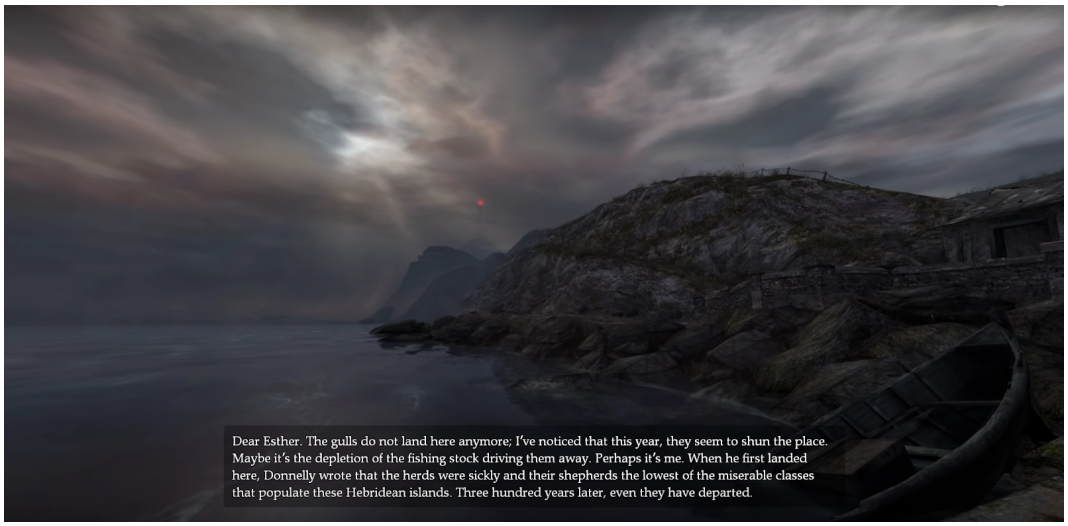

Figure 3.1. Island of *Dear Esther*.[100]

Figure 3.2. Cave drawings and candles.[101]

The space of the game, the player or observer's entry into that space, and the implications of the space as a necessary condition for generating all of the qualities of the game that are experienced by the player, is the subject of this chapter. Space in a video game with an

[100] WindyPower, "Dear Esther - Complete Walkthrough (1080p, no commentary)," YouTube Video, March 5, 2012, https://www.youtube.com/watch?v=hlGdbziSwEY.
[101] WindyPower, "Dear."

immersive ecology can be defined generally as a field that, by virtue of its nature as a generator for temporal and material conditions, reconfigures the experiencing subject of the space as a subject-object hybrid. That is to say that space produces the temporal and material conditions that are perceived by the player or observer as the experience of the game. Through this, the player or observer becomes not just a subject experiencing the game space, but also an object within the digital world of the game, experiencing both subjecthood and objecthood simultaneously. The space is one of not just emergence as elements come together, but of ontological possibility, in which the subject-object hybrid can itself become reconfigured in a multitude of possible ways.

One way to understand this phenomenon is that space in an immersive ecology is performative. The basic action that space performs is to break down the perceived boundary between the digital world and physical world, dissolving the two ontological sites into an inbewteen state. This is expressed through the equation Space=Visuality+Gateways of Significance. Visuality and Gateways of Significance are positions from which this inbetween state is visible. Visuality, or the way we see the game, is the player or observer's first point of access to the space. The first impression that *Dear Esther* has on the viewer is the solitude communicated by its graphic styling and somber color palette. Gateways of Significance refer to critical spatial junctures that are signaled to the player in some way. These could be things within the game itself, like the spatial thresholds in *Dear Esther,* that trigger the reading of a new letter. They are also things like load screens, which pause one space as another is generated, exposing the limits of the video game space. Space is not restricted to the combination of these two elements, but they provide a useful starting point for considering how video games with

immersive ecologies are their own spatial typologies that create their own ontological information flows from the physical subject playing or observing the game, to the digital object as a stand in for that subject in the game world, creating multiple possible, simultaneous subjectivities.

Dear Esther is an excellent example of how game space has its own temporal and material conditions that affect how the player or observer of the game understands the game space to be a place--but those conditions are byproducts of the space itself. Space in a video game with an immersive ecology is a field that exists without the intervention of a player or observer, as it is hosted on massive server farms, available at any time to anyone with access to the technology required to activate it. The space comes into being with the algorithms that generate it. The space precedes the rules of time that govern game play, and the rules for material interactions that make it seem familiar. Time refers here to both the amount of physical clock time that elapses while the player is involved with the game, and to the way the video game space conveys the passage of time. *Dear Esther* is a relatively quick game to play--the main storyline taking only about an hour and a half to complete. In the game, there is a sense of time passing as the day turns to night. There is also a sense that time is passing as the narration of the letters reveal more and more about what happened to Esther, in conjunction with the location we, as the invisible avatar, inhabit on the island. Materiality refers to the literal bitmapping of the graphics onto digital shapes--the textures applied to make grass look like grass, stone like stone, water like water. In the case of *Dear Esther*, the materials are meant to look visually hyper-real, or as much like what one might encounter in the physical world as possible. It also refers to the way the player may or may not interact with material objects in the game, and how those objects

create a sense of culture within the game. Both are products of how the designers want the space of the game to be traversed, communicated, and experienced. The space itself sets the conditions for being in the world, manifest as temporal and material qualities. Together, the rules of time and materiality established by the space combine to create a place, to make the video game world come to life and surround us as the player or observer of the game.

This is also an example of the way the digital world and the physical world of built architecture combine, intertwining so that there exists a space that is neither fully occupied, nor that exists purely as digital images. The immersive ecology must be understood as an actual space, but one with its own unique modalities--in this case, time and materiality. The conditions for this flow between physical space and video game space are determined by the video game space itself as a precondition for all other temporal and material conditions that follow in the game.

Visuality

The way the game appears visually is the first point of access into the game space. When the game console or computer is turned on, the first impression the game has on the player is visual. It is the moment that the boundary between the digital game world and physical world begins to be transgressed. The visual impact is one way that the boundary can be understood as dissolving, as the game either tries to simulate the way objects look in the physical world, or departs from visual expectations.

Boundaries

The space of *Dear Esther* is an example of the way the boundary between the physical world and video game world dissolves. In *Dear Esther,* the player or observer is given cues about a narrative from the letters, but it is hard to explore the world and listen to the letters at the same time--details are lost in the exchange between listening and looking at the island. In this way, it is the exploration around the space and the response one has to it that is more important than the narrative, which establishes the context for being on the island, or the impetus for moving around it. In this case, the boundary between the physical world of the player or observer's living room and the world of the video game space dissolves through the experience of the anxiety induced by exploring the island. The computer or television screen is a perceived boundary that separates the physical world we are sitting in with our living bodies, from the digital space of the game. The game itself contains boundaries within it, like limits to the map, the extents of the game world, or as in *Dear Esther*, narrative boundaries. The boundary between the physical and the virtual worlds is only a limiting factor in so far as it is the extent to which the game world has an effect on the player or observer of the game as they are called into the world.

Space, its borders, and its role are widely taken up in philosophical and architectural discourse. Heiddgger provides an understanding of boundaries that complicates the traditional view of them as something that limits space. However, for Heidegger, that means that space is an empty void to be filled. David Harvey's definition of space owes a lot to Hiedegger, but space is more than a void. It is shaped by social practice. Manuel Castells takes his definition of space from Harvey, but applies it to a virtual context, in which space is not a reflection of a society, but is society itself. These definitions together provide an understanding of space and boundedness,

that, with additional modification, are useful for seeing how the boundary between video game space and physical space falls away, and is actually an imaginary construct rather than a perceptible separation.[102]

The Heideggerian concept of raum, or boundary, helps clarify the limitations of the concept of boundedness. In "Building, Dwelling, Thinking," Heidegger explains that raum is a boundary, but not the way we typically think of a boundary as a limit. Rather, it is the place from which something begins. Though Heidegger could not have imagined a video game, the way that he refers to the idea of being in a place, like the island of *Dear Esther*, is as a locale.[103] A locale draws people inward, toward it. In this context, locale combines with the expansion of space outward from the boundary, or raum, to begin constructing the subject who exists within this inbetween ontological state. The inward/outward concept of raum and locale becomes a productive way to conceive of the construction of a subject within a space. In this context, subjectivity refers to the relationship of the knowing subject--the player or observer--to the world. This applies to both the world of the video game as well as the physical world. If the screen on which the video game appears is perceived as a boundary, then space begins to flow outward infinitely from the world of the game. In this way, space speaks to the way the boundary between the physical and video game worlds is dissolved, but also why space must be understood as the driver for establishing the conditions of time and materiality that follow to create a sense of place. These modalities cannot emerge without space as a precondition. The value of

[102] For an interesting analysis of being called into a work of art, in the same vein as being called into the world of the game space, as well as a discussion of the physical limits of a work of art, see Jacques Derrida, *The Truth in Painting* [Vérité en peinture], (Chicago: University of Chicago Press, 1987). In this essay, Derrida complicates the preconception that the work of art ends at the edge of the canvas.
[103] Martin Heidegger, "Building Dwelling Thinking," *Basic Writings From Being and Time (1927) to the Task of Thinking (1964)*, ed. David Farrell Krell, (New York: Harper & Row, 1977): 356.

considering space as the precondition for other factors to emerge in video game space is that it blurs the boundary between the physical and the digital, which is to say, it reconfigures traditional notions of subjectivity, and asks us, as the player or observer, to consider ourselves as subjective agents exiting in this inbetween ontological state.

The function of space relative to the creation of place is commonly taken up in architecture and planning discourse. David Harvey defines space as "the fundamental material of social expression."[104] For Harvey, space is an unchanging, immutable truth; it is people and cultures that create variation. In video games, this needs to be reversed; space sets the conditions for the ways in which everything else emerges, and in the process, blurs the boundary between digital and physical. In the context of video games with highly immersive ecologies, the rules of the space and the contexts for spatial conditions are variable from game to game, and world to world. Space, in the way that Harvey describes, is a "'positional quality' in the world," determined by proximity to places, which are formed by cultural variation.[105] It is place that determines the conditions for spatial expression. Eric Sheppard in "David Harvey and Dialectical Space-time" explains that Harvey enumerates three spatial themes: "grounding conceptions of space and time in humans' experiences of the world, abandoning absolutist conceptions of space, and developing a formal analytic language of space."[106] It is a human centric understanding of space, which is limited to human experiences, both as individuals and as forms of imagination and cultural representations of space. Space is shaped by social practice; people and experiences constitute space. As cultures change, so too does a human-centric perception of space.[107]

---

[104] Eric Sheppard, "David Harvey and Dialectical Space-time," in *David Harvey, A Critical Reader*, eds. Noel Castree and Derek Gregory, (Malden: Blackwell Publishing Ltd., 2006), 122.
[105] Sheppard, "David," 122.
[106] Sheppard, "David," 122.
[107] Sheppard, "David," 123.

The space of video game worlds cannot be defined by experiences alone. The value of Harvey's definition is that because space is nothing more than experiences, it is therefore not "externally fixed," as in a Newtonian or Cartesian grid. Distance is then measured by "process and activity." This is valuable for understanding video game space in that the experience of the video game is the impetus for entering the game world to begin with--the player turns on the console and picks a game in order to experience it. In *Dear Esther*, it is the experience of the island and the anxiety that results from exploring it. Harvey's suggestion that distance is relational is also useful. In the context of *Dear Esther*, different letters are read aloud by the narrator as the player crosses invisible thresholds as the player explores. Yet this approach reduces the space of the video game world to narrative junctures, rather than considering how the space itself is pointing towards new types of subjectivity. Harvey's idea of space in this context is that the people and place of human experience is what gives space a shape, which also needs to be modified in video games because in games, this relationship is variable. Often these games depend on player interaction with non-player characters (NPC's), which are characters controlled by the game's programming and artificial intelligence, rather than another player. This is the case with *Dear Esther*; the narrator's voice is not actually a spatial condition simply because it is activated by crossing spatial thresholds--it is narrative in function and purpose. This means that space cannot be measured in terms of either experience or relational distance, as Harvey suggests, because this reduces the space to narrative junctures rather than a metric for understanding the space itself. In this way, the spatial conditions are already determined, and set the conditions for the way the player or observer of the game may experience place--the space sets the conditions for the NPC interactions.

Harvey's definition of space is useful for understanding space as experiential. In the context of video games, it requires modification, because simply thinking of space as a series of relations reduces it to narrative junctures, rather than understanding the inherent qualities of space within the game itself. Understanding space must be thought of in terms of how the experience of space is modifying the player or observer's subjectivity. This is the relation that is significant in game space: the back and forth feedback between the player or observer as they navigate the space, learning how they are to be and act within it--the inward function of locale--and in turn how that affects the user's conception of the world around them, their subjective understanding of the physical realm having been modified through the experience of the game--the outward function of raum.

Much of Harvey's definition of space rests on Heidegger's discussion of Being in the world relative to what Heidegger refers to as *raum* and *locale*--a clear distinction between space and place--which speaks more directly to issues of boundary. Typically, a boundary is thought of as something that establishes limits and extents. In his essay from 1951, "Building Dwelling Thinking," Heidegger explains that in ancient Greek, *raum*, or boundary, meant the opposite. A space emerges from a boundary; "A boundary is not that at which something stops but...is that from which something *begins its essential unfolding.*"[108] This assumes that space comes before all else; for example, the horizon precedes everything that seems to extend from it. Heidegger's model of subjectivity within space is dependent on a relationship that forms between humans and the things that we craft. For Harvey, space is defined by relations between people, and for Heidegger it is relations between humans and objects. For example, a human builds a bridge that

[108] Heidegger, "Building," 356.

connects two sides of a riverbank. It is the bridge that gives the sides of the river bank purpose, and that calls people to that location, which he terms a locale. It is from the locale that space emerges.[109] Heidegger has taken the poetic and freeing concept of raum and restricted it to the service of human beings. There is a clear hierarchy intended: humans build, which creates locals, or places, which allows for space.[110] While there is a hierarchy, the human is only one part of a larger system, which Heidegger terms the fourfold. In his essay "The Question Concerning Technology," he describes the making of a silver cup. The human who makes the cup, the tools, the silver itself, and the idea of the cup, all have a role to play in not just the making of the cup, but the relationship the cup aids in forming between the silversmith and the world.[111]

What is interesting about this model is that space in this context expands infinitely outward from the human made thing, which is the boundary, while the thing calls the locale toward it, inward, which inherently establishes limits as the effects of the thing in creating a locale can only possibly extend but so far into space. While the human has a privileged position within Heidegger's model, the human's role within the larger system of the fourfold, combined with the inward/outward concept of raum and locale, becomes a productive way to conceive of the construction of a subject within a space. If the video game world stands in for the boundary of the thing, then space begins to flow outward infinitely from the world of the game. This is the moment in which the boundary between the video game world and the physical world, as a limit, is transgressed by the player or observer. In this scenario, the limiting factor is the extent to which the game world has an effect on the player or observer of the game as they are called into

[109] Heidegger, "Building," 353-359.
[110] For a detailed analysis of Heidegger's work on "space" and "place," see Jeff Malpas, *Heidegger's Topology: Being, Place, World,* (MIT Press: Cambridge, 2006).
[111] Martin Heidegger, "The Question Concerning Technology," (1954), trans. Walter Lovitt, in *Martin Heidegger Basic Writings,* ed. David Farell Krell (New York: Harper Collins, 1977), 307-341.

the world--the locale, or place, in this context combines with the expansion of space outward to begin constructing the subject who exists within this inbetween ontological state

By giving primacy to locale in the formation of space, Heidegger suggests a type of multiplicity of Being across time and space. He explains that thinking about a locale is to be at that locale--he explicitly states that he does not mean that the mental images are a substitute for the locale, but that the mental projection is as if one were actually there. Heidegger says, "I am never here only, as this encapsulated body; rather, I am there, that is, I already pervade the space of the room, and only thus can I go through it."[112] To imagine a locale is to transgress space and time--we think of ourselves in states of presentness and also having completed the action of being at the locale. In the context of the game world, this idea is interesting, but it is critical to point out that neither the mental projection of a game space, nor the image of the video game world that appears on the screen, is equivalent to being in a physical space. Raum suggests the mechanism by which the boundary between worlds is often imperceptible, and the multitude of being across time and space as a way of "being" in space speaks to the way the game world suspends physical clock time and physical materiality. The construction of the subject in the game world suggests the multitude that Heidegger points to. The limitations of Heidegger's model for reconsidering the boundaries between video game and physical worlds is that he implies that Being is a universal condition, and the disdain for technology that he expresses in "The Question Concerning Technology." He describes that technology is a tool for enframing, or *Gestell*, which inhibits *Dasein*, or Being in the world.[113]

Manuel Castells discusses space relative to technology that further explores the

[112] Heidegger, "Building," 359.
[113] See Heidegger, "The Question."

relationship between space and place. Reacting to the advent of the internet in the 1990's, Castell's *Rise of the Network Society* argues that time and materiality are shaped by space.[114] He identifies new types of relationships between people and places, primarily in labor contexts, and says that these changes in the structure of our societies are actually a reflection of the way new types of space are taking shape in a networked era, meaning the internet constitutes a space. For Castells, these new relationships, forged by online interactions, are reshaping "at an accelerated pace, the material basis of society."[115] Adopting much of David Harvey's definition of space, Castells defines it as "a material product, in relationship to other material products--including people--who engage in [historically] determined social relationships that provide space with a form, a function, and a social meaning."[116] Understanding that there is a relationship between space and place, Castells defines place as shaped by people and cultures, and the material expressions of those cultures. Critically, while Harvey understands space in terms of the experience of place, Castells sees the material expressions of a culture as made possible by space. Space is not a reflection of society, but is society itself, allowing for cultural, temporally specific expression of society to take shape. Traditionally, local cultural histories and values were expressed in material-spatial terms through objects like architecture. In what he refers to as the network society, this relationship is disrupted, and space and time, which are the "fundamental dimensions of human life," are radically transformed.[117]

Space and time are transformed in what Castells refers to as the *space of flows*. It is one component of what he calls *real virtuality,* which refers to a synchronic space where a constant

[114] Manuel Castells, *The Rise of the Network Society*, (Malden: Blackwell Publishing, 2000).
[115] Castells, *The Rise*, 1.
[116] Castells, *The Rise,* 411.
[117] Castells, *The Rise,* 375.

flow of information is available across multi-media platforms. Castells defines the space of flows as "the material organization of time-sharing social practices that work through flows. By flows I understand purposeful, repetitive, programmable sequences of exchange and interaction between physically disjoined positions held by social actors in the economic, political, and symbolic structures of society."[118] He emphasizes that materiality in this context is the scaffolding supporting the flows, of which there are three layers. The first is a circuit of electronic impulses, meaning that places are linked and do not exist in isolation, places are all connected to the circuit. They are physical nodes and hubs, meaning that while the space of flows is not a place, it does have a physical manifestation in the form of cities, where major companies and service providers have offices and places where people can physically interact if necessary. Finally, they are people, who he describes as falling into two additional categories: managerial elites that organize a society, which he characterizes as cosmopolitan, and everyone else, who he describes as local. By local he means people who are culturally, symbolically, and historically linked to a particular physical location. He sees the logic of the space of flows, as in the logic of elites, subsuming local cultures and diachronic histories, and the people along with it who understand their subjectivity in local, physical terms.[119] This implies a type of subjective crisis, as local people are no longer able to identify with local, physical cultures or histories as they are absorbed by the elites. Nor are local people able to understand subjectivity relative to the space of flows, in Castells sense, because it lacks form and sense of place.

Games like *Dear Esther* demonstrate that time and materiality are shaped by space--space sets the conditions for these things to emerge--but Castells sees the space of flows as a negative,

[118] Castells, *The Rise,* 412.
[119] Castells, *The Rise,* 410-415.

dominant force that does not allow for the emergence of place; people using the technology that makes up the space of flows, like the internet, or in this case, video games, are void of any agency to create or redefine what a space of place could be within the space of flows. Understanding the space of flows as reconfiguring relationships, and giving space primacy in shaping material and temporal conditions, is critical to unpack the space of video game worlds. However, the emphasis on materiality as it negates local histories, and thus people, as part of the third layer of the space of flows is problematic. Video games fundamentally challenge the binary that Castells establishes between the space of flows and its opposite, the space of place, which are physical, lived, everyday locations with cultures, symbols, and histories.[120] This type of binary opposition refuses to consider how different cultures understand and use the first layer of electrical circuits, or the technologies, that materially configure the space of flows. Such binary oppositions are only possible because Castells strips the users and occupants of the space of flows of agency--his descriptions are of people as helpless in the face of these technological changes. Within this binary, video games cannot be considered space, because they fit the criteria for the three layers of materiality that constitute the space of flows. And yet, they also constitute a place in which people create their own unique in-game histories--the spaces themselves changing and evolving to grow alongside a society as informational societies. In this sense, video games meet the spatial criteria for both the space of place and the space of flows. Instead of thinking of social action in material terms the way that Castells suggests, we should instead think of place making as a question of agency and subjectivity in the "material," entirely authored world of video games. Castell's assertion that space is not a reflection of society but is society

[120] Castells, *The Rise,* 378.

itself, in that it shapes society, is critically important. Video games, as a space, shape the subjectivity of the player or observer, that is then transmitted into the physical world as part of a feedback loop.

Space as generative of other emerging conditions is one way in which game worlds are themselves a new spatial typology, rich with their own unique cultural histories, that have the ability to reconfigure the nature of the relationship between time and materials and how we, as the player or observer, understand ourselves as experiencing subjects within a place. This is similar to what Manuel DeLanda describes as a phase space of possibility. In "Real Virtuality," he argues that virtual reality is emblematic of how algorithms can be used to simulate behaviors, ranging from things like gravity and friction to perspective and simulated movement through space. DeLanda wants to expand what is thought of as virtual reality to include math and other computer sciences that do not include a visual component. He speculates about a *real virtuality*. DeLanda's real virtuality is distinct from Castells' Real Virtuality--DeLanda uses the phrase to mean "immanent patterns of becoming."[121] He uses the mathematical discovery of gravity as an example of real virtuality. The singularities, or the minimum and maximum value of a given parameter is not observable in the same way that force acting on an object is observable. Real virtuality is thus a type of modeled projection that does not depend on the visual manifestation to exist—it is virtual in that it is not a material concept, but is made up of latent possibility for being that is real and serious, rather than a metaphysical suggestion.[122] He writes that "singularities form the structure of a space of possibilities, and it is this structure that constitutes a real

[121] Manuel DeLanda, "Real Virtuality," in *Computational Design Thinking*, (West Sussex: John Wiley & Sons Ltd, 2011), 142-148.
[122] "If the ontological status of causes may be said to be actual, that is, if causes must actually exist in order to produce their effects, the status of the singularity is not that of an actual entity but of a *virtual* one. It is nevertheless real, every bit as real as are the causes and the effects: singularities define a real virtuality." DeLanda, "Real," 145.

virtuality."[123] This can easily be extended to include computer and console video games, especially as these platforms move toward making virtual reality (VR) equipment and VR games more accessible.

Taken seriously, the ability of singularities to construct a world of possibilities defined by algorithms behavior means that each video game world is a structure defined not just by the ludic elements of game play, but by the way in which the algorithms that create the worlds are mapped to form what the player or observer of the video game perceives as space. DeLanda understands points within space in this context not in terms of experiences, as Harvey and Castells do, but rather in terms of "a field of rapidity and slowness."[124] This understanding of spatiality introduces a topology, a temporal "phase space" of possibilities along a curvature, rather than a Cartesian grid, forming loops of possibility.[125] Game space is not only defined by algorithms that establish the minimum and maximum values of the space, but is often defined by this very curvature that DeLanda references. For example, many games with expansive, immersive ecologies have the ability to "fast travel" around the game world. This means that the player can call up a master map of the game world, select a location, often that they have already traveled to, and be teleported to that location rather than having to walk across the game world to get there. In the video game *Horizon: Zero Dawn,* the player can access the main game map, and select a symbol of a campfire, many of which are scattered across the map, at which point the player will be taken to that location.[126] Fast travel folds space and time and compresses spatial possibilities. These codes are then limited by the ludic decisions made by the game designers, like whether or

[123] DeLanda, "Real," 144.
[124] DeLanda, "Real," 145.
[125] DeLanda, "Real," 146.
[126] *Horizon: Zero Dawn,* Video Game, Developed by Guerrilla Games, (Sony Interactive Entertainment: 2017).

not to include the ability to fast travel at all, or whether spaces must be 'unlocked' through game play to permit fast travel, and if there is a cost to fast travel, like money or the passage of time. The singularities that create the space precede the ludic decisions or the corresponding visual images that make up the map on the player's screen.

Dear Esther invites the player or observer to explore the world of the game, which takes place on one small, seemingly deserted island--it is not the massive, sprawling world of exploratory possibility that many commercially popular games, like *Horizon,* are today. Nonetheless, *Dear Esther* is still an example of a space of possibility--it is a series of algorithms mapped to form a space from which temporal and material conditions emerge. In the context of video games, the idea of "patterns of becoming" allows not only for a dynamic understanding of the digital world as a process of formation and latent possibilities written into the simulations created by the algorithms that constitute the space of the game worlds, but also to the possibilities for subjectivity that emerge as the boundaries between simulation and physical are indistinct. The possibilities for the space lead to the emergence of temporal and material conditions that govern the player or observer's interaction with them.

Visuals

The look of a video game is a moment where the boundary between worlds is obfuscated--the visuals have a huge and immediate impact. The visuals are the first impression the game world has on the player, and is perhaps the most compelling way to think of the player or observer as entering into the space of the game. The visuals are the first part of the experience of the game as a locale, drawing the player or observer inward. DeLanda is incredibly valuable for understanding the subjective experience of games as a space of possibility, but his definition of

real virtuality depends on removing the visual component of simulated behaviors. However, the way a game looks has the first impact on how we will perceive the spatial experience that follows, and therefore cannot be separated from what constitutes space in the context of video games. For example, *Dear Esther* is visually hyper real. This means that the look of the game is intended to simulate physical conditions as much as possible. The sea grass blowing in the wind, the flickering candles, the look of the rock textures, and the lapping of the foam on the waves of the beaches are all strikingly realistic looking, although the coloring is desaturated and a bit muted, which immediately sets a lonely, somber tone for the game. Alternatively, games may look and feel abstract, like *Gris*, which is like being in a mixed-media composition of paper cutouts and watercolor painting.[127] Abstract games have graphics that are stylized and not meant to be a one to one copy of recognizable elements from the physical world. Regardless of visual style, video game worlds with highly immersive ecologies are a space of possibility.

Vision is primarily a spatial function. Henri Bergson, a nineteenth century French philosopher, describes that vision connects space into a homogenous unit of organization. This "visual space" is the basic organizational mode for the world, the purpose of which is to turn reality into constituent units to be counted and made sense of.[128] For Bergson, space is inherently negative, as its defining characteristic, its visual nature, erases any possibility for flow or difference. Modifying Bergson's definition of visual space with a feedback loop of subjectivity is one way to break down the visual hegemony of space that Bergson, among others, describes. What is significant is that space does not have a center, because it is a loop. This is why the inbetween space created between the game and the physical world, as well as the inbetween

[127] *Gris*, Video Game, Developed by Nomada Studio, (Devolver Digital: 2018).
[128] Steven Crocker, *Bergson and the Metaphysics of Media*, (Houndmills: Palgrave Macmillan, 2013), 25.

moments of game play, are so important to look at to understand how space is functioning.

A majority of commercially popular games aspire to look as similar to the physical world as possible, and appear stylistically hyper-real. That is, they are meant to look and feel as much like the physical world as technologically possible. For example, the wildly popular, recently released game, *Red Dead Redemption 2*, is a visually hyper-real open world game set in the 19th century in a fictional geography meant to be a model for an area approximating the western United States, including Texas, Louisiana, and parts of Mexico [Figure 3.3].[129] Colors, styling, and atmosphere all contribute to a blurring of the boundary between where the space of the screen stops and the physical space begins. The graphic experience of the game space serves as a locale, compelling the player inward toward the game space.

Figure 3.3. Scene from *Red Dead Redemption 2.* Author's image.

The game map in *Red Dead* is an excellent example of how the visuals, as they relate to

[129] *Red Dead Redemption 2*, Video Game, Developed by Rockstar Games, (Rockstar Games: 2018).

navigating the video game world, speak directly to the way video game space is a phase space of possibility that sets material and temporal conditions, and underscores the way in which a subject is formed through this spatial experience. The game is visually hyper real; there are great pains taken to have visual fidelity to things in physical life, including the map used by the player to locate themselves geographically. The map looks like a map might from the turn of the 20th century, using a muted color scheme, and an old timey type font that clearly labels cities and other points of interest [Figure 3.4]. There are also labels that seem as if hand written in cursive, labeling additional places on the map outside of cities as if the player and protagonist of the game is making his own notes and adding to his map, filling it in with sketches as the game progresses and the player moves through the world. To use the map, the player pauses the game and selects the "map" from a menu of options. The player can then zoom out or into different areas of the map as they hover a cursor, shaped like the crosshairs of a gun, over the map. Areas of the map that are "undiscovered" are not visible, showing as blank paper, until they are unlocked through gameplay, at which point the new section of map is made visible, materializing as if being drawn by an invisible hand. From here, the player can place wayfinding markers on the map; when gameplay is resumed, a red trail will appear in a small mini-map that appears on the screen, showing the player how to go from their current location to the marker.

Figure 3.4. Map in *Red Dead Redemption 2.* Author's image.

It is not just by clearly referencing recognizable elements from the physical world, like fold out maps, as well as an entire genre of Western semiology, but it is the way the player pauses the game, brings up the map, and traverses the world with navigation tools, that the video game space creates a subjectivity that exists between the physical and virtual worlds. The visuals make the space familiar and accessible. When the player pauses the game, a menu of options appears that overlays a red side bar on top of the game space. The game space is blurred, as if a camera lens is unfocused in a film--the avatar continues to move slightly, shifting as if waiting. Pausing the action of the game to bring up the interface of the map is a break in how deeply immersed the player or observer is able to become. The blurred image of the avatar keeps moving--even though our temporary exit from the space of the game world pauses the action, it does not seem to hamper the world existing despite our presence in it, as the horse our avatar rides continues to flick away flies with its tale, and the smoke from our campfire continues to rise, and the avatar surveys his surroundings.

Jonathan Crary explains in *Techniques of the Observer* that vision is part of a lineage, the tendency being to think of the history of representation as a general progression to more "verisimilitude" in terms of both the technological capability as well as our preference for things that look realistic. He says that really what this is doing is reflecting a social apparatus that "discipline[s] and regulate[s] the status of an observer." The goal is a transcendental subject--a sameness.[130] If this is the case, then we are all supposed to perceive the experience of a hyperreal game like *Red Dead* with a similar response. Many game scholars fall into this trap, seeing the game spaces attempting greater degrees of realism. The game space, analogous to his example of the camera obscura and eventually photography, is not neutral, but rather is part of a "larger and denser organization of knowledge and of the observing subject."[131] This is precisely what is at stake when considering the video game space as constructing new types of subjectivity.

