Creating Memorable Boss Fights

A study of the structure behind Bosses

Jonathan Disenfeldt   **SU19A**

2022-05-09

Handledare: Mats Tauholm

Teknikprogrammet

Gymnasiearbete 100p

Abstract

In this project we dive into what a boss fight is, and how to make them interesting and memorable. We define a boss as an ultimate climax of both story and mechanics, testing what the player has learnt so far, and by establishing the foundation of what makes a boss fight; with theme, movesets, environment, build-up and story we create a practical example inside a pre-built game project. To do this we take inspiration from the pioneering game series of the genre, *Dark Souls*, and explore how they define what a good boss fight is, as well as how they approach the importance of movests and themes.

We also establish some of the more common mistakes with creating bosses which can lead to a bad experience. By missing any of the core pillars the fight might seem lacking or bland without depth, and without a way to tie the boss to simpler concepts or themes the fight will be easily forgotten.

By following these set principles and avoiding the common mistakes by analyzing 3 boss examples, we're left with a boss complete with their own arena, music, storytelling, and has 17 different attack chains, 2 distinctly different phases with a middle phase, compelling VFX and a functional AI which is built to remove repetition and adapt to circumstances such as the distance from the player. The fight itself was perceived as challenging and visually impressive by 4 testers, where one was able to give ample feedback about mechanics due to their varying experience in harder boss fights.

While most of the responses were positive, some negative feedback was gathered; namely that the engine could sometimes not handle the amount of visual effects present, and that certain style choices could be seen as bland. These problems were traced down to the practical example being an un-optimised solution meant to be done by a deadline, and that the environment could have been more visually impressive in the 2nd phase. This could however conflict with feedback from the experienced tester who commented that the environment wasn't too visually distracting.

Overall the project is deemed a success, by defining the boss fight structure and creating a practical example with the majority of responses being positive. Participants were observed to be having fun when testing and impressed at the grand scale of the project, and were accurately able to bond the fight to simpler themes and ideas that can more easily be memorized. It is however of note that the testing process could have been done much better, with online testing or more random stick

samples a wider range of testers could have been gathered to provide a larger test group and more generalizable results.

Lastly, the project serves as a proof of concept at a larger global scale; showing how boss fights are made and how to make them better. As the project is concluded we come to the conclusion that it cannot be continued by a single person anymore, as the scale of the game grows too large.

Table of Contents

1.   Introduction

1.1 Purpose

The meaning behind this project is to create an interesting boss fight and the atmosphere surrounding it for a game I have been developing in my spare time, as well as to dive into how boss fights are structured and created. To achieve this I will study games of similar genre; such as

Dark Souls (FromSoftware, 2011) or *TLoZ: The Wind Waker* (Nintendo, 2002), to find out how boss fights are structured and how they become these memorable spectacles that we remember. The *Dark Souls* series also serves as a great source for inspiration as the games are widely regarded to contain some of the best boss fights; if not the best.

1.2 Foundation

To understand what type of work this will be and why certain decisions are made it is important to know the game it will be built in. Project: Archmage takes inspiration from games such as *Dark Souls* with their combat mechanics, and *TLoZ: Breath of the Wild* with their map layout of a semi-open-world game. The game is in very early stages and features an empty island, an ocean, and a day-night cycle; most work has instead been put into the player and multiplayer aspects. The player can move, run, jump, and switch between melee and magic. They have a health bar, stamina bar, and mana bar which are resources that need to be balanced.With melee they can do simple attacks, block, parry, and use a special ability unique to that melee weapon. To differentiate this game from many others of similar genre a greater focus of combat has been put into the spellcasting system, where melee serves more as a backup for when you are recharging your mana. When using magic or the melee special ability the attacks have to be charged for a while which increases their power the longer they are held, and expends mana. As it is right now magic features 4 different elements with 2 attacks each, the elements are structured such that the different attacks work roughly the same but have visual and mechanical differences. Examples of this would be that the 'E' key is an AOE attack, hitting everything around you, but the effects vary. Earth has an AOE which knocks enemies away from you (knockback not implemented yet), while water has a vortex which sucks enemies into the middle, and wind has a hurricane which lifts both the enemy and the player. Lastly, the player has a dodge which quickly moves them in the direction they're moving, making it more possible to evade attacks.

Using this structure means that combat might be more slower and longer ranged than traditional combat featured in things like *Dark Souls*, this is why all the enemies will also feature large scale magic attacks to counteract the power given to the player. This creates a focus around dodging attacks and finding windows of opportunity to strike back. In the future both the magic and melee will be worked on further, and things such as melee magic attacks and grab moves have been planned to make combat more interesting.

1.3 Project Summary

Background
In the background chapter we begin by defining what a boss actually is and their roles in a video

game. We then establish 5 different core factors which hold great importance to the boss fight experience and motivate why these are so important. And to end the background chapter off we analyze the Dark Souls Design and how the game series creates interesting boss fights.

Problem   **Formulation**

The problem formulation chapter is started by describing how the 5 core factors create the spectacle that are boss fights, and how a lack of any of them can ruin the experience. Afterwards we go onto what can be a common problem when designing bosses; that they are meant to fit into your game and follow the rules of it. We then create the core question *"What makes a boss fight an interesting and memorable experience in a third-person action-adventure game?"* to start our project off.

