

**How do games foster creative thinking within its players, and
how important is it that a game does so?**

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Abstract

Creativity and learning are a fundamental part of video games. In order to provide meaningful and satisfying challenges to players, games often require players to have the ability to think creatively about solutions for the challenges they face. However, it is crucial for a game to be able to foster that ability into its players, as a failure to do so will result in a frustrating experience for the player as can be seen in Kingdom Hearts 3 Re:Mind's Limit Cut and Secret Episodes. Games tend to foster creative thinking within players through the use of operant conditioning, with the most favorable form of operant conditioning being positive reinforcement. This means that the ideal way to foster creativity within players is by rewarding them with progression for successfully displaying creative thinking, which is perfectly exemplified in The Legend of Zelda: The Wind Waker. With that being said, applying creative thinking in order to overcome challenges is not the only way a game can provide players with meaningful and satisfying experiences. Multiplayer First Person Shooters are able to provide meaningful experiences to 3 out of Richard Bartle's 4 player types without the need to foster and apply creative thinking. These findings indicate that in order to design a memorable challenge for players, game designers need to foster creative thinking into them, which will in turn make for a satisfying experience as they apply the creative thinking they learned into the game's challenges. However, that is not the only way to provide a memorable gameplay experience, as it is still possible for games to provide such an experience through the appeal to socializing, competition between players, and achievements.

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Chapter I - Introduction

At its essence, games are an artform that hinges on interactivity between a player and the game they are playing. (Arjoranta, 2019) As an arts medium, games hold creativity at their very core. Whether it be through the use of creative environments, character designs or gameplay mechanics. It can be said that creativity is at the core of the field of games design from both the perspective of a designer and a player.

The meaning and nature of creativity is a topic of great depth and nuance. Etymologically, creativity refers to creation (Greene, 1974), a definition that is more resonant with that of a designer's perspective. However, my dissertation is not concerned with that outlook on creativity. Rather, this dissertation will define creativity as reference to capacity or potential (Greene, 1974). In essence, the study of the limits of the human mind. Games are an interactive medium, and due to that fact, the way games affect the player's mind is a discussion of the utmost importance. However, that definition brings with it some interesting barriers, due to the fact that the potential and capacity of the human mind is not something that can be conventionally metrically measured, especially within the confines of how games affect their player base. Due to that, I will be connecting that definition of creativity with a principle by Edward de Bono, titled "Lateral Thinking." According to de Bono, lateral thinking is the cultivation of different approaches to unfamiliar situations and challenges (Bono, 2015). By tying all these concepts together, I will be able to more easily define creativity as pertaining to a game's players.

However, when discussing players, it is crucial to specify and acknowledge what constitutes a player within this analysis. In the broadest simplest sense of the term, anyone who plays a game is a player, no matter who they are, their preferences, and how they play. This causes an issue, as within this lens, what constitutes a player ends up being too broad to concisely and accurately discuss player creativity. Hence, this thesis will take to breaking down player types through the lens of Bartle. Richard Bartle is a prolific researcher and writer within the fields of games design, his theory of player types consists of Socializers, Explorers, Killers, and Achievers (Bartle, 1996). These parameters will be expanded on, and used to formulate the groundwork under which this dissertation will explore its core idea. However, in order to fully discuss this topic, it is crucial to take a look at the value in which this discussion bears on the medium of video gaming and the life of its players as a whole.

Something that is important to establish early on within this dissertation is the importance of creativity in general, as knowing the uses that comes with having a creative mind is going to be crucial in order to dissect the question this dissertation posits. This is quite a difficult topic, as while I defined creativity from the lens of a game's player, the abstract nature of creativity holistically makes its utility open to interpretation depending on one's personal definition of creativity. Due to this, it is first very important to differentiate the concepts of creativity and imagination in order to establish the value of creative thinking as a skill, as those two concepts are often conflated. Within "*An Experimental Study of Imagination*" published by University of Illinois Press, a succinct definition of imagination within ordinary usage is presented as the range of images and ideas that an individual can picture within their mind. According to Lev Vygotsky, a Soviet psychologist most well known for his studies on the psychological development of children, in "*Imagination and creativity in the adolescent*" Vygotsky posits that imagination is the genesis of creativity, hence the need to instill imagination within the growing minds of children in order for them to develop the skill of creativity. Vygotsky also posits that for both adults and children, creativity is essential to life (Vygotsky, 1998).