At issue here is human-centric subjectivity, and embodiment within the video game space, when our primary mode of accessing the space is through vision. If the issue is how the player or observer is occupies in a space in which there is a limited boundary between the physical and game worlds, then embodiment becomes critical in modifying Heidegger's multiplicity when we consider space as the primary constitutive factor of the subject, rather than locale. Heidegger states that "Spaces...are always provided for already within the stay of mortals."[132] Combined with his suggestion of multiplicity of being, this means that space is created entirely within the dominion of human consciousness. This is the same effect that Crary describes, assuming that because it is visual, it is a purely human experience. Yet games like *Red*

[130] Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century,* (Cambridge: MIT Press, 1992), 26.
[131] Crary, *Techniques,* 27.
[132] Heidegger, "Building."

Dead undermine that assumption. If we think about visuals alone, the way the player places wayfinding markers and navigates to them, is a visual task. However, the net experience of performing the action of placing the marker and making the way to that marker suggests that the experience of the world, albeit a visual one, and the space that we move though to get to the marker, is mutually constitutive of a subject.

There is a distinction between vision and visuality which helps clarify the position that vision alone is not constitutive of an experiencing subject in a video game world. In *Visual Methodologies*, Gillian Rose defines vision as what is seen with the eye, while visuality is a cultural construction. Visuality is what we see, how we are able to see it, what we are allowed to see, and what remains unseen. In the example of *Red Dead*, the player or observer's understanding of space, based purely on the visual information in front of them, is carefully controlled by the rules of the game space. In the map example, the user sees hyperreal graphics, and receives more information about the space by pausing, calling up a map, and viewing the information accessible at a given point in time, limited by where the player has already explored, which fills in blank areas on the map. In the digital age, Rose identifies a breakdown in the modern maxim that seeing is believing. Digital images not only proliferate, but can lie and are easily manipulated—truth is no longer inherent in an image.[133] She invokes Jean Baudrillard's concept of the simulacrum, which is to say that the distinction between real and unreal has dissolved. It is not a requisite for images to have a real or truthful correlate in the world. Digital images are changing the very nature of visuality.[134]

This points to another breakdown in the idea that visual media is a progression towards

[133] Gillian Rose, *Visual Methodologies: An Introduction to Researching with Visual Materials,* 4th ed. (London: SAGE Publications Ltd., 2016).
[134] Rose, *Visual,* 2-5.

verisimilitude, when taking into account games that are abstract, or that do not intend to be copies or models of elements from the physical world. The video game *Gris* is a layered, two dimensional platform game with highly stylized graphics and an immersive ecosystem [Figure 3.5]. Elements and objects are recognizable, but are abstracted, from buildings and statues to environmental effects like wind. Movement through the space is a linear progression, and can be classified as a three dimensional platform game. This means that there are not multiple pathways to be explored, but rather the player moves from left to right, or up and down, along the screen, hopping and jumping along and through "platforms" disguised as architectural and landscape elements.

Figure 3.5. Scene from *Gris*.[135]

The game is divided into acts--it begins in black and white, and as the player progresses, each act adds a layer of color to the environment in a highly abstract, almost meditative way, as if watercolors have been dropped into the world. Like *Dear Esther*, there is very little to interact

[135] MKIceAndFire, "Gris Gameplay Walkthrough Part 1 Full Game [1080p HD PC] - No Commentary," YouTube Video, December 14, 2018, https://www.youtube.com/watch?v=z8k_ximc8Og.

with besides the environment, meaning the player can pause, but there are no true menu interfaces to interact with, such as historical codexes or weapons inventories. There is very little narrative, no skill tree, no combat, and no interaction with other people--either other players online or NPCs. Both *Dear Esther* and *Gris* ask the player or observer to experience the world visually, as the dominant way you enter the game. Both are short, taking only a few hours to complete. And yet stylistically and visually they are completely different games. *Dear Esther* blurs the boundaries between digital and physical because of the anxiety it produces from being so hyperreal. You literally feel it in your physical body as you anticipate something happening that never does. *Gris* is relaxing and beautiful. Both video games ask the player or observer to be in the world by looking at it, and by visually taking it in as the player or observer deciphers its temporal and material rules. Because games are a phase space of possibilities, visual style does not matter--both types of games are equally capable of blurring the physical/video game boundary.

In the context of vision, embodiment becomes critical for modifying Heidegger's multiplicity in considering space as the primary constitutive factor of the subject rather than locale. Heidegger states that "Spaces...are always provided for already within the stay of mortals."[136] Combined with his suggestion of multiplicity of being, as in the ability to think about a locale as the same thing as being at that locale, this means that space is created entirely within the domain of human consciousness. While Heidegger's concept of raum remains useful in thinking about spatiality and the formation of a subject as a multiplicity, N. Katherine Hayles provides a definition of posthumanism that can modify Heidegger's human-consciousness model

[136] Heidegger, "Building," 359.

of space by reinvesting embodiment in issues of subjectivity. It takes embodiment beyond issues of vision as a sensory experience, and combined with DeLanda's space of possibility, contributes to an understanding that while the player or observer experiences the game space visually, there is more at work in spatializing than visual experience alone.[137]

The boundary of the body itself dissolves, but is not lost as the player enters the game space. The space of the video game should be understood not through the player or observer's body as a physical volume, but as a material reality. This allows space to once again emerge as a formative concept. Space is entirely reconfigured in this way. It is not a void to be filled by a locale. The emphasis is on space's expansion outwards as it extends in all directions, as in raum. This is not to say that the ability to understand space is being extended by the technology we use to access the game in a cyborgian sense. Hayles' suggestion that the "construction of the observer cannot finally be separated from the construction of reality" which implies that our way of looking is changing--our vision is not changing, but rather our way of seeing is changing. [138]

When thoughtfully considering the way that something like the map in *Red Dead* is used and how it functions, the player or observer is not only referencing their semiotic-material understanding of the map, which is a type of embodiment in this sense, but the map is being used to unfold the game space around the user. The marked locations on the map function in a way akin to how Heidegger suggests locales function--the player literally zooms in to look at specific buildings marked with symbols to identify them as things like general stores and gunsmiths. This is the inward function of a locale, operating in the game space in much the same way as the physical world. Travel between wayfinding markers on the map make space something

[137] N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*, (The University of Chicago Press: Chicago, 1999): 1-24.
[138] Hayles, *How,* 190.

measurable, or a series of distances between points, rather than something formative. The visual experience serves to draw the player or observer into the locale, but the function of the map as it unfolds game space acts as a raum, or that from which space emerges.

Gateways of Significance

Certain spatial points in the game world serve as gateways of significance, marking moments of change or transition. In *Dear Esther*, this is something like the reading of a new letter that corresponds to geographic locations on the island. In other games, it is a moment of achievement that corresponds to new areas of the game being discovered, or unlocked, and becoming accessible. These points are junctures that mark the transgression of the boundary between the physical world and the digital world. Moments like load screens reveal that boundary, and mark the gateway between worlds. These are opportunities for the feedback loop of subjectivity to have effect, as the player pauses their navigation of the world, and waits for new areas to render. During these moments, subjectivity is reconfigured as multiple subjectivities--the experiencing subject (the player or observer), as well as a digital object (the stand-in for the subject) within the game space.

Load Screens

The doors of the Bathysphere have just closed. The menu interface for *BioShock* appears on the screen, and the player selects the desired destination to travel to.[139] The Bathysphere, a small pod designed for transporting people through the city of Rapture, similar to a metro system, begins to

[139] *BioShock*, Video Game, Developed by 2K Boston, Directed by Ken Levine, (2K Games: 2007).

move out of its docking station. Bubbles appear on the screen, which fade into a load screen as the area selected to travel to is generated by the game. The load screen itself is a solid colored background, usually in a muted tone. The screen is surrounded by an art deco style gold frame, in keeping with the style and time period of the city of Rapture, the world in which the game takes place. At the top of the screen is text, in the same art deco style, that tells the player or observer the name of the area of the game map that is loading. Underneath that is a slideshow of images--screenshots taken from around different areas of Rapture that do not necessarily correspond to the area being traveled to. Below the image is a quote from an NPC that reveals something about the game history and the lore of Rapture [Figure 3.6]. The background color, slideshow of images, and quotes change with each new load screen, although the same format is followed each time. After roughly a minute, the load screen fades away, the doors of the Bathysphere open, and the player enters the new area, resuming game play.

Figure 3.6. Bathysphere Load Screen from *BioShock*.[140]

[140] RabidRetrospectGames, "BioShock Remastered Gameplay Walkthrough Full Game (1080p) - No Commentary," YouTube Video, September 16, 2016, https://www.youtube.com/watch?v=nFjMkFwB1ck.

Load screens are a site where the boundary between the physical world and video game world is visible as the game space is generated. The load screen is an opportunity for the player to see the limitations of the space--they are moments in which the space is no longer seemingly infinite, but where the player or observer is taken out of game play, out of the world, while the space itself loads and generates. There is some variation in the types of load screens that are common to games with immersive ecosystems. More interesting, however, is when the load screens serve different functions. At their most basic level, load screens are a limit of the technology, which appear as new areas of the game are loaded and redner. Often, load screens signal a gateway of significance, as new areas of the world become accessible. Finally, load screens can serve as narrative guides, providing information about the game play, story, or world.

Part of what is happening with load screens is a limit of the technology. The game has to render new areas of space. Designers have built these moments into the game play at seemingly logical junctures as the player passes from one area to another. The game *BioShock* is an emblematic example. It is a first person shooter game, meaning the player experiences the game from a first person point of view, only seeing the avatar's hands and weapons rather than an entire body. Much of the experience of the world of *BioShock* relies heavily on combat sequences. While violent action is beyond the scope of this discussion of space and boundaries. The load screen described above is a common example of how load screens operate. Often, load screens are built into the game as the player switches modes of transportation--in this case as the player transitions from walking around one part of the city, to using a Bathysphere, to access a different part of the city farther away, which necessitates loading the new area. What is significant is the break in the action--especially in a game that is not only as visually compelling

as *BioShock*, but one that is governed by violent action and combat sequences. It is one of the moments in the game that the player is taken out of the ludic, or rule based, moment of game play that governs the way combat sequences work, and is able to catch their breath. It is a pause, and an anticipation of getting ready to enter a new area. The boundary between game space and physical space is visible as the player or observer is drawn out of the world of play, and into a different aspect of the space of the world--the load screen.

Load screens can also function as a juncture of significance, or as a gateway within the world itself. There are several examples of this, one of which is in *Dear Esther*, as the player passes invisible thresholds that initiate the narrator reading letters that correspond to that area of the island. In the video game *Journey*, space is activated by passing over in-game boundaries that trigger a load screen as the player enters new areas of play.[141] In this case, it happens as a "level" is completed, which in this game corresponds to a narrative "act," as in a play. With each new act comes a change in architecture and landscape elements--a desert with ruin-like architectural follies, an underwater area within a building, and a snowy mountaintop. As the player crosses these in-game boundaries, they are taken to a narrative cutscenes that reveals some in-game history, then the screen gets bright and goes to white as a new area loads, while discreetly flashing "saving" in the upper right hand corner of the screen. Then the new area opens, and the camera gives a long shot of the new space before the player regains control of the avatar. This serves to provide history and vibrance to the game experience, but also gives the player or observer a moment to come up for air before resumbering in the game world.

In *Witcher 3*, the load screens function as a narrative guide post.[142] This game is massive,

[141] *Journey.* Video Game, Developed by Thatgamecompany, (Sony Computer Entertainment, Annapurna Interactive: 2012, 2015, 2019).
[142] *The Witcher 3: The Wild Hunt*, Video Game, Developed by CD Projekt Red, (CD Projekt: 2015).

and at the time of its release, was lauded for its sheer size and scope. There are two types of load screens. The first is fairly traditional, and looks and feels much like those in BioShock. The other type of load screens are animated, more like the visual style of a graphic novel with bold, dark outlines of the figures on the screen, than in keeping with the hyper-real visual style of the rest of the video game. These occur at major junctures. The story is fairly complex for a video game, and is based on a series of novels and Polish folklore. In this way, the load screen not only serves as a break for the player and a moment in which the boundary between the physical and game worlds is visible, but it serves a narrative function. The graphic novel-like styline of the load screen, which is dynamic, moving slightly as the game loads, marks a deliberate distinction between the physical world and game world because it is such a departure from the rest of the experience of the game. A narrator's voice can be heard providing information about the corresponding moment of game play, and how the load relates to the point at which the player is in the game's story, rather than providing information about the space itself, like the slideshows in *BioShock*. The narrative function of this load screen, combined with the visual break in style, positions the player at a point in time in the story, rather than a point in space.

The load screen speaks to the inward/outward function of Heidegger's notion of raum, and is an opportunity to consider the ways in which subjectivity is being reconfigured in this type of inbetween moment; both in between spaces in the game, but also in between the physical and the game worlds. It is dissolving the traditional notion of subject altogether, creating a subject-object hybrid that exists in the space between the physical room and the digital game world. The subject is playing or observing the game, while the digital object is the avatar, or stand in for the physical subject, within the game space. The hybridity of this is critically

important--the experience of the game space occurs necessarily as an object, but the spatial experience is not reduced to being simply an object. The player-object within the game is still an experiencing subject. Both the player-subject and player-object are mutually constitutive. To understand this new type of subject, the paradigm must be reversed so that space is no longer something we consider as inward, defined by limits, but rather space itself, along with our subjectivity, is looking outward--outside of our bodies, and outside of physical rooms. Space, in this sense, is generative of the subject-object hybrid.

This subject-object hybrid produced by space cannot be thought of as transcendental. In traditional phenomenology, including Heidegger's discussion of raum and locale, the subject is thought of as possessing a unique ability to consider their own subjectivity, and find commonality across experience. For Harvey, Castells, and Crary, this meant human-centric understandings of subjects within space, rather than space as producing unique subjects. When considering how the visual impact of a game is something that creates a space of possibility, combined with the moments of respite provided by load screens and the boundary between worlds made visible, it is possible to see how the subject is reconfigured in the in-between state. This inbetweenness yields multiple subjectivities. A subject is produced that exists inbetween being a physical subject sitting in front of a video game console, yet is not fully an object in a digital game--it is a hybrid.

Posthumanism understands subjectivity in terms of a back and forth flow of information between human and technology. In what she refers to as reflexivity, N. Katherine Hayles describes this back and forth flow as the means by which the subject is created. She defines reflexivity as the way in which that which produced the system becomes part of the system being produced. What this means is that subjectivity in posthumanism is the back and forth flow of

information across a dissolved boundary; information flows between subject and environment simultaneously. In the physical world, boundaries are imposed around things to make sense of them, but reflexivity complicates and disorganizes those boundaries. The posthuman subject is constantly reforming boundaries between body, information, and materials.[143] In the context of video games with immersive ecologies, this suggests that information flows back and forth from the physical subject to the digital object in the game world. The dissolved boundary means that information flows freely and simultaneously back and forth between subject and the game environment. The space of the game is forming an experiencing subject, as the subject provides feedback to the game to move throughout the space. In posthumanism, there is not a singular, individual subject, but rather a collective subject--the game space, the designers who made it, and the person playing the game all form a collective subjectivity.[144] Each subjective position within that collective subjectivity will be different, based upon their experience of the game space.

Space=Visuality+Gateways of Significance

When space is understood as generative, the boundary between the physical and game worlds bleeds from one to the other to the extent that the separation is almost imperceptible, and for this reason the experiencing subject within the space is reconfigured from an individual subject to a multiplicity of subjects, characterized by their hybridity as an experiencing subject and a digital object.When the boundaries are transgressed, space itself becomes constitutive of the experiencing subject participating in both the video game world and physical world.

[143] Hayles, *How,* 2-9.
[144] Hayles, *How,* 2-4.

The notion of a subject-object hybrid created as information flows back and forth between the game space and the player is seen when considering the visuals of the game. The visuals, whether hyper-realistic or abstracted, provide clues as to the way the game space can be thought of as a phase space of possibility. One moment when the boundary between worlds is visible is during load screens. They mark a shift in the game and how the space is experienced--either as the player crosses over in game boundaries, passes through thresholds of significance, or loads new areas that require narrative explanation. The load screens pull the player or observer out of the world for a brief moment, providing an opportunity to resituate in proximity to the game world.

The subject is mutually constituted by the experience of both worlds. Giving space the quality of expansion, of inward-outward flows, accounts for the way people experiencing the video game world are in and are affected by the space. Giving primary agency to the space allows for other questions to emerge about the mechanisms in the game that blur the boundaries, such as the way time and materiality are uniquely constitutive of space, which are all functions of the space itself.

Chapter 3

Time=Distance+Death

There is a well known glitch in the hyper-real video game *Red Dead Redemption 2* that suggests the way time is a function of space in video game worlds.[145] Typically, the player accesses the different parts of the game world simply by traveling to them, either on foot, by using a form of transportation like a horse, or by fast travel--selecting a predetermined point on the game map. In this example, the player can only access a part of the game map, called Guarma, through what appears to be a glitch, or a broken spot, in the game, but was actually intentionally built into it. In order to get to Guarma, the player has to kill their avatar, a protagonist named Arthur, in specific places within the game world. In each case, proximity to Guarma and the impending death are signaled by a deterioration in the quality of the game graphics, meaning they transition from being incredibly hyper-real, to simple geometries. There are a few different ways that the avatar can die that will unlock the Guarma area. For example, one player discovered a specific spot inside a specific cave. If the player takes the avatar there equipped with lots of alcohol, and gets him drunk, Arthur will pass out and respawn, meaning regenerate back to life, at the top of a mountain, which provides access to the border of the map. If the player has Arthur travel along the border of the map long enough, he will eventually appear to fall through the map, which graphically looks like a two-dimensional plane. At this point, the screen looks like it does when

[145] *Red Dead Redemption 2*, Video Game, Developed by Rockstar Games, (Rockstar Games: 2018).

Arthur dies, although in this case, he does not actually die, he simply respawns in Guarma, giving the player access to this otherwise inaccessible part of the game world. The player has to be careful, however, because if the player has the avatar get too close to the border of the map, he will slide back down into the regular part of the world.[146] Another, simpler method of accessing Guarma is to travel to a specific spot along a specific river towards the southernmost section of the map. If the player has Arthur get drunk at this location, he will pass out and respawn in Mexico, which is another restricted area of the game. The player can use the cheat "Run!Run!Run!" to spawn a horse into Mexico to ride, which simply allows the player to travel faster than walking. From here, the player has Arthur ride the horse to the farthest corner of the Mexico portion of the game map. After crossing over a ridge, the graphics of the game begin to deteriorate. The more simplified and block-like the graphics become, the closer the player is to Guarma [Figure 4.1]. Interestingly, the mini-map that appears on the screen while the player has the avatar travel, usually used for navigation, shows that the avatar is hovering over water, when in fact Arthur is traveling over land, even if it only looks like blurry blobs of color. Once the player runs out of land, Arthur runs off a cliff. He falls, and appear to die as his body hits the water below--the water suddenly appears hyper-real looking again, and fades to black and white to signify that the player, as Arthur, has died [Figure 4.2].[147] Just as in the previous example, Arthur is not dead, but respawns in Guarma. It is lush and beautiful, filled with non-player characters (NPC's), buildings, and tropical flora and fauna that are unique to this area of the game world [Figure 4.3].

---

[146] GTA Series Videos, "How to Reach Guarma & Mexico in Red Dead Redemption 2 (after Patch 1.05 without cheats)," YouTube Video, Dec 10, 2018, https://www.youtube.com/watch?v=xaVezKuc1jI.
[147] MrBossFTW, "The 100% EASIEST Way To Get To Mexico, Guarma & Anywhere Outside The Map In Red Dead Redemption 2!," YouTube Video, April 29, 2019, https://www.youtube.com/watch?v=JtUBAKB6uHg.

Figure 4.1. Block-like graphics on the way to Guarma.[148]

Figure 4.2. Falling through the map on the way to Guarma.[149]

[148] MrBossFTW, "The 100% EASIEST Way To Get To Mexico, Guarma & Anywhere Outside The Map In Red Dead Redemption 2!" YouTube Video, April 29, 2019, https://www.youtube.com/watch?v=JtUBAKB6uHg.
[149] MrBossFTW, "The 100%."

Figure 4.3. Guarma.[150]

There are three elements of note in the example of the Guarma glitch that relate to time in video games: crossing a distance, embodiment of an avatar, and the transcendence of the avatar's death, which activates a new area of the game world. The first is the way that the player travels a vast distance in order to reach the Guarma area. Distance, in this case, is related to movement of the body across a perceived space. Before this can be successfully done, the player must abuse the avatar's body, by getting Arthur so drunk that he passes out. In passing out, it is as if Arthur's body gains access to another plane. That plane deteriorates graphically as the player has Arthur travel across it, as if a metaphor for the deterioration that happens as the body approaches death. Appearing to kill Arthur gives the player access to an otherwise inaccessible part of the world--transcending the regular area of game play, taking the player to a place that exists independent of the rest of the game world. Death activates a new space. The act of crossing into Guarma is not unlike crossing the physical body of the player or observer from the physical

[150] MrBossFTW, "The 100%."

world into the world of the game--the player uses Arthur to cross an inbetween area within the game itself, existing between the hyperreal looking space of regular game play, and the secluded space of Guarma.

The way that time in video games functions as a product of the space of the game is the subject of this chapter. Game time cannot reasonably correspond in a one to one replica of physical clock time. In an immersive ecology, time refers to the rate at which time passes within the game itself. For example, many games with immersive ecologies have day and night cycles--the length of day compared to night is representative of one way of talking about video game time. Another is the amount of in-game time it takes to complete a task, like traveling across a distance. In a game like *Red Dead,* which is representative of a large area of the American midwest, it cannot take the same amount of time to travel from the Grand Canyon to Louisiana as it would in the physical world. Because the space is constituting an inbetween ontological state that creates new types of subjectivity through the back and forth flow of information, it also refers to the physical clock time that has elapsed during game play, which operates at a different rate than physical time. Because game time is not a direct equivalent to physical-clock time, distance, and the amount of in-game time compared to physical-clock time that it takes to cross that distance, stands in for the physical body's association with how long it takes to travel between points. The body playing the game and the body of the avatar reconcile in the inbetween space created by the game and the physical world temporally. It is the body, or the avatar as a stand-in for the physical player or observer's body, that crosses spatial distance in the game.

One way to consider temporality in game space is as an activator. The equation

Time=Distance+Death understands time as a product of distance, which is spatial, and death, which is embodied. These elements come together to show how multiple simultaneous temporalities exist as the player or observer engages the inbetween space--between the game and the physical world. The discussion of distance looks to things like the process of unlocking areas of game maps and fast travel to understand distance as a form of space-time. Death is one poignant way of discussing embodiment within the space as a temporal phenomenon. In the physical world, death is an ending of the physical body, but in game space, death is an activator of different modes of temporality through the combination of perceived distance, and the embodiment of the player within the game as an avatar. Death is the activator for multiple possible temporalities that is one component of the way the player's subjectivity is reconfigured with the game space, combining the physical, experienced subjectivity with a digital object, or avatar, to create a hybrid subjectivity. While the temporal space of immersive ecologies is not limited to the dual aspects of distance and time, together they represent one way that immersive ecologies produce alternative, hybrid subjectivities as the player or observer experiences the flow of time inbetween spaces.

Death in video games is a moment where the mechanisms that normally govern physical, embodied reality break down.[151] Those mechanisms are space as a relationship between points, and the finitude of our physical existence. Death, like in the Guarma glitch, is a moment of game play where the inbetweenness of game space and physical space is visible, and as such, we may see the way in which the player or observer occupies several temporal phases--that of the

[151] Henri Bergson, "Time and Free Will," in *Key Writings,* ed. Keith Ansell Pearson and John Mullarkey, trans. Melissa McMahon (New York: Continuum, 2002), 49-77. In it, he says that we may only catch glimpses of what life is when the mechanisms that try to control it breaks down. Stephen Crocker, *Bergson and the Metaphysics of Media*, (Houndmills: Palgrave Macmillan, 2013).

physical world, the temporal structure of the game world as a space produces time, and the multitude of individual player's experiences as variations therein. It is an embodied understanding of space-time that does not reduce the body to extremes, either the body as a controlled machine, or as a pure life force.[152] The space of games reconfigures traditional notions of time; when death activates the modalities of game time, it also modifies how the player or observer understands being in the world relative to temporal conditions, as it modifies subjectivity so that the player or observer exists in at least two space-times simultaneously.

Distance

Distance is a spatial quality that reveals the function of time in video games. Time is a product of space. The sheer size and scope of many of the worlds with immersive ecologies is first conveyed visually in the form of a game map. The way the player or observer familiarizes themselves and utilizes the game map to traverse space is a function of time--the time it takes to gain access to all the parts of the map, but also the time it takes to travel from point to point along that map. Game maps as a reflection of distance demonstrate the relationship between space-time in the game, and draw a contrast to physical-clock time. Through the way the game map is revealed to the player as they progress through the game, and the way the player may choose to travel across distances, multiple modes of temporality are experienced by the player or observer simultaneously.

[152] Crocker, *Bergson,* 127-128.

Time as a Function of Space

In the case of *Red Dead*, the player is in the world of the game space through the experience of the visuals. It is one of the most visually hyper-real games that has been released to date. Its visually hyper-real style is so over the top that it is what defines the way the player or observer is situated in the space--particularly because of the way the environmental factors operate. When the player has the avatar walk through shrubs and other landscape elements, they behave as if a physical body is really having to push them aside and move through them. This is unique--in most other games, the avatar's body appears to pass directly through the shrubs and grasses, as if these objects were ghosts. If the camera angle is low enough, the graphics that make those grasses look like textured, realistic grass, are visible as pixels of color, and the view appears to slice right through those objects as if they do not possess any physical properties [Figure 4.4]. In *Red Dead*, as Aurthur's body brushes against shrubs, they move exactly as you would expect from real life, bending and swaying out of the way with no clearly visible breakdown in the textures and graphics--both the visuals and the physical properties align with expectations set by the physical world. Vision is the main ontological point of access, meaning that the experience of visual hyper-reality in *Red Dead* is what first takes the player or observer into the world of the game space.

Figure 4.4. Visual breakdown of landscape objects in *Horizon: Zero Dawn*.[153]

This visual point of access into the game space underscores the breakdown between physical clock time and game time, which operates according to its own rules. The sheer size and scope of a game like *Red Dead* is part of its visual impact, which contributes to why it is compelling. This includes the game maps, which appear massive, with an abundance of playable areas. It also includes the way distances appear as relational during game play. Games like *Red Dead* often include a variety of landscapes, from sweeping desserts to mountain ranges. The way the player sees these different areas during game play affects the perceived distance between them. It would be impossible for the game to operate in physical-clock time--that is, the player must be able to cross large distances of the game world in a reasonable amount of time in order not to lose interest--game time cannot reasonably correspond in a one to one replica of physical clock time. The way the landscape looks, as the player travels through the space across what is supposed to represent vast distances, has to therefore seamlessly transition from one area of the

[153] JRC-Gaming, "Horizon Zero Dawn - The Whole Map End to End (How Big is Horizon Zero Dawn?" YouTube Video, March 10, 2017, https://www.youtube.com/watch?v=hKbOX5ev_2I.

map to another. An alternative strategy is to incorporate load screens, carefully disguised to make sense in the game play--as when the player changes modes of travel, usually in the form of a metro-like system, such as the Bathysphere in *BioShock*, or elevators in *Mass Effect*.[154] The visual cues and transitions from one landscape to another contribute to the vastness and variety possible in the game world. The transitions from one landscape area to another are gradual and indistinct, so the player hardly notices as they pass from one area into the next. This blurs the distinction between game time and physical clock time as the player accepts the time it takes to traverse from one area of the game to another, essentially accepting the way that game time operates according to its own logic without noticing this shift in temporal conditions.

The images that make up the space of the game, that seem to transition as the player appears to move an avatar through three dimensional space, are directly linked to duration. Henri Bergson speaks to temporality and vision in his 1888 thesis *Time and Free Will*. Movement and images are inseparable. Movement is an external, embodied act, and images occur in the mind; for Bergson, as Giles Deleuze paraphrases nicely, "thinking is movement and mediation."[155] Though, clearly, Bergson was writing broadly about temporality and could not predict the existence of video games, the idea that images and distances are linked and related to time is directly applicable to understanding temporality in video game space. It is a relation between flows of images thought of in terms of duration. In video games, the appearance of three dimensional images is the relation of image flows, and the time it takes to cross through that space its the duration that is linked to the images. For Bergson, this duration is measured in terms of intervals, which refers to the separation of two things. In Bergson's example, the brain is the

[154] *BioShock*, Video Game, Developed by 2K Boston, Directed by Ken Levine, (2K Games: 2007). *Mass Effect* (series), Microsoft Game Studios and Electronic Arts, 2007-2016.
[155] Crocker, *Bergson*, 20.

interval between movement (action) and image (thought). When this is applied to the visual component of video games and understood in a temporal context, the medium of the video game becomes the interval between the physical body of the player and the consciousness created by the experience of the images that constitute the game space. This inbewteeness is critical to Bergon's understanding of time, just as it is critical in this case to understanding the reconfiguration of the subject inbetween the physical world and the game world.

The logic of time is established by the medium of the game space itself. Nuances of the way time is represented and how much it corresponds to our understandings of physical clock time differ across games. These are things like whether or not the game has a day and night cycle, and whether this can be controlled by the player. In games like *Skyrim*, the player can choose to "sleep" to make time pass more quickly--anything from a night cycle to a prison sentence.[156] The space sets the rules for duration and travel, by restricting access to parts of the game world, or determining what modes of transportation are available at a given time. Often, this is done through narrative devices.[157] In *Horizon: Zero Dawn*, the player cannot leave the avatar's home area until they have reached a certain point in the narrative by accomplishing specific tasks and gaining skills for combat needed to survive beyond the home area.[158]

It is important to try to describe the way the player or observer detects the passage of time as they engage with the game space. The perception of physical clock time changes radically. Often, it is hard to have a sense of how much physical world time has elapsed while engaging with the game. There are three approaches to understanding time in a virtual context: time as

[156] *The Elder Scrolls V: Skyrim*, Video Game, Developed by Bethesda Game Studios, (Bethesda Softworks: 2011).
[157] James Ash,"Emerging Spatialities of the Screen: Video Games and the Reconfiguration of Spatial Awareness," in *Environment and Planning A* 41, no. 9 (2009), 2115.
[158] *Horizon: Zero Dawn,* Video Game, Developed by Guerrilla Games, (Sony Interactive Entertainment: 2017).

entirely synchronic, time as purely habitual, and time as proleptic. It is proleptic time that most usefully links time and space when considering how time in video games relates to subjectivity.