Method   **Description**

With the core question established we begin planning a practical example of the theory put together in the background chapter. Here we start with establishing how a data collection should be done to learn how the project should be structured, and then we continue to plan the workflow of making the boss fight. After that is done we formulate how we can deem how successful the project is by collecting feedback from a group of testers.

Implementation

Lastly, we analyze 3 different boss examples and create a functional boss enemy using the core factors summarized in the background chapter. This boss features 2 distinct phases with a wide moveset that can adapt to the circumstances the boss finds itself in, with striking visual effects and animations the boss is brought to life and creates an enjoyable boss fight experience.

2.   Background

2.1 What exactly is a Boss Fight?

As Mike Stout so aptly puts it in *"[Boss Battle Design and Structure](#)"* (2010); a boss is both a test and a story; and that those are a boss' primary functions. A boss can be summarized as a battle of grand proportions meant to test the skills of the player and all they've learned up to that point. They should embody the area that the player has just gone through in all aspects and hold great importance to the universe the game is set in. It is simply not enough to just make a basic enemy a bit bigger with more damage and health. No, a boss fight should be memorable, a dance of death in a symphony of grandeur; for they are often one of the best things that can leave a lasting impression   on   the   player.

2.2 What a Boss Fight should contain

To separate a Boss from an ordinary enemy we have to make them truly special; one of a kind. According to Josh Bycer in *"[The Impact of Dark Souls on Boss Design](#)"* (2021):

> *"A good boss fight should be a standout moment in a game—something that hasn't been seen before in the game or will be seen again. When done right, they can provide a unique moment in your game or a suitable test of the player's skills."*

Simply put; a boss is something which should only be experienced once in the game. Here I have compiled some important factors that make bosses what they are and distinct them from regular enemies. Let me however be clear; there is a clear distinction between regular bosses and final bosses, some of these things listed can be ignored by a regular boss but a final boss should incorporate all of these in some way.

Theme
This might be the singular most important thing; a boss should have a clear theme, usually the same as the area they're placed in. If the player has just spent hours trodding through the bottom of the ocean they shouldn't be met with a large fire demon, but instead something aquatic themed like a Kraken or someone in a big diving suit. This theme should shine through in both their aesthetics but also in their attacks, you have to think logically; "Is this an attack that the boss could be able to do?". If large deviations are made from the theme they should be properly introduced with something like a fight phase change or an animation to show it. If a boss lacks a theme they can quickly become dull and un-memorable, it makes it much easier for us as players to remember if we can bind the bosses to a certain simple concept, for example "Underwater", "Angel" or "Disgusting". A good example of this is brought up in Design Doc's video *[Boss Battle Design ~ Design Doc](#)* (2019) where they compare two bosses from the *Batman: Arkham Asylum* series, where they state that the final Joker boss and the Clayface boss are mechanically similar but have vastly different results due to how they kept to their themes. Joker deviates too far from his maniacal and scheming theme and becomes a steroid juiced brute while Clayface keeps to his body morphing abilities and incorporates this beautifully into his fight, leading to the former becoming one of the worst bosses of the series according to Design Doc.

Movesets
While an ordinary enemy might only have one or two attacks a boss should be able to use a vast and varied amount of attacks. This helps with keeping the player on their toes and adding to the challenge of it all, as well as giving the developer more chances to make interesting attacks. Without a large moveset the boss becomes predictable and again; dull. It's no fun if you know exactly what the boss is going to do again or if they've repeated the same attack five times in a row. This will be mentioned more under the next subtitle; "Dark Souls Design". There are however many games where combat isn't the main focus, and movesets become less important.

Environment
Mentioned in the theme section, the environment should have a clear theme which the boss can personify or represent. The boss arena itself where the battle takes place should lift this theme even further and provide proper space for the player to avoid attacks. Another good implementation is environmental interactions like destructible pillars which you might be able to take cover behind for one attack. Without a good and fitting environment the boss feels out of place and could be perceived as unbalanced and unfair; for instance if the enemy would have wide sweeping attacks but the arena was a small confined room the player would feel trapped; something which might fit for a horror game but not for this type of game.

Build   **Up**
This is something which can be done in many different ways; in certain games a boss might have a very short build up and become a moment of surprise, while in others you might have been told about this boss for an entire section and they eventually appear in a grand way. In most cases build up works hand in hand with the Theme and Environment; since the boss is likely at the end of a section the entire level is a form of build up, with the build up helping to create the theme and the environment being a way to create build up. In *"Boss Battle Design and Structure"* (2010) Mike Stout brings up how a bossfight is the climatic end to a chapter of the game and releases tension built up during that chapter, dictating the pacing of the game. Without build up a boss would feel random and out of place, and in most cases they would be missing out on important aspects like suspense. For example; compare a boss which just appears and starts attacking you with a boss who (with a cutscene) smashes through a wall while holding an enemy, who then crushes said enemy and then turns to face you. This small build up accurately conveys that this boss might be able to pick you up or rush forwards while also signaling their raw strength.

Story
Something which may be conveyed in many different ways; a story gives depth to a boss. Without a story the player might ask "So who was that guy?" or "Why are they here?" after the fight, and upon discovering nothing more is said about them they quickly forget the boss. By creating a story behind the boss we give them life and place in the games' universe, no longer are they these meaningless antagonists meant to just be a roadblock in the game; but instead they're given depth and   might   give   a   lasting   impression   or   interest   in   the   player.