In addition, "*What Video Games Have to Teach Us About Learning and Literacy*" by James Paul Gee is a book that focuses on the learning benefits of video games, while not required for this dissertation to dissect in great detail the findings of this book, the conclusion it reaches is important to establish the relevance of this dissertation's question to the medium of video games. Gee posits that video games are built on the player's learning as they progress through a game's different challenges, stating that a compelling game requires challenges that cause the player to learn throughout a game's duration. (Gee, 2008) As such, with a medium as reliant on the idea of learning to progress through challenge, combined imaginative nature of video games with the different levels of interactivity within imaginative fictional world; it is quite important for a video game to be a tool to foster creativity within both the minds of children and adults. This is the core idea that will be both reinforced and challenged throughout the duration of this dissertation.

Furthermore, the term foster is used in my dissertation as an umbrella term for developing the ability to learn within another person. (Mezirow, 1991). As a term, it most fittingly addresses the aim of the question posed at the core of this dissertation, as I aim to explain how designers can bring about change within the players who interact with their games.

With all of that being said, there is still an important aspect of the main question posed here that I have not discussed, which is “how important is it to do so?” in reference to how games foster creativity within players. The reason behind this part of the question is simple, the same way there are many different player types, there are also many different types of games which do not necessarily require creativity to bypass challenges and obstacles presented to the player. Does that make those games inherently lesser experiences, or is the pursuit of fostering creative thinking one that is not crucial to a games designer? By using philosophical and game design theories, and applying them to Legend of Zelda: Wind Waker, Multiplayer First Person Shooters, and Kingdom Hearts 3: Remind, I will aim to answer these questions.

Chapter II - Case Study #1: The Legend of Zelda: The Wind Waker

The Legend of Zelda, published by Nintendo and created by Shigeru Miyamoto and Takashi Tezuka (Nintendo, 1986 -), is a video game franchise that has sold over 100 million copies as of March 2022 (Clement 2021). The franchise consists of 25 total titles, with a 26th title having been recently announced as of the writing of this dissertation. The Legend of Zelda; The Wind Waker, shortened as Wind Waker, is the 9th entry in the franchise, initially released in December of 2002 on the Nintendo Gamecube, with an HD re-release on the Nintendo Wii U in September of 2013. It is widely considered by fans to be one of the most beloved entries in the series, with unanimous critical acclaim with a 96 out of 100 average on Metacritic from 80 different critic reviews and a 90 out of 100 based on 1556 different user ratings (Metacritic, 2013); and as I will come to explain, much of that acclaim comes from the way that Wind Waker is able to foster creative thinking within its players.

To start this analysis it is crucial to define the term mechanics, as this will be the backbone for my analysis of Wind Waker. The definition I will be using for mechanics comes from the MDA Framework, established in Northwestern by Robin Hunicke, Marc Leblanc, and Robert Zubek. MDA is short for Mechanics, Dynamics, and Aesthetic, and was made as a formal way to approach the creation of games, and the way games interact with their players (Hunicke, 2004). Mechanics and dynamics aid the other within the MDA Framework, the mechanics to the “components of the game, down to the level of data representation and algorithms,” which leads into dynamics, defined as “the behavior of the mechanics acting on player inputs.” (Hunicke, 2004) Simply put, mechanics refer to the responses of the game to the player’s inputs. Now that mechanics has been defined, it is important to establish the mechanics of Wind Waker in order to proceed with the analysis.

As an action adventure game, the game has two sides to it, adventuring and action. From the adventure side of the game, at its core there’s boat exploration, dungeon exploration, and island exploration; and in terms of action, at its core there is blocking and attacking. However, what makes this game special is the added mechanics it presents and how those mechanics, which are slowly unlocked throughout the game, aid its adventuring and its action in terms of creative ways players can approach challenges. Throughout the game, the player gradually obtains a total of 8 mechanics as they progress through the game’s different dungeons, these mechanics are what elevate the game into its widely beloved and critically acclaimed status through the usage of these mechanics in

fostering player creativity, which I will now proceed to dissect using philosophy and Games Design theories.

This analysis of Wind Waker will focus on the dungeons of the game. Dungeons, as defined by the Dungeons and Dragons Dungeon Master's Guide 3rd Edition, is "an enclosed defined space made up of encounter areas connected in some fashion." (Cook et al., 2000) When applying this definition to Games Design, a dungeon is essentially a section of a game that shares a theme either in terms of mechanics, or aesthetic, usually both. These sections of Wind Waker are where the tools the game gives you are applied in order to surpass obstacles, and a great example of that is very early on as exemplified by the following figures:

Figure 1



All of the figures within this chapter are screenshots from my own personal play. This figure showcases the player in the beginning of a dungeon, with a locked door and two enemies holding flaming sticks ahead of them.