While Bergson understands space and time as entirely separate, the link that he establishes between images and duration establishes time as a fluid multiplicity, which when considered in the context of video games, unites space and time. In the physical world, space requires us to relate current events to those that have occurred in the past and that will occur in the future in order to make sense of the present. This occurs across scales, from something as small as organizing the every day on a calendar, to the events that constitute an entire life that are placed along a timeline. It requires temporal adjacency. We must project events into homogenous space in order to organize them in succession. This obscures time by making it appear fixed. Time, in actuality, is necessarily a continuous flow of simultaneity.[159] Bergson's understanding of time as a multiplicity is incredibly important in the context of video games, as is his recognition of time as an interval that has some sort of relationship to space. He sees space as empty, but in the context of video games that is not the case--it is the opposite. Game spaces create the illusion of time as a fixed quantity, but really space is opening up a range of possible conceptions of time. The implication is that in the case of video games, time is allowed to flow inbetween the two modes of considering time--game time and physical clock time. In video games, space sets the conditions for time to flow freely.

The interval, or inbetweenness, of game time and physical-clock time, when understood as a temporal multiplicity, allows synchronicity and diachrony to coexist in game space. Time is a product of space, and is therefore contributing to a modified subjectivity through our embodied

[159] Crocker, *Bergson*, 22-24.

understanding of what time means. Manuel Castells defines time as a product of space--space sets the terms for the logic of time.[160] In *The Rise of the Network Society,* he argues that the space of flows produces timeless time; it is a space in which there is no sense of the passage of time. If the virtual space of the internet produces a new logic of time, then the virtual space of video games also produces new temporalities. For Castells, this means that the synchronic space of the internet will subsume the space of place, or spaces with local cultures and diachronic histories.[161] The parallel, then, is that the temporality of video games will subsume physical clock time, rendering the lived experience of the passage of time meaningless.

A ludic understanding of time is another, though related way that video game time is typically characterized. For example, game scholar Jesper Juul takes the position that the player approaches the game temporally. For Juul, this means that the ludic rules of game play as they relate to the passage of in-game time dominates the experience of the game. Juul points to the in-game timer that many games possess. Somewhere in the menu functions of the game there is usually a timer that tells the player how much physical clock time they have spent playing the game.[162] Some games require several days worth of time to complete--more if the player intends to complete what are called side quests, or story lines that are not necessarily related to the main narrative. This is one of the only means the player has of easily gauging the distinction between physical clock time and the game time.

Bergson is a rejoinder to the dualism of both Castells and Juul. He discusses the "pure past" or the "past in general," which is a quality of time that "links synchrony and diachrony and

[160] Manuel Castells, *The Rise of the Network Society*, (Malden: Blackwell Publishing, 2000).
[161] Castells, *The Rise,* 410-415.
[162] Jesper Juul, *Half-Real: Video Games Between Real Rules and Fictional Worlds*, (Cambridge: MIT Press, 2005).

lets time present itself in these two different ways."[163] Rather, there is an interval between the two modes of time--the interval between them being their common origin, which is that they are both ways of thinking about time.

Habitual time versus proleptic time is another way of characterizing time that is perhaps most useful in the context of games. Juul argues that the player forms habits of being in the game world as the player learns the rules of engagement. The player seeks to avoid in-game death by learning the rules and forming habits that produce a future that is necessarily different than the past, which resulted in death. What Juul describes is what Bergson would refer to as habitual time. Habit extends past, present, and future into the same homogenous experience. A load screen is an example of proleptic time. In what Steven Crocker describes as Bergson's proleptic time, which is a way of bringing on the future as something necessarily different than the present, which renders the present valueless.[164]

Game time is both habitual and proleptic. It is habitual in that this is the mechanism that happens when the player or observer suspends physical clock time and enters into the space of the game time. The temporalities of game and physical space bleed together, and the past, present, and future are indiscernible. The game itself is a form of proleptic time, meaning that it is about waiting for change, or anticipating that something will be different in the future, which is what gives the game a sense of tension. It is in this way that the game is operating in-between. Not only is it inbetween the two time structures of game and physical time, but it is about being inbetween moments within the world itself.

When space is the driver for temporal conditions, the logic of video game time results in

[163] Crocker, *Bergson*, 13.
[164] Crocker, *Bergson*, 95-96.

a back and forth feedback loop between temporal modalities. This creates a hybrid sense of both the time in games that has elapsed as the player or observer spends time in the space, combined with their experience of physical clock time--both their modified, distorted understanding of the amount of time that has elapsed as they engage the space, as well as their associations, and the way they fill in information about the time it takes to cross distances, the span of a day, and their in-game embodied experience of the video game world. This back and forth flow of the function of time happens inbetween the experience of the game space and the physical world work to modify the subjective experience of both game and physical spaces.

Compression and Folding

Time is both a product of space, and a tool for spatially situating the player. The video game series *BioShock* is comprised of three games. The first two take place in the 1960's in the underwater city of Rapture, an art deco, utopia-gone wrong. The third, *BioShock Infinite*, takes place in 1912 in Columbia, a steampunk styled city in the clouds [Figure 4.5]. In *Infinite*, the player is helping a protagonist, Elizabeth, escape captivity.[165]

[165] *BioShock: Infinite*. Video Game, Developed by Irrational Games, (2K Games: 2013).

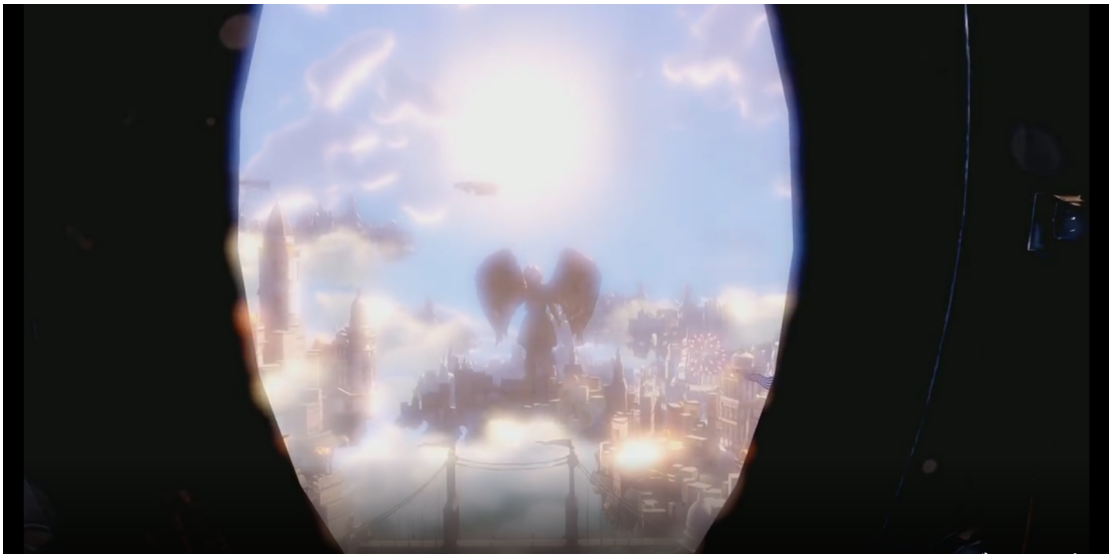

Figure 4.5. City of Columbia in *BioShock Infinite*.[166]

Time is the main theme of *Infinite*, and is evident in ways that extend beyond the main narrative and into the spatial. Anachronisms are everywhere. For example, the player, via the avatar, encounters an early twentieth century barbershop quartet, but they are singing acapella versions of songs by the Beach Boys. A major part of the game play, and one of the ways you end up traveling around the city, is that Elizabeth is able to open "tears," or rifts in space-time, and travel through them [Figure 4.6]. By the finale sequence, she has fully realized her power to do this, and opens a rift to Rapture, the city the is the memorable setting in the first two games. The rest unfolds primarily as a narrative cut scene, and therefore is not an attribute of the video game space itself, but this ability to open rifts in space, incorporated into gameplay as a means of travel, points to one of the ways that space creates unique modalities of time. The premise of *Infinite* suggests that the game designers were playing with this idea as part of the core of the game series. *Infinite* is in essence suggesting that games are able to create multiple

[166] MrBlockzGaming, "BioShock Infinite FULL Walkthrough No Commentary Gameplay Part 1 Longplay (PC) [1080p60fps]," YouTube Video, July 24, 2017, https://www.youtube.com/watch?v=My5FK614tGU.

timelines--multiple worlds that can be accessed at will by game players and observers, in much the way Elizabth is able to access infinite worlds. This is not to say that game space creates timeless time, or Castell's suggestion that real virtuality erases place, but rather that games offer a variety of simultaneous worlds and unique experiences.

Figure 4.6. Elizabeth opening a "tear" in space-time in *BioShock Infinite*.[167]

Understanding game maps helps us see the distance that is supposed to be represented in the game space, as well as how that distance is traversed and compressed. Maps appear to serve a simple spatial function, showing the player where they are in the world relative to other places, but in video games they do more, and also suggest the ways that time is operating according to spatial logics. Maps require significant physical clock time to unlock the entire world, and serve several functions. They are their own unique spaces within game worlds. Distance does not have a 1:1 correlate between the game and the physical world. It does not take the same amount of time to travel a distance in the game space as it would in the physical world. David Harvey suggests that distance is relational. It is part of proleptic time. The distance traveled is activated

[167] MrBlockzGaming, "BioShock Infinite."

by the anticipation of an ending to come--whether that is the ending of the game or the experience of in-game death. Distance, or movement across the game space, is then already conceptually complete as the player anticipates the future event. Time then becomes the interval between the images that constitute the space as a means of executing that anticipated future.[168]

Maps unfold and change in video games with immersive ecologies--they are not always immediately available in their entirety. In large games, like *Red Dead Redemption 2* and *BioShock*, the player does not at first have full access to the entire game space. When the player brings up the map, only the beginning, currently occupied area is visible. There are two main ways that the map "unlocks" and the world builds. The first is through achievements. The player must work through game space in order to unlock new areas of the map. Sometimes this is as simple as exploring and encountering new areas, or it can be more complicated, requiring reaching points in the narrative or learning new skills. In *Red Dead*, as the player travels to novel areas, the blank places on the map fill in, as if being drawn by an invisible hand. The map works in conjunction with the space of game play. In *Fable II*, new quest areas are added to the map as the player happens upon them while running around the world. For example, as the player encounters areas such as the "Gypsy Camp" or "Bowerstone," quests, or sequences the player could choose to engage with, they get added to the game map.[169] This links the map to the game space not just as a navigational tool, but to the structure of the space itself, orienting the player or observer in terms of the skill progression as the player completes quests and moves on to others.

The other way that maps are temporally significant is as space is unlocked by reaching high-up vantage points. In games like the *Assassin's Creed* series, the game map is initially

[168] Crocker, *Bergson*, 31.
[169] *Fable II*, Video Game, Developed by Lionhead Studios, (Microsoft Game Studios: 2008).

covered by the "fog of war," or a mist that appears over the map, obfuscating parts of the world.[170] Once the player is able to climb to the top of a tall building and survey the city, the parts of the city that are visible are unlocked, and added to the map by clearing away the fog of war [Figure 4.7]. To see is to unlock and gain access. In *Horizon: Zero Dawn*, the "tall neck" robots serve a similar purpose. These are large robots that serve a surveillance function in the world of *Horizon*. They are akin to an oversized, artificial intelligence giraffe. The protagonist, Aloy, can climb one of the tall necks and hijack its artificial intelligence, "synchronizing" with it, and adding the tall neck's surveillance area to the map [Figure 4.8]. In both *Assassin's Creed* and *Horizon*, the player must progress through the world in order to find these vantage points. There is a significant physical clock time investment to reveal all that the map is able to show.

Figure 4.7. The fog of war over the map in *Assassin's Creed: Syndicate*. Author's image.

[170] *Assassin's Creed* [series], Video Game, Developed by Ubisoft Montreal, (Ubisoft: 2007-2018).

Figure 4.8. Climbing a "tall neck" in *Horizon: Zero Dawn*. Author's image.

Maps lead the player to believe in the vastness of the game world, but they are also integral to the space. As maps unfold through player progression, in order to travel around that seemingly vast area, space has to either be re-folded in a different way--as if compressed--in order for the player to travel across what appears to be a massive world in a reasonable amount of physical-clock time. In the game play space of *Journey*, distances are compressed.[171] A location or building will appear far away, across an entire desert, for example, but as the player starts to move toward it, the player finds they are suddenly there. It is a surreal experience--it is almost imperceptible, but is unmistakably impossible based on physical world experiences of space and travel distances. It is unique to this medium and cannot exist in real life. Sometimes this is just the result of the logistics of game play. In games like *Red Dead* or *Horizon*, the worlds feel vast, but they cannot have an equivalent travel-time to the physical world, or it would take too long to get anywhere. Alternatively, *Journey* is a relatively small game, both in terms of the scale of its world, divided into three simple acts, and the clock-time investment it takes to play,

[171] *Journey.* Video Game, Developed by Thatgamecompany, (Sony Computer Entertainment, Annapurna Interactive: 2012, 2015, 2019).

coming in around two hours. In *Journey*, the compression is deliberate, contributing to the slightly surreal, magical look and feel of the game. It serves to underscore that this is a way that the player or observer can feel the dissolution of the boundary between clock and game time. I noticed it because I was looking for it--when I played the game myself, it felt very natural as an accepted part of this surreal, abstract world.

The compression of space-time, as in *Journey*, is also visible in *Fable II*, although it is not executed as elegantly. In *Fable II*, as the player moves the avatar through the world, the player will come to specific points that compress space-time, rather than it happening integrally to gameplay. For example, as the player comes to a point along a road, text appears, large, and in the middle of the screen, which tells the player the in-game distance that would be traveled should that road be taken to its destination, as well as the in-game time it would take to travel that distance using the current mode of transportation [Figure 4.9]. If the player keeps moving the avatar forward, it confirms to the game that the player wishes to travel along that road. Abruptly, a load screen appears, and when the space reemerges, the player's avatar is suddenly in the area noted by the text and travel distance. If the player pauses and goes into the game menu to check the in-game time of day, it shows that the designated amount of time has indeed elapsed. The player or observer does not experience the act of traveling that distance, or feel the passage of time. It is an odd disjunction--not just between game time and physical clock time, but in the game itself.

Figure 4.9. Distance and time to travel by current mode of transportation in *Fable II*.[172]

The other way that game maps show unique temporality is by folding space. In many games with large worlds, the player can choose to "fast travel" across the map in order to save physical-clock time spent moving through playable space.[173] Fast travel is the act of transporting over large areas of the game world instantly by accessing the map and selecting some sort of marker, at which point a load screen usually appears, and the player's avatar will appear in the area of the world selected on the map. Often the ability to fast travel is predetermined by the points established on the map by the designers, such as a sign post, or a campfire, that once discovered during the course of game play, get added to the map for the player to use for fast travel. In *Witcher 3*, the player can call up the map, and select a fast travel spot on the map.

[172] MrBlockzGaming, "Fable 2 Full Walkthrough No Commentary Gameplay Part 1 Longplay (Xbox One S)," YouTube Video, March 21, 2019, https://www.youtube.com/watch?v=eZjSd8RxQCU.
[173] "Computer games are allegories of space: they pretend to portray space in ever more realistic ways but rely on their deviation from reality in order to make the illusion playable." Espen Aarseth, "Allegories of Space: The Question of Spatiality in Computer Games," in *Space Time Play: Computer Games, Architecture and Urbanism: The Next Level*, eds. Friedrich von Borries, Steffen P. Walz, Matthias Böttger, (Boston: Birkhäuser Verlag AG, 2007), 44-55.

These locations are scattered all over the world. In *Horizon*, these predetermined points are represented by campfires [Figure 4.10]. Once the player has encountered the fast travel point by exploring the world, it appears on the map and can be used to access that area of the world quickly. This is essentially folding space. The player selects the fast travel destination, and is transported there, usually with a load screen appearing as the selected area generates. It does not, however, alter the rate at which in-game time passes. It is common in games for fast travel to cause some amount of time to elapse, usually corresponding to the amount of time it would take the avatar to walk to that location, much like in the *Fable II* examples above. Folding space, in the case of fast travel, is a physical-clock time saving device. This act links the space of the game, and its unique ability to be folded, directly to the physical world, through temporality, and the different rates of exchange between in-game time and physical-clock time.

Figure 4.10. Fast travel campfire symbols on the map in *Horizon: Zero Dawn*. Author's image.

Sometimes, but not always, the use of fast travel costs something, as a way to discourage using it. The impact of this is that it forces the player to be present in the exploration of the world, rather than pulling the player out of the game space and into the world of the

physical-clock. It keeps the player in the world of the game as well as the time of the game. For example, *Horizon* requires that the player use the avatar's resources to make fast travel packs out of parts she finds or purchases. They are not easy to make, so the ability to fast travel is limited. At one point, the narrative prevents the player from being able to fast travel, which forces the player to experience critical narrative events as they travel across the game map on foot. The main quest asks the player to travel from the far north to the far south of the map, and they force the player to do it on foot because racing is part of the drama.

Red Dead radically limits the ability to fast travel, forcing the player to travel on foot or horseback through the world. Not only is the game forcing the material experience of spatial exploration, but the experience of travel also suggests the unfolding of that space because of the way time functions differently in the game, meaning great distances can be traveled with very little in-game time elapsing. The images that constitute the space of the game literally unfold before the player as they travel, as the world's images render ahead of the player. However, a geographic area that is supposed to approximate the American west and parts of Mexico, can be traveled by foot in just under four hours of physical-clock time.

If this is considered in the context of Heidegger's raum, or boundary, and locale, which is a place created by the unfolding of space outward from a boundary, then space-time in video games, like *Red Dead,* is more about the way familiar materiality--the views and vistas of the landscape that we travel through--than about the reality of the time it takes to pass through them. The hybridity of the in-game time to travel with the physical clock time correlate is accepted as natural. Maps are one moment where we can see this happening--action is paused and the player is forced to navigate.

There is a disjunction between the amount of time it takes to travel the world of a game like *Red Dead*, and the passage of time, represented by day/night cycles. In *Red Dead,* the player cannot control whether it is day or night. In some games, the player can control, via menu interface, what time of day it is, to experience different areas or complete different quests without having to wait around on in-game time to elapse. This is one way in which games do not abide by our physical notions of time. A built in physical clock, like a circadian rhythm that depends on the sun rising and setting, does not exist. That the player is able to travel the entire world of *Red Dead*, which appears vast on a map, but takes just a few hours to walk across and can be done in the span of just a few in-game days, is strange because it does not abide by our physical, embodied understanding of the passage of time.

Horizon does not let the player control the in-game time of day. The days and nights happen as a cycle. A day is roughly twice as long as a night--a day takes about thirty physical clock minutes to elapse and the night is roughly fifteen minutes.[174] This cycle is further interrupted by the narrative, which appears as dialogue cutscenes triggered by the avatar reaching certain junctures or skill level achievements. If the player reaches a point of the game where the narrative needs it to be night, for example, when Aloy is about to leave her home area for the first time, day will pass quickly and night will come suddenly. This is an example of synchronic game time--time in a single moment is more important to the experience of the game than the diachronic flow of time. It is yet another alternative shape that time takes in game space, distinct from the physical world.

[174] Interesting because in the video I was watching to time this, the player made a comment to the effect of "is it just me or does night seem to last a lot longer than the day?" When in fact it is half the length of a day. JRC-Gaming, "Horizon Zero Dawn - The Whole Map End to End (How Big is Horizon Zero Dawn?" YouTube Video, March 10, 2017, https://www.youtube.com/watch?v=hKbOX5ev_2I.

Fable II takes the disjunction that can be created by time in the game even further. *Fable* lets the player's avatar sleep to pass time. The player has the avatar go to a bed, and a menu appears that the player uses to tell the avatar to sleep, setting a duration. The player does not experience that duration--in game time simply elapses. The avatar wakes almost instantly, and game time has elapsed according to the set duration. Even more notable is the way the game links quests, space and time together. For example, the game is broken up by a major quest, called the "Spire Quest." In the first part of the game, the player may choose to have the avatar have a child. It will remain a baby until the "Spire Quest" is completed--regardless of how much physical-clock or in-game time it takes the player to get to the "Spire Quest," or how many side quests one decides to engage before beginning the Spire. The "Spire Quest" takes nine in-game years to complete. When the avatar returns from the Spire, the baby is now nine years old. Any children the player decides to have after the "Spire Quest" do not remain babies, but age "normally." Fable underscores the passage of time over a span of in-game years by showing the change of seasons, reflected in the landscapes.

In video games, maps and the ways they are used to travel around the game worlds, are an example of how time is a function of the conditions set by the space of the game itself. Manuel Castells talks about "virtual time," suggesting that real virtuality is restructuring time in two ways: simultaneity and timelessness. Simultaneity means instant, globally available information, which he refers to as "temporal immediacy." Virtual media mix times, and we are able to pick and choose what we want to engage with, which "creates a temporal collage" of which the time is synchronous--there is no beginning, end, or sequence.[175] Temporal immediacy

[175] Castells, *The Rise,* 461-462.

and temporal collage accurately represent the way in which players may engage with video games at will.

Temporal collage, when modified by the idea that game-time and physical clock time form a hybrid, as the flow of information goes back and forth from the game space to the physical space, allows us to consider the way that game space is actually reflective of new types of modified subjectivity, meaning the way in which the player or observer as an experiencing subject is altered by the experience of the game, rather than simply as timeless time, or a space in which there is no sense of the passage of time.

Time must be placed in the context of space itself. The space is defined, as DeLanda suggests, in terms of "a field of rapidity and slowness," rather than along an x, y, and z axis. The ability to go to a master map of the game space and select a destination to 'fast travel' folds space and time and compresses spatial possibilities. These codes are then limited by the ludic decisions made by the game designers, such as whether or not to include the ability to fast travel, or whether spaces must be 'unlocked' through game play to permit fast travel. The singularities that create the space of the game precede the ludic decisions or the corresponding visual images that make up the map on the player's screen. This understanding of spatiality introduces a topology, a temporal "phase space" of possibilities.[176] This space of possibilities suggests possible subjectivities created by the space as the person interacting with the game negotiates the temporalities of the game space and the physical world simultaneously.

[176] Manuel DeLanda, "Real Virtuality," in *Computational Design Thinking*, (West Sussex: John Wiley & Sons Ltd, 2011), 142-148.

Death

To get to Guarma in *Red Dead*, the player has to kill the avatar. When the player is ready to return to the main game map, the avatar must die again. The player can either have the avatar pick a fight with guards, who will shoot and kill the avatar, or the player can have the avatar enter a "restricted" area of Guarma, where an "invisible sniper" will shoot and kill the avatar--the player never sees the shooter or the bullets--Arthur's body starts to behave as if it is taking the force of being struck by bullets, lunging forward unnaturally [Figure 4.11]. The player's avatar respawns back in the main area of game play. There is no consequence for dying in this context. Arthur simply respawns, meaning regenerates back to life, and keeps playing, retaining any items the player added to the compendium while in Guarma.

Figure 4.11. Death by invisible sniper to leave Guarma.[177]

Experiencing video game death is entirely distinct from death in the physical world. For the physical body, it is an ending. In the context of the game, it is often something to be avoided,

[177] MrBossFTW, "The 100%."

and may or may not result in negative consequences for the player, but it is meaningless to the avatar's body in a way that is analogous to the physical body, because the avatar can simply respawn, and the player can keep engaging with the game world. The meaning of death in a video game, then, is about restructuring the player within the space of the game. It activates the temporalities that are the subject of this chapter. Video game death is an embodied understanding of the space, as the physical subject experiences the space of the game as a digital object, or avatar. The death activates these alternative subjectivities, creating a multitude of ways of being in the world, which Heidegger refers to as Dasein. For Heidegger, there is only one Dasein. Video game space-time, through the player-avatar death, modifies a singular Dasein, creating a new "you."

In video games, death is not final, but rather it is relational. It is not something to be arrived at in the future, as in Bergson's model of proleptic time. It serves as a beginning--the player-avatar respawns with the knowledge and experience gained from having died. It is relational in that understanding death as final in the physical world gives video game death meaning as a beginning. Bergson describes that "relations are external to the things they connect."[178] Death in the game is connective tissue between the game and the physical body. In this way, death speaks to broader issues of embodiment in the video game space, and the way in which death, as emblematic of the multiple temporalities presented by game space, speaks to the way in which death and this relationship to time constructs the experiencing subject--the player.

Bodies in video game space reflect unique modalities of temporality created by the space because of the way they abide by their own sets of temporal rules distinct from the realities of

[178] Crocker, *Bergson,* 41.

our physical bodies. Castells correctly suggests that time is different in the space of flows versus the space of place. He relegates the space of flows to timelessness and synchronicity, while mastery over time, the biological time of our bodies, and socially determined sequences of time exist only in the space of place, or physical spaces with diachronic histories.[179] Castells argues that "the network society is characterized by the breaking down of rhythmicity, either biological or social, associated with the notion of a lifecycle."[180] In a section called "Death Denied," he says that by subverting death, meaning a rhythmic lifecycle, we are flattening the "landscape" of life "in the endless boutique of customized feelings."[181] However, if we modify this suggestion by reconsidering how the back and forth flow of information between these two modes of understanding time as Bergson suggests--the differences between game time and physical clock time--it is possible to consider the new modes of subjectivity being formed between them and what that means in terms of embodiment.

Death activates multiple modes of temporality that the player simultaneously accesses, but death is fundamentally a physical experience. Posthumanism, specifically N. Katherine Hayles project of reinvesting the body into discussions of cognition, recognizes that the body is a critical part of the process of linking thoughts and actions. Engaging with technology is not just a mental exercise. Interjecting Hayles into the discussion of death as an activator for temporality better suggests the interval, or the inbetweenness, of the relationship of the temporalities that constitute game time and physical clock time to find common origins.

Embodiment is one of the ways the inbetween ontology of the space created by video game space and physical space is reconfigured in the context of time as a function of space. For

[179] Castells, *The Rise,* 465.
[180] Castells, *The Rise,* 446.
[181] Castells, *The Rise,* 451.

Hayles, embodiment is a primary concern in the way that technology is modifying subjectivity through the back and forth flows of information, from technoogly to body. Hayles describes that there is an "enacted body, present in the flesh and on one side of the computer screen, and the represented body, produced through the verbal and semiotic markers constituting it in an electronic environment."[182] Hayles seeks to reinvest the body as the foundation of being, even in an electronic space, which she argues phenomenology deconstructs and genders by separating the cognitive--logic, male--from the physical--lived, female, perception. She challenges the commonly held position that cyberspace is disembodied, arguing that through the lens of posthumanism, the body is involved in that we "see, hear, feel and interact with virtual worlds." [183] Notably, her project seeks to eliminate binaries, like real and virtual, embodied and disembodied. This is the way in which Hayles suggests the subject is turned into a cyborg.

Game bodies possess some similar attributes across game types. Often, games with immersive ecosystems are experienced from a third person perspective, where the majority of the avatar's body is visible, and appears as if moving around just a few feet from the camera. An exception is a game like *BioShock*, which is like many shooter-style games in that it is viewed from a first person perspective, where only the avatar's hands are visible, as if the player is looking through the eyes of the avatar. *Dear Esther* is another exception, and is one of the rare examples of a game that does not show any body part of the avatar at all. If the game is one in which it is possible for the avatar to die, usually from losing in combat, there is usually a health meter in a corner of the screen, almost always the upper left. Near the health meter is often

[182] N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*, (The University of Chicago Press: Chicago, 1999), xiii.
[183] N. Katherine Hayles, "Embodied Virtuality: Or How to Put Bodies Back into the Picture," in *Immersed in Technology: Art and Virtual Environments*, ed. M.A. Moser and D. MacLeod, (Cambridge: MIT Press, 1996), 1.

another meter that corresponds to some sort of magical ability. Bodies in game space are more than they can be in physical life. In *BioShock,* it is a meter for something called Eve, in *Witcher* it is for magic, and in *Red Dead* the additional meter corresponds to the avatar's horses health.[184] In most games, the health and supplemental meters go away when they are not needed, notably, when simply traveling around the world and the avatar is not engaged in combat, the screen is automatically cleared of clutter that is not relevant at that moment.

Sometimes games attempt to simulate the limitations of our physical bodies, and other games ignore them completely. For example, in *Red Dead*, the avatar has to regularly eat, drink, and rest, or Arthur's health, represented by a meter in the corner of the screen, begins to dwindle. Further, *Red Dead* requires the player to have the avatar feed, water, and groom their horse, or its health will likewise dwindle. Other games, like *Horizon,* do not let the player control whether it is day or night--but it is inconsequential in terms of the avatar's body. Aloy has unlimited stamina--she can travel and fight indefinitely without needing to rest or eat. The player can perpetually move Aloy's body without consequence.

There are moments where the boundary between the physical body and the digital game body becomes visible--when our connection to the avatar's body, as a surrogate for ourselves in the space, is severed. These are moments of disembodiment, when the player is placed in space in a way that makes the physical-game boundary visible. For example, in *Fable II*, there are times that the camera abruptly shifts from looking at the avatar in third person, where the back of the avatar is visible, to panning out to show a wide shot of a geographic area. It shows where the avatar is in space, but the effect is jarring, as the player's view is literally removed from the body,

[184] *The Witcher 3: The Wild Hunt*, Video Game, Developed by CD Projekt Red, (CD Projekt: 2015).

and hovers out in space. This effect does not happen consistently, contributing to how disorienting this effect is. *Journey* has a similar effect that, although it is executed more elegantly, still shows a moment where the flow between the physical and game bodies is disrupted. As the player-avatar transitions out of a load screen into a new area, the camera, similar to *Fable*, does a wide shot of the area to show the player where they are about to enter, and then returns them to third person with control of the avatar.

The rules that govern the limitations of our bodies are different in game space than they are in physical space because of the way time operates differently. Death is the way we perceive the passage of time in a physical, embodied sense. Death is a physical experience, and is the one thing that living beings have in common. We understand our body in space as governed by time because our bodies are finite and limited. In game space, the opposite is true. The passage of time and the game body is infinite and limitless, even with game features such as in *Red Dead* that try to create parallels to the physical body's needs.

If Bergson sees time as the only form of subjectivity, and Hayles understands a subjectivity created by flows between the enacted body and the physical body, Hediegger offers another point along this spectrum that complicates the way in which the experience of death is related to temporal structures in game space. Not unlike Bergson, Heidegger views time as open. In "The Origin of the Work of Art" essay, he uses the metaphor of a water fountain to discuss time, where events in the past flow into another pool of the fountain, affecting its flow into yet another pool.[185] For both Heidegger and Bergson, human finitude is ultimately how we know and understand temporality. They diverge in that where Bergson sees multiple possible temporalities,

[185] Martin Heidegger, "The Origin of the Work of Art," (1935), in *Basic Writings From Being and Time (1927) to the Task of Thinking (1964)*. ed. David Farrell Krell. (New York: Harper & Row, 1977), 139-212.

Heidegger is concerned with the act of death as what subjects have in common--we all share death as a condition of being. While this human centric understanding of the experience of death does not allow for recognition of the multiple temporalities of video game space that Bergon's philosophy does, the way Heidegger discusses the experience of death is useful for connecting the physical player as an experiencing subject to the digital object of the avatar's body through the experience of game death.