2.3 Dark Souls Design

Something which has set the staple for what a boss fight should be is FromSoftware's game series *Dark Souls*; renowned for its grandeur bosses. As Josh Bycer states in *"The Impact of Dark Souls on Boss Design"* (2021), the series redefined what attack patterns were; they went from a few random but predictable attacks to long patterns flowing from one to another. Together with attack telegraphing (the way an attack winds up in preparation, signaling which attack is being used) this

meant that players had to observe and learn the boss' attacks, shifting the focus from reacting against random attacks to learning how the boss behaves. Of the various bosses in the series. Many, such as IGN in *"[10 Best Final Bosses in Video Games](#)"* (2021), regard the Souls-series as having some of the best bosses; further settling that they have mastered the formula behind a great boss fight. Something which drives this further is that every boss has a clear theme and feeling; when you're fighting the boss you understand them and their role in the game universe. The bosses (most of them…) are singular spectacles which force you to learn their movesets and adapt, eventually overcoming them.

Some examples of great bosses in FromSoftware's games are *Ludwig the Accursed* from *Bloodborne* (2015) and the *Soul of Cinder* from *Dark Souls 3* (2016). Ludwig being a prime example of phase changes; where he changes from being a maniacal monster to a composed swordsman with spells, and the Soul of Cinder being a great balance which adapts to the player and of great importance to the story of the universe. The project would therefore try to emulate the greatness of such fights and take inspiration from how they're designed in regards to mechanics, feeling   and   presentation.

2.4 Dark Souls Design in other Game Types

As mentioned before however, there are many game types where combat isn't the main focus, and things like puzzle solving or parkour are of greater focus. In these situations a boss fight has to get more creative, and must mimic the options available to the player more closely. Here the scales of the different factors get rebalanced, and things like environment can be of much greater importance while movesets become more of a novelty. The Dark Souls design still remains relevant here however; maybe you're trying to trick the boss into doing a certain attack which will leave a vulnerable weak spot open, or you might be trying to activate different things inside the arena which will eventually damage the boss. The bosses here still require movesets to break up repetition and provide situations which can either pressure the player or be exploited. This can for instance be seen in the game *Little Nightmares 2* (2021), made by Tarsier Studios. Here the final boss named *Six* has been transformed from your companion to a giant elongated monster version, and to free her you have to break a music box guarded by her. To do this you must lure Six away from the box by whistling, and use one of four portal gateways to get to the other side of her as you sneak up to damage the box. As the fight goes on the terrain gets more complicated and Six becomes more intelligent, where she starts doing multiple attacks in a row and you are forced to use multiple portals in a row, keeping the fight interesting and giving it a sense of development. Something which gives the fight much more pressure is that you as the player, *Mono*, is very small in comparison and moves quite slowly and is therefore required to use the portals as a puzzle solving element in fighting the boss. To add to this, Six can at her last stages use the portals herself to reach the player with her long arms, adding further danger.

Fig. 1; Six seen guarding her music box, here the player has to lure the boss around the arena and avoid her attacks using the portals seen at the sides.

3.   Problem Formulation

3.1 Challenges

The problem with boss fights is that they can quite often become unmemorable when they're supposed to be the peak of what a game can offer; the climax of the story or something which pushes the player to their limit. This problem often boils down to them lacking the priorly mentioned factors; a proper theme, interesting movesets, a captivating environment, a proper build up, or a story behind them. Combining all of these factors creates the spectacular dance of death and challenge which pushes the player to their limit and imprints a memory of it into their mind. The project will therefore attempt to create a boss fight which includes all of these factors in some way and attempt to refine these to create a memorable boss fight experience.

Another major problem that many might overlook is that a boss must be fitting for the game it is placed in; it is restricted to the rules of the game and the tools the player has at their disposal, any major deviation from this creates an unfair or unfitting addition to the game. If for example the player can only walk around slowly then the boss shouldn't have any projectile attacks which are clearly meant to be dodged, but if mechanics like taking cover or such were in place then it would be a fair addition. A boss is simply tailor made to the game it is in, one cannot just give them special privileges that break the game rules without a proper justification or compromise. This means that while we can follow the Dark Souls Design we still have to make our own boss from

it, customizing it to the rules and style of the game. One cannot simply copy what works in one game and hope it works in a completely different game.

3.2 The Core Question

How do you design an interesting and memorable boss fight experience in a third-person action-adventure game?

4. Method Description

4.1 Data Collection & Planning

To begin the project it would be beneficial to analyze some of the greatest boss fights in a similar genre. As mentioned, the project will mainly take inspiration from the Souls-series with its approaches on themes, phases, AI, and general design. The scope will however be expanded to take inspiration from other great boss fights and see how they have created strong themes and memorable fights such as *Ganondorf* in *TLoZ: The Wind Waker* (2002). By doing this we get a good grip of how the Dark Souls design works and how we can try to emulate this to make our boss fight feel better, as well as how to create the different aspects that make a boss fight that were established in the background chapter. Plucking different aspects from the different fights we also have to keep in mind that the boss should fit the game, as stated in the Challenges subchapter. The development should therefore keep those aspects in mind, but adept them to the slower playstyle of the spell casting combat that the game is centered around, explained in the Foundation subchapter. This means that the boss should use mainly ranged magic attacks and leave openings for the player to attack, complementing the controls and design of the player.