Figure 2



This figure shows the player picking up one of the sticks dropped after defeating the enemy and facing an empty podium. When the enemy is defeated the flame is no longer on their respective sticks.

Figure 3



This figure shows the player after having solved the puzzle presented ahead of them, with a chest appearing due to their success.

What these 3 figures present are a setup, a problem, and a solution. The setup starts with the player facing 2 enemies, both wielding flaming chunks of wood as their weapons. Once the player defeats those 2 enemies, they're able to pick up either of those weapons. After that you get the problem, which is that the player can't progress without a key to the next door, however, there is no key in sight. That is when figure 2 comes into play, which presents two non-lit flambeaus, with an empty space in between them. The

player is presented with a lit flambeau on the other side of the room as a clue as to what they can do to progress. Figure 3 shows the solution, where the player successfully lights both flambeaus with the flaming weapons from the enemies that they defeated. This reveals a chest that the player can open to get the key required for progression.

The important thing about this process, is that none of it is ever explicitly explained to the player through dialogue, rather the pieces are all in play to provide the player with all of the clues they need to progress. This challenge is provided very early in the game in the second dungeon, which provides a player with a test of their lateral thinking in the early stages of Wind Waker. Taking de Bono's definition of lateral thinking into account, which was defined in Part I of this paper; the player was provided with an unfamiliar challenge, and they were required to cultivate the ability to solve it without being explicitly guided by the game. This is the very first obstacle that the player faces in this dungeon, thus from the very start the game presents the player with the fact that they will have to come up with solutions to unfamiliar situations using the tools provided to them without any guidance. This precedent that the game sets early, then sets the stage for true creative thinking, as it applies this approach to design when the player has their full arsenal of mechanics, which can be seen in the following figures.

Figure 4



This figure shows the player facing an object on a ledge while wielding a giant leaf.

Figure 5



This figure shows the player on a lift after having solved the puzzle presented to them in this room.

Figures 4 and 5 are from the dungeon that directly follows the one I discussed in figures 1, 2, and 3. By this point of the game, the player has unlocked 2 out of the game's 8 additional mechanics that the player gradually unlocks by traversing dungeons. The mechanic of note in this example is the giant leaf wielded by the player that can be seen in both figures. This leaf's primary utility is gliding, which allows the player to float in the air at the cost of their MP, which is an acronym for magical points and can be seen in both figures as the green bar below the hearts. However, that leaf has an understated utility that the game does not focus on as much as the gliding, which is blowing strong gusts of wind that are also at the cost of MP. The understated emphasis of that utility of the leaf is what lays the foundation for the problem and solution presented in these figures.

In this challenge, there is a gondola lift that is halfway across a large chasm, and the player must find a way to reach the gondola lift using the tools at their disposal. The player's first instinct would be to simply glide to it due to that being the leaf's primary purpose, however, the lift is at a high altitude to the player rendering that solution unfeasible. Rather, what the player must do is present in Figure 4, where they must blow a gust of wind towards the object that is on that ledge. When the player does that, the lift will travel towards them as seen in Figure 5, which allows them to cross the chasm. This is a challenge and a solution can be seen as a challenge on the limits of the player's breadth of thinking, which harkens to the definition of creativity utilized in Part I. The

solution to this challenge required lateral thinking, as it was an unfamiliar situation, and the solution to this unfamiliar situation required more unique thinking rather than the basic mechanics presented.

This is important, as the game follows the precedent it sets early on, where the player is rewarded by lateral thinking. Hence the game changes the player's approach to solving problems, as they are now conditioned to solve situations by expanding the limits of their thinking, in essence, being more creative. Wind Waker develops that ability within its players through establishing a precedent early on, and continuing to reward players for lateral thinking. Hence, the game fosters this ability within the players according to the definition of fostering that was established in Part I.

There is a term I used in that prior paragraph which requires more development, as it is very important to the core of this paper. That term being rewards, as it is my belief that rewards are what foster certain behaviors within players, behaviors such as creativity and lateral thinking. To define rewards and the impact of rewards, it is important to look at operant conditioning. Simply put, operant conditioning is a method of learning that incorporates punishments and rewards, or more commonly referred to as punishment and reinforcements. These two categories of learning were furthermore split into positive and negative variants, with 4 total quadrants underneath operant conditioning which were: positive reinforcement, negative reinforcement, positive punishment, negative punishment (Cherry, 2019). The quadrant that concerns this analysis is positive reinforcement, which provides players with a positive result after they exhibit a specific desirable behavior. In the case of Wind Waker, the player positively rewards players for thinking laterally by allowing them to progress through dungeons.