There are multiple Daseins, or ways of Being in the world, in the context of video games, as the game space and physical space reconfigure the subject within the inbetween space. Heidegger's discussion of death is not unlike Bergson's proleptic time. In *Being and Time*, Heidegger sees death as completing a being's Dasein, or their Being in the world. Being is always determined by that which comes next, or "ahead of itself," even when it has nothing "before it."[186] Death is what we are always towards, in its myriad of possibilities. We are always towards some possibility, and there are many modes of being toward a possibility. That there is always more to come is essential to Dasein. The irony of this is that once the being has completed Dasein by dying, they are no longer in the world. Once Dasein is whole, as there is nothing more for it to be towards, than there is an "utter loss of Being-in-the-world."[187]

The usefulness of this in video games is that Heidegger suggests ways we might get an idea of the wholeness of Dasein without experiencing our own death. One of these is to experience the death of others. Experiencing game death becomes a metaphysical stand-in for experiencing death in a similar way that Heidegger discusses substitutes for the experience of death. He writes that "the *end* of the entity *qua* Dasein is the *beginning* of the same entity *qua*

[186] Martin Heidegger, *Being and Time* (1927), trans. John Macquarrie & Edward Robinson, (New York: Harper, 1962), 279.
[187] Heidegger, *Being*, 280.

something present-at-hand," meaning the person goes from a Being experiencing Dasein to a Thing, a corpse.[188] This is as if the being of the subject witnessing the death is still an entity qua Dasein, but the game body experiencing death is a Thing. For example, the player is the subject witnessing the death of the avatar, free from the full implications of death in the physical world--there is no mourning or sense of loss. Rather, the player is reconfigured through the experience of the digital object--the avatar, who experiences the death. This Thing, as Heidegger calls it, the digital corpse, is ready at hand to the player in the same way Heidegger discusses tools that fall to hand, like a hammer. The ability of the player to control the avatar gives the digital body a degree of Tool-like-ness to begin with.

There is a distinction to be made here between the death creating a Thing of Dasein, and the phenomenal content of death, as well as a distinction between the experience of someone else's death and the death of the avatar in game space. Heidegger says that the phenomenal experience of death means that we do not think of the death as creating a Thing of a corpse, but rather we must think of it as something that has lost its life. In this way the Dasein is always more than an object, even if there is nothing remaining for it to be towards and its Dasein complete. He discusses things like funeral rites and graves to suggest that the corpse is more than an object, that we still think of it as a kind of Being, experiencing a relationship with that Being as we mourn. We are "with" them in that we still occupy the same world. In this way, we are still in the same world as the avatar experiencing the death as we respawn and continue to play, subverting physical bodies and the ludic experience of that death, and adapting the way we are within the space of the game accordingly. The process of getting to Guarma via death is one of

[188] Heidegger, *Being*, 281.

proleptic anticipation--of being towards the event. The player adapts their way of being in the game according to this desired outcome. The avatar dies, and the player is still with the avatar through that death, as they respawn in Guarma. The player then resumes using the avatar as a tool for navigating the world of the game, lacking their own physical body in the space.

Critically, experiencing a stand-in for death is not a substitute for our own Dasein and our own death. It is one possibility that can represent one aspect of Being. Heidegger goes so far as to say that "representability is not only quite possible but is even constitutive for our being with one another."[189] One Dasein can be another Dasein.[190]

In the same way that someone else's death cannot complete our own Dasein because we all will die in our own way, the game death is not a correlate to the example of experiencing someone else's death. He says that "Dying is not an event; it is a phenomenon to be understood existentially…"[191] This is where the reversal of death as a physical end and death as a beginning that activates temporality occurs in the game. It is in this way that reframing the discussion of death as an activator for time that death in the context of the video game again becomes part of the experiencing subjects Dasein, both in and out of the game space.

In video games, death is by definition an event. Many games with immersive ecologies let the player select a difficulty mode, which affects how hard it is to stay alive. In the default mode, for someone familiar with games, it is generally not hard to stay alive. In the games I looked at, health, or what allows the avatar to stay alive and the player to keep playing, is easily available, or is not a factor at all. This suggests that death is not the primary purpose of the game experience--the designers want the player's avatar to stay alive for the player to explore the

[189] Heidegger, *Being*, 283-284.
[190] Heidegger, *Being*, 279-284.
[191] Heidegger, *Being*, 284.

world. For example, in *Fable II*, the avatar does not die, but rather, has a "heroic struggle." If the player-avatar is losing a fight, at the last moment when they run out of health, the avatar experiences a burst of health and energy, and is able to fight off all the remaining enemies. The only trace of the would-be death is a scar that appears on the body of the avatar.

In game space, this operates differently because our perception of time is not related to the embodied understanding of the space in the same way that it is in the physical world. For example, when one dies in the game and regenerates, we do not try to understand it within the game fiction or as some quality inherent in the world, but rather we understand it as the rules of the game.[192] However, much in the same way that load screens function as a break in the boundary between the video game space and the physical space, the death in the game is a moment where the boundary is again visible. In this case, it is an opportunity to be drawn out of the game-time and back into physical clock time and the needs of our physical bodies. Before the avatar respawns and the player continues, it is an opportunity to exist in the physical world.

Embodiment in the game world is a temporal experience, but it operates according to a different set of logics than the limitations of physical bodies, and offers a way to metaphysically experience death. The game body and its limitations, or lack thereof, reflect the way time operates as a hybrid between game time and physical clock time. When death is an activator, time is embodied. It points to synchronicity and diachrony existing simultaneously as it exposes the boundary, or the interval between game time and physical clock time. Death in game space is one mode of being toward death, and in this way, space producing time serves to construct, through the back and forth flow of time, the subject-object hybrid that is able to experience

[192] Juul, *Half-Real*.

multiple Daseins.

Time=Distance+Death

In the Guarma glitch, death is a beginning, leading to somewhere new. In the physical world, death is an ending. In game space, it is an activator. It constructs the multiple temporalities possible in video game space, and combines the synchronic and diachronic time of the game and the physical world. Game death lays bare the myriad possibilities that time may exist in game space, and points to the way in which the experiencing subject is formed by these temporalities.

The playing subject experiencing the game death is mutually reconfigured by the space and the time of the game world. Critically, time is a product of space. It is only when we see space as the producer of time that death is able to take on meaning, informing the back and forth flow of subjectivity. Space is what gives time the ability to construct a subject in game space. Vision, as the point of access into the space, is inseparable from the movement through that space and the time it takes to complete those actions. Game maps, and the compression of space-time, point to the way in which space produces temporality. Movement is an embodied act, and the images we understand as constituting space are mental. The flows of images are the interval between the space of the game world and the time it takes to be in that space. Space sets the conditions for time to flow back and forth freely, which is experienced as distances compress.

This is an embodied understanding of space-time that suggests the formation of multiple possible Daseins, both in and out of the game world, as the player's subjectivity is reconfigured.

Some games underscore death as a theme, and the medium lets the player metaphysically experience it, like *Journey* or *Dear Esther*. Death is the whole point of the game, and much like in Heidegger's philosophy, in physical life, is the inevitable ending. These are examples of how the aspect of embodiment in games makes the subject more than a digital object, but places the construction of that subject within a set of material conditions.

Chapter 4

Materiality=Encounters+Navigation

The island chain that makes up Skellige is a particularly striking part of the game space of *Witcher 3: The Wild Hunt*. Each of the many islands can be explored, and are composed of dramatic landscapes. The *Witcher* series of games is based off of books that draw heavily from Polish folklore. The area of Skellige makes clear cultural and visual references to medieval Nordic culture. Being in the world of the *Witcher*, specifically Skellige, is therefore a deliberate play on the player or observer's ability to recognize this area as Nordic--it is both a temporal and cultural association. The player's avatar, named Geralt, arrives in Skellige by ship, and enters from the docks surrounded by wooden homes and buildings with thatched roofs, that from their look and styling are clearly belonging to seafaring people [Figure 5.1]. Walking up the steep hillside toward the silhouette of a castle at the top of the mountain, the player, as Geralt, encounters a village sprawled along the slope, rich with non-character players (NPC's) talking and interacting, and tending to their small, outdoor fires. Along the way, the buildings become made of stone, with steep gabled roofs, ornamented with carvings that look like what one would expect from vikings [Figure 5.2]. The path is dotted with grasses and brush, with lush pine forests in the distance. Sometimes, snow begins to fall. There are places along the path carved out to observe the scenery. The player is able to have Geralt, a magical being referred to, with some disdain, as a Witcher, walk to the edge of the trail and survey the surroundings [Figure 5.3].

The views from these islands are some of the most breathtaking in the entire game--they are sublime vistas over the rocks and ocean below, with other islands rising dramatically out of the mists.[193]

The way in which material encounters in video game space gives it structural qualities is the subject of this chapter. These structural qualities are what the player or observer is able to experience as the space taking shape. Materiality in games with immersive ecologies can be defined as the bitmapping of textures onto geometries, the way the player interacts with material objects, like swords, magic, and architectural and landscape elements, and the resulting information those encounters give the player or observer about where they are in time and space. These aspects of materiality shape the logistical experience of the world of the game, and informs the way the player or observer understands themselves within that space. Materiality, as a product of space, lets the player or observer negotiate the inbetween space formed between the game and the physical world, by experiencing the cultures of the game through artifacts, architectures, and landscapes. The materiality of the game space understands the worlds as part of a larger system of meaning outside the game world. The way the player or observer understands their material interactions within these larger systems of meaning, or within the flow created by the back and forth system between game space and physical space, creates a new phenomenological understanding of what constitutes materiality.

Material encounters are what make a game space come to life. They are what communicate the look, feel, and vibrancy of the game. The logic of the game spaces sets the rules for the way materiality is constructed, and establishes the conditions for the way the player

[193] *The Witcher 3: The Wild Hunt*, Video Game, Developed by CD Projekt Red, (CD Projekt: 2015). *The Witcher* games are based on a series of eight books, of the same name, by Andrzej Sapkowski. The game series popularity has inspired the creation of a Netflix show, based on the books, originally released in December 2019.

or observer approaches the game space. Materials help the player or observer understand where and when we are, as in the example of Skellige, by locating the player or observer in time and space. Materiality refers to a range of encounters. At its most basic level, it is the bitmapping of pixels as textures onto digital geometries that suggest to the player or observer that they are looking at shapes representing rocks, trees, water, buildings, and people--the literal materials of the game space. It also refers to the expectations the player or observer brings to the game for how those materials should behave, based on their embodied experiences from the physical world. It is the way in which these material encounters with objects are mediated by the game space, and the way specific views and experiences of travel, tourism, and navigation throughout the world operate to limit or subvert those material expectations. Finally, it refers to cultural materiality. As in the example of Skellige, games often use materials as devices that draw on knowledge of cultural heritage and specificity. Specific to game space is the way that material encounters are deployed, so that these types of cultural references are more than just temporal artifacts, but become something all their own, with a set of spatial logics, that make the game world pulse with life. The player or observer's first experience of the materials is visual, making reference to things they are familiar with in the physical world. In this way, materiality operates within the same feedback loop as time, so that the game materials and physical experiences the player or observer have with those materials co-create our understanding of subjectivity inbetween the game space and physical space.

Figure 5.1. Arriving on an island in Skellige in *Witcher 3*. Author's image.

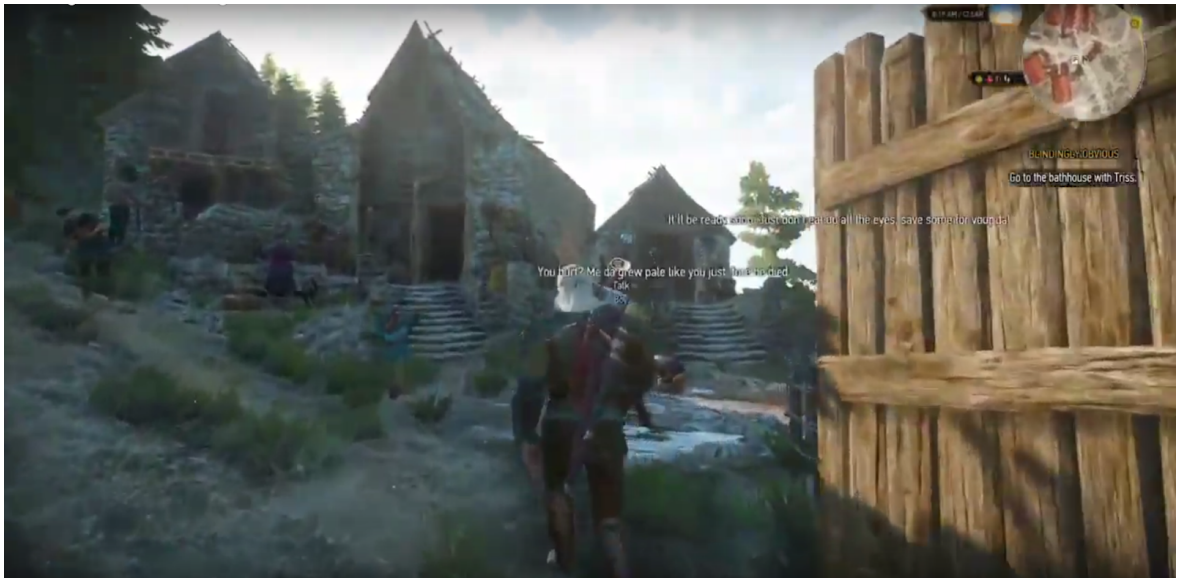

Figure 5.2. Architecture in Skellige. Author's image.

Figure 5.3. Surveying the landscape from an island of Skellige. Author's image.

One way to consider materiality in these types of games is by breaking it into its constituent parts in order to understand how materiality performs a function within the space of the game world. The performative function of materiality, or how those materials make the game space come to life, is posited by the equation Materiality=Encounters+Navigation. Encounters with material objects, combined with the way the player is able to navigate through those encounters, together create the material experience of the world. Material encounters refers to the interactions that the player, through the avatar, has with objects, weather conditions, and NPC's. These encounters begin to imagine a world filled with its own history. As the player navigates through these encounters, they become a tourist, exploring the space inbetween moments of violent action. The player depends on wayfinding devices, like compasses and minimaps, to orient within the space of the world. As the player explores, the image composition of the world unfolding before them is another form of material navigation, providing the player with visual cues about where and when they are. While the material experience of an immersive ecology is

not limited to these components, they provide a starting point from which to consider how the space produces the material experience, and in turn, the materiality shapes the alternative subjectivities of the experiencing player.

Space sets the conditions from which materiality emerges. In *Rise of the Network Society,* Manuel Castells provides a way to understand materiality in a virtual context, in which space sets the conditions for both time and materiality. For Castells, this means that materials are operating within the space of flows. Flows are the processes that dominate our social, economic, political, symbolic life in the information age. Materiality, in the context of the space of flows, is the "ensemble of elements" that support those flows. They are the material articulation of flows, and thus create a new type of space: the space of flows.[194] In a similar sense, materials in the video game space are the elements that support the space of the game world through visual information as well as object interactions, as in the avatar holding weapons, bumping into trees, or crossing stone bridges. Although Castell's understands the space of flows negatively, within the proposed context of a video game space without center, Castell's understanding of materiality as a support for spatial flows is a useful way to think about the work that materials are doing.

The way the digital game materials function is often understood in terms of physical-world equivalencies, or the digital materials fidelity to its physical counterpart. Annabel Jane Wharton, an architectural historian, refers to game materiality in terms of visual persuasiveness in her work on video game architecture in *Architectural Agents: the Delusional, Abusive, Addictive Lives of Buildings*. Visual persuasiveness refers to the stylistic and material choices made by the designers to elicit a sense of immersion in the space. As part of a larger

[194] Manuel Castells, *The Rise of the Network Society*, (Malden: Blackwell Publishing, 2000), 412.

argument about the agency that buildings, including virtual and video game buildings, have beyond the designer's intent, she argues that these visual choices have a direct impact on the player's impression of the world and convey meaning to the player.[195] While the designer must consciously choose a visual theme for the game in order to organize the code and algorithms that constitute the images, she argues that the meanings that the images convey take on a life of their own once in the hands of a player. Wharton gives agency to the game's buildings and spaces as much as to the designer's and players of the game. Buildings affect the game's persuasiveness in that they convey messages about social meaning through form and materiality, suggesting wealth and resources.[196] This can be clearly seen in the Skellige example, as the buildings encountered at the dock are simple wooden structures, suggesting a poorer area of the island, and the buildings higher up the mountainside and closer to the castles are made of stone, with a greater degree of carvings and ornamentation.

Wharton is critical of understanding immersion in games as a phenomenological experience as part of her argument that materials in games have agency of their own. She references Heidegger's "The Thing," taking issue with his assertion that the essence of a thing is its use, not its materiality. In this essay, Heidegger discusses that a jug's essence is its presence, or its ability to clarify a human's relation to the world. Things are only that which have presence. Wharton says that,"In phenomenology, language and its consummate human manipulator displace the spatial object and flatten space narcissistically into a mirror."[197] She reads Heidegger,

[195] Annabel Jane Wharton, *Architectural Agents: The Delusional, Abusive, Addictive Lives of Buildings,* (Minneapolis: University of Minnesota Press, 2015), 154.
[196] Wharton, *Architectural*, 176-178.
[197] Wharton, *Architectural*, 202.

and with him phenomenology as a whole, as stripping an object of its history by removing any reference to space or time.

The cornerstone of visual persuasiveness, for Wharton, is verisimilitude to the objects in the physical world that they stand in for. If the material objects in the game do not represent a one to one copy of something from the physical world, Wharton reduces them to mere images.[198] Wharton suggests that for the game buildings and environments to have agency as what she refers to as models, they must be a clear one to one imitation of identifiable things. Her examples of models range from mathematical algorithms to the virtual model of Hagia Sophia in *Assassin's Creed* and Frank Lloyd Wright's Fallingwater in *Second Life*.[199] If the game world is visually abstract, she argues that the materiality is reduced to a mere image, stripping it of its qualities as a model. This neglects that identifiable algorithms are in place to mimic things like gravity, or a lack of it, and a number of environmental and lighting effects.

If we take the first part of Wharton's argument, suggesting that the game user is interacting with those objects on their terms and not necessarily in the same way they would be used in the physical world, the question of materiality becomes much more complex than simply reducing the materials to part of a series of convincing images. This reading of phenomenology, as well as an emphasis on hyper-realistic games as evidence, reduces materiality to a series of images, reflecting familiar visual references from the physical world only, dismissing the objects use value within the game space itself. Objects and material encounters and their uses in game space, regardless of whether they are hyper-realistic looking or not, very much affect the way the

[198] Annabel Jane Wharton, "Models' Acts: Analog to Digital," Lecture at the University of Virginia, (November 16, 2016).
[199] *Assassin's Creed* [series], Video Game, Developed by Ubisoft Montreal, (Ubisoft: 2007-2018). *Second Life*, Video Game, Developed by Linden Lab, (2003).

player or observer is able to understand the space, and is far more complex than reducing materials to part of an image composition. Materiality is the main factor in creating the persuasiveness of the video game space through a combination of visual references, like the wooden viking ships docked at Skellige in *Witcher*, or the square, abstracted trees in *Gris*, and how that informs embodied associations through the way the player uses and experiences materials and objects in the course of interacting with the game world.

In Heidegger's later work, such as "Building, Dwelling, Thinking," and "The Origin of the Work of Art," his phenomenology is more concerned with Being in the world as a matter of how Being unfolds, rather than the meaning of Being itself. This is a critical moment in Heidegger's thinking when applying phenomenology to game space, because how being unfolds is closely linked to materiality. In his essay "Origin of the Work of Art," natural materials used in the art making process, such as paint or clay, become intelligible when they enter into established systems of meaning, which he calls worlds. For example, the painter uses paint, the natural material, to create a painting, which is entering the paint into an established system of meaning as the artist depicts whatever it is being captured in a piece of art. The person looking at the piece of art is then able to conjure up their own associations with whatever is depicted--they have their own embodied, material experiences with the object of the painting. These same natural materials simultaneously suggest the existence of a multitude of other possible arrangements. They might have manifested on the canvas as anything imaginable, but those other possibilities are unintelligible because they have only been given the form before us by the artist. This is how the material forms in the game space become more than images. Our understanding of them as part of a larger system of meaning opens up a multitude of possible interpretations of what that

object is and what it might be used for. In this sense, materiality is a multitude. The other unknown possibilities that might have been suggest what Heidegger refers to as a mystery, which he sees as ontologically positive and essential to the unfolding of Being.[200] As Wharton suggests, this demonstrates that for phenomenology, the subject is at the center of the concept of Being--both the author of the work of art and the viewer as a receiving, experiencing subject. However, the object depicted as well as the art object itself, are outside of and separate from the subject, and exist to aid the subject in their quest for Being within the world. This happens in much the same way that material encounters with objects depicted in the video game space aid in the way the player or observer is in the world of the game space, outside of and separate from themselves as subjects. This position accepts Heidegger's discussion of the way materiality creates a multitude of possible worlds, but develops a new type of subjectivity within the game space. It is a new form of phenomenology in which materials in the game aid a privileged human player or observer in understanding the game space, but that subjectivity itself is part of a multitude, and not a singular experiencing subject.

That is not to say video game space represents a type of post-phenomenology, which represents an extreme end of a spectrum of possible subjectivities. Geographer and video game scholar James Ash is associated with post-phenomenology, which builds on several strains of phenomenology, including Merleau-Ponty's emphasis on the experiential, as well as Heideggerian phenomenology, in that it is interested in the way objects are used and interact. It distinguishes itself in that the human experience of the object is no longer a central concern.[201] In

[200] Martin Heidegger, "The Origin of the Work of Art," (1935), in *Basic Writings From Being and Time (1927) to the Task of Thinking (1964)*. ed. David Farrell Krell. (New York: Harper & Row, 1977), 139-212.
[201] James Ash, *The Interface Envelope: Gaming, Technology, Power*. (New York: Bloomsbury Academic, 2015). Ash's description of post-phenomenology is described as closely related to Graham Harman's object oriented ontology (OOO), and Bruno Latour's Actor-Network Theory (ANT).

post-phenomenology, everything is assumed to begin with an equal amount of agency to act in the world--from people, to water molecules, to the wind blowing the trees. This is referred to as flat ontology. From this starting point, Ash argues that virtual worlds, including video games, are real spaces composed of real objects; real in that the objects in the game world are equivalent to physical objects. They are more than images of objects, and have the same amount of agency to act on the player as any physical object.[202] Ash uses post-phenomenology to suggest that the concept of "I" extends beyond the body in that the body does not constitute the only form of experience. This is his way of suggesting that the video game world, composed of objects rather than images, asserts itself on the player without raising the question of the player as an experiential subject within the game. Post-phenomenology totally decenters the human subject and places intentionally entirely in the realm of objects within the world--objects are more than their appearance or intended use.[203]

Considering the way that in-game materials provide support for the experience of video game space is important for understanding the construction of a subject. Heidegger represents one way of approaching materiality as a kind of scaffolding for space, with the issue of human experience at the heart of that understanding. Wharton acknowledges that materials in game space take on lives of their own, but she reduces this to a visual experience. Ash goes the farthest to remove human subjectivity from the inquiry, focusing on the way in which video game materials are "real." While this is an interesting starting point, it is unproductive and dangerous. A gun in a video game does not kill anyone in the physical world--equivalencies cannot be made between digital objects and physical ones. Straying too far from questions of human subjectivity

[202] James Ash and Paul Simpson, "Geography and Post-Phenomenology," in *Progress in Human Geography* 40, no. 1 (2016): 48-66.
[203] Ash and Simpson, "Geography," 48-49.

in game space does not account for the way materials actually function in the game space.

Vision is the crux of how we first enter the game space, but the way the material objects function is not able to be reduced to vision and recognizability alone. Space sets the conditions for material encounters through a visual experience, and the way the player uses material objects in the game world aid in their ability to travel through that world. The material encounters follow their own unique logics as they place the player or observer not just in time and space, but help them access specific cultural histories to create a rich fabric of spatial experiences that exist as they suspend their expectations of physical-material encounters, and accept the types of material encounters that occur through the back and forth flow of information between the digital game space and the physical world. Again, this forms a feedback loop, where our physical experiences inform the player or observer's expectations for their digital encounters, but they accept the unique behaviors of the digital materials that in turn provide them with information about the game space, reconfiguring the way they are modified subjects within this unique space--the player or observer is a reconfigured subject-object hybrid, an experienced player within the world of the game as a digital object. There is a middle ground between Wharton's visual persuasiveness as simply immersion in a fantasy world shown on a screen, and Ash's assertion that the virtual is experienced as equally real as the physical world, in which neither the designers of the game, the materials and objects, nor the players, are stripped of their subjectivity. This middle ground understands materiality and subjectivity as both constituting a range of possible experiences and results. Both materials and subjects are critical to the encounter, but recognizes that the player as a subject approaches the game space from a position of privilege.

Architectural theory provides an intervention that modifies the phenomenological position for considering the function of materials in digital space. Neil Leach, David Turnbull, and Chris Williams draw on Manuel DeLanda and Gilles Deleuze to suggest that two fundamentally opposed things—tectonics and digitization—have collapsed into each other, and that the digital world can and should be thought of in terms of material tectonics. In architecture, tectonics generally refers to a building's structural qualities. In this context, Leach, Turnbull and Williams suggest that digital tectonics is a paradigm shift for thinking about architectural culture in which algorithmic models and the materiality of tectonics can digitally coexist.[204] It is not a matter of the "realness" of the digital-material objects, as it is in post-phenomenology, but rather an emphasis on the logics of the way materials function in digital space, independent of human actors, but also not equating digital materials with physical materials. DeLanda understands this as the ability of materials to be dynamic. In this way, form emerges from within the possibilities of the structure based on its material properties.[205] Like Heidegger's thinking of the artist as one who puts the natural materials into a form in the world, this structural, tectonic form could take on a myriad of possibilities.

The possibilities for form to take shape beyond the designers intent, much the way Wharton suggests that material objects have agency, is referred to by both architects and video game scholars as emergence. Game scholar Jesper Juul defines emergence as game play in ways that the designers cannot predict and do not intend. He sees this as a negative, undesirable experience because it interferes with the rules of play that, he argues, define the game experience.

---

[204] Neil Leach, David Turnbull, and Chris Williams, "Introduction" in *Digital Tectonics*, eds. Neil Leach, David Turnbull, and Chris Williams, (West Sussex: Wiley-Academy, 2004), 4-12.
[205] Manuel DeLanda, "Material Complexity," in *Digital Tectonics*, eds. Neil Leach, David Turnbull, and Chris Williams, (West Sussex: Wiley-Academy, 2004), 14-21.

Leach suggests emergence is part of the core structure of architectural theory, as the way in which digital tectonics operate. For Leach, this means the interactions of the computer's operations—of small components coming together.[206] Leach's reading of digital tectonics that are expressed as material interactions within the computer provide a positive reading of Juul's suggestion that emergence is somehow antithetical to the rules. The game world is composed of materials that the eye registers and the physical body understands as grass, rock, fabric, or metal because of the way they look and they behave as part of the larger environment. Understanding the interactions between materials begins to form the tectonics of the game world, each laden with possibilities for unique and unpredictable interactions, limited by their algorithms and coding, which are part of the space. The overlap of these material objects await the player's discovery, and through them, reveal knowledge about the game world.

Geographer John Pickles argued in 1985 that it is impossible to separate subject and object. This assertion was taken up by other geographers to mean that "rather than subjects manipulating objects in the external, 'real' physical world, we are being in, alongside, and toward the world."[207] The parallel model allows for categories of distinction between objects that are useful for understanding the mechanisms by which the materials in the game, presented as image representations, or bitmaps of textures on digital geometries, perform work. This work reconfigures the boundaries between digital and physical. The materials cannot be reduced to mere images. Rather, they configure spatiality by transgressing the boundary with physical reality. The material experiences of the two worlds, the video game world and the physical world, together inform the way the player or observer is a subject existing both in and out of the

[206] Neil Leach, "Swarm Tectonics," in *Digital Tectonics*, eds. Neil Leach, David Turnbull, and Chris Williams, (West Sussex: Wiley-Academy, 2004), 70-77.
[207] Leach, "Swarm," 70-77.

game space simultaneously, inbetween the two.

Encounters

As the player, via the avatar, moves throughout the game world, they interact with a range of materials that constitute the experience of the world. These material encounters are anything from the weapons used for combat, NPC's they interact with and talk to, weather conditions that spontaneously make it rain or snow, to buildings that make up villages, towns, or elaborate dungeons, which are labyrinthine areas used as battle grounds for combat. The player's avatar bumps into objects, or walks through them, picks them up, discards them--any range of actions are possible, permitted or limited by the video game's coding. The hot sun beats down on Arthur in *Red Dead Redemption 2* as he and his horse cross a barren desert. Or his pants get muddy as he walks through wagon wheel ruts in the dirt streets of the town of Valentine.[208] Together, these material encounters make up the world of the game, and the player's experience of them begins to inform a broader cultural history that exists within that game. The player or observer comes to understand the world of *Gris* as the avatar fights against a strong gust of wind, blowing her backward, impeding her progress.[209] As the player or observer experiences and develops those cultural histories through object interactions, the player or observer becomes a part of them, embedded within the material scaffolding that supports the space of the game world.

[208] *Red Dead Redemption 2*, Video Game, Developed by Rockstar Games, (Rockstar Games: 2018).
[209] *Gris*, Video Game, Developed by Nomada Studio, (Devolver Digital: 2018).

Digital Objects

As the player moves the avatar through a video game space, the avatar's body brushes up and bumps into objects. In games like *Witcher 3* and *Horizon*, the player's avatar is able to walk through fields, populated with bushes, trees, and grasses.[210] In these hyperreal game examples, the landscape objects look and behave as much like their physical-world counterparts as possible. However, this is an example of where the limitations of the materials lay bare the in-betweenness of these two worlds. They are moments where the experience of the game space breaks down. If the avatar bumps into a tree, they get a bit stuck, but continue to look as if they are walking, which is not how a physical body would behave if it bumped into a tree in the physical world. An even better example of this breakdown is the way the camera cuts through grasses and bushes in the game while the character is walking or crouching. If the camera gets too close to things like bushes as the player guides the avatar through them, the camera cuts through the digital object as if it possesses no spatial or material properties at all. As this happens, you can see the mottled, camouflage looking colors that make up the flat texture, imitating physical-world textures, and you can see how flat the geometries that make up the object, as well as the mottled colors applied to that geometry, really are. An exception to this is *Red Dead Redemption 2*. Possibly because this is a more recent game and the technology has improved, this is the only game I observed that has landscape objects that behave almost as if they have spatial properties. If the avatar passes through a bush, the body of the avatar actually has to push the branches out of the way, and they bounce and spring back into place as one might expect from a physical-world bush.

The first, most obvious, thing that materiality refers to is the literal bit mapping of digital

[210] *Horizon: Zero Dawn,* Video Game, Developed by Guerrilla Games, (Sony Interactive Entertainment: 2017).

textures onto digital surfaces that are meant to simulate an object, like grass, rocks, weapons, and clothing. Often, we see this as glitches, or in the example above, when we can see the flat textures applied to the geometries. Materiality also refers to the way we encounter objects in the space, and how that informs the way we experience the space. Both serve to place the player within space and time, and to demonstrate to the player the rules that govern the space. Understanding these aspects of materiality is a matter of the way in which the materials are a product of the space itself, and how that in turn shapes a subjective experience mutually constituted by the game space and physical space. There are unique conditions of game materials existence, and they have significance in a way that physical world objects do not in normal encounters.