4.2 Development

The work would begin by settling on a theme and creating an environment to embody this theme. This arena would also include a build up in the form of a large staircase or large architecture leading up to the arena itself to properly convey a build up to the player. Some dialogue may be shown to the player here to introduce that they are about to face an opponent, and give some introduction to the general demeanor of the boss. With this build up the player should feel like they are nearing a battle of epic proportions and help build the theme around the boss, as mentioned in the background chapter.

After an arena has been made the project would focus on creating the boss itself, beginning with

planning out attack patterns and how these would flow into each other and follow the Dark Souls design. After planning has been made the work would begin on the boss itself, who at first should be focused on having no game breaking bugs like something being infinite or being able to walk outside the arena. After a solid base has been established the focus would shift to fleshing the boss out with visual effects and more patterns. Eventually leading up to minor polishing like animations and potential cutscenes/dialogue to properly create an experience of epic proportions.

4.3 Project Content

**The   project   will   entail;
A functional boss enemy who:**

- Has a functional boss behaviour where it uses multiple kinds of attacks to pressure the player and force them to react. These attacks should be perceived as challenging but fair, as to keep the player interested and leaving space for them to learn. (High Prio due to being the core of the boss, Balancing is Medium-Low Prio due to the theme and feeling being the   centerpoint   of   the   design)

- Features 2 fight phases where the boss changes its behaviour and attack patterns, as well as getting some new ones. This would also include a change of aesthetics, such as the arena changing or the boss itself looking different. Multiple fight phases helps keep the boss interesting over a longer fight. (High Prio due to keeping the fight interesting)

- Has captivating visual effects for his special attacks to enhance the spectacle of his fight. (High   Prio)

- Has opportunities for the player to master skills such as parrying attacks, rewarding them with a stagger window against the boss. (Medium Prio, creates a sense of skill and mastering   the   boss   fight)

- Has an interesting character model. (Low Prio, will use placeholder)

- Has a minor cinematic (using the camera system Cinemachine in Unity) to introduce the boss and cover the conversion between the phases, this helps the boss flow from one phase to another. (Low Prio due to being a finishing touch, might be ignored due to cinematics ruining   the   flow   of   combat)

An environment which:

- Looks aesthetically fitting for its theme, enhancing the feeling of the boss. (High Prio due to being central to the theme aspect of the boss fight)

- Features a soundtrack to enhance the feeling, **all** bosses should have their own songs which enhance their aspects and themes and help provide that one of a kind feeling. (High prio to find fitting existing songs, low prio to make one myself due to not being accustomed with music creation)

- Builds up in preparation for the boss, motivated in the background chapter. (Medium Prio)

- Changes in conjunction with the boss changing, enhances the feeling of a boss fight phase shift. (Medium Prio due to being a finishing touch to be done after the boss itself is done)

The project will not contain;
- A story behind the boss or its significance in the world, due to the rest of the game only being in early development and having no set story in it yet, it might be done if all other points are finished early. (Although one has been planned out, and might be hinted towards in dialogue, a proper story would however require the boss existing outside of just the fight).

- Multiplayer Support, the game itself is multiplayer but the boss will not be made for it. This is due to it having no relevance to the project goal of designing and making a memorable boss fight.

4.4 Feedback Collection

To finish the work and see how successful it has been, the game will be playtested by ~5-10 individuals and judged by their reaction and gameplay. Things such as seeing how they play and maybe play differently to beat the boss, how difficult yet balanced they see it, how visually interesting the fight is and if they thought something specific was special about it. This will show what was done good and what could have been better with the fight and properly convey if it was memorable and special. The chosen group of playtesters should be from people who have experience in this type of game genre and boss fights in general, as to receive adequate and more precise responses due to their higher level experience. Some with lower experience should however be introduced into the pool as to provide response from someone with an "outside" perspective, one that could judge the boss more on the aesthetics rather than the mechanics.

5.   Implementation

5.1 Boss Analysis

We begin the practical work by analyzing 3 separate boss fights from different games, all using different approaches to the same formula.

5.1.1 Ludwig the Accursed - Phase changes, Building themes & Aggressive AI

Ludwig the Accursed is an optional boss fight in FromSoftware's game *Bloodborne* and resembles the Dark Souls Design perfectly. In this gothic lovecraftian game you play as a hunter and take down vile beasts using swords and guns, but still keeping to the close ranged and high paced Dark Souls combat. As the player approaches Ludwig's arena they wade through a river of blood surrounded by corpses, giving an uneasy feeling that something bad is coming up and building up the monstrous theme. When the player enters the arena they are met with a cutscene, where a corpse crawls towards you and with their dying breaths asks for help. "*An unsightly beast… A great terror looms! Ahh, Ludwig the Accursed is coming! Have mercy! Have mercy upon us!*" is uttered as zoomed in shots of different grotesque parts of the beast is revealed, and a sheathed sword on their back. This leaves the player questioning what it is that they're going to fight, as a seemingly nonsensical shape of limbs where they shouldn't be takes form and reveals them to be an amalgamation of human and horse as an unsightly screech is let out.