In summary, The Legend of Zelda: The Wind Waker, uses positive reinforcement to foster creativity within its players. It does so by allowing the player to progress through dungeons by cultivating different approaches to the unfamiliar challenges presented to them by the game. This in turn makes the player think laterally about future challenges faced in dungeons, hence changing the way the player thinks and approaches the challenges within the game. This is a very strong example of how game designers can foster creative thinking within players. However, this discussion is not quite as binary, as there are also games where the appeal is the lack of lateral thinking involved within the gameplay loop, which will be presented within the next part of this paper.

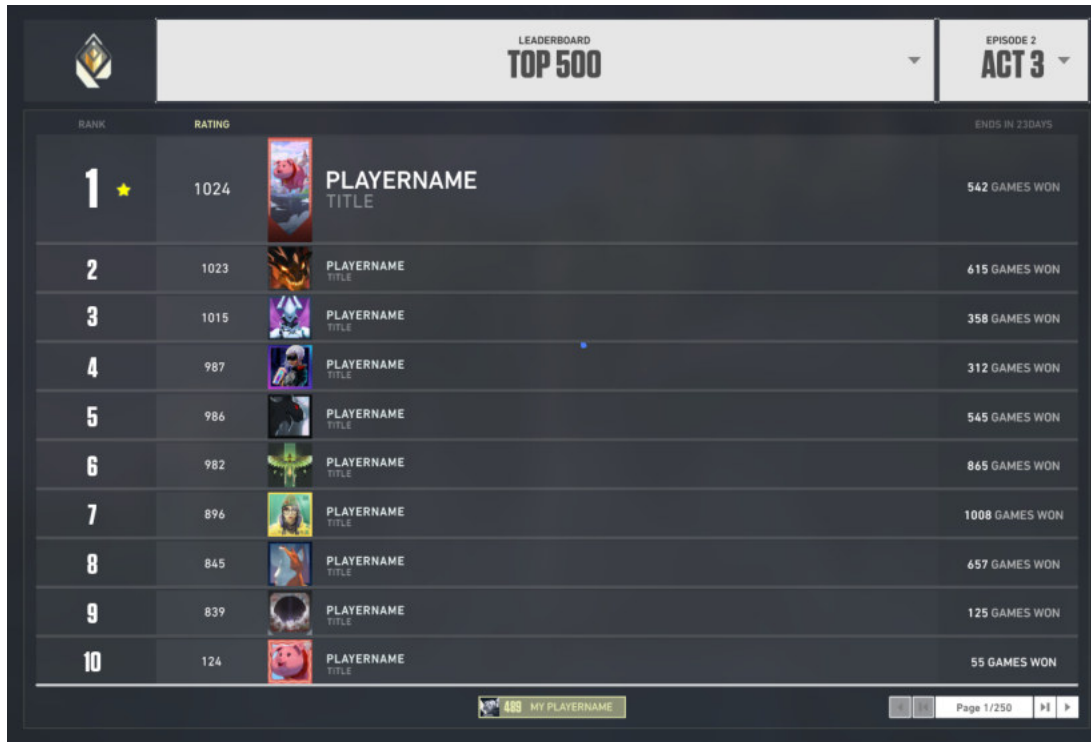
Chapter III - Case Study #2: Multiplayer First Person Shooters

This chapter of my dissertation will be less concerned with a specific video game, and instead focus on an entire genre of video games as the topic of the case study. The genre in question being First Person Shooters, or FPS, the acronym that this genre is more commonly known by. A first person shooter game is at its core, defined as a video game with the primary gameplay mechanic of shooting a gun at any given enemy target while being controlled from first person. This means that the player moves as if they are in the shoes of the playable character, with only the weapon of choice being visible on screen during active play. (Voorhees, 2012) However, we are not merely discussing the genre of first person shooter games on its own, but rather, coupling it with another concept known as multiplayer.