Glitches demonstrate the material workings of the game space. A glitch is when something in the space goes awry, and does not behave how the designers intended or how the player would expect. The designers generally try to avoid these, unless they are intentional, and hardly a "glitch," like the Guarma glitch in *Red Dead Redemption 2*. More often than not, glitches are mistakes. For example, in *Witcher 3*, there is a spot in the world, in the country away from most pertinent areas of game play, where the player's avatar, Geralt, walks along a path, and horses appear on a hill in front of him. From a distance, they appear to be standing on the hill, munching grass. As Geralt, you walk the path and get closer to the horses, but it does not appear that they are on the hill at all. Rather, they are floating in space, hovering several feet above the ground level [Figure 5.4]. It is as if whoever placed them in the world put them on the z axis to look correct from a distance, but did not place them along the x-y axis to keep them there as the

player's avatar gets closer. There is a similar glitch in *Fable II*.[211] Early in the game, the avatar does a vault over a bridge to jump into a lake below. When the player has the avatar put his or her hands on the stone wall of the bridge to make the jump, the hands do not make contact with the wall. They appear to make contact with something invisible in space, her hands resting in thin air as she makes the jump.

Figure 5.4. Floating horses in *Witcher 3*.[212]

The significance of this in terms of the materiality of these encounters is the contrast between the way they are modeled spatially, as points on a grid, versus the way they are experienced in space. Space in video game worlds with immersive ecologies should be thought of as a flow between the game space and physical space, and as such, it has no center. Therefore, space in the game cannot be thought of in terms of points on a Cartesian grid. The reality of

[211] *Fable II*, Video Game, Developed by Lionhead Studios, (Microsoft Game Studios: 2008).
[212] How Big Is the Map? "HOW BIG IS THE MAP in The Witcher 3? Walk Across all Maps," YouTube Video, Dec 10, 2017, https://www.youtube.com/watch?v=xkhrnXaBRVU

modeling things like horses and bridges in game space is that they are placed in the space of the game according to gridded logic, along a x, y and z axis, corresponding to the object's vertical, horizontal, and depth placement. It is pure coding, and pure mathematical logic, which is an extreme point along the spectrum of agency. Rather, what is significant to shifting subjectivities within the game-physical inbetween space is the material experience itself. It is the way this type of encounter eludes the designer's intention, and has an effect on the player, who is the experiencing subject. It modifies the expectations the player has for how a material should behave within that space by breaking with preconceived notions of things like object placement or object behavior. The experiencing player is not reduced to pure coding in the form of an avatar encountering other forms of coding that make up objects.

This speaks to the way in which scholars like Wharton, Ash, and Leach are interested in how material objects can behave in ways that are unintended, and have agency of their own. Entire YouTube channels are dedicated to videos of players encountering glitches. If a glitch comes to the designer's attention after the game is released, they will often attempt to fix it for re-releases or expansions. These are usually chance encounters--the glitch has to happen in a specific location that some poor designer simply overlooked, or is so unique that the player has to execute it in a specific way for the game coding to glitch. Glitches demonstrate that the player retains subjecthood within the confines of the designer's mediation, crafting individualized experiences through encounters with the digital materials that constitute the objects of the game world that goes beyond designer intent. This acknowledges that both the designers and the players have intent and agency, but the emphasis is on the player as a subject with volition despite limits and boundaries established by the designers, or by the limits of the technology

itself.

Materiality goes beyond the appearance of objects to include object interactions. Materiality emcompasses the wide range of object encounters and material interactions that make up the experience of being in the game space. Material objects orient the player or observer in the video game space through their quantity and availability, the skill required to use them, and their significance.

After the player arrives via avatar in the underwater city of Rapture in *BioShock*, one of the first things the player must have the avatar do is pick up a wrench with which to defend himself from "reapers," who are a type of violent drug addict that attack the player's avatar mercilessly from the moment he enters the city.[213] In this first person game, the only part of the avatar's body that the player or observer sees are hands, equipped with an object as a weapon. There is very little to orient the player or observer in the world--it is designed as a dark labyrinth that is claustrophobic, simply because it is a world underwater. While there is a voice over the radio that speaks to the avatar, and thus the player or observer of the game, the primary way the avatar and player gains information about the world is through finding an abundance of objects. These objects orient the player in time, experiencing revelations about the world of Rapture through the avatar. Found objects provide clues as to when the player or observer is, but they also orient the player in space, as they teach the player how to be in the world by demonstrating what the rules and limitations of the player's experience of the world is. They teach the player the rules of the avatar's body, as the player's avatar finds alcohol, and the player can choose to have the avatar drink it, which makes the images on the screen get fuzzy, signaling to the player that the

[213] *BioShock*, Video Game, Developed by 2K Boston, Directed by Ken Levine, (2K Games: 2007).

avatar is drunk. They teach the player the limits of the avatar's strength and survival skills, as the avatar encounters weapons, as well as a type of vending machine that provides the avatar with unique, superhuman skills that help the player guide the avatar to survive, and that relate directly to the game's narrative. The avatar comes across voice recordings, which the player has the avatar pick up, that then plays while the player has the avatar continue to walk around. These recordings slowly come together to tell the player and avatar simultaneously about the world's history.

In *BioShock*, the player, via the avatar, comes across lots of objects immediately, though this is not the case in every game. The quantity and availability, as well as limitations to how much the avatar, and thus the player, is able to carry or take with them at a given time, relates to the experience of the space because of the limitations this puts on the player. *BioShock* uses objects to clearly situate the player or observer within the world. In *Fable II*, the player is also provided with access to lots of objects easily and early in game play, but in this case it is not to inform the player about the world and where they are in space. The effect is to suggest that objects are not what is important in this game. Rather, the game emphasizes encounters with NPC's, and the avatar, and thus the player's emotional interactions with them. Objects simply facilitate those interactions. Other games radically limit the availability of objects. Famously, the horror game series *Resident Evil* makes objects extremely difficult to come by, and radically limits the amount the player's avatar can carry, which heightens the fear factor as the player fights drug addict, zombie-like creatures.[214] Objects have a range of roles they play--they place the player, through the avatar, in time and space, provide information about the history of the

[214] *Resident Evil* [series], Video Game, Developed by Capcom, (Capcom: 1996-2019).

world taking shape within the game space, and establish rules for interacting with other NPC's and objects within the game world. Objects set the stakes for the experience of the game.

Many games with immersive ecosystems often have a skill tree that is affected by object interactions. As the player progresses through the game, which often means finding new areas within the world and defeating enemies in combat, the player is usually able to gain new abilities and use bigger, better, more powerful objects to defeat antagonists and move through the world with greater ease. In *BioShock*, this means that the player's avatar first encounters a wrench with which the player must have the avatar use to defend himself, but eventually the avatar and player upgrade to more powerful weapons, like guns. It is not always this straightforward. Often, object interactions are used to move the player through the world, and subsequently, through the narrative. One of the ways this is done is by forcing the player to craft objects that they might need to progress through the game by collecting other objects. In *Witcher*, the player must have the avatar collect items, which can then be combined, or crafted, into things like armour, by taking found or purchased objects to a blacksmith. In *Horizon*, the player uses the avatar to make weapons, such as fire arrows, out of found or purchased constituent parts.

The significance of objects is denoted visually in game space. Visual cues alert the player to objects that are useful or that can be interacted with in a meaningful way. For example, in *Fable II* and in *BioShock*, useful objects glow with a light aura [Figure 5.5]. This means that the player can pick it up and do something with it.[215] An exception to visual cues that denote object significance is *Dear Esther,* in which objects have neither a glow or a use.[216] Objects in this game can be picked up, but not carried or used in any way. The objects in *Dear Esther* exist only for

[215] Some games, like *BioShock*, have a menu option to turn off the object glow feature.
[216] *Dear Esther*, Video Game, Developed by The Chinese Room, (The Chinese Room: 2008, 2012).

the sake of their material experience, providing information about the island being explored by the player. Objects draw the player through the world. Interacting with them, when happened upon, is a way to place the player in the space simply through their encounter. It is an example of the significance of objects asking the experiencing subject--the player or observer--to have relationships with materials that are specific to their existence in the game space.

Figure 5.5. Useful objects glow with a light aura in *BioShock*.[217]

Cultural Histories and Tourism

Dear Esther is a game that is all about exploration, and little else--it is sometimes referred to as a "walking" game. The way it is set up for the player or observer to explore makes it seem as if the player is a witness to someone else's life and tragedy. That is because the player or observer experiences the world through objects and items that have been left scattered and discarded around the island. The player, via the avatar, generally does not interact with the

[217] RabidRetrospectGames, "BioShock Remastered Gameplay Walkthrough Full Game (1080p) - No Commentary," YouTube Video, September 16, 2016, https://www.youtube.com/watch?v=nFjMkFwB1ck.

objects at all, but simply observes them. The player can have the avatar, who is never seen, pick up objects, but the only purpose they serve is to direct the player through the experience of the island. The lack of interaction with objects helps to establish the rules for being in the world, in much the same way as weapons do in a game like *BioShock*, but in this case, they speak to the passive experience of being within the world of *Dear Esther* itself. Medical tools, letters floating on the water like paper boats, lit candles--finding more objects to witness is what motivates the player to keep exploring the island as they try to piece together what is going on.

Object interactions create the conditions for experiencing the richness of the game space. As in the examples above, the object encounters in game space often facilitate violent action and combat, but this is not always the case, as in *Dear Esther*. Object interactions populate the game space, making it come alive, significantly, during moments of nonviolent action. Through objects, cultures within the game with their own unique histories are co-created by the game space and the unique relationship it creates with objects, but also by making references, regardless of their level of visual abstraction, to cultural objects and histories from the physical world. Critically, the experience of the objects makes them more than simply recognizable visual elements, as a model or an image. The material experience of objects within game space understands objects and material encounters as a mediated and embodied experience, expressed inbetween the digital game and physical objects. This happens as objects inform the player or observers role as tourists in the game world; we are encouraged to explore by various means of material object encounters. One of the moments when this happens is when the player suspends the action of play, taking a moment to survey the landscape of the game world. Related to this is wayfinding, and the devices used to help the player navigate as a tourist. This is to some degree

an issue of how the visual cues and markers established by the game space set the rules for how the materials behave, and thus how we understand our place within it.

The third function of materials is to place the player in time and space. Space sets the conditions from which both time and materiality emerge. Materiality combines with time to alter the way geography is understood in game space. Geography in game space cannot be measured by distance on a map, or as moments between narrative points. Rather, geography in game space should be understood as a flow between game space and physical space--time and materiality reconcile themselves together when the player is able to disengage from the game's violent or narrative action, and survey the landscape. As Henri Bergson would characterize it, these moments are the interval between violent and narrative action. This interval exposes the function of materiality. This happens either as the player wanders around the world, traveling from point to point, or when the player reaches a high vantage point from which they may observe the space around them. The player becomes a tourist experiencing the game space through material encounters.

For example, the idea of tourism as a mechanism for being in the space is central to *Witcher 3*. The game quests themselves draw the player or observer farther into the world, asking them to experience it as a tourist as the player uses the avatar to travel around. The quests are elaborate tree-structures. In order to do one quest, the player is sent on a myriad of other quests that make up component parts of the larger quest. In doing this, the player is forced to travel widely around the world of the game. In *Witcher*, the player is free to deviate from quests and to wander, largely uninterrupted by people or combat. Occasionally, monsters will see the avatar and the player will have to engage, but it is not frequent, and it is easy enough to ignore them and

keep walking. This encourages and fosters exploration and tourism.

By contrast, not all games with immersive ecologies allow for the same degree of tourism as *Witcher*. In *Horizon*, when walking around and exploring, there are a significant amount of enemy robots the player has to fight. It is difficult to avoid them. They are programmed to have a radius within which they will engage the avatar. Sometimes, the player can use the avatar to outrun their radius and get away, but when trying to simply explore the world, the player does not get very far without having to fight. This keeps the player or observer on high alert. While the state of the player is different while they engage the world as a tourist based on the amount of violent combat they are likely to encounter, the way the space presents itself to the player through material conditions, like the composition and feel of the landscape while they travel, remains critical to the experience of the world. Regardless of the likelihood of violent action, the material experience of the game space of an immersive ecology transforms the player or observer into a tourist, surveying the landscape. In doing so, the interval between in-game action as well as between the digital and physical worlds is visible here. These moments inbetween action and inbetween digital-physical space is how geography should be considered in the context of the game--as a form of materiality.

Like many other games, when traveling around the world of *Witcher* and not engaged in combat, the health meters in the corner of the screen go away, and it is easy to get carried away by the experience of the landscape. Wayfinding devices help the player situate themselves within the landscape as they experience the world as a tourist. These devices are reminders that we are not totally within the space of the game, and require aids to navigate from one material encounter to another. These wayfinding devices appear as overlays on top of the game world, and are

themselves a type of material encounter, interfacing between the physical world and the ability to orient oneself within the game space. Navigational tools ask the player to remove themselves from experiencing the game space's materials through the avatar, and to experience the space as a physical body interfacing with the digital space.

Navigation

If the geography of the game world is a type of materiality, then navigation through that world is important to understand the space of the game as manifesting those materials. The tools used to understand the player's location in the world, via the avatar, are themselves a type of material encounter that the player uses to interface with the material geography of the game space. There are several different methods of wayfinding in game space. These devices orient the player spatially. The image composition that makes up the material space of the images on the screen is also a type of material encounter that aids in the player's ability to navigate the space. The composition that the player can see at any given moment is highly mediated. Together, these are two aspects of game navigation that explore how materiality is a geographic element in the game space.

Wayfinding

Games must signal to the player where they are geographically within the space of the game world, using wayfinding cues. These cues take on three main forms in video games with immersive ecologies. The first, and most common, is a traditional sign system, such as a compass. The second is visual overlays within the world itself, imposed upon the game space to

signal directions to the player. Third, are games that use no blatant wayfinding devices at all, depending on material interactions themselves to guide the player through the space. Each type of wayfinding device is a form of materiality that varies in degree according to how much separation the type requires between the player and the material compass, overlay, or materials themselves.

Most games have a compass that remains on the screen as the player moves from point to point within the game, although some games allow the player to enter a menu and turn the compass off. In *Horizon*, the compass is a simple line across the top of the screen that shows the player how they are positioned relative to the axis of a compass. *BioShock's* compass is the most typical typology. It is an arrow styled to fit the look and feel of the game, that points the player in the direction of the objective, usually defined by the current quest objective, which in many games is selected from a menu screen. The arrow swivels as the player moves so that it is always referencing the objective. In a game like *BioShock*, in which the city is designed as a labyrinth, the arrow points the player toward the object that will help in advancing through the plot, which corresponds to advancing through different zones of the city. Although common, this arrow is not always linked to a quest. In games like *Witcher*, the player is able to pull up the game map and place a marker. Upon reentering the game world, the arrow will point in the direction of the marker that the player established on the map.

A minimap is a small, visually simplified version of a portion of the main game map. It appears in a corner of the screen, placing the player within the larger context of their surroundings. In *Witcher 3,* this appears as a circle in the upper right corner of the screen. Interestingly, *Witcher* is unique in that it also includes a minimap for the time of day. The

material encounter of the physical player interfacing with these types of visual overlays, like a day and night map, helps to place the player spatiotemporally [Figure 5.6].

The final, most obvious way material encounters speak to wayfinding is through the use of text. It is common that as the player enters an area of the game, like a region or a city, a textual label will appear across the screen. It is an interface that breaks with the immersion of the game landscape as the player travels as a tourist. It is unique in that it differs from the function of load screens. Load screens often tell the player or observer the name of the location that is loading, and is a moment of pause when the inbetween space, between the game world and physical world, is visible. A textual overlay is different. It appears as the player continues to move, independent of a load screen. It is a material overlay, in that the navigational elements of the game space are themselves a type of materiality, in and of itself, that signals to the physical player that there is a threshold of significance, and places the physical body within the game's unique region. In *Witcher*, as the player's avatar enters an area, for example, named White Orchard, the load screen fades away, and a text label appears across the middle of the screen, telling us where they are.

Figure 5.6. Mini map and map of time of day in *Witcher 3*. Author's image.

Alternatively, some games employ unique wayfinding devices that speak to the conditions within which the game asks the player to be within the world, including using no overt wayfinding devices at all. *Fable II* uses a "breadcrumb trail." This is a path of glowing dots, like sparkling yellow stars, that signal the player to move the avatar to follow that path towards a quest objective. These dots will then either surround the object of the quest, or, more often, the NPC the player is meant to interact with [Figure 5.7]. *Fable* was designed to emphasize emotional choices and experiences within the world--the breadcrumb trail is an attempt to break with the conventions of traditional wayfinding. The result is wayfinding that is in keeping with the nature of emotional interactions. It looks a bit magical, as if it were fleeting, suggesting a way of being in the world of *Fable*, and traveling through it, rather than demanding it with the aggressive point of an arrow. This is an example of a wayfinding device that is an overlay within the world itself, rather than more traditional sign systems.

Journey and *Gris* use no way finding devices or maps--it is only the player within the world itself, exploring its abstract landscape.[218] Notably, these are both smaller, indie games, that are not intended to simulate a boundless world like *Fable II*. Instead, the player is oriented through interactions with the material objects themselves. *Gris* orients the player in space by being disorienting--it plays on layering and levels while giving the player's avatar only one direction to go at a time. It is a dynamic, two dimensional platform game, which means that it is composed of two dimensional elements that overlap, and the player is able to navigate the avatar around and behind some of them in order to access new spaces that might appear inaccessible. It is a platform in that the layering encourages the player to move the avatar up, down and across

[218] *Journey.* Video Game, Developed by Thatgamecompany, (Sony Computer Entertainment, Annapurna Interactive: 2012, 2015, 2019).

platforms, generally progressing from left to right across the screen. Essentially, the player is always moving the avatar up, down or forward (to the right) across the screen. In this way it is not an open world the way the other examples are. Yet there is no way to be in the world without experiencing the two-dimensional objects that make up the world. The encounters with the architectural elements, such as towers, buildings, and columns, and natural objects such as trees and wind, are the only way to be in the space.

Figure 5.7. Breadcrumb trail as wayfinding in *Fable II*.[219]

Journey gives the impression of being an open world; it appears visually expansive, and the player can move the avatar to fly anywhere within the part of the world that makes up the "act" that the player is currently engaging. The player is free to have the avatar fly, float and explore. However, the player is gently encouraged to go certain directions to make progress through material interactions. The only thing that keeps the player navigating in the right direction are carefully placed pieces of fabric that are critical to gameplay. Visual distance to

[219] "MrBlockzGaming, "Fable 2."

these pieces of fabric keeps the player moving toward them, and as a result, making progress towards an objective, which is the end of the act [Figure 5.8].

Gris and *Journey* are both visually abstract games that rely on material interactions for the ontological basis of being within the space. This suggests that the material of game space is more than a matter of visual persuasion. Yet the ability to look, both as an avatar as an actor within the space, and the player viewing the images of the space and controlling the avatar, and to recognize either visual elements or physical behaviors of material elements, is still fundamental to understanding the material functions of the space. In *Fable II*, the first skill the player learns to do is to "look," meaning the player is directed by the game, usually via text interface, how to zoom the avatar's vision in on something that is in the distance, focusing on it. As the player controls the camera to focus the avatar's vision, peripheral things fade away. For example, in *Red Dead Redemption 2*, the avatar uses binoculars to zoom in on a point in the distance. The player uses a series of buttons on the remote to engage the binoculars. As the avatar, Arthur, carries out this directive from the player, the arm movement begins, signaling that he is raising the binoculars, and then the image on the screen changes. The player now sees, through a first person perspective, the point at a larger scale, with two large, black rings around the edges of the screen, just as if looking through binoculars in the physical world. In this case, a material object is used to aid the avatar's body, and thus the player, in zooming in on a point of interest in the distance. It switches the player's visual perspective from third to first person, asking the physical player to recognize the act of looking through binoculars from their own embodied, physical experience of doing this action. This switch in perspective also implies a position of privilege from the vantage point of the player. Because games usually teach the player

this skill early in the experience of the game world, regardless of the form it takes, be it binoculars or something else, like a magical ability, it suggests that being able to pull a material location or object closer to the player to view it's materiality in greater detail is of utmost importance to the experience of the game.

Figure 5.8. Wayfinding through material markers in *Journey*.[220]

Composition

Composition of the visual elements that constitute our encounter with the space of the game serves two functions: first as a kind of material recognizability, and second as a more literal composition of the world itself. It is the material manifestation of the space--it is the space taking form. The game space is a field of possibility that allows for temporal conditions to emerge because that space has no center, meaning it is a flow between the game space and the physical world, and the player's subjectivity is reconfigured as they exist inbetween the two. This in turn

[220] IAmSp00n, "Journey - Gameplay/Playthrough (No Commentary)," YouTube Video, March 21, 2012, https://www.youtube.com/watch?v=bkL94nKSd2M.

creates a feedback loop that constitutes subjectivity within the space--subjectivity is reconfigured through the mutual experience of the game space and the physical world, as each modifies the other simultaneously. This relationship, between space and time, suggests that what is referred to as composition is more than just an issue of arrangement of visuals within the image, but is the arrangement of the material objects as materials themselves, and not just as images. The materiality of the composition is a modifier to the way time presents itself within the field of possibility of the game space. This breaks down the notion, as Wharton might argue, that vision by way of fidelity has a hegemonic grip over space, because this would imply that vision quantifies and fixes time within the empty void of game space. The game space is not an empty void, nor is temporality singular. Materiality reinforces this when we think of it not only in terms of interactions, but as part of a larger composition that constitutes the world of the game. The composition is a form of materiality that dislocates any kind of spatial center.

Red Dead Redemption 2 has a unique feature called "cinematic mode," which speaks to the way vision connects material encounters through tourism to a larger set of material culture references within the feedback loop between digital and physical subjectivity. Cinematic mode is an effect that makes the camera pan out and angle down, and the top and bottom of the screen are framed with a letterbox, so that as the player is moving, it appears as if the player is watching a Western genre film, rather than a video game. As this shift occurs, no new space is revealed to the player--it does not pan out to show a greater area. It simply shifts the camera angle on the space already visible to the player on the screen. Sometimes as the player, via the avatar, is traveling, the camera will switch views from third person to cinematic mode automatically, which makes travel constantly visually interesting. The player can also control cinematic mode

by pressing a button. The player has to hold the button down, so it is only feasible to view the world in cinematic mode during travel, between moments of violent action and dialogue. The player cannot engage in combat sequences in cinematic mode. This suggests that being in the world rests on the player's vision and the way we see things, but it also depends on the player or observer's recognition of a genre [Figure 5.9].

Figure 5.9. Cinematic mode in *Red Dead Redemption 2*. Author's image.

This effect goes beyond simply being visually persuasive, and speaks to the nature of the material counters themselves as cultural experiences. Recognizability is also central to the material encounters in *Horizon: Zero Dawn*. *Horizon's* world building is only successful if the player can recognize their world within the game space. It is a game that takes place in the thirty first century American West, but in a tribal, seemingly primitive culture. Material encounters place the player in the far future, evident to the player by architectural and geographic features, as well as material objects. For example, as the player navigates the avatar, she frequently passes by statues of crumbling Confederate monuments, dilapidated skyscrapers, and gas stations. The

player is able to direct her to pick up objects like watches, although the avatar, occupying a technologically simplistic thirty first century, has no way of knowing what a watch is--this is intended specifically for the twenty first century player to recognize from physical world experiences [Figure 5.10]. The combat sequences are primarily with artificially intelligent robots that roam the landscape, and look strikingly like animals and dinosaurs that a twenty first century audience would easily recognize, like horses and giraffes.

Figure 5.10. Finding a watch in *Horizon: Zero Dawn*.[221]

The physical properties of material objects also contribute to the recognizability of them--not just visual cues alone--and how closely the game space conforms to the laws of physics that govern the physical world. In *Journey*, for example, the player or observer can only understand movement through the world as they use the avatar to float and spin in the air because the game also applies laws of gravity that they can recognize as they defy them. *Journey* is abstract, but we still experience gravity as well as elemental conditions, like sand, water, and snow. A living environment means one in which all of the NPC's react to circumstances around

[221] JRC-Gaming, "Horizon Zero Dawn - The Whole Map End to End (How Big is Horizon Zero Dawn?" YouTube Video, March 10, 2017, https://www.youtube.com/watch?v=hKbOX5ev_2I.

them. In games like *Witcher* and *Red Dead*, weather spontaneously and randomly occurs and changes in plausible ways, simulating weather familiar from the physical world. If it starts to rain, NPC's will run under bridges or awnings for cover. If it snows, the players dress in heavier clothes.[222] Weather conditions are another aspect of the physical properties of material objects that are recognizable.

Composition, or the way in which the visual elements that constitute the images are arranged and appear on the screen, and how these shift and change to reflect movement through the game world, is used to convey meaning about the space through material experiences as the player travels as a tourist. The picturesque vistas in games create moments where player agency and memory are negotiated, between familiarity and the new application of those materials in the game world. It uses familiar artistic compositional techniques to make elements recognizable, to help place the player or observer in the space, and to activate the game world. One of the best examples of this is in *Witcher 3*, which uses picturesque compositional motifs to make the landscape seem knowable and accessible. *Witcher* is notable because so much attention seems to be paid to this effect that almost every single vantage point within the game is beautifully composed--vistas are strikingly arranged, complete with breaktaking environmental effects, like rolling clouds and sunsets. Almost every place in the game references cornerstones of picturesque imagery--each shot has a foreground, midground, and background, and usually includes textbook picturesque elements like rolling hills in the distance, often with a small architectural ruin, in art called a follie, in the midground. In the physical world, the use of these

[222] Smith, Dave. "Even People Who Hate Games Will be Blown Away by this Aspect of 2015's 'Game of the Year'," in *Tech Insider,* Accessed May 4, 2016, http://www.techinsider.io/witcher-3-living-world-2015-12.
Sprony, "The Witcher 3: Designing the Environments (Developer Interview)," Mapcore, Accessed May 4, 2016. https://www.mapcore.org/articles/interviews/the-witcher-3-designing-the-environments-developer-interview-r69/.

ruins in architecture and in art were meant to serve a contemplative and educational function. In nineteenth century gardens, they were very deliberate landscape elements. The game strategically uses high-up vantage points to survey the landscape, which is another picturesque trope. These material elements help the player or observer accept the fantasy of the world because it looks and feels familiar. The carefully staged compositions throughout the game references the styles of architecture that clearly draw on northern Europe, as well as the temporal condition of the medieval setting. These vistas negotiate spatial agency and player memory that is vital to the experience of the virtual world, as the player acts as traveler writing his or her unique version of the game. The landscape thus becomes a historiographic tool for conveying themes as the player writes their history.[223]

The devices used in the picturesque are easily identifiable in a game like *Witcher*. William Gilpin, who first described the qualities of picturesqueness in the eighteenth century, describes that the scene should have contrasts of rough and smooth, travelers in the distance, monumental medieval structures, ideally cathedrals or castles, hazy hillsides and mountains bounding the scene.[224] All of these things can be found in abundance in a game like *Witcher* as well as many other RPGs. Gilpin referred to this as visual fullness.[225] One of Witcher's designers, Miles Tost, describes that game designers employ picturesque painting strategies:

> we use a lot of traditional image composition techniques, much like painters would use them. For example, you climb up a slope, you are greeted with a nice view. The view would be carefully crafted for this one (sometimes multiple) perspectives. We'd play with

[223] Vinicius Marino Carvalho, "Leaving Earth, Preserving History: Uses of the Future in the Mass Effect Series," in *Games and Culture* 10, no.2, (2015): 131-135.
[224] Kim Ian Michasiw, "Nine Revisionist Theses on the Picturesque," in *Representations,* no. 38 (1992): 76.
[225] According to Wharton, *Architectural,* 127.

> shapes and composition to help guide the eye of the player to objects/places we want the player to see and explore or likewise, try to hide certain things that way. Light also plays a big role here, as a bright spot in the distance can easily grab the players attention."[226]

All of these devices can be found in picturesque images.

The player or observer is in the world of *Witcher* through these vistas [Figure 5.11]. The game encourages exploration in order to be in it. As Geralt, the avatar and protagonist, travels the world, the player gains familiarity with the landscape, which is reflected by the way the landscape changes. This is seen as the main story progresses, but also through a number of side quests. An example of this is the Skellige side quest in which Geralt must lift a curse that creates storms over one of the islands. He sails to it in the hurricane-like storm; rain and mist occlude any understanding of the landscape. After the curse is lifted, the sun comes out, and the view is clear. Not only is the island and its architecture now clear, but the view from the top of the mountainous island provides a high point from which the surroundings can be seen and therefore understood as part of a larger world.

[226] Giuseppe Nelva, "The Witcher 3: Wild Hunt Level Designer Answers a Ton of Questions about the Upcoming RPG," Interview with Miles Tost, *DaulShockers,* March 23, 2015. http://www.dualshockers.com/2015/03/23/the-witcher-3-wild-hunt-level-designer-answers-a-ton-of-questions-about-the-upcoming-rpg/.

Figure 5.11. Picturesque vistas in *Witcher 3*. Author's image.

Witcher is a superior example of this effect, but not the only one. *Horizon* and *Fable* also use similar compositional techniques. The trope of the ruin in the distance is also common. Wharton describes that video games are primarily picturesque, which she argues as justification for their artistic license. She says that video games are the modern equivalent of monumental tourism of the late eighteenth and early nineteenth centuries.[227] She argues that in video games, the picturesque is used to "code and characterize." While the video game can easily be seen as a type of travel narrative or tourism, the landscape goes far beyond simple codification through its use of picturesque devices. The picturesque as a negotiation of the beautiful and the sublime has a specific emphasis on travel and understanding the landscape that is unique. Through drawing the landscape and viewing it from picturesque points, the eighteenth century traveler had a greater understanding of their surroundings. The picturesque served the dual function of providing understanding and ownership via the succession of picturesque images.[228] In this way,

[227] Wharton, *Architectural,* 159.
[228] Michasiw, "Nine," 76.

the video game vista has much in common with the eighteenth century concept of the picturesque. In *Witcher*, this trope is extended to become humanity versus the other; a major plot point is that a different spatiotemporal realm threatens humanity. Rather than indicating anxiety over our collective future, *Witcher* represents the complex relationships we have with our collective past—with our folklore and heritage.[229] This is manifest in material interactions, visible through picturesque compositions seen from the perspective of the player as a tourist.

Subjectivity through material interactions as they are defined by spatial conditions suggests that the player and the game space are co-authoring the experience of the space. Co-authoring the game creates a sense of player agency through volition and memory of the history they have created. The picturesque vistas in games are creating moments where player agency and memory are negotiated. The landscape thus becomes a historiographic tool, meaning a material aid for the player, as the player writes their history over several hours of physical-clock time gameplay.[230] Co-authoring happens as the player chooses how to approach the game through the material encounters, objects, and cultures presented by the game space. Even when this takes the form of quests, it is the same as saying the order in which the player moves through the world, because the quests take the player throughout the world of the game.