Here the fight with Ludwig starts, and already we know their theme and how they might move and behave. By being a lumbering mass with no logical set of limbs the player can assume that the boss will move uncontrollably and lunge, with wild attacks that swing high or use weird extra limbs; which is exactly what the boss does. It behaves as a beast should and keeps to its theme beautifully, but as it reaches its 50% health mark a cutscene interrupts, showing that the sword sheathed on his back has been released and glows with a magic shine. This reminds Ludwig of who he is, and returns his humanity, "*my guiding moonlight*" as he so puts it. Ludwig, now "The Holy Blade", uses the powerful sword and its magic and turns from a maniacal beast to a composed swordsman. Here he uses well telegraphed sword attacks and spells to assault the player until the fight is concluded.

This fight showcases how two opposite themes can be put together to create an interesting contrast between the two different phases, and how the boss has been designed with their attacks to symbolize this, switching from one moveset to another. Ludwig can be considered a simpler AI, he does not defend himself in any way and instead relies on his attacks to dictate the flow of combat, where the player has to attack, dodge, attack, etc. Another important note is how the music resembles his different phases, in his first phase it's almost quiet background noise as his shrieks and screams dominate the soundscape, but when he enters his second phase the music kicks in with a instrumental and orchestral waltz music, showing that his humanity has returned.

Fig. 2; Art made of Ludwig the Accursed/Holy Blade, showing the contrast with his semi-humanoid features and sword wielding while also being a grotesque monster.

5.1.2 Ganondorf - Story & Defensive AI

Ganondorf is the returning overarching villain of *The Legend of Zelda* game series, representing the evil that the world has. While commonly being shown as a brutish knight or a giant beast, the Ganondorf of *TLoZ: Wind Waker* takes the form of a calm and laid back philosopher and swordsman, better representing the game's theme of water and wind. Here, Ganondorf appears multiple times in the game, monologuing about the world and his motivations and providing a view into his own thoughts, perhaps even convincing the player that there is logic behind his actions to restore the world. Nonetheless he is the villain, and as the hero you face him down in a final battle to determine the fate of the world.

Ganondorf has a slightly smarter AI than Ludwig, due to not having any beastial parts in this game he frequently blocks and tries to evade attacks, creating a flow where the player and boss takes turns with attacking and defending. To properly damage Ganondorf the player has to either dodge and stun him by jumping on his head, or wait for Zelda to shoot a stunning arrow. But to mix this fight up Ganondorf will occasionally slap Zelda unconscious and go on the offensive, changing the flow. As the fight goes on Ganondorf begins dodging and moving more and more quickly, and as the battle draws to a close the story is concluded with the evil once again being banished.

This showcases the aspects of a fight not just being a fight, but it being a climax of the story. Ganondorf is the ultimate evil, the opposite of the protagonist, he embodies all the conflict in the game and tests the player of all they have learnt in the game. While not as mechanically challenging as Ludwig, they still feel like an ultimate battle due to this importance in the story.

Fig. 3; Ganondorf blocking the player's attacks and preparing his own onslaught.

5.1.3 Jetstream Sam - Interactive Fighting, Rivalry & Reactionary AI

Jetstream Sam is one of the more well thought out bosses of the chaotic game *Metal Gear Rising: Revengeance*. He persists throughout the entire game and serves as the rival to the protagonist Raiden, being a rival means that they are a mirror image of the protagonist; they're the same, but different. While all of the other bosses are technologically enhanced and use various gimmicks, such as *Monsoon* with his smoke grenades and magnetic powers, Sam uses only his trusty blade and expertise, much like Raiden. Now, rivals are a whole other genre of boss design which an entire project could be dedicated to, therefore a link to a useful video made by The Digital Dream Club about designing rivals will be under the Appendices chapter as Appendix 1. It is highly recommended to view it out for some further insight into boss design, such as color theory and shape theory.

In Sam's bossfight he moves swiftly and evades most of the attacks thrown at him until he makes attacks of his own, where he has attacks that are well telegraphed in what he's about to do. A great example of this would be his charge attacks, where his sword begins glowing with an intense glow and swinging slowly in the air indicating that it's best to back off. By being hit by one of these stronger attacks the player is put into a mini cutscene where he repeatedly strikes the player stylishly.

This shows a certain style that MGR:R uses commonly, controlling the player and pacing of the game using mini cutscenes or quick time events. When done properly this can provide a more cinematic experience, but when done poorly it can feel like the player has no control or that gameplay is lacking. Sam however, balances this beautifully; by restricting the use of cutscenes

and quick time events to specific moments in a longer fight the player is left with a great flow between gameplay and cinematography. This can be seen in how quick time events are used in the phase transfer and the ending of the fight, as they provide flow from one thing to another.