A multiplayer game is simply defined as a game that can be played with multiple people (Steinkuehler, 2004). There are many different types of multiplayer games, and for the sake of discussing this topic within this dissertation, I believe it is important to properly segment the different types of play within this genre. There are four ways of distinguishing multiplayer play: online, local, cooperative, and competitive (Palant, 2006). Online multiplayer refers to any type of play that features multiple players which takes place over an internet connection, this can be either alongside friends in a private lobby or with complete strangers in a public lobby. Local on the other hand can be very simply defined as multiplayer play that occurs without the need of an internet connection, with the simplest example being playing a game using a single console with the use of multiple controllers. Local and online can be grouped as the ways in which multiplayer can occur, meanwhile the two following features can be grouped as the type of interaction the players have with each other. Cooperative multiplayer occurs when all the players involved work together to achieve a singular goal, and competitive multiplayer is any multiplayer that requires players to defeat one another in order to achieve victory.

When combining this with the aforementioned genre, we get multiplayer first person shooter games, which are games that are theoretically designed to be played forever. (Voorhees, 2012) When played online, these games have a constant progression as the more a player plays, the more skilled they get, and the more skilled they get, the more they get matched up with other similarly skilled players. An example of this can be seen in the figure below from the popular multiplayer first person shooter Valorant (Riot Games, 2020).

Figure 6



This figure is of a regional leaderboard in the popular Multiplayer First Person Shooter game Valorant.

Most of the time, multiplayer first person shooter games will contextualize this progression through a leaderboard system as can be seen in figure 6, these leaderboards exist to show the player a rough estimate of their skill level in comparison to other players in this region or sometimes even across a game's entire player base (Landers, 2015). The importance of this system will be discussed further on in this chapter.

The reason why I have deemed it important to cover multiplayer games for the topic of creativity and the way it is fostered through games, is due to their difference to single player games such as the aforementioned Legend of Zelda: The Wind Waker that was the focus of the prior chapter. Single player games differ greatly from multiplayer games as the player interacts on their lonesome within a world filled with challenges directly presented by the game designer (Severin, 2022). However, within multiplayer, the main source of interaction is not directly between the player and the game designer's challenges, but rather between the players and each other in the case of competitive multiplayer games. This distinction is important in two key ways for the sake of this dissertation: goals and player types, and the way those two concepts interact to provide

the player with a satisfying experience, and these distinctions will open the path to discuss whether it really is crucial for games to foster creative thinking or require it for a satisfying player experience.

When strictly defining what a goal is, one can very easily look to a dictionary definition. According to Cambridge dictionary, a goal can simply be defined as an aim or purpose (Cambridge Dictionary). However, when discussing goals from the lens of Games Design, the concept is more layered as there are different types of goals for a player when playing a game. In video games, goals can be split into micro goals and macro goals, a concept that is taken from Business Management but is very much relevant in this field as well. A macro goal is the game's major milestones, whether it be beating an entire dungeon or even the entire game. Meanwhile, micro goals are the small stepping stones that a player places for themselves while working towards a macro goal. (Ali, 2022) The application of micro and macro goals to single player games is quite the easy endeavor, due to single player games usually having a simple structure in terms of progression. In the case of *The Legend of Zelda: The Wind Waker* an example of micro goals are present within the examples mentioned in chapter 2 of this dissertation. In the beginning of that chapter I discuss one of the first puzzles within that game, and completing that puzzle would count as a micro goal, as it is a small stepping stone within the macro goal of completing the dungeon that the puzzle is contained in. As established in that chapter, *Wind Waker* fosters creative thinking by requiring the application of lateral thinking to overcome micro goals in order to progress to the ultimate macro goal of beating the game.

However, applying this same idea to multiplayer games is a more difficult endeavor. In the case of competitive multiplayer first person shooters, those games do not have conventional macro goals, due to the fact that as previously explained in the chapter, these games are designed to be played repeatedly whether it be in local or online lobbies with no main campaign that requires completion like in the aforementioned *Wind Waker*. Instead, players set their own goals rather than the designers setting goals for them due to the random nature of playing against other humans rather than the predetermined nature of going through challenges set by the game ahead of time. When looking back at figure 6, which depicts a *Valorant* leaderboard, these leaderboards are usually what are used for players to self impose goals upon themselves, and these goals depend on the player type of whoever is playing the game.