To look out upon the game spaces as a tourist, to familiarize oneself with the materials that make up the world, is to tame the wildness of the landscape by anticipating the ludic, intense, or reward structures that the world has to offer. These moments also do the work of conveying the vastness of the game world, composed in such a way as to balance the ludic and narrative elements of the game. The vistas must reinforce narrative themes, but compositionally

[229] Paul Martin, "The Pastoral and the Sublime in Elder Scrolls IV: Oblivion," in *Game Studies* 11, no. 3 (2011).
[230] Carvalho, “Leaving,” 131-135.

must keep the players attention focused on regions that they can access. The composition must draw the player back into the heart of the space.

Materiality=Encounters+Navigation

Material encounters in game space have tectonic properties that shape the logistical experience of the world and inform the way we understand ourselves to be in that space, experiencing the cultures of the game through their artifacts and landscapes. Materials make the game space come to life, but are limited by the spatial logic that governs the world. As Heidegger suggests in his discussion of art, the shape that these materials take bring forth a world that, as the player experiences and co-authors through material encounters, shape subjectivity through a back and forth feedback loop. While human experience is of primary concern, the material conditions in the game space do take on agency of their own, though it should not be thought of in terms of a physical-world equivalency or as an issue "realness." Rather, considering the material conditions and unique operations of materials in the game space shows the way that they contribute to the space of the game. Vision is merely the way into the space; the functions of the materials, from the behavior of bushes as we move through them, to the weather, navigational devices, and the overlay of material signifiers over the world speaks to the way the materials operate within space. The materials are the tectonic supports for the space, and constitute a myriad of possible dynamic experiences.

At the end of the first act of *Journey*, the player guides the avatar to slide down a massive, sand covered hill that goes through a large, stone loggia [Figure 5.12]. The sun is setting, so the

sand and buildings in the distance are washed in red light. The camera pulls back so that as we slide we can fully see the surroundings. There is a cityscape that looks as if inspired by Islamic architecture, with ornate geometric patterns. Always in the distance is the mountain that, by this point in the game, through a series of cutscenes, camera angles, and cleverly crafted architectural and landscape elements, the player has gathered is where they are heading. The music is beautiful and serene. The path that we are sliding down is linear, in that the player does not have a lot of control. We are free to just take in the entirety of the scene for a few seconds. It is a moment that captures the way time and materials operate uniquely in the game space. These qualities are distinct. The sun is setting, so we understand time, but it is not our physical time. The architecture looks vaguely familiar, so we accept it, even though it is not a model of anything from the physical world. We understand the material conditions of the sand, warmed by the setting sun as we slide down, and there is a sense of freedom, as when we were kids sliding down dunes at the beach. It is strikingly beautiful--with the compositional choices of the red glow of the setting sun against the sand, and the mountain emitting a bright white light in the distance, there is a clear sense that there is a much larger world beyond this one moment, and that we will experience it. Accepting that we are in a space that establishes rules manifest by temporal and material conditions allows us to consider how this moment is more than an image: it is a place.

Figure 5.12. Sliding in *Journey*. Author's image.

Chapter 5

Place=Time+Materiality

The video game *Horizon: Zero Dawn* is unique in the way that it uses menu screens that are carefully woven into the world of the game itself. In the game, the avatar, Aloy, navigated by the player, uses a synaptic headpiece that she wears near her ear, called a Focus. The game is set in the thirty-first century, but is full of anachronisms, as the characters are tribal and appear to be primitive in their limited use of tools, technology, and reliance on superstition to form their worldviews. Aloy finds the Focus early in the game--her adoption of technology used by the "old ones" sets her apart from non-player characters (NPC's). The Focus is the interface between Aloy and her world, but also between the player and the video game space. It is how the game presents pause screens and menus to the player. It calls up the menus to access Aloy's weapons, and things like the player's game saves, and the game map. It lets the player or observer see things that other game characters cannot see--for example, it lets Aloy see the predetermined pathways that the artificially intelligent robot animals will take, so that the player can navigate Aloy to avoid them or strategically engage them in combat. It also lets Aloy and the player access holograms and journals that she finds that reveal plot points to Aloy, and thus the game world's history, to the player. Perhaps most notably for a discussion of place, the Focus serves the additional purpose of showing Aloy, and thus the player, what the ruins of buildings once were [Figures 6.1 and 6.2]. For example, from the high vantage point of the ruins of a skyscraper,

the player is able to position Aloy with a view of a nearby dilapidated structure, and use the Focus to reveal what the building once was. The Focus overlays an image of the building as it appeared in the twenty first century, as it would be familiar to the player, as well as a textual label, that shows the building was a "stadium," clearly referencing the Mile High Stadium, in Denver, Colorado.[231] The game's designers have cleverly woven into the game's visual and narrative context the ability to control and pause the game via menu interfaces, and also situated the player in time and geography through a tool that refers to clearer vision with its name.

The link between authorial mediation, the formation of community, and the development of in-game histories as they relate to the spatial conditions of time and materiality are the subjects of this chapter. These elements are some of the ways that place is formed within the video game space, and perceived by the player. These aspects also demonstrate the limitations of the game world as a place. In video games with immersive ecologies, place refers not to a spatial or geographic area within the game, but the way in which the video game presents its own set of temporal and material conditions that together form a logic of experience for the player or observer as they occupy the game space as a subject-object hybrid; that is, as they experience the game's temporal and material logic on its own terms as a physical, experiencing player taking on the persona of a digital object, or avatar.

Time and materiality are not passive elements of game play--each has a critical role in shaping the way the player understands the place of the game space. The equation Place=Time+Materiality implies that each component is performative. The experience of the space, and the temporal and material conditions that manifest from that space, unfolds before the

[231] *Horizon: Zero Dawn,* Video Game, Developed by Guerrilla Games, (Sony Interactive Entertainment: 2017).

player or observer in a highly mediated way determined by the designers of the video game. Even in open world games, in which there is perceived freedom to explore, the designers have woven together people, places, events, and plot points that craft a particular player encounter. The suggestion that time and materiality are performative speaks to this, as does the idea that player experience is what creates a sense of place as these modalities combine. The formation of place in a video game is a matter of the experience of spatial sequencing. That is, the order that the player experiences the different temporal and material conditions that are produced by the space of the game world affects the way in which the video game is able to be a place in and of itself. Designer intent and the way a sense of community is woven into the video game are temporal conditions. The ability of the game to create a sense of having a history is the material manifestation of that expression of community. It is the menu interface, as in the example of the Focus in *Horizon,* that is itself a type of spatial-material encounter that brings together the idea that player experience is the expression of place as time and materiality coalesce, which demonstrates the performative aspects of space, working to reconfigure the player or observer as an experiencing subject. As the example of the Focus shows, ultimately, the creation of place in game space is entirely dependent on the privileged vantage point of the player as an outside participant in the game space--in game space, place itself is dependent on the hybridity of the subject formed by the back and forth flow of inputs from the game space and the physical space.

Figure 6.1. The ruins of a building in *Horizon: Zero Dawn*. Author's image.

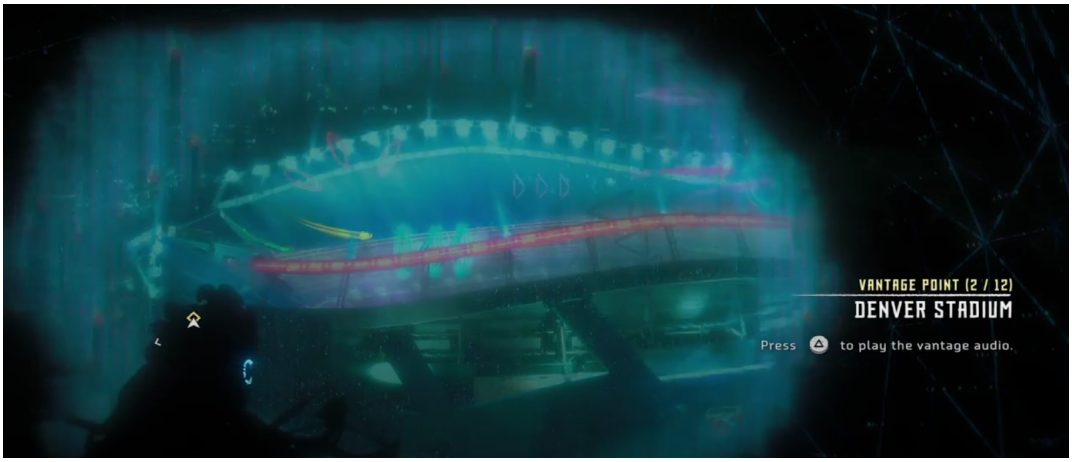

Figure 6.2. Aloy using the Focus. Author's image.

Time

Time is one aspect of the way place is formed by the game space. Time in video games does not correspond to physical clock time. Rather, it is a manifestation of spatial conditions that are visible as the player spends physical-clock time unlocking areas of the map through play, which progresses at its own rate, often visible through in-game day and night cycles. Temporality in

game space is a manifestation of the space itself, and is used to activate the game space. Distance, or a spatial component of video game temporality, and death, which is embodied, combine to show that multiple, simultaneous temporalities exist within the inbetween space created by the video game and the physical world, creating a hybrid subjectivity as the player or observer exists in both game space and physical space simultaneously.

Temporality affects the ability of a game space to be a place. The temporal component of place manifests as designer intentionality, which unfolds the game space as a sequence, and the sense of community that the designers often seek to elicit from that unfolding. Intentionality suggests that the game designers lead the player or observer through the game space in a specific order, with or without some degree of variation to that order. This is done through things like main quests, and side quests. As the player completes the sequence of events, they are delving deeper into the space of the game. Community, which is distinct from place, also develops as the player becomes more invested in the world of the video game. Community is a temporal condition, relying on the player's sense of the physical world communities to which they perceive as belonging, which is imbued with distinct elements of nostalgia. Therefore, time modifies place in the video game space by linking intent to the abstract notion of community in a way not found in the physical world.

The categories of intentionality and community come from Heidegger's discussion of raum and locale. Raum, or boundary, is that from which space unfolds, like a horizon, rather than the typical understanding of a boundary as that which encloses, like a fence. Raum as a distinct outward-flowing connotation. Locale is what draws people inward--it is conflated with place. An example is a bridge, which brings people toward a certain point to cross a body of water. The

bridge is a place, which people maintain and care for. Designer intent is serving the same function as a locale, as the way the space of the game is experienced is highly crafted and mediated, cultivated by the designers. It draws the player or observer inward. Community challenges Heidegger's conflation of locale with place. In game space, place is not a geographic location, but is a linkage between experiences. Time is what brings these two categories together.

Intentionality

The way that space generates temporal and material conditions such as images, distances, the way the avatar dies or requires food to survive, the weather patterns, interactions with NPC's, and the use of objects in video games, are all mediated by a team of designers. Two things are at odds in the game space--the perceived choice that we have as a player, versus the fact that these are highly mediated space of control and authorial agency. While the player or observer approaches the game with agency, or the ability to intervene in the world of the game space by playing in it, the designers that make the game have a great deal of agency in determining how the elements that make up the game space, discussed thus far, will, and when, present themselves. Video game design is a form of authorship that should be approached through the framework of Foucault's author function, which suggests that the author is created by the experience of the audience.[232] Foucault does not deny the presence of the author, suggesting that the authorial subject is bound to the object that they produce. This approach does not flatten the complexities of authorship, but gives primary agency to the player of the game. Foucault says that the author function does not refer to one specific person, but rather to several "positions that

[232] William Huber, "The Foundations of Video Game Authorship," (PhD diss., University of California, San Diego, 2013): 3-4.

can be occupied by different classes of individuals."[233] Not only does this lens emphasize the experience of the game space, but underscores the multiple possible subjectivities that can form through the experience. The game itself produces meaning by making references outside of the game world, the experiences of which are then interpreted by the audience, or in this case, the player or observer.[234]

The author function recognizes the control that the designers have over the creation of the space, and the way time and materiality function within it, but the player of the game retains the agency to experience the game space as a place. The successfulness of the designer in convincing or persuading a player that they have transgressed the boundary between the physical world and the place of the game world directly affects the player's ability to be a subject with volition in the game, experiencing it as a place, rather than becoming an object encountering other digital objects. This is critical in the formation of the subject-object hybrid that is formed by the simultaneous encounter of the video game world and the physical world in the inbetween space. The playing or observing subject retains subjecthood, and is not reduced to being an avatar made up of pixels on the screen. Player subjecthood depends on how convincingly the place of the game world has been created by the designers, or how smoothly the elements of time and materiality have been blended. The playing or observing subject is bound to the designer agents.

Intentionality manifests in the temporal sequencing that is established by the game space. As previously discussed, games often limit the areas that a player can access until certain achievements have been unlocked. For example, in *Horizon*, Aloy is not free to leave her home tribe's geographic area until she has mastered certain skills, meaning the player must learn the

[233] Michel Foucault, "What Is An Author?" in *Language, Counter-Memory, Practice,* trans. Donald F. Bouchard and Sherry Simon, (Ithaca: Cornell University Press, 1977), 113.
[234] Foucault, "What," 111-113.

mechanics of elements like the rules of game play and combat, and uncover critical narrative components, before they can advance further into the game world. Put another way, the player must experience pertinent game aspects in an order determined and controlled by the designers before they can continue. However, it is the player experience of these sequences that Foucault says forms subjectivity. Despite designer mediation, it is that way that the player understands this sequence as they experience the world that in part makes up the game as a place. The player is simultaneously co-authoring the space, forming multiple possible subjectivities based on their own experiences and what they bring to the game as individuals. The player or observer is also forming impressions, through the mechanism of time, of how that place exists. Just as distance and death demonstrate that time is an activator for video game space, time is an activator for place. Space sets the conditions from which time emerges, the manifestation of which is mediated by designer agents, but the player's experience of it is activated by temporal conditions that in turn, in part, form place.

Community

Part of what is compelling about video games is the way designer's attempt to pull the player or observer into racial, religious, and factional conflicts as part of the narrative drama of gameplay. This is often enacted within the space itself. In *Witcher 3*, the player can see dead bodies casually laying in creeks as they use the avatar to travel through the war torn area of White Orchard. The avatar, Geralt, is from a group of outcasts called Witchers. The area of Kaer Morhen where they live and train is a secluded, slightly dilapidated castle, reflecting the juxtaposition of their extraordinary power with their status as second class citizens.[235] Video games are often

[235] *The Witcher 3: The Wild Hunt*, Video Game, Developed by CD Projekt Red, (CD Projekt: 2015).

allegorical, speaking in broad strokes to issues of community and exclusion from those communities.[236] Community is a concept central to gameplay, closely linked to the spatial-temporal structure of the game, that heavily influences the material manifestations of how the concept of community is portrayed to the player or observer.

Community falls into the category of time because it is useful to consider it in terms of a process of nostalgia about the past versus projections of where the community should go in the future. Doreen Massey writes in "Places and Their Pasts," that places are social, rather than geographic, which links them to community through the idea that communities are groups who share a geographic area or a common interest. They are also temporal, linked to memory and nostalgia that varies based on whose memory it is, and the power structures that affect those groups.[237] Community can be seen as manifesting in video game space in three primary ways: first, based on interactions with NPCs, secondly, on the visual experience of the community, and finally, as a combination of interactions and visual cues.

Community is not the same thing as place itself. While place is the combined effect of temporal and material conditions in the game, community speaks to one way that temporality forms place. As the player experiences the game, they begin to be a part of the types of imagined communities depicted in the game. In a video game with an immersive ecology, community is something that is produced by space through temporal experience. Community is a constituent factor in the game's ability to be a place. Understanding community relative to place is one way to acknowledge that designers set the stage for issues of community to be enacted, but that implies greater importance for community in the creation of multiple, simultaneous subjectivities

[236] See Vinicius Carvalho's discussion of *Mass Effect* in "Leaving Earth, Preserving History: Uses of the Future in the Mass Effect Series," in *Games and Culture* 10, no.2, (2015): 127-147.
[237] Doreen Massey, "Places and Their Pasts," in *History Workshop Journal,* no. 39, (1995): 182-192.

than to reduce community in the game space to a constructed, simulated social milieu. In this context, the term community also recognizes that there is a spatial element to community that is being altered by digital spaces like video games. This does not refer to the larger community of physical gamers, linked by the fact that they have all engaged with the same game. Rather, community in the context of place refers to the way the physical player imagines themselves as a part of the community within the space of the game itself, and how that works to create a sense of geographic place, even in the absence of any physical geography. The player makes the game a community through their own interpretation of the game world, and how they take that experience with them into the physical world. Just as there is not one player subjectivity, there is not one experience of an in-game community.

Often, the term game "community" applies to massive multiplayer online games (MMO's), which involve simultaneous play within the same video game space, like *EVE Online*, *World of Warcraft*, or *EverQuest*.[238] These games include immersive ecologies, though they are not the focus of this study precisely because of the social, multiplayer aspect that is central to the game--players are forced to interact socially to achieve strategic goals. For the purposes of this discussion of game community with immersive ecologies, and the way that affects the individual, playing subject, community within the game can be thought of in terms of how the player interacts with NPCs, how the player approaches the game space from within their own preconceived frame, with their own sense of physical world-communities to which they think of as belonging, and how they take away a modified sense of community from their experience of

[238] For a discussion of "community" within the context of the game *EverQuest*, see Greg Lastowka, "Planes of Power: *EverQuest* as Text, Game, and Community," in *Game Studies* 9, no. 1, (2009). *Eve Online*, Video Game, Developed by CCP Games, (Simon & Schuster, Atari: 2008). *World of Warcraft*, Video Game, Developed by Blizzard Entertainment, (Blizzard Entertainment: 2004).*EverQuest*, Video Game, Developed by Verant Interactive, 989 Studios, (Sony Online Entertainment: 1999).

the video game's portrayal of community.

The previous discussion of space underscored the feedback loop created by the outward and inward function of Heidegger's concepts of raum and locale. Raum is a boundary from which space unfolds, and locale is a place, which draws people inward. It is easy to read locale, or place, as synonymous with community in Heidegger, as he emphasizes the way people use and cultivate the land and buildings within that area. Although place and community are not the same in a video game world, what is further noteworthy about the concept of locale is that Heidegger discusses that there is a transcendental aspect to the idea of locale. This means that for Heidegger, being in a place is a mental exercise--thinking of a place is the same as physically being at that place. Place, and community in this case, exist as physical geographies, but being there does not depend on being physically present at that location. Heidegger's suggestion is interesting in the context of community building in game space--not because it is an equivalent to a community or even being at that locale, or place, but because it suggests one of the ways in which the boundary between the game space and physical space is transgressed, specifically as it applies to community. Raum, or a boundary, has an outward function for Heidegger. It is that from which possibility emerges. A locale has an inward function, a bringing together, of, in this sense, community, which he defines in terms of regional commonality, history, and shared language.[239] Being at a locale can only be transcendental if we think about it in terms of raum, or the outward function of a boundary--the way the boundary of the game space dissolves into the physical space. The blending of these two functions, the locale of the game as it draws the player or observer in, combined with the outwardness of the raum, as the game space bleeds into the

[239] Martin Heidegger, "Building Dwelling Thinking." *Basic Writings From Being and Time (1927) to the Task of Thinking (1964)*. ed. David Farrell Krell. (New York: Harper & Row, 1977).

physical world, is how the player or observer might begin to think of themselves within a shared community of the game space. Raum and locale are not independent functions. In the game space, locale exists within the context of raum--the boundaries of the game from which the space flows create the conditions from which locale emerges and can be experienced as such.

Sharing of traits, interests, or geography is a common, though reductive, way to consider communities that can be problematized in the context of video game space. In her discussion of place, Massey discusses the blending of different social groups as a constantly shifting series of relations. Critically, these shifts are a search for coherence, for commonality, that occur through time. The present is characterized by a longing for the past and tradition in order to project a vision for the place's future, though whose memory of what that past was will vary.[240] Video games are only nostalgic in situations that recall a bygone era of gaming itself, which is not necessarily the focus of an immersive ecology. Recent forms of platformer games, like *Gris*, reference earlier, simpler forms of two dimensional gaming.[241] This does not speak to issues of place or community. Nor do historical portrayals of places and communities. The neo-medieval setting of a game like Witcher is not expressing nostalgia, but rather provides a backdrop for more current expressions, if overly simplified, issues of community, like persecution, inclusion, and exclusion. The places and communities formed in the game are their own, yet like a physical community, owe a debt to a larger system of connectedness that precedes it in order to make meaning.

The first form of community development that games express is through dialogue interactions. *BioShock* is an excellent example of a game that is aware of issues of community.

[240] Massey, "Places," 188.
[241] *Gris*, Video Game, Developed by Nomada Studio, (Devolver Digital: 2018).

As the player advances through the labyrinthine, underwater city of Rapture, dialogue is triggered from two seemingly opposing NPCs--Atlas, the avatar and player's guide through the city, and the city's founder and game antagonist, Andrew Ryan. These narrative dialogues reveal the history and pathos of the city, which is dilapidated and dangerous, though still strikingly beautiful. This juxtaposition is rhetorical commentary on issues of place, as well as community itself. The game is designed as an objectivist utopia--Andrew Ryan's is a rough anagram for Ayn Rand, and his dialogue sequences speak to this, as his voice booms over an intercom statements like:

> I am Andrew Ryan, and I'm here to ask you a question. Is a man not entitled to the sweat of his brow? 'No!' says the man in Washington, 'It belongs to the poor.' 'No!' says the man in the Vatican, 'It belongs to God.' 'No!' says the man in Moscow, 'It belongs to everyone.' I rejected those answers; instead, I chose something different. I chose the impossible. I chose... Rapture, a city where the artist would not fear the censor, where the scientist would not be bound by petty morality, Where the great would not be constrained by the small! And with the sweat of your brow, Rapture can become your city as well.[242]

Place, in this case, the city of Rapture, was founded as an intellectual and artistic utopia. Different communities with different values emerged from this group, and the city fell into ruin, the dangerous state in which the player and avatar first encounters it. The profoundly impactful game play that results is an example of what Massey discusses. It is a critique of the notion that a place is formed by a type of nostalgia that serves as a model for the future--*BioShock* does not emphasize nostalgia specifically, but Rapture's downfall results from the assumption that a city

[242] *BioShock*, Video Game, Developed by 2K Boston, Directed by Ken Levine, (2K Games: 2007).

or community can thrive because everyone there is expected to share Ryan's values. More broadly, *BioShock's* compelling style owes a debt to the first person shooter (FPS) style of game that preceded it. *BioShock* took the simple format of a traditional FPS, which is not in itself an immersive ecology, and created a complex world--the place itself, the city of Rapture, critiques the issues of community that are at stake in video game space, which is to say, the assumption that like-mindedness is enough to form a common bond. As previously discussed, being in the world of *BioShock* depends largely on the player's discovery of, and interaction with, objects, like weapons, but the way community unfolds within that context comes from dialogue.

Dialogue is often a major part of game play. It is an attempt to immerse the player in the game space through forced interactions with NPC's. *Witcher 3: Wild Hunt* has particularly protracted dialogue sequences. The game tries to force the player to be in the space through these lengthy interactions, by drawing them into the lore of the game, by presenting them with the perception of having choice as to how the avatar may respond, and by instigating quests that take the player further into the game world. A key feature is the perceived choice that these sequences present. Frequently, throughout the course of a single conversation, a wheel will appear at the bottom of the screen, displaying several possible options that the player may select with which the avatar, Geralt, will respond. Each response will elicit a different reaction from the NPC, and is likely to affect the narrative tree of the game play as a result. Responding in a particular way in a dialogue sequence, usually when it comes down to accepting a quest and on what terms, could potentially have ripple effects for the rest of gameplay. Yet this particular dialogic mode of being in the world through interactions with NPC's usually, as is the case in *Witcher*, feels trite because the visuals in a hyperreal world like *Witcher* are much more compelling than dialogue. The

rendering of human figures does not yet rival the realism of buildings, landscapes, and atmospheres. Much of dialogue success depends on the quality of the writing and voice actors. In *Witcher*, as in many games, because these dialogue interactions are integral to quests as well as to revealing elements of the game world's history and lore, they should not be skipped.

The dialogue of *Witcher* is staged in a way that underscores the avatar's difference and exceptionalism from the rest of the NPC's mediated, perceived communities. In this case, the in-game communities are linked by no more than what they have in common, while the Witcher, Geralt, is clearly marked as outside, as "other." It speaks more to narrative themes than to the ability of the game space to form community, or how the temporality of community affects the game's ability to be a place.

Different types of interactions create a sense of community in varied ways, and thus to different degrees. While *Witcher* uses dialogue to instigate quests through interactions with NPC's in the game world, *Fable II* defines itself in terms of its emotional and moral interactions. [243] Being a part of the world of *Fable* rests on the way interactions with NPC's create a sense of belonging in a community. The interactions themselves are far less trite than *Witcher's*, partially because *Fable* takes itself less seriously. While the graphics are largely hyperreal, the game atmosphere elicits a sense of magic though things like the slightly cartoonish stylizing of the characters, as well as visual cues like the glowing breadcrumb trail used for navigation. Interactions in *Fable* take on two primary modes. The first are morality based interactions, where a dialogue sequence will result in the appearance of a response wheel, much like *Witcher*, from which the player selects a response. Where it differs from *Witcher* is that in *Fable*, the choices are

[243] *Fable II*, Video Game, Developed by Lionhead Studios, (Microsoft Game Studios: 2008).

presented as a moral binary--one option is clearly the heroic choice, and the other is malevolent. Over the course of the game, the cumulative effect of the choices will manifest visually on the avatar's body, which is referred to as the character's "alignment." If the player has selected primarily morally good responses, then the avatar will begin to glow, and NPC's will react with awe and adoration as the avatar passes by. If the choices have been predominantly reprehensible, then the player will become scarred and appear menacing, and NPC's will run and cower as the avatar passes. Alignment can be affected by these obvious, binary choices, but can also be affected by things as mundane as the foods the player chooses to have the avatar eat.

The second mode of interaction is to interact with an NPC without dialogue, but rather through performing actions, which results in the NPC experiencing a range of emotions, like admiration, love, or fear. The player does this by engaging the NPC, at which point a wheel of possible actions will appear [Figure 6.3]. These range from things like singing and blowing kisses, to farting--if the avatar farts too much, he or she will defecate in their pants and the NPC's will laugh. While human-centric interactions are the cornerstone of being in this game, and how those interactions with others impacts the world around the avatar, *Fable* also includes animal interactions. A dog is the avatar's constant companion throughout the game. The dog is reactionary; the player cannot control the dog, but if the player has the avatar engage in combat, the dog will come to the avatar's aid, attacking the enemy. If the player directs the avatar to do something like fart or burp for too long, the dog will bury its nose.

The result is that the player is drawn into the perceived community of the game within the construct of this highly mediated, moral binary. The player may choose to be morally good or morally bad. The avatar then exists either within the community, accepted and praised by NPC's,

as the player navigates she or he through the world, or shunned by the community, with NPC's cowering in fear as the avatar passes by.

Fable II seeks to underscore affect and community with the expression wheel and "alignment" menus. Like the more traditional dialogue wheel, these menus give the player the perception of choice as to how they respond to different situations. The player or observer is within the world of *Fable* through emotional encounters and a sense of responsibility for their actions. *Fable* is unique because of the central role emotions play. The expression wheel is a spectrum of good to evil and a sliding scale in between. Once the player has the avatar perform an emotive action, textual interfaces pop up all around the people the avatar is interacting with so the player knows their emotional response--symbols of hearts appear floating over NPC's heads if the action has made them attracted to the avatar, with a + or - sign along side a number according to how much they like or dislike what the player has directed the avatar to do [Figure 6.4]. Notably, at the end of the game, regardless of the avatar's alignment and whether the player's actions have been good or bad throughout the game, there are still only three possible endings that the player may choose from. Many games try to have more and more possible outcomes as the technology gets more advanced, but ultimately the choice is just a matter of perception. Community in the game is thus limited--the player has little to no control as to whether the avatar seeks to be within or act from outside the community of NPCs, even when the game, like *Witcher*, is meant to underscore choice and difference.

Figure 6.3. Action wheel in *Fable II*.[244]

Figure 6.4. Emotional responses from NPC's in *Fable II*.[245]

Many games with immersive ecologies, including *Witcher* and *Fable,* have in common the degree of perceived choice that they try to elicit from the player or observer. Both games find

[244] MrBlockzGaming, "Fable 2 Full Walkthrough No Commentary Gameplay Part 1 Longplay (Xbox One S)," YouTube Video, March 21, 2019, https://www.youtube.com/watch?v=eZjSd8RxQCU.
[245] MrBlockzGaming "Fable 2."

it desirable to suggest that the player has volition in their interactions with NPCs, which then affects the scope of the game, whether that manifests as consequences later in a narrative tree, as in *Witcher*, or as visible alterations to the avatar's body as an expression of their alignment, as in *Fable*. In both cases, the player's avatar is not actually interacting with other physical humans or people playing the game, but rather with computer controlled characters that have been designed by the game authors to serve a specific function. Even if the choices present on the dialogue or interaction wheels seem abundant and varied, they are all predetermined variables with predictable outcomes. In the example of the dog that is the hero's companion in *Fable*, the player's avatar first encounters the dog being harassed and beaten by a group of kids early in the game. The player has a choice as to the way in which they intervene to stop the harassment of the bullies, however, the player does not have a choice as to whether the dog will follow them through the game. If the player tries to have the avatar lose the dog, it will always return. It is impossible for the outcome of the interaction with the bullies not to result in the dog becoming the avatar, and thus the player's companion--so the player's choice of response to the situation does nothing but contribute to the avatar's alignment--the player actually has little choice at all. In this way, community building in terms of interactions is disproportionately affected by the game's designers.

The second way that community is formed as it relates to place in the game space is through the visual experience of the game world. In his discussion of the formation of nationalism, Benedict Anderson states in *Imagined Communities: Reflections on the Origin and Spread of Nationalism,* that, "[Community] is imagined because the members of even the smallest nation will never know most of their fellow-members, meet them, or even hear of them,

yet in the mind of each lives the image of their communion."[246] The emphasis Anderson places on image is notable. All communities are imagined, and distinguish themselves by the style in which they are imagined.[247] Anderson suggests that community is formed as people recognize themselves within images, selectively choosing which images represent them. This definition is also noteworthy within the context of authorial intent and mediation because in our digital age, including media like video games, we do have a sense of the people that make up our perceived community, through things like social media and online interactions. In this context, the perception we have of those people is a highly crafted, mediated image of self-subjectivity.