In the middle of the fight, Raiden strikes Sam in such a way that his sword arm is left exposed, using the special slow-motion *Blade Mode* the player targets his hand and slices the sword out of his grip. Here, Sam starts fighting with hand to hand combat and becomes much more rageful, dodging and becoming more agile than before, even resorting to more brutal attacks such as violently kicking the player. This perfectly resembles his theme of being a dishonored swordsman, where his sword is his only connection to who he used to be. By removing the sword he is left as a confused and rageful husk of a man, not knowing what he's fighting for. To further show this MGR:R uses a quite unique technique among boss fights: where the boss music is not only there to create a better experience, but to also showcase the boss' ideals and thoughts of the world. While Sam is shown as confident and arrogant throughout the game, his theme *The Only Thing I Know for Real* (Konami Digital Entertainment, 2013) sings of him not recognizing himself anymore, and that the only thing he knows is how to fight; but not why he fights. But as he loses his sword in the 2nd phase the lyrics go silent, and only the background music remains, truly showing how he has lost his identity, and showcasing the importance and impact of music in boss fights.

> *"Memories broken, the truth goes unspoken. I've even forgotten my name! I don't know the season or what is the reason, I'm standing here holding my blade!*
> *...*
> *Losing my identity, wondering have I gone insane?"* [The Only Thing I Know for Real]

Fig. 4; Jetstream Sam and the protagonist Raiden clashing swords in a scripted quick time event to finish the boss fight, providing a better flow from gameplay to the following cutscene.

Now that the three different fights have been analyzed we can see an overarching approach on the Dark Souls Design, and how it has been improved with time and had different approaches. By taking aspects and lessons from these games we can construct a fight of our own, but as mentioned in the Challenges subchapter and the Data Collection subchapter we have to adapt these mechanics to our own fight, making it slightly slower paced and longer ranged. This can be done by having the same waltz tempo that Ludwig uses in his second phase, where the pacing of the fight swings from high intensity to low intensity and provides moments of action and respite for the player.

5.2 Theme

As the most important part of a boss and the foundation of what the boss will be, the theme should be the first thing which is established. Therefore it has been decided that *Holy*, but with a hidden *Darkness* will be the theme. This has been done to create a strong contrast between the boss fights phases much like in Ludwig's fight, where the first phase will be Holy and mainly using ranged spells, while the second phase will be Darkness and use primarily melee attacks. So how does one represent   this   theme?

We can begin with making a heavenly environment, embodying the Holy theme. Things which are commonly attributed to such things are floating islands in the skies and Greek architecture made of marble, giant rays of light and a general brightness to everything. To add Darkness to it all the arena should change in some way, this can be coupled together with the boss fights phase change. This way the boss might begin as a heavenly warrior but change to reveal his inner corrupted self (see Fig. 5). To accompany this the arena might start out as a large marble cathedral lit up by magic runes   but   then   be   corrupted   with   black   sludge   seeping   from   the   walls.
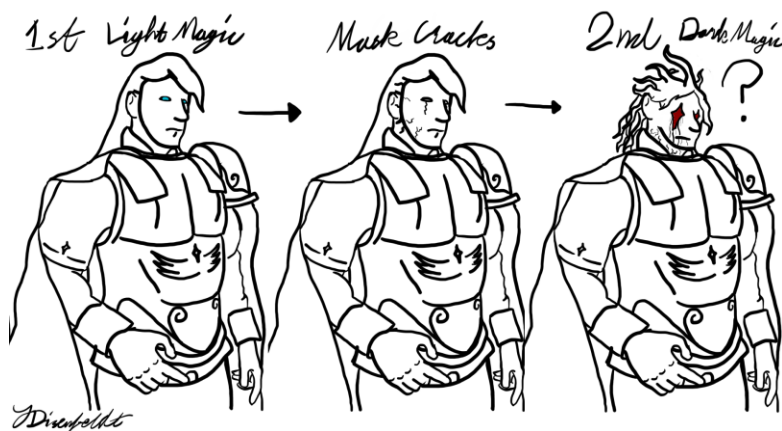

Fig. 5; Boss Concept Art

5.3 Environment Creation

To properly create a build up to the boss I have chosen to create large architecture and a giant bridge made of light leading up to the boss room. This makes the player feel tiny in comparison to the environment, and the large bridge going slightly upwards makes the player feel like they're going to someplace important (see Fig. 8), enforcing the build up aspects mentioned in the background chapter. The arena itself should be large and opulent, a circular hall leaves much room for the player to properly move around as they dodge attacks (see Fig. 7).

To create all this I will be using the 3D modeling software Blender due to being relatively familiar with it. Using simple shapes and tools we create the buildings and islands, but for more complex things like clouds we look to Metashapes, or more specifically Metaballs. These shapes merge together when in close proximity to each other, using metaballs in various sizes and positions we can create convincing clouds as seen in the pictures below.
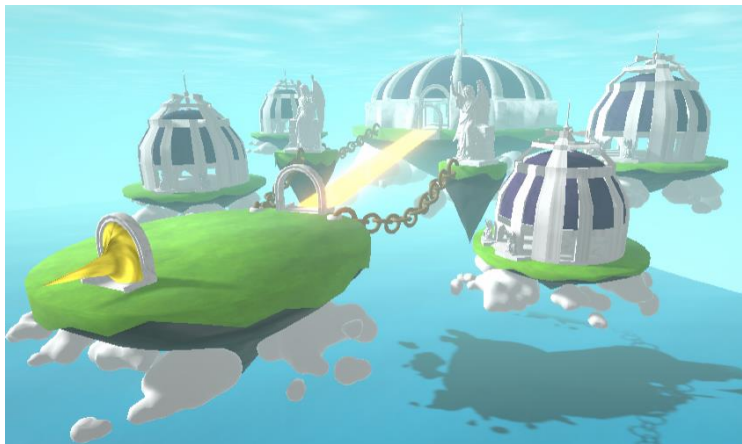