Player types is a topic that was touched on very briefly in the introductory chapter 1 of this dissertation. According to Richard Bartle, there are four types of players: Socializers, Explorers, Killers, and Achievers (Bartle, 1996). Socializers are players who play games for interaction, whether it be interaction with real people or social interaction with a game's characters and NPCs. This can be conflated with explorers, however, the key difference with explorers is that they play games to immerse themselves within the game's world and simply want to play at their own pace. A killer is motivated by eclipsing others, whether it be speedrunning a single player game, or rising up the leaderboard in a multiplayer game. And finally, the achiever, which can be seen as a combination of a killer's ambition and an explorer's desire to fully explore the game. However, with the case of the achiever, they do not explore for the sense of immersion, but rather for the rewards that exploring brings about. Each player type can apply to both singleplayer and multiplayer games as stated by Bartle, however, the key here is figuring out how it impacts multiplayer games. The reason distinguishing all of these player types is important is due to how it affects their approaches to goals in multiplayer games. When looking at a socializer, they would not concern themselves with climbing up the leaderboards like a killer or achiever would for their macro goals, but rather they would play the game for the sole purpose of the social aspect of online gaming. As for explorers, a multiplayer first person shooter game that is intended to be repeatedly played simply would not interest them.

When applying all of this to the question posited by this dissertation, which is "How do games foster creative thinking within its players, and how important is it that a game does so?" It becomes evident that fostering creative thinking is not something crucial that a game needs to do in order to provide a satisfying experience for most player types. Multiplayer first person shooter games are able to provide satisfying experience to three out of Bartle's four player types by providing the players with a macro goal that they can set for themselves that will consistently motivate them to play, as I established above.

I will now look back at "*What Video Games Have to Teach Us About Learning and Literacy*" by James Paul Gee, which was used in the very first chapter of this dissertation to establish the importance of fostering creativity. Something that James Paul Gee brings up is that challenges and the potential for growth is what brings players back into a game, and in chapter 2, I established that *The Legend of Zelda: The Wind Waker* is able to succeed in this by fostering creative thinking within the player. However, as can be seen in this analysis, multiplayer first person shooter games can provide satisfying

player experiences for socializers, killers, and achievers, without the need to foster creative thinking within the player. Rather, they do it by constantly providing a sense of escalation as I established earlier in this chapter by matching players up against more skilled online players the more they play the game and improve. This can be proven when looking at the peak of active players in a single day for Valorant, which was up to 6,027,617 (Tracker Network, 2023) according to Tracker Network, a reliable source for tracking a game's active player base. Furthermore, despite Valorant being released on June 2, 2020, the total active users that were logged on January 2023, a whole two and a half years later, is a massive 14,045,544. These numbers are very tangible proof that the multiplayer first person shooter formula works despite not fostering creative thinking within its players in order to overcome the game's micro and macro goals.

In conclusion, first person shooter games are able to provide a satisfying player experience for millions of players despite their lack of fostering creative thinking with its players. They do this by appealing to the social side of multiplayer gaming in order to appease socializers, and appealing to the competitive nature of multiplayer gaming to continually drive achievers and primarily killers to keep playing the game. These three player types are able to achieve micro and macro goals without the need for lateral thinking due to the repetitive gameplay loop that naturally comes with multiplayer first person shooter games, which are designed to be played repeatedly. Hence, this establishes that fostering creative thinking is not an absolute necessity to provide a fulfilling video game experience. However, this only applies to multiplayer games, when it comes to single player games, the next chapter will discuss the degree of necessity in fostering creative thinking for single player games.

Chapter IV - Case Study #3: Kingdom Heart 3 Re:Mind

Kingdom Hearts is a widely beloved Disney and Square Enix crossover action game published by Square Enix and owned by Disney (Square, 2002 -) that began over a decade ago with the first game releasing on March 28, 2002 in Japan. The series has sold over 36 million copies throughout its three mainline games and ten spinoff games (Aberdeen, 2022). The focus of this chapter will be on Kingdom Hearts 3, released in Japan on January 25, 2019, and worldwide on January 29, 2019, and is the third mainline entry in the Kingdom Hearts series (Square Enix, 2019). A little under one year after the release of the game, an extensive DLC titled Kingdom Hearts 3 Re:Mind was released on January 23, 2020 (Square Enix, 2020). DLC, also known as downloadable content, refers to content that is added after a game's initial release, and usually costs an additional fee (Durango, 2016). Kingdom Hearts 3 Re:Mind features three additional special episodes to the game: the Re:Mind Episode, the Limit Cut Episode, and the Secret Episode. This chapter will be concerned primarily with the Limit Cut Episode but will also touch on the Secret Episode, as the primary content within those episodes consist of what fans of the series have labeled "Superbosses."