For this reason, the visual cues that also contribute to a larger sense of community by signifying what is important are almost more significant in developing a sense of community than NPC interactions. One of many examples from a variety of games is the way that *Fable* uses a rage of visual cues to foster interpersonal interactions within the game. One of these are symbols that float above the NPC's heads that communicate to the player what that NPC is feeling toward the avatar, and thus the player themselves. For example, if the avatar blows kisses at an NPC and they are programmed by the designers to like it, hearts will begin to float above their heads, like bubbles, proportionate to the degree to which they are receptive to those kisses. Another visual cue is different colored auras that color code the types of interactions the avatar can have with various NPCs, including animals. Enemies, predictably, glow red. A purple aura signals someone the avatar can talk to. Green means that that person is part of the player's current quest, and so on [Figure 6.5]. In *Fable II*, the overall lighting effects add to the fantastical, magical feeling of the spaces, but also help direct attention. For example, when

[246] Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism,* (Brooklyn: Verso, 1983), 6.
[247] Anderson, *Imagined,* 6.

talking to the primary narrator character, Teresa, at the very beginning of the game, there is a general glow around crowds of people as the avatar stands among them, which again emphasizes the importance of the human element to this game. The lighting shifts so that a brighter spot appears around Teresa, signifying her importance. It visually pulls the player or observer's attention to her.

Figure 6.5 NPC's in *Fable II* glow with different colored auras.[248]

In most situations, the dialogue and the visual cues work together, which is the third form of community building in game space. The sense of community, whether based on interactions, visual stimuli, or a combination of both, is simultaneously familiar and unlike experiences from the physical world. We have to suspend our expectations of what a community is from the physical world, and transgress the boundary between worlds, accepting the way that time, materiality, and thus place will manifest in game space. For example, the communities of *Horizon* are familiar tropes, but also very different from the physical world. Community is

[248] MrBlockzGaming, "Fable 2."

formed in broad strokes in *Horizon*.The avatar, Aloy, is from a matriarchal, highly ritualized tribe, or community, called the Nora. They reject anyone who is motherless, like Aloy, who is an outcast that no one from the tribe is allowed to speak to or interact with. The visual styling of the Nora area is a palette of snowy whites and blues, washed in pale pink sunrises, surrounded by outlying, bucolic grasslands. A contrast to this is the Carja tribe, who worships a sun-king, is more technically advanced, and whose home area is composed of a palate of desert reds and oranges. Dialogue sequences with members of each tribe underscore their differences as distinct, opposing worldviews. The dialogue and the color choices are opposite one another [Figure 6.6]. Each community is different, though familiar because of their narrative and visual cues, without directly referencing any cultures from the physical world, playing off of cultural differences and the look and feel of different geographic regions.

Most video games with immersive ecologies depict reductive, generalized versions of community. Despite this, the value in recognizing the ability of a game space to be its own form of community relative to temporal conditions and place making is because of the way in which this affects the playing subject's inbetween subjectivity, as they occupy the inbetween state between video game world and physical world. The player approaches the game from a particular vantage point within a physical community that forms part of the feedback loop within the communities projected by the game space. Video game community, despite its simplified versions of the complexity of physical world communities, present an opportunity for players to engage with taking on identities within those communities, or outside of them, that they might not otherwise experience. More importantly, awareness of the limits of video game community, part of which is the limitations imposed on the allowed interactions with NPCs by the designers

of the game gives the player or observer a chance to be analytical and reflective about the nature of community as they move through the physical world, having experienced the space of the game.[249]

Thus far, the discussion of subjectivity has been focused on the individual player or observer. In the context of place making and community, this must expand to include not only the designers as agents who mediate the experience, but the collective "we" that is formed by the player and avatar working together. The most obvious collective subjectivity is the interplay between designer as mediator and the player as a co-author, as Foucault suggests in his discussion of the author function. It is the player's interpretation of the game that is most important. The players or observers of the game co-author the space as the video game space and physical space create a hybrid-subject. Inherent in this idea is that there is a multiplicity of outcomes and experiences that result in unique, individualized player-subjects, even though the game space is highly mediated. While the inward quality of Heidegger's locale serves to demonstrate how community can exist in game space seen through the context of the outward, expansive function of raum, Hediegger's understanding of community has limitations in that his ontology does not allow for the formation of multiple subjectivities. He refers to destiny, or the shared fate of an entire community.[250] There is no room for difference to emerge in Heidegger's model.

[249] For a discussion of subjectivity within a community as a process of production and consumption, rather than of shared identity, see Miranda Joseph, *Against the Romance of Community, (*Minneapolis: University of Minnesota Press, 2002). Joseph provides insights into the way communities perpetuate social hierarchies that have inspired the thinking behind my discussion of collective subjectivity in video game communities.
[250] Heidegger, "Building."

Figure 6.6. The Nora tribe on the left, and the Carja on the right. Author's images.

The experience of community in game space is a negotiation between the collective representation of a community depicted by NPCs in the game, and the subjectivity that is formed by the player. There is an experiencing player, the player as a co-author with the designers, and the "we" that forms as the player and avatar become a subject-object hybrid. Each of these subjectivities is influenced by the larger systems from which they emerge--influenced by the imagined communities of which they participate, both within the game and from the physical world. Games like *Witcher* and *Horizon* very deliberately underscore the community aspect of game play, by placing the player-avatar outside of the primary group of NPC's in the game, situating the avatar, and thus the player, as "other," and somehow exceptional. The player is privileged, not just in their vantage point of the world, which will be discussed relative to menu interfaces, but in terms of how they approach that world from within the world itself, as the avatar and part of the narrative of the game.

Game spaces are choices about the organization of space within the context of specific cultural narratives that are privileged by the designers. They have real virtual cultural, social, and material implications, both as a part of the system of design and production from which they emerge, but also for the player as they co-create an experience of the game. The mechanism

behind this varied notion of the effect of game community on the player's subjectivity is the way in which the cultural materiality offered by video game worlds is based on models from physical life, even if the images presented are abstractions. They are more than visually persuasive simulations. Manuel DeLanda refers to this multiplicity of possibility in a digital context as real virtuality, meaning that these communities, as a part of the game spaces from which they emerge, are "immanent patterns of becoming."[251]

The concept of community manifests the way in which place is uniquely presented in video game space via interactions with NPC's and the visual cues that play off of the player or observer's sense of familiarity. *Journey* is a notable counterpoint to the examples of *BioShock*, *Witcher*, *Fable* and *Horizon* for two reasons.[252] First are the types of interactions available. For the most part, the solitude of the game is striking. Occasionally, the player's avatar encounters another avatar, which is not an NPC but is someone else in the physical world playing the game, linked to your game via the internet. You and the other players can help each other, but you can only communicate via musical chirps and by flying and spinning around. At the end of the game, a list will appear of all the other player's names whom your avatar encountered. This is the default mode, but it can be turned off, in which case you are alone for the entire game. Community means something entirely different when the player is alone, or interacting with other physical players rather than NPCs. Yet the degree of control is the same--we perceive that we have a choice to wander around the world of *Journey* and interact with the people we encounter or not, but the pathway is still predetermined. Community instead rests on the way in

[251] Manuel DeLanda, "Real Virtuality," in *Computational Design Thinking*, (West Sussex: John Wiley & Sons Ltd, 2011), 142-148.
[252] *Journey.* Video Game, Developed by Thatgamecompany, (Sony Computer Entertainment, Annapurna Interactive: 2012, 2015, 2019).

which we understand the history of the game space as we encounter it and it is revealed to us. What is radical about community in game space is that it does not assume continuity with physical communities or their temporalities. They are communities based on hybridity, making multiple, simultaneous references outside of the game world itself. These references start to form the material basis for the history of the game space to emerge--materiality being the other half of the equation that creates place in game space.

Materiality

Materiality combines with temporality to create place in video games. As previously discussed, materiality in a video game refers to the structural scaffolding that is formed by the space of the video game world. It is these structural elements, like textures and objects, that are what the player experiences as the game. Materiality lets the game come to life. It is how the player or observer understands themselves to be in a particular place and time as they engage with the video game space. Critically, the materiality of the game speaks to the inbetween state that the player, as a subject-object hybrid, occupies. It is within this inbetween state that the material aspects of place making in the game space are negotiated as part of the back and forth flow between digital and physical worlds.

The way histories develop in the game world, and the menu interfaces used by the player to interact with the game world, are two aspects of materiality that show how place is produced in part by material expressions. The in-game history presents itself to the player as part of the material scaffolding that constitutes the player's experience of the game world. History is one of

the actions performed by the game materiality that results, when combined with temporality, to create place. History is formed by the game's objects and interactions, rather than time itself, since time operates according to its own logics of synchronicity and diachrony than in the physical world. Menu interfaces are their own form of material expression that do not exist anywhere else. They mediate the experience of the game world, by operating strictly within the inbetween space, and underscore the privileged vantage point of the player within the game world. To a degree, menu interfaces demonstrate the limits of the video game's ability to be a place.

Creating History

When the player engages with a video game, they enter into a world that is already alive. It exists on servers regardless of whether the player is engaged with the space or not--a repository for the formation of the games past, both in terms of the fictional past constructed by the designers that makes up the gameplay experience, and the individualized player's experience and history of saves as they move through the world. Video games consist of a purely constructed history, but they make reference to things outside of themselves, and in that sense are a hybrid form of history. Often, game histories are revealed to the player through cutscenes, which are cinematic interludes within the game play, where the quality of the graphics often greatly improves and the player is a primarily passive observer. There are other ways in which the game history can be revealed, and it is these moments that suggest the way the player co-authors their experience of the game. Material encounters, like objects and ruins, in the space of the game help fill in the history of the place. These are interesting because the player has a comparatively great degree of latitude in how much they want to engage with them, and thus engage in the history of the game.

The historian Vinicius Carvalho adds critical texture and history to the experience of the game world. In "Leaving Earth, Preserving History: Uses of the Future in the *Mass Effect* Series," Carvalho reinvests historical specificity into the game world in a way that maps onto the physical world. Because Carvalho uses narrative as his primary evidence, this is a way of acknowledging the importance of the material, aesthetic, fictional components of game play that combine to convey the narrative to the player and to reinvest temporality. Using the specific example of *Mass Effect*, a futuristic science fiction space exploration game, Carvalho uses primarily the narrative and choices available to the player to convincingly argue that the game series is actually about our own Western historicity.[253] It is a hypothetical future that explores technological anxiety, class and race distinctions, struggles and oppression.[254]

There is a spectrum of material interaction that informs the game history, ranging from passive to active. An example of the low stakes, passive type of interaction is the found-journal, which is a common trope. In *Horizon*, the Focus is used to access digital journal-like objects as Aloy encounters them. Using the Focus, the journal is read aloud by the entrant, and Aloy is able to continue running around and exploring as the journal is read to her. It is a passive way to experience the game history that the player can choose to pick up and engage or not. The Focus is interesting because it is an in-game way to access the history of the place as someone outside of the game. Similarly, *BioShock* uses diaries, which the player encounters as taped audio recordings. When the player has the avatar pick up one of these, the entry is read aloud, as a banner appears at the bottom of the screen, including a label for the name of the entry and a picture of the NPC who is speaking [Figure 6.7]. The diary entry is added to the player's menu,

[253] *Mass Effect* [series], Video Game, Developed by BioWare, et. al., (Microsoft Game Studios: 2007, Electronic Arts: 2008).
[254] Carvalho, "Leaving."

and can be replayed at any time.

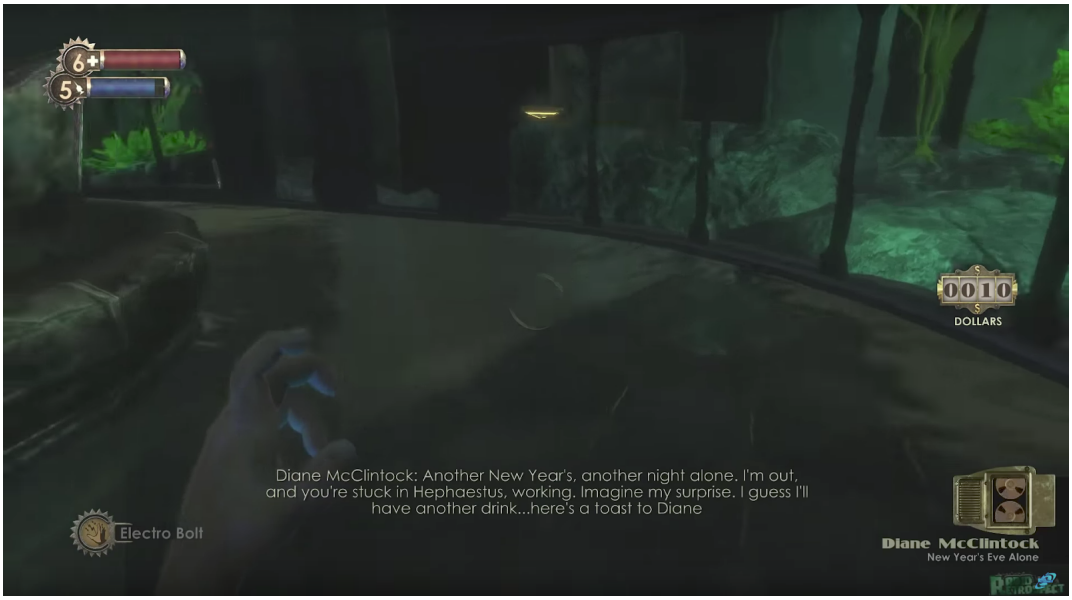

Figure 6.7. Diary in *BioShock*.[255]

Some games require active participation to reveal more than a cursory explanation of the game history. In *Witcher*, the player must actively seek out historical encounters. For example, the player can navigate the avatar to walk up to town bulletin boards that appear to have paper tacked onto them. The player can choose to zoom in on certain areas of the board, which will narrow the focus, moving from third person to first, so that a large, menu like version of the bulletin board takes over the screen. Once the player selects a paper, it will be stored in the player's menu, and then the player must navigate through the menu to call up the paper. The same thing happens with encounters with NPC's in *Witcher*. When the player's avatar comes across someone the game designers have distinguished as noteworthy, a text notification will appear on the screen that says that person has been added to the player's compendium. Then the player must go into their menu to look them up and read about them.

[255] RabidRetrospectGames, "BioShock Remastered Gameplay Walkthrough Full Game (1080p) - No Commentary," YouTube Video, Sept 16, 2016, https://www.youtube.com/watch?v=nFjMkFwB1ck.

In *Witcher*, as Geralt encounters new groups of people, the player learns about them through dialogue. With each new encounter, an additional part of the game's codex can be accessed—an encyclopedic reference containing written information about that person or social group's history. Part of the reward for exploring the world is to discover characters and their histories, connecting social groups to particular places and times within the world, adding to the texture and depth of play. By adding to the game history, themes are revealed, and thus by extension exploration of the world, in this case, is really about discovery of narrative themes.

These histories are predetermined by the game authors, but the degree to which the player interacts with them is how different experiences of community history manifest differently for different people. These in game histories are not synchronic. There is a temporal progression, often as the game history reveals narrative elements, as in *BioShock* or *Horizon*. Other circumstances require the player to take on agency in revealing the game history, like in *Wticher*, taking ownership of how involved in non-quest elements of the game world the player wants to be. The player is able to craft their own experience of the game's history, even if they are not the ones who write it or contribute to it.

Menu Interfaces, On Screen Texts, Labels

The menu interface of a game is a moment in game play where we see the limits of the ability of the game as a place. This is where place bumps up against the boundary between the game space and its ability to be a place, compared to the way we conceive of physical places. The menu interface is a moment of game play in which the boundary between the game world and the physical world is visible, as the player is drawn out of the space of the game world and into a space where they have control over how their game experience manifests. The menu interfaces

tell us things about how the player can use the remote to control the character and the cameras, but also provides a record of quests, access to weapons, the map, and provides an opportunity to access saved versions of the game play. There are a variety of ways this is executed, which is again, at the discretion of the game designers. These range from almost no menu at all, to deeply complex and detailed compendiums. The menu is a moment of possibility, where the game authors have given the player the tools necessary to be in the world and experience the space on their own terms.

The level of menu complexity needed to interface with the game space is not a direct correlate to the degree to which a game constitutes a place. The simplicity and elegance with which the player interfaces with *Journey* and *Gris* does not speak to their ability to be a place. Each presents temporal and material conditions, manifest through in-game interactions. The world itself communicates place, rather than requiring menu interactions. The lack of menu required to participate in the world of the game speaks to the degree of designer mediation. In these two game examples, both games are linear, literally in that they move the player toward a singular end point, and figuratively in that there is only one possible outcome available once that end point is reached.

Textual labels are a type of in-game menu interface that breaks with vision as the primary mode of spatializing the game world. The text labels appear on top of the visuals that compose the game space. They usually provide additional information about places, objects, or people being encountered in the course of game play. Some game menus will let the player turn text labels off, using a menu interface, but the default setting is for these types of labels to appear during game play. *BioShoc*k has an abundance of textual labels. When the player has the avatar

glance around a room, almost all of the objects are labeled with white text that pops out as separate from the world, meant specifically for the players and not the in-game character. Again, this speaks to the way the player is in the world of *BioShock* through object encounters. The limit of this is the way the designer appears obligated to walk the player through the world using textual notifications.

Alternately, the games with more complex menu interfaces tend to have a greater degree of perceived choice, like *Witcher*. In this way, the menu and textual interfaces speak to the obfuscated nature of choice versus authorial intent in the game space. The more freedom the game seeks to allow, the more complex the menus need to be in that world.

Menu interfaces speak more to the amount of latitude the designers have tried to build into the game world than it does to the ability of a game to be a place. The use of the Focus in *Horizon* as both an in-game play device as well as the means for the player to access the game's menu controls suggests this. This is a moment where the designers seem to recognize the limits of the menu, and try to compensate by hiding the way in which menus expose the boundary between the game and physical worlds. The Focus is an intentional recognition of this boundary in a way that tries not to limit the ability of the *Horizon* world to be a place.

The player is ontologically in the world of *Horizon* through the menus. The Focus mediates all encounters with NPC's, both in terms of the narrative but more importantly in the type of interactions the player's avatar can have with that person, and the resulting changes to the player's menu options, which are called up for the player via the Focus.

The Focus, unlike other menu interfaces, uses visual cues to maintain the spatiality of the menu itself within the game world. This visual element underscores the careful mediation

employed by the game's creative team that work together to create a complex and visually specific digital world. The visuals not only reinforce the main narrative points through things like use of color and navigational wayfinding points, but expand upon them in ways that place the player temporally and geographically. One of the best examples of this is the designer's use of architectural ruins. Much of the landscape is littered with the skeletons of skyscrapers, museums, and office buildings. As part of this digital mapping of seeing the world through the Focus technology, Aloy is able to overlay an image of some of the ruins that we as the player might recognize from our own time and geography. Mapping an image of what the building would have looked like to a twenty first century audience over the image of the ruin in Aloy's world happens regularly during game play, referencing museums and other building typologies familiar to a modern player, and architectural styles unique to particular geographic locations in the United States, giving the player both temporal and geographic context. This also happens with objects Aloy finds, like a square shaped object, clear to a modern audience to be a watch. The Focus allows her to view the object and instantly catalogue it, using an in-game text label to file it as an "ancient black bracelet," describing it textually and with a stylized image that is clearly a wristwatch. The world of game play has clear, obvious and intentional references to our present day world by including several recognizable features from our own time, as well as playing on our own possible anxieties as we are beginning to integrate artificially intelligent technologies into our lives.

The use of the Focus is a rhetorical moment where the designers are making their author function clear. By using the Focus to reveal certain visual cues, they are making their intent visible for the player to respond to. Within the context of the author function, the player then

responds to the designer's intent by inferring references from outside of the game's visual and narrative content and are interpreted by the player. This moment when the designer's acknowledge their own authorship is critical to see the limits of place making in video game space.

The Focus is a rejoinder to the post-phenomenological approach of understanding game space as made up of objects that are more than their intended use. Rather, it is a back and forth flow of recognition on the part of both designers and players as they fill in information about the game space. The Focus is a fantastic posthumanist moment, recognizing the way technology interfaces with our bodies. Hayles describes reflexivity as a means by which the subject is created. It is the way in which the thing that produced the system becomes part of the system being produced.[256] The game authors do not go so far as to speculate as to how this modifies Aloy or the player as subjects, but through the author function and a posthumanist lens we can understand how this lack of designer commentary leaves open the possibility for multiple possible subjectivities to emerge. Post-phenomenology totally decenters the human subject and places intentionally entirely in the realm of objects within the world, in that objects are more than their appearance or intended use.[257] This strips both the designer and player of agency. Post-phenomenology goes beyond the image to suggest that the player is having an embodied experience of the world. The use of the Focus is as much a commentary on the nature of menu interfaces and gameplay using Aloy's body as it is on the nature of video games themselves, and the way in which the experience of this technology reconfigures our own physical bodies.

---

[256] N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*, (The University of Chicago Press: Chicago, 1999).
[257] James Ash and Paul Simpson, "Geography and Post-Phenomenology," in *Progress in Human Geography* 40, no. 1 (2016): 48-49.

Place=Time+Materiality

While retaining subjecthood in game space is critical for approaching questions about the boundary between the physical and video game worlds, it is important to recognize that the subject is not a fully realized individual within the game world. The player assumes the character of an avatar, taking on an abstract "we" form of subjectivity as a subject-object hybrid. What makes this compelling is that the player identifies with the avatar and the world they inhabit in some way—the avatar, as Wharton describes, "signals the human act, conscious or unconscious, of recognizing, in a separate entity, something of one's own self."[258] In *Horizon*, while the player controls Aloy's movement, the player cannot force her to go places where the code does not allow—she cannot fly or climb a cliff face without the designer's intention. The player can choose her reaction from limited options in some scripted moments of the game, but cannot control her words or her temperament, or her physical characteristics beyond the armor she wears. Movement within the world is the primary way that the player is persuaded that they are a subject within the world, choosing whether to focus on the main narrative or on side quests. In *Witcher*, when Geralt reaches the edge of the game world as he walks along a path, the avatar is forced to turn around and says something to the effect of, "I have a feeling I'm forgetting something." It is not a matter of freedom, but of sequencing. Embodied movement within the world is limited by designer mediation. Seemingly arbitrary restraints are put in place by the designers to restrict the player within specific areas of the game at specific times. In the case of *Horizon*, Aloy cannot climb or jump any structure. There must be pre-established hand holds put

[258] Annabel Jane Wharton, *Architectural Agents: The Delusional, Abusive, Addictive Lives of Buildings,* (Minneapolis: University of Minnesota Press, 2015),183.

in place seemingly left there by other tribes people before her. Narrative blocks also prevent freedom of movement. If a narrative event needs to take place prior to travel to a certain area, the game forces the player to travel on foot in order to encounter the event, rather than "fast travel" by selecting points from the map and traveling across the world with the click of a button.

For Foucault, the author and the player co-create the space. Both roles need to have agency to influence the video game. Post-phenomenology suggests that the subject does not exist prior to experience, but rather comes into being through experience.[259] Because game worlds bleed into the physical world, the player retains subjecthood within the confines of the designer's mediation, crafting individualized experiences that go beyond designer intent as they affect the player's physical body, and thus their sense of being in a place. This acknowledges that both the designers and the players have intent and agency, but the emphasis is on the player as a subject with volition despite the limits and boundaries established by the designers.

The video game world is limited by technology, affecting the possibilities for the size of the worlds and the variation in the perceived amount of choice the player has to interact with NPCs, the environment, and affect endings and outcomes. This is further limited by the way designers try to focus our attention, even in exploration games like *Dear Esther* and *Red Dead*. That is why it is important to think about the space of games as a space of possibility mediated by the modalities and flows of time and materiality set by the designers. This establishes the rules for the game to be a place, and allows us to consider the ways that place is configured such that everyone involved retains some degree of agency.

[259] Ash and Simpson, "Geography," 49.

Conclusion

Space→Time+Materiality=Place

It means something different to be in video game space than it does to be in physical space. One is felt with the senses and embodied, while the other is accessed visually before all else, and experienced through an avatar. Yet the act of playing or observing these games shows that there is an undeniable overlap in the experience of each.

Space itself is reconfigured by video games with immersive ecologies, so that an inbetween ontological state exists in the interval between digital and physical worlds. Space in a video game with an immersive ecology can be defined generally as a field that, by virtue of its nature as a generator for temporal and material conditions, reconfigures the experiencing subject of the space as a subject-object hybrid. One possible implication of this is that the inbetween state creates a back and forth feedback loop that reconfigures the subjectivity of the person playing or observing the game. The subject--the player or observer--approaches the game with a set of lived, embodied preconceptions about the look and feel of what a video game is, what environments look like, and how objects should behave, that affects their experience of the game space. Similarly, the conditions set forth by the game space carry their own set of assumptions, behaviors, and rules, that impact the physical subjects ability to have agency within the game space. These two experiences exist simultaneously as one flow. Through this flow, the player or observer is reconfigured as a subject-object hybrid, retaining some degree of subjective agency,

but not fully able to express it as they act within the world of the game as a digital object, via an avatar surrogate. The conditions that make up this experience emerge from the game space itself, but it is the relationship between the video game world and the physical world that gives the experience meaning. Some of the conditions within the video game space that reconfigure the subject are their unique modalities of temporality, materiality, and together, the video game as a place. I have posited that video game space is performative, and this conclusion reflects key points of my argument to suggest that these modalities reconfigure the subject into a subject-object hybrid that is able to experience a range of subjectivities and temporalities in the inbetween state.

Space=Visuality+Gateways of Significance

Space itself becomes constitutive of the experiencing subject when space it is prioritized. There is a breakdown in the boundary between the digital world of the game and the physical world in which the player or observer sits. Heidegger presents a useful way of understanding this breakdown. In "Building, Dwelling, Thinking," he describes the concept of raum, or boundary, and locale, or place. Raum is not a boundary in the sense that it contains a space, the way we typically think of a boundary. Rather, he traces raum's etymological origins to the Greek meaning of the word, as something from which space expands, like a horizon. There is no center. Locale, on the other hand, is a place. He means this literally, as a physical location. Locale, created and cultivated by human caretakers, pulls people toward it. Raum is outward, and expanding, while locale is inward.[260] In video games, the space of the video game expands

[260] Martin Heidegger, "Building Dwelling Thinking." *Basic Writings From Being and Time (1927) to the Task of Thinking (1964)*. ed. David Farrell Krell. (New York: Harper & Row, 1977).

outward from the perceived boundary of the computer or television screen on which it is viewed, while at the same time, as some function as a locale that pulls the player or observer inward.

Manuel Castells is one theorist who understands space as generative of temporal and material conditions. He rightly points out that space and time are reconfigured in what he calls the space of flows. While he sees this as a negative, a crisis and loss of subjectivity, when it is understood through the idea that space functions as a generator, it becomes positive, and a place of possibility. Manuel DeLanda describes this, in the context of architectural algorithmic modeling, a phase space of possibility, meaning there are "immanent patterns of becoming."[261] He describes this as a series of loops, rather than a Cartesian grid, from which temporal and material conditions emerge.

The space of the game is accessed visually before anything else, and is entered as the player crosses junctures of significance throughout the game. Video games like *Dear Esther* speak to the way in which our primary understanding of the world that we are entering is, at first, visual.[262] The impact of the visual experience is undeniable, whether the world is composed of hyper-real images, that are meant to look as much like their physical-world counterparts as possible, or abstracted and visually imaginative. Regardless of stylistic choices, the visual impact of the renderings that make up the game space reconfigure our knowledge of space, like the camera obscura and cinema before it.[263] The visual experience marks the access to the game, but it is the fact that the player moves through the space that defines it as such.

Understanding the experience of the game space along a spectrum of subjectivity clarifies

[261] Manuel DeLanda, "Real Virtuality," in *Computational Design Thinking*, (West Sussex: John Wiley & Sons Ltd, 2011), 142-148.
[262] *Dear Esther*, Video Game, Developed by The Chinese Room, (The Chinese Room: 2008, 2012).
[263] Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century,* (Cambridge: MIT Press, 1992).

the way space functions in video games. Heidegger presents one mode of spatializing along this spectrum. He understands human beings as one component of a larger system of being within space--in "Building, Dwelling, Thinking," he refers to this as the four fold. In this essay, space exists entirely within the realm of human consciousness, as he describes the human's ability to think about being at a locale, or a place, as equivalent to being at that physical location. N. Katherine Hayles suggests that embodiment is critical to understanding how any technology is modifying our subjective experience. The physical, material body and the materiality of the virtual are a mutually constitutive pair, constantly being formed and reformed. For Hayles, the physical body is distinct from embodiment--embodiment emphasizes context, and is a product of the specifics of the space, time, materials, and place that it is a part--in this case, the video game. [264] When placed in conjunction with Heidegger, Hayles is reinvesting the embodied experience within the context of being at a location. Space is formative as a material reality--even in the context of video games, is one that affects our material reality.

Gateways are established in video games to mark junctures of significance. These can be significant skill level progressions, or junctures analogous to chapters in a narrative, but critical to the notion of space are those that mark areas of spatial significance. What makes the space more than just a series of rendered images perceived by a visual, physical player or observer's body, are these junctures. Load screens are an example of a gateway of significance, and is a place where the inbetween state of being in the game versus the physical world is visible as new space generates and loads. Load screens often occur once some achievement has been reached,

[264] N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*, (The University of Chicago Press: Chicago, 1999), and N. Katherine Hayles, "Embodied Virtuality: Or How to Put Bodies Back into the Picture," in *Immersed in Technology: Art and Virtual Environments*, ed. M.A. Moser and D. MacLeod, (Cambridge: MIT Press, 1996).

but they also occur disguised as travel. In *BioShock*, the player enters a bathysphere in order to travel long distances through the city of Rapture.[265] Instead of experiencing that travel, space and time compress--the game displays a load screen showing still images as a slideshow to the player while they wait on the new space to load. The player or observer is momentarily drawn out of the space of the game and into the now visible inbetween state as they take a break and wait.

Space itself produces a multiplicity of simultaneous subjectivities--subjects do not fill the space. Understanding the point of visual access into the game, combined with how space is suspended in moments like load screens and other gateways of significance, shows that a subject-object hybrid emerges within the inbetween space. The inbetween nature of this experience yields multiple possible subjectivities, in which the player or objserver is neither a fully formed subject in the digital game space or in the physical space of their living rooms as they interact with the game, nor are they reduced to digital objects bouncing around on a screen. The player's being within the physical world is reconfigured from the experience of the game, and the way that the space has been experienced begins to inform expectations for space in the physical world. The subject is no longer a distinct, experiencing "I," but is a multiplicity, either a multiple "you" formed by being a subject-object hybrid, or a "we," who comes away from the game having experienced it its own type of place. The subject and object are no longer discrete or distinct.

Time=Distance+Death

Time operates according to different logics than the physical world time with which we are familiar. In an immersive ecology, time refers to the rate at which time passes within the

[265] *BioShock*, Video Game, Developed by 2K Boston, Directed by Ken Levine, (2K Games: 2007).

game itself. In the physical world, time is governed in two primary ways. The first is by the biological realities of our bodies as we age and march toward our inevitable finitude. The other is by the units of the clock, which compartmentalize and rationalize the time of day as hours and minutes, but also mark history as the extension of those days, as they stretch into recordable years and their corresponding events. In video games, time, as a product of video game space, reconfigures this. There is no physical body to experience aging, and the game clock functions at a different rate, marking the passage of time, differently than its physical world counterpart. This function is visible in the way traveling distances in the game operate as space and time compress, and critically, by the way death in the game serves as a beginning, rather than an ending, activating temporality. Temporality acts as a multiplicity, so that the player or observer exists in multiple temporalities, both synchronic and diachronic time, simultaneously--the diachronic time of the physical clock, and the histories presented on the screen. These in game histories are one way that game time differs from physical clock time, in that they exist outside of physical historical events, and thus being to form synchronicity--multiple times existing at once experienced by the player simultaneously. Space as the generator for temporal conditions allows time to flow freely between the physical world and the digital video game world.