Fig. 6; The Heavenly Environment

Fig. 7; Inside the Arena

Fig. 8; The Build up from a Players View

5.4 Boss Planning

Now the time has come to plan out the boss itself. To keep them interesting they will be focused on melee attacks with implementation of spells, both in melee and ranged. Upon his phase change he should become more maniacal to embody his 2nd dark theme, shown in a worse posture and more feral attacks with an even stronger bond towards magic as to enlighten his empowerment. The reasoning behind this is that in the world the game is set in, channeling magic comes with increasing costs, as the fight goes on the boss becomes more and more desperate and starts to pull strength from darker sources; corrupting himself in the process and leading to the 2nd phase. This could be conveyed through a brief lore explanation before the boss (due to the rest of the game being rather barebones) and through his moveset and minor dialogue, having a tendency to use more magic in his attacks closer to the 2nd phase. By tying the boss into the lore of the game mechanically we create something more special for the game and makes them fit inside the universe more, it is also important for the attacks to follow the rules set in the background chapter.

Something else of importance is planning out which target group the boss will be tailored to, and therefore which difficulty it should be. As I myself have experience and knowledge in fights of the harder difficulty and am taking inspiration from such games the fight will be structured after such a fight. This means that the boss will be designed to have a specific flow of combat with high intensity scenarios balanced out by moments of lower intensity, properly following the Dark Souls design set in the background chapter.

The planning begins by sketching up his moveset and attack chains (Fig.9 - 10):
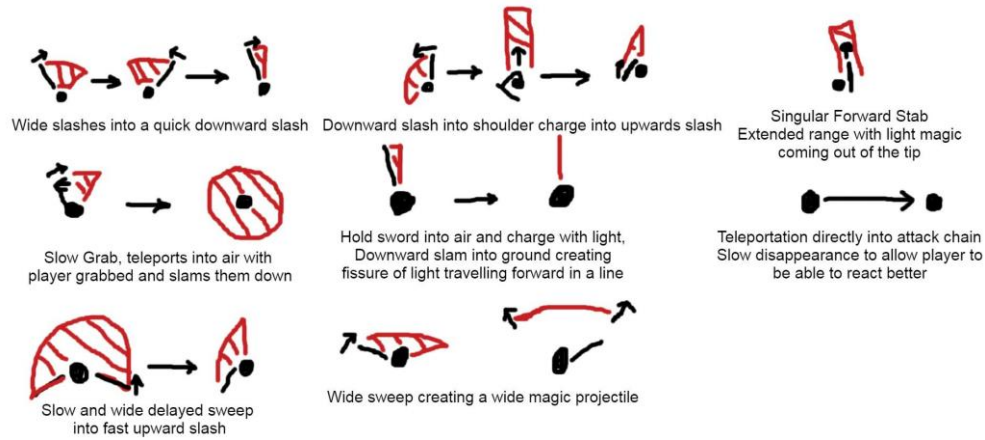
Fig. 9; Sketches of the 1st phase moveset, having composed and methodic strikes.
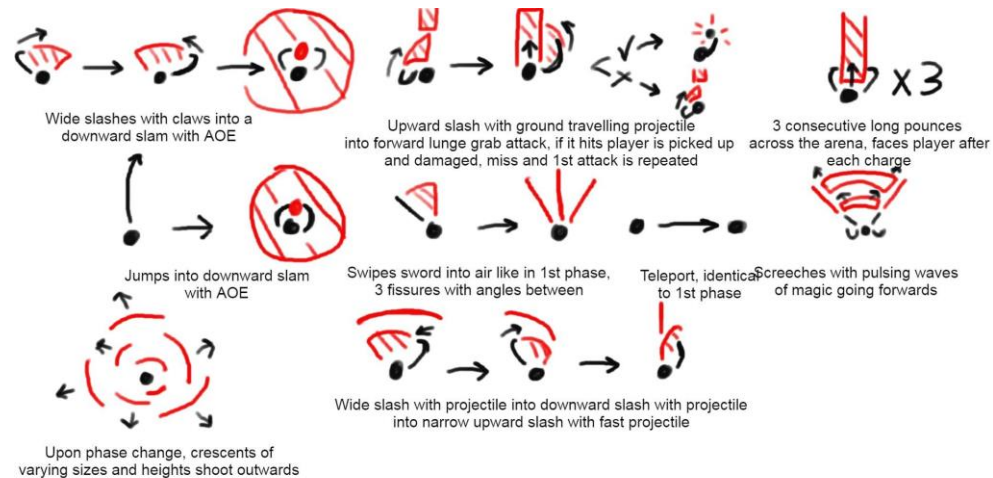

Fig. 10; Sketches of the 2nd phase moveset, many similar things to the 1st but empowered and expanded upon by the corrupted magic. Using claws and wild lunges with a larger presence of magic.

Due to game development being a continuous flow of new ideas and changes these attacks are subject to change or tweaking, as some things might sound better theoretically than they are practically.