Superbosses, according to TV Tropes, is an optional boss fight in a game that is significantly more challenging than the game's main mandatory boss encounters (TV Tropes). While not an official label of what these fights are, the definition of superboss that TV Tropes provides is in line with the bosses I will be talking about in this chapter. The Limit Cut Episode features thirteen superbosses all based off of fights in the main story, but with drastically different AI and a recommended battle level of 99 which is the maximum level in the game. The Secret Episode features a superboss that is entirely original to the episode with a completely original moveset and against a character the players have never fought before. These fights all require the use of creative thinking in order to overcome the challenging encounters. In this chapter, I will be analyzing examples of how the fights incorporate creative thinking into their design, and how this design alienated many players and divided the player base of Kingdom Hearts 3.

This will be a very interesting analysis, as I will be analyzing two versions of a boss fight: the mandatory main story version that does not require creative thinking to defeat, and the optional superboss which requires creative thinking to defeat. The following figures depict both the main story and the superboss version of a boss by the name of Saix, who is characterized by blue hair and the primary weapon of a claymore.

Figure 7



This is a very late main story boss fight, hence I was not able to screenshot my own footage of play as it would have taken too long. Rather this is footage from a Youtube channel by the name of NicoB (Nicob7700, 2019). This footage showcases the main story version of a boss fight, with the enemy in the process of throwing a singular claymore at the player.

Figure 8



Once again, this is footage of play from the Youtube channel NicoB and showcases the claymore having been thrown in the direction of the protagonist. The important thing to note here is that this is not only a blockable attack, it is also an attack that does not home in onto the player meaning the player can simply move away and avoid it.

Figure 9



After throwing the claymore, the boss lands on the ground and is stationary for a little bit of time.

Figure 10



This is footage captured from my own play of the superboss version of the fight depicted in figures 7 and 8. This attack has the same basis as the ones in those figures, however, rather than throwing a single blockable and non-homing claymore, the superboss version throws 5 unblockable claymores that home in on the player. With one of the claymores landing in a straight line towards the player, while the other 4 home into the player from the side.

Figure 11



This figure shows me attacking the enemy after dodging the first claymore throw in order to put him into a stunned state (this will be explained further in the analysis), and while doing this, you can see claymores circling around and homing on me while I'm in the process of attacking.

Figure 12



In this figure, I am in the process of using a mechanic known as airstepping, which allows you to quickly transport yourself to an enemy's position. However, I did this after quickly dodging away from the claymores that were homing in on me in figure 11. You can see the fire imprints on the floor from where the claymores landed.

Figure 13



After airstepping to the enemy following figure 12, I continue to attack them in this figure.

Figure 14



The enemy teleports away from me in this figure after I attack him enough times in figure 13, and he prepares to begin his next attack.

Figures 7, 8, and 9, and figures 10, 11, 12, 13, and 14 showcase the same basic move but as can be seen from the figures and their descriptions, it is quite clear that the main story version of the fight requires a very rudimentary understanding of the game's mechanics, while the superboss version requires an extensive understanding of the

game's mechanics, and most importantly, creative thinking. In order to further analyze this, it is first important to establish the usual flow of gameplay in this game. And to do this, I will have to introduce the concept of Finite State Machines. While initially a mathematical computation model, this is a concept that is a big aspect of games design as well. With both enemies and the player character, every action they do is a state, for example, attacking, blocking, walking, standing still, are all examples of a player's different states (Černý, 2020). In the case of a Kingdom Hearts humanoid boss, their states can be simplified with the following: attacking, stationary, staggered. For example, in figures 7 and 8 the boss is in an attacking state where he is throwing the claymore at the player. In figure 9, the enemy is in a stationary state. In Kingdom Hearts 3's main story fights are always briefly in a stationary state after attacking, and that stationary state gives the players a window of time to attack them in order to send them into a staggered state. The staggered state, as can be seen in figure 11 is a state the boss goes into when the character is attacking them where they are more liable to take damage. However, after a certain damage threshold, the boss circles back to their attacking state mainly by teleporting away from the player, which can be seen in figure 14.

From the outset, perhaps the most crucial distinction between the two versions of the Saix boss fight, is the fact that unlike the main story version, the superboss version never goes into the stationary state. Rather the superboss fight is constantly in the attack state, and the player has to find openings within his attack in order to forcefully get him into the staggered state to deal substantial damage. This is a massive difference from the main story version, where the boss fight will always give the player the ability to deal substantial damage after landing an attack, by going into a stationary state between every attack which I explained in the previous paragraph. Figures 10 through 14 showcase such an instance of me having to forcefully put the boss fight into a staggered state by figuring out an opening within the attack where he throws his many claymores. Crucially, this opening can only be figured out through the use of creative thinking. I had to dodge the first claymore in figure 10, then put the boss into a stagger state by attacking him before he reached the ground in figure 11, then immediately dodge away before the other four claymores can circle around and attack me in figures 12, and finally I had to quickly airstep back to the boss before he recovered from his staggered state to continue dealing damage. As opposed to the main story in figures 7 through 9 where all the player has to do is avoid a singular straight claymore throw and then attack the enemy.