Distance across space requires that space be temporally compressed, which points to the way in which clock time operates in game space, both in terms of how long it takes to cross a distance, but also how rapidly day and night in the game elapse. A game like *Red Dead Redemption 2* uses hyper real visuals to situate the player in time and space--the nineteenth century American wild west.[266] The player cannot reasonable cross the entire geographic distance

[266] *Red Dead Redemption 2*, Video Game, Developed by Rockstar Games, (Rockstar Games: 2018).

represented in the game in the same amount of time that it would take in the physical world, so space is compressed, while the perception of a vast area is maintained through the use of maps, gradually shifting terrains, visual and atmospheric effects, like rain storms, and day and night cycles. The degree to which the ontology of the game rests on its ability to be hyper real also speaks to the way time is compressed as a function of space. Movement and images are inseparable, combining an embodied act with a mental one.

Maps in games with immersive ecologies suggest that the player or observer is occupying a vast world, as in the case of *Red Dead*, while the actual travel time to cross these distances is obfuscated. Game maps do not just situate the player in space, but suggest scale and give a sense of geography. The time it takes to cross a distance on the game map is an act already completed in the player's mind, part of what Steven Croker, an internet scholar, refers to as Bergons's proleptic time.[267] Time becomes the interval between events, the movement having already been completed in the player's mind as they anticipate the event. This is what is happening as space-time folds in order to fast travel across a game map, selecting predetermined points and respawning at the chosen destination. More indirectly, it is what happens as the player walks through the game world. Space and time compress so that the player can travel from point to point much more quickly than the same perceived geography could be crossed in the physical world.

Death in the video game is an embodied understanding of death without reducing the body to, what Bergson refers to as, a controlled machine or pure life force.[268] It is relational, in that we approach the game with an understanding of what it means to die, but it serves as a

[267] Stephen Crocker, *Bergson and the Metaphysics of Media*, (Houndmills: Palgrave Macmillan, 2013), 31.
[268] Crocker, *Bergson,* 127-128.

beginning, from which the player respawns and continues to play. The game death is relational in that it connects the physical body to the game body, or avatar. Because death is relational, for Bergson, time is the only true subjectivity, meaning that we are formed through time. Hayles and Heidegger offer additional points along this spectrum of subjectivity. Hayles understands subjectivity as flows between the enacted body and the physical body. Heidegger understands physical death itself as the final subjective experience.[269] It is what a being is always towards--in a proleptic sense, it is anticipation of the final event. While no one can experience this final event and understand it, the game death acts as a sort of surrogate, though it is admittedly not the same as experiencing a death in the physical world. However, when death in the video game world is understood as a temporal beginning--not an event, but a temporal activator--then video game death in the context of time becomes part of the formation of the subject as it expresses multiple simultaneous temporal experiences.

Materiality=Encounters+Navigation

Materiality in game space is what makes it come to life. This refers to both the way materials are presented as such, but also the way objects are used, and cultural histories develop in the game space. Materiality is the tectonic structure of the game space. It is more than just the visual look of the game materials, or the "visual persuasiveness" of the game, too often conflated with verisimilitude.[270] It is the multitude of possible forms the materials might have taken on, and the possible uses that players might find for them. The space produces it, establishing the rules

[269] Martin Heidegger, *Being and Time* (1927), trans. John Macquarrie & Edward Robinson, (New York: Harper, 1962).
[270] Annabel Jane Wharton, *Architectural Agents: The Delusional, Abusive, Addictive Lives of Buildings,* (Minneapolis: University of Minnesota Press, 2015), 154.

for interaction with the materials, but the materials serve to support the space by providing information about where and when the player or observer is. The materials are approached with a preconceived idea about how materials should behave, according to physical world experience, but they operate in game space according to the rules written by the designers, and used by the players. They are more than just temporal artifacts, but act within the same feedback loop as time, so that the physical world and video game world material experiences co-create subjectivity. Material as a tectonic spatial support is visible in two primary places within the game structure: as the player or observer encounters and uses material objects, and as the player navigates the game world as a tourist.

In most video games with immersive ecologies, there are moments where the materiality of the game space breaks down and becomes visible for the graphic bitmapping of colors onto flat geometries that it is. This could be when the camera cuts through the landscape, following the avatar, at an angle that the designers did not intend, and it appears as though the avatar is slicing right through the grasses and bushes, rather than the grasses moving aside as might be expected from physical world experiences. It might be glitches that are encountered during game play--seeing horses floating in space, for example. These breakdowns suggest something more important about material encounters. It is that the player approaches the game with a set of expectations based on physical experiences, but that those expectations are modified, adapted, and accepted based on the way materiality is presented in the game. Visual cues guide the player and observer as to the usefulness of objects--that a wrench can be used in *BioShock* to fight off reapers, or that a sparkling music box in *Fable* has magical significance--and the use of those

objects that extend beyond what is accepted in the physical world become naturalized.[271]

Navigating the video game world as a tourist demonstrates the ability of material encounters to create a world rich with its own set of cultural histories by referencing some elements of recognizable physical material culture. Linking video game histories with existing cultural histories produce a new form of material history through the mutually constitutive feedback loop. Object interactions do more than facilitate violent combat--they create the conditions for experiencing the game. Because space generates materiality, distance must be understood as a flow between game space and physical space expressed temporally, rather than as a measurable distance or as points between narratives. This is best seen as the player uses the avatar to travel the world in between quests and in between moments of violent action, roaming around the world, viewing it from different vantage points. It is the navigational devices as the player becomes a tourist that point to the rules established for how materials can behave in the space. Wayfinding devices, like the compass and mini map in games like *Witcher 3: The Wild Hunt*, and *Horizon: Zero Dawn*, are themselves a kind of material encounter, as they interface between the player's experience of the world and their ability to orient themselves in the game world.[272]

It is the ability to interface by navigating the space and the use of objects that allows the player to decide how to approach the world of the game. This interfacing is one place where the boundary of the inbetween space is visible. While agency is limited by the highly mediated nature of video game space, the player has the subjective ability to decide how to approach material encounters in the game, including the ability to adopt the mantel of a tourist, surveying

[271] *Fable II*, Video Game, Developed by Lionhead Studios, (Microsoft Game Studios: 2008).
[272] *The Witcher 3: The Wild Hunt*, Video Game, Developed by CD Projekt Red, (CD Projekt: 2015).

landscapes, negotiating the spatial experience presented as images on the screen with physical experiences and nostalgia. It is this approach that constitutes the myriad of possible material encounters allowed by the flow between the video game world and the physical world.

Place=Time+Materiality

Space generates the temporal and material conditions that support it, which are varied and flow through the inbetween ontological state--when temporality and materiality combine in this context, they show the way in which the game space becomes a place. As the raum, or boundary, of the video game space and physical world expands outward and into one another, it is the ability of the game space to create a locale, or place, that draws the player or observer inward. While Heidegger conflates place and locale through his descriptions of cultivation of the land, there is an important distinction between place and community in video games. Place in video games with immersive ecologies are not geographic, but are a logic of experience. It is as the player or observer interfaces with the game through menus that the ability and extend to which a game space can be a place is visible. This demonstrates that there is a fine line between designer mediation of the experience of the game world, and how the player retains the ability to approach the game as a subject with volition. The menu is the extent to which the player has control, and co-authors the space of the game as they personalize it. The creation of place in the game space is dependent on the privileged vantage point of the player. The player can only be in the game by being outside of it. Place in the game can only be to the extent that the subject is mutually formed by the back and forth flow of time and materiality in the inbetween ontological state between worlds.

Community in game space is fundamentally temporal. Community is an attempt by the designers to draw the player into the texture of the game space, through things like factional differences between NPC groups within the game world. One of the ways this happens is through the use of dialogue with NPC's. A game like *Witcher 3* uses protracted dialogue sequences, in which a response wheel will appear from which the player may choose how to interact with the NPC from a set of predetermined options. These dialogues reveal details about the NPC's lives, the larger social groups of which they are a part, and serve to draw the player, via the avatar, further into the world of the Witcher as the conversation leads to new quests. This is a common way of engaging the player in a community. In *Fable II*, this is done through binary morality choices--the response wheel usually presents a clearly "heroic" response, and one that is malevolent towards the people of the community. *Fable* takes this even further by incorporating emotions and "alignment" a central feature of the game. The power of the game community is that it requires negotiation between the collective representation of a community depicted by NPC's in the game, and the subjectivity that this experience reconfigures in the player. There is an experiencing player, the player as a co-author with the designers, and the "we" that forms as the player and avatar become a subject-object hybrid, all affected in different ways by the broad, problematic concept of "community," and the implications often explored in game space through themes of inclusion and exclusion.

Interfacing with the game space is a material condition, part of the scaffolding that supports the game space. Being in the game world requires that the player have insights and advantages that the NPC's do not. A particularly elegant example of this is the use of the Focus

as a menu interface that is integral to both the narrative and the game play of *Horizon*.[273] The Focus is how Aloy taps into her, or really, the player's privileged vantage point in order to see things like the paths that combatants will take in order to avoid or strategically fight them, and to discover things about her world with insights that NPC's cannot access. Conventinely, it is also how the player accesses all the necessary controls for the game, like the map. From this point of privilege, the designers have given the player the ability to experience the space on their own terms.

Place is a combination of the multiple temporalities and material possibilities that are manifest within the video game space. The medium of video games requires that space be of primary concern, and understood as the generator for all other conditions. When we understand space as critically formative, it allows us to see a quality of being simultaneously within that space and outside of it--it opens space up to a multiplicity of spaces, rather than forcing us to exist in one singular space. This is a form of architecture, which shares with video games its own set of cultural concerns, but that are not distinct or separate from one another. Similar to the spectrum of subjectivity, these shared concerns produce their own spectrum, from the world of pure physical construction, to the pure logic of the codes that write digital space. The possibilities for how these two cultural productions, video games and architecture, which share an investment in the way space configures our experiences, will continue to reorganize subjectivity. The ways that this will happen are as endless as the possibilities that the configuration of space itself might be. The forms that these subjectivities take are themselves a reflection of the meaning of space.

[273] *Horizon: Zero Dawn,* Video Game, Developed by Guerrilla Games, (Sony Interactive Entertainment: 2017).

Bibliography

Aarseth, Espen, Solveig Marie Smedstad, and Lise Sunnanå. “A Multi-dimensional Typology of Games.” *DiGRA ‘03 - Proceedings of the 2003 DiGRA International Conference: Level Up*, vol. 2. (2003): 48.

Aarseth, Espen. "A Narrative Theory of Games." *International Conference for the Foundations of Digital Games*, (2012): 129-133.

Aarseth, Espen. “Allegories of Space: The Question of Spatiality in Computer Games.” *Space Time Play: Computer Games, Architecture and Urbanism: The Next Level*, edited by Friedrich von Borries, Steffen P. Walz, Matthias Böttger, 44-55. Boston: Birkhäuser Verlag AG, 2007.

Aarseth, Espen. “Nonlinearity and Literary Theory” [1994]. *The New Media Reader*, edited by Noah Wardrip-Fruin and Nick Montfort, 761-780. Cambridge: MIT Press, 2003.

Anderson, Benedict. *Imagined Communities: Reflections on the Origin and Spread of Nationalism.* Brooklyn: Verso, 1983.

Ash, James. “Emerging Spatialities of the Screen: Video Games and the Reconfiguration of Spatial Awareness.” *Environment and Planning A* 41, no. 9 (2009): 2105-2124.

Ash, James. *The Interface Envelope: Gaming, Technology, Power*. New York: Bloomsbury Academic, 2015.

Ash, James, and Paul Simpson. “Geography and Post-Phenomenology.” *Progress in Human Geography* 40, no. 1 (2016): 48-66.

Bergson, Henri. “Time and Free Will.” *Key Writings,* edited by Keith Ansell Pearson and John Mullarkey, translated by Melissa McMahon, 49-77. New York: Continuum, 2002.

Bogost, Ian. *How to Do Things with Videogames.* Minneapolis: University of Minnesota Press, 2011.

Carvalho, Vinicius Marino. “Leaving Earth, Preserving History: Uses of the Future in the *Mass Effect* Series.” *Games and Culture* 10, no.2, (2015): 127-147.

Castells, Manuel. *The Rise of the Network Society*. Malden: Blackwell Publishing, 2000.

Consalvo, Mia, and Nathan Dutton. “Game analysis: developing a methodological toolkit for the

qualitative study of games." *Game Studies*, (2006).

Crary, Jonathan. *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century.* Cambridge: MIT Press, 1992.

Crocker, Steven. *Bergson and the Metaphysics of Media*. Houndmills: Palgrave Macmillan, 2013.

DeLanda, Manuel. "Material Complexity." *Digital Tectonics*, edited by Neil Leach, David Turnbull, and Chris Williams, 14-21. West Sussex: Wiley-Academy, 2004.

DeLanda, Manuel. "Real Virtuality." *Computational Design Thinking*, 142-148. West Sussex: John Wiley & Sons Ltd, 2011.

Derrida, Jacques. *Of Grammatology* [De la grammatologie], translated by Gayatri Chakravorty Spivak. Baltimore: Johns Hopkins University Press, 1976.

Derrida, Jacques. *The Truth in Painting* [Vérité en peinture]. Chicago: University of Chicago Press, 1987.

Feireiss, Lukas. "New Babylon Reloaded: Learning from the Ludic City." *Space Time Play: Computer Games, Architecture and Urbanism: The Next Level*, edited by Friedrich von Borries, Steffen P. Walz, Matthias Böttger, 218-221. Boston: Birkhäuser Verlag AG, 2007.

Fernández-Vara, Clara. *Introduction to Game Analysis.* New York: Routledge, 2015.

Foucault, Michel. "What Is An Author?" *Language, Counter-Memory, Practice,* translated by Donald F. Bouchard and Sherry Simon. Ithaca, New York: Cornell University Press, 1977.

Graham, Ian, Ronald Shaw and Barney Warf. "Worlds of Affect: Virtual Geographies of Video Games." *Environment & Planning A*, 41 no. 6, (June 2009): 1334-1335.

Gregersen, Adreas. "Generic Structures, Generic Experiences: A Cognitive Experientialist Approach to Video Game Analysis." *Philosophy and Technology* 27, no. 2 (2014): 159-175.

Griffiths, Devin C. *Virtual Ascendance: Video Games and the Remaking of Reality.* Lanham: Rowman & Littlefield Publishers, Inc., 2013.

Harvey, David. "Space as a Key Word." *David Harvey: A Critical Reader,* edited by Noel Castree and Derek Gregory. London: Institute of Education, 2004.

Harris, Blake J. *Console Wars: Sega, Nintendo, and the Battle that Defined a Generation*. New York: Harper Collins, 2014.

Hayles, N. Katherine. “Embodied Virtuality: Or How to Put Bodies Back into the Picture.” *Immersed in Technology: Art and Virtual Environments*, edited by M.A. Moser and D. MacLeod. Cambridge: MIT Press, 1996.

Hayles, N. Katherine. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. The University of Chicago Press: Chicago, 1999.

Heidegger, Martin. *Being and Time* (1927), translated by John Macquarrie & Edward Robinson. New York: Harper, 1962.

Heidegger, Martin. "Building Dwelling Thinking." *Basic Writings From Being and Time (1927) to the Task of Thinking (1964)*, edited by David Farrell Krell. New York: Harper & Row, 1977.

Heidegger, Martin. "The Origin of the Work of Art" (1935). *Basic Writings From Being and Time (1927) to the Task of Thinking (1964)*, edited by David Farrell Krell, 139-212. New York: Harper & Row, 1977.

Heidegger, Martin. "The Question Concerning Technology" (1954). *Martin Heidegger Basic Writings,* edited by David Farell Krell, translated by Walter Lovitt, 307-341. New York: Harper Collins, 1977.

Huber, William. “The Foundations of Video Game Authorship.” PhD diss., University of California, San Diego, 2013.

Jenkins, Henry. “Narrative Spaces.” *Space Time Play: Computer Games, Architecture and Urbanism: The Next Level*, edited by Friedrich von Borries, Steffen P. Walz, Matthias Böttger. Boston: Birkhäuser Verlag AG, 2007.

Joseph, Miranda. *Against the Romance of Community.* Minneapolis: University of Minnesota Press, 2002.

Juul, Jesper. "Games Telling Stories? A Brief Note on Games and Narratives." *Game Studies* 1, no. 1 (2001).

Juul, Jesper. *Half-Real: Video Games Between Real Rules and Fictional Worlds*. Cambridge: MIT Press, 2005.

Lastowka, Greg. “Planes of Power: *EverQuest* as Text, Game, and Community.” *Game Studies* 9, no. 1, (2009).

Leach, Neil. "Swarm Tectonics." *Digital Tectonics*, edited by Neil Leach, David Turnbull, and Chris Williams, 70-77. West Sussex: Wiley-Academy, 2004.

Leach, Neil. "Virtual Dreamworlds." *Beyond Form: Architecture and Art in the Space of Media*, edited by Christine Calderón, Omar Calderón, and Peter Dorsey, 130-141. New York: Lusitania Press, 2004.

Leach, Neil, David Turnbull, and Chris Williams. “Introduction.” *Digital Tectonics*, edited by Neil Leach, David Turnbull, and Chris Williams, 4-12. West Sussex: Wiley-Academy, 2004.

Lefebvre, Henri. *The Production of Space* [1974], translated by Donald Nicholson-Smith. Oxford: Blackwell, 1991.

Lefebvre, Henri. “Seen from the Window” [1992]. *Rhythmanalysis*, translated by Stuart Elden and Gerald Moore, 27-37. Continuum, 2004.

Lizardi, Ryan. “BioShock: Complex and Alternate Histories.” *Game Studies* 14, no. 1, (August 2014).

Malpas, Jeff. *Heidegger’s Topology: Being, Place, World.* MIT Press: Cambridge, 2006.

Martin, Paul. "The Pastoral and the Sublime in Elder Scrolls IV: Oblivion." *Game Studies* 11, no. 3 (2011).

Massey, Doreen. “Places and Their Pasts.” *History Workshop Journal,* no. 39, (1995): 182-192.

Michasiw, Kim Ian. "Nine Revisionist Theses on the Picturesque." *Representations,* no. 38 (1992): 76-100.

Mosco, Vincent. *The Digital Sublime: Myth, Power and Cyberspace.* Cambridge: MIT Press, 2004.

Nelva, Giuseppe. "The Witcher 3: Wild Hunt Level Designer Answers a Ton of Questions about the Upcoming RPG." Interview with Miles Tost. *DaulShockers.* March 23, 2015. http://www.dualshockers.com/2015/03/23/the-witcher-3-wild-hunt-level-designer-answers-a-ton-of-questions-about-the-upcoming-rpg/.

“*Red Dead Redemption 2* Achieves Entertainment’s Biggest Opening Weekend of All Time.” *Business Wire.* October 30, 2018. https://www.businesswire.com/news/home/20181030005459/en/Red-Dead-Redemption-2-Achieves-Entertainment%E2%80%99s-Biggest

Rose, Gillian. *Visual Methodologies: An Introduction to Researching with Visual Materials,* 4th ed. London: SAGE Publications Ltd., 2016.

Sheppard, Eric. “David Harvey and Dialectical Space-time.” *David Harvey, A Critical Reader*, edited by Noel Castree and Derek Gregory. Malden: Blackwell Publishing Ltd, 2006.

Smith, Dave. "Even People Who Hate Games Will be Blown Away by this Aspect of 2015's 'Game of the Year'." *Tech Insider.* Accessed May 4, 2016. http://www.techinsider.io/witcher-3-living-world-2015-12.

Sprony. "The Witcher 3: Designing the Environments (Developer Interview)." *Mapcore*. Accessed May 4, 2016. https://www.mapcore.org/articles/interviews/the-witcher-3-designing-the-environments-developer-interview-r69/.

Soler-Adillon, Joan. “The Open, The Closed, and the Emergent: Theorizing Emergence for Video Game Studies.” *Game Studies* 19, no. 2, (October 2019).

Venturi, Robert. *Complexity and Contradiction in Architecture*. New York: Museum of Modern Art, 1977.

Wharton, Annabel Jane. *Architectural Agents: The Delusional, Abusive, Addictive Lives of Buildings.* Minneapolis: University of Minnesota Press, 2015.

Wharton, Annabel Jane. “Models' Acts: Analog to Digital.” Lecture at the University of Virginia, (November 16, 2016).

Wigley, Mark. “Gamespace.” *Space Time Play: Computer Games, Architecture and Urbanism: The Next Level*, edited by Friedrich von Borries, Steffen P. Walz, Matthias Böttger. Boston: Birkhäuser Verlag AG, 2007.

Appendix 1: Annotated Gameography

Assassin's Creed [series]. Video Game. Developed by Ubisoft Montreal. Ubisoft, 2007-2018.

BioShock. Video Game. Developed by 2K Boston. Directed by Ken Levine. 2K Games, 2007.

The protagonist's plane has crash landed in the middle of the Atlantic Ocean in the 1960's in front of a lighthouse. He enters the lighthouse, and descends into the underwater city of Rapture, where he finds himself in the middle of a power struggle. The city, imagined as an underwater creative and intellectual utopia, is a dystopia, filled with drug addicts who attack the protagonist as he searches for a way out. The game positions the player within the city through the use of objects and the avatar's relationship to them and experience of them.

RabidRetrospectGames. "BioShock Remastered Gameplay Walkthrough Full Game (1080p) - No Commentary." YouTube Video. September 16, 2016. https://www.youtube.com/watch?v=nFjMkFwB1ck.

BioShock: Infinite. Video Game. Developed by Irrational Games. 2K Games, 2013.

The protagonist finds himself in a city in the clouds, called Columbia, in the year 1912. He finds himself the guardian of a young woman named Elizabeth, and in the middle of a struggle for power between the city's leader and a rebellion. The game play underscores the ability of games themselves to represent multiple simultaneous timelines, as the protagonist and Elizabeth travel through "tears"in time and space.

MrBlockzGaming. "BioShock Infinite FULL Walkthrough No Commentary Gameplay Part 1 Longplay (PC) [1080p60fps]." YouTube Video. July 24, 2017. https://www.youtube.com/watch?v=My5FK614tGU.

Dear Esther. Video Game. Developed by The Chinese Room. The Chinese Room, 2008, 2012.

Dear Esther, sometimes referred to as a "walking game," allows the player to explore a small island. There is no visible avatar. The player navigates along paths and beaches. At frequent junctures during the exploration, a narrator's voice can be heard reading letters that he has written to his dead wife, Esther, and the man who killed her in a drunk driving accident. The letters follow the protagonist's mental decline, which parallels the look and feel of the island. The solitude is striking, and how much anxiety that can induce as the player or observer waits for some sort of action that never comes.

WindyPower. "Dear Esther - Complete Walkthrough (1080p, no commentary)." YouTube Video. March 5, 2012. https://www.youtube.com/watch?v=hlGdbziSwEY.

The Elder Scrolls V: Skyrim. Video Game. Developed by Bethesda Game Studios. Bethesda Softworks, 2011.

Eve Online. Video Game. Developed by CCP Games. Simon & Schuster, Atari, 2008.

EverQuest. Video Game. Developed by Verant Interactive, 989 Studios. Sony Online Entertainment, 1999.

Fable II. Video Game. Developed by Lionhead Studios. Microsoft Game Studios, 2008.

In *Fable II*, the player controls an avatar who is an orphan with some magical abilities. The narrator explains that the avatar is destined to become a Hero by saving the land from its evil ruler. The setting is semi-realistic, which emphasizes the visually fantastical, atmospheric effects, like glowing objects and "breadcrumb" trails. The centerpiece of

gameplay are morality choices, which the player may use to interact with non-player characters, and to affect their avatar's "alignment," as either a good or malevolent Hero.

MrBlockzGaming. "Fable 2 Full Walkthrough No Commentary Gameplay Part 1 Longplay (Xbox One S)." YouTube Video. March 21, 2019. https://www.youtube.com/watch?v=eZjSd8RxQCU.

Gris. Video Game. Developed by Nomada Studio. Devolver Digital, 2018.

This dynamic platform game follows the protagonist as she releases color into her world, awakening a monumental statue in the process. Divided into acts denoted by the color that is added in the end, the player jumps up, down, and through architectural and landscape elements in order to progress through the game. The player is drawn into the world of *Gris* through the art. The layering of the world, both in terms of architecture that the player can interact with, and the colors themselves, are compelling.

MKIceAndFire. "Gris Gameplay Walkthrough Part 1 Full Game [1080p HD PC] - No Commentary." YouTube Video. December 14, 2018. https://www.youtube.com/watch?v=z8k_ximc8Og.

theRadBrad. "Gris Walkthrough Gameplay Part 1 - Intro." YouTube Video. December 29, 2018. https://www.youtube.com/watch?v=K71eJoh4QE8.

Horizon: Zero Dawn. Video Game. Developed by Guerrilla Games. Sony Interactive Entertainment, 2017.

In the thirty-first century, an outcast from her tribe searches for a way to be accepted. In doing so, she finds a piece of "ancient" technology, called a Focus, that allows her to see things in her world that others around her cannot. When a rival tribe attacks, her Focus allows her to unravel the events that led to the demise of the "old ones." The player is

drawn into the world, an area approximating the western United States, based on their ability to recognize familiar objects. It uses vision, through the use of the Focus, and anachronisms experienced through objects and architecture, to provide commentary about our twenty first century relationship to technology, specifically artificial intelligence. It is all about being posthuman, and the blurred boundary that creates between worlds, which is underscored through the use of the Focus as a rhetorical device. The player or observer is in the world of *Horizon* through the menu interfaces presented by the Focus--the world is mediated by menus, and the player interacts with it through menus and symbols.

JRC-Gaming. "Horizon Zero Dawn - The Whole Map End to End (How Big is Horizon Zero Dawn?" YouTube Video. March 10, 2017. https://www.youtube.com/watch?v=hKbOX5ev_2I.

theRadBrad. "Horizon Zero Dawn Walkthrough Gameplay Part 1 - Aloy (PS4 Pro)." YouTube Video [series]. February 27, 2017. https://www.youtube.com/watch?v=okTZb6GkU0U.

Journey. Video Game. Developed by Thatgamecompany. Sony Computer Entertainment, Annapurna Interactive, 2012, 2015, 2019.

Divided into three acts, *Journey* is a meditative exploration of death. This visually abstract game opens to the player's avatar standing alone in a desert, with a mountain in the distance. Throughout gameplay, the player advances toward the mountain. The first act takes the player through the desert and into a seemingly abandoned city. The second act takes the player under the city, into an area flooded with water and jellyfish-like creatures. The final act finds the avatar on the mountain, which is covered in snow. As the player's avatar reaches the top of the mountain, the player loses control, and collapses, falling down dead in the snow. The space of the game as the player navigates the avatar

towards the mountain landmarks feels simultaneously surreal, and also familiar, as the landmark will appear far away, and then suddenly is right before the avatar.

IAmSp00n. "Journey - Gameplay/Playthrough (No Commentary)." YouTube Video. March 21, 2012. https://www.youtube.com/watch?v=bkL94nKSd2M.

Mass Effect [series]. Video Game. Developed by BioWare, et. al.. Microsoft Game Studios, 2007, Electronic Arts, 2008.

Minecraft. Video Game. Developed by Mojang. Mojang, 2011.

No Man's Sky. Video Game. Developed by Hello Games. Hello Games, 2018.

Red Dead Redemption. Video Game. Developed by Rockstar San Diego. Rockstar Games, 2010.

Red Dead Redemption 2. Video Game. Developed by Rockstar Games. Rockstar Games, 2018.

This game allows the player or observer to take on the persona of Arthur, an outlaw in a gang at the turn of the twentieth century in the western United States. It follows the decline of the gang as they are pursued by the law. Notable for its highly realistic graphics and physics, this game allows a great deal of player exploration of the world, independent of the narrative action. The menus, pause screens, and camera angles all work as a cohesive whole to relate the game to the Wild West genre of film and literature. This game also contains a notable cheat, referred to as the Guarma Glitch, which allows the player to access a part of the world that does not appear on the regular map of game play.

GTA Series Videos. "How to Reach Guarma & Mexico in Red Dead Redemption 2 (after Patch 1.05 without cheats)." YouTube Video. December 10, 2018. https://www.youtube.com/watch?v=xaVezKuc1jI.

Life28SK. “Walking Across the Entire Map in Red Dead Redemption 2.” YouTube Video. December 4, 2018. https://www.youtube.com/watch?v=x-bj_r7UlbA.

MrBossFTW. “The 100% EASIEST Way To Get To Mexico, Guarma & Anywhere Outside The Map In Red Dead Redemption 2!” YouTube Video. April 29, 2019. https://www.youtube.com/watch?v=JtUBAKB6uHg

theRadBrad. “Red Dead Redemption 2 Walkthrough Gameplay Part 1 - Intro (RDR2).” YouTube Video [series]. October 25, 2018. https://www.youtube.com/watch?v=GU5vd5Z28UQ.

Resident Evil [series]. Video Game. Developed by Capcom. Capcom, 1996-2019.

Second Life. Video Game. Developed by Linden Lab, 2003.

The Sims. Video Game. Developed by Maxis. Electronic Arts, 2000-2019.

Super Mario World. Video Game. Developed by Nintendo EAD. Nintendo, 1990.

Tetris. Video Game. 1984.

The Witcher 3: The Wild Hunt. Video Game. Developed by CD Projekt Red. CD Projekt, 2015.

The protagonist, a magical being called a Witcher named Geralt, finds himself in the middle of a supernatural conflict. The Wild Hunt is looking for Geralt’s adopted daughter in order to kill her, and he must save her, defeating monsters that plague the country and cities of the world of *Witcher* in the process. This hyper-real, neo-medieval game setting takes the player across a large area, populated by several visually distinct towns and landscapes, each with its own distinct atmosphere and backstory. The game draws the player deeper into the geography of the game setting through elaborate quest trees, which it establishes through protracted dialogue sequences. In this game, the emphasis is not on

how the player receives information about the world or the narrative, but is about finding reasons to travel deeper into the world and the space, interacting with non-player characters (NPCs) and objects in the process.

How Big Is the Map? "HOW BIG IS THE MAP in The Witcher 3? Walk Across all Maps." YouTube Video. December 10, 2017. https://www.youtube.com/watch?v=xkhrnXaBRVU.

MrBlockzGaming. "The Witcher 3 Wild Hunt Full Walkthrough No Commentary Gameplay Part 1 Longplay (PC) [1080p60fps]." YouTube Video. January 8, 2018. https://www.youtube.com/watch?v=xaF3djhG5Mg.

World of Warcraft. Video Game. Developed by Blizzard Entertainment. Blizzard Entertainment, 2004.