5.5 Boss Creation

The first part of the boss AI is the movement, organizing it with enums to signal which action he currently is doing; such as closing distance or strafing. These enums randomize a duration for every behavior and which one it will enter afterwards, certain situations may override this or make

the boss favor a certain decision over another. An example of this would be when the boss is a long distance from the player it will more likely move towards the player than away from the player, or that if the player is casting a spell then the AI will be more likely (but not guaranteed) to dodge in a direction as to attempt to avoid the attack. This semi-randomness keeps the boss interesting but methodical, as the player is forced to observe the boss' movement and act accordingly while still keeping an element of surprise. The boss can now move intelligently, and by adding a dash with parameters for when it is likely to do so we add a bit of defensive AI to the boss, making it seem more intelligent by not adding much, these parameters are for example when the player is charging up a magic attack, it's not guaranteed but it is more likely to be done then than if the player is just walking. The dodge also functions in different directions based on the type of incoming attack, when the boss is far away and the player uses a magic attack it will try do dodge sideways or diagonally forward to close the distance and put pressure on the player, whereas if the player is attacking in melee it will more likely back off with a dodge backwards.

Some further work surrounding the boss is done before work begins with the attack patterns. This includes a bossfight manager which keeps track of the status of the fight, doing things such as starting the fight and trapping the player or despawning the boss and resetting the arena once the player dies. Using a manager like this makes it a lot easier to switch between different fight stages, instead of it all being controlled by an instanced boss gameobject.

The attack patterns are then structured by the boss' distance from the player, close ranged attack can only be done when the player is within a distance while ranged attacks are over that distance. The attack choice is then randomized between all valid attacks, them being those within range and those that have not been used recently (as to avoid repetition). Certain weaker attacks also have a lower cooldown before the boss can begin attacking again, so that the boss can pressure the player further and only give them respite after their stronger attacks. While the randomization done here might be perceived to break the Dark Souls design stated in the background it is still established with modifiers such as which attacks are valid to use and other factors like attacks flowing into other attacks. Therefore the boss doesn't feel like an enemy who attacks, waits, attacks, waits, etc. and instead feels like a flow between pressuring the player and giving them some respite. Using animations from the free 3D animation and rigging site Mixamo several attacks are stitched together, and with the Unity Particle System the magic attacks are brought to life. By using Mixamo the work is made less time consuming and more manageable to reach the deadline, however, custom made animations would be preferable in certain situations where for example the hitboxes of the sword don't properly swing outwards.

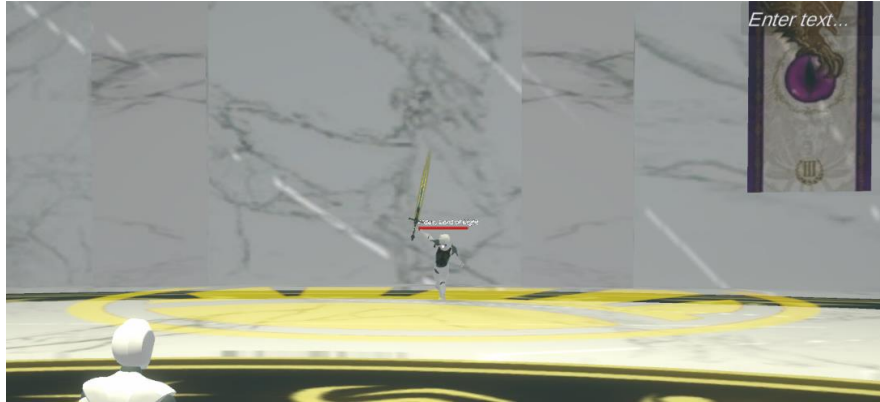Some of the attacks included are (Fig. 11-24):

Fig. 11; The build up to an AOE attack, signaled by the boss raising his sword and a magic circle expanding on the ground around him. A change from the planned "beam" was made due to the similarity to the empowered stab attack.

Fig. 12; A charge attack where the boss charges the player at an accelerating high speed, the flash of light indicates that this is a parryable attack, rewarding the player with a temporary stun on the boss where he is vulnerable to damage. This attack is an evolution of the planned shoulder bash attack and puts more pressure against the player at range, closing the distance.

Fig. 13; A beam attack, having high tracking to begin but losing it in the last frames, requiring a sideways dodge to avoid.
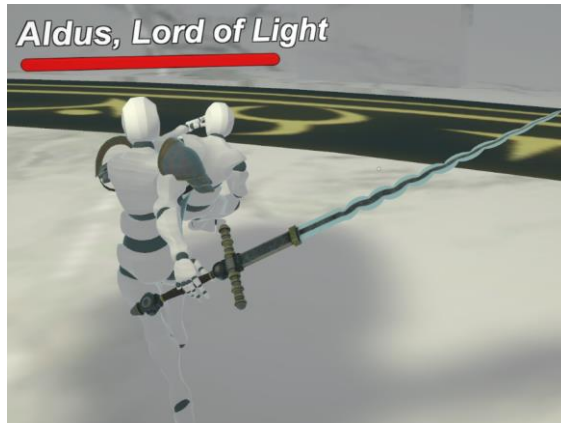
Fig. 14; A grab attack, having a small hitbox but dealing high damage after being grabbed and slammed down into the ground.

The work continues by making the boss phases, having the boss change in visual appearance and behaviour