This is a very important difference, because what this showcases is that Kingdom Hearts 3 Re:Mind requires creative thinking in order to overcome the difficult

superbosses, however, the game's main story never fosters that skill within the players. Due to this, a massive divide was created within the player base of Kingdom Hearts, with the players who are not used to creative thinking within games finding the fights unfun and frustrating, while the players who have that ability found the fights a very fun challenge. This divide is evident from the IGN review of Kingdom Hearts 3 Re:Mind and the subsequent backlash the review received.

The IGN review, written by Jonathon Dornbush, stated that the bosses were “frustratingly difficult at times combat-wise” and that there was a “Grand Canyon-sized valley between the challenge of its bosses and everything else that comes before them.” (Dornbush, 2020) This review on Youtube currently sits at 3,900 dislikes to a comparatively much fewer 1,600 likes (IGNentertainment, 2020). This controversial divide is the result of challenges that require creative thinking despite the game not fostering that skill within its players. Furthermore, within the review of the original game only a year prior, the same reviewer, Jonathan Dornbush, comments on the game being too easy, stating that the main story's fights were “relatively easy, with enemies acting more as damage sponges that tested my endurance rather than my abilities.” (Dornbush, 2019) This assertion from Jonathan Dornbush was proven by my analysis of the main story version of the Saix boss fight in figures 7, 8, and 9.

In conclusion, to once again return to “*What Video Games Have to Teach Us About Learning and Literacy*” by James Paul Gee; in the introduction of this dissertation, I talked about James Paul Gee's assertion that video games are a medium built upon learning, where a player learns from challenges presented by the game. Furthermore, in chapter 3 of this dissertation, I bring up an assertion James Paul Gee made which stated that games are most compelling when offering a challenge to the player that they can learn from. In the case of Kingdom Hearts 3's main campaign, the game never offers the player substantial challenges and in turn, the game is never able to foster creativity within its players as the player never feels the need to learn in the process of playing the game. Due to this, Kingdom Hearts 3 Re:Mind's challenges that require creative thinking to overcome can be seen as frustrating by many players, as they were not fostered with the skill of creative thinking before Re:Mind's superbosses. This case study showcases the necessity to foster creative thinking within players, if a game wants to provide substantial challenges to the player that require creative thinking, which was something that The Legend of Zelda: The Wind Waker succeeded in, as I established in chapter 2 of this dissertation.

Chapter V: Conclusion

I set out to answer two key questions when starting this dissertation. How can game designers foster creative thinking within their players? And how important is it that a game is successful in fostering creative thinking with its players? Throughout the three case studies of this dissertation, I was able to approach these questions in three different ways. With the Legend of Zelda: The Wind Waker, I analyzed a game that was successful in fostering creative thinking within its players. Multiplayer First Person Shooters were used to showcase that games can provide satisfying experiences for many players without fostering or requiring creative thinking within play. Finally, Kingdom Hearts 3 Re:Mind showcased the middle ground between the prior two, with the analysis focusing on a game that requires creative thinking to overcome challenges without fostering that ability within the player, and how this created a divide within the game's player base.

When combining these three findings, that is when I reach the conclusion for the questions I set out to answer for this dissertation. In order to foster creative thinking within players, game designers need to use operant conditioning, in order to either reward players who continuously use creative thinking within play, or punish players who do not use it. Operant conditioning creates habits, and these habits are what game designers foster into their players, in this case the habit being the ability for a player to think creatively when faced with challenges. While fostering creative thinking is not crucial for a game designer to do within a competitive multiplayer game, as those games provide challenging and satisfying experiences without the need to foster or incorporate creative thinking into gameplay; it is still very important to foster creative thinking within players in single player games to create a consistently satisfying gameplay experience that players can keep coming back to.

These conclusions have been incredibly valuable to me in reconstructing the way I think about designing the escalation of challenge in games. Players want to feel satisfaction when they play games, and providing them the opportunity to learn the more they play a game, and to apply that learning when they face challenges is the ultimate form of satisfaction for a player. As I said at the very beginning of this dissertation; at its essence, video games are a medium that hold creativity and learning at their core, and it is when a designer can combine learning and creativity in perfect harmony that a game can truly become an unforgettable experience for its players.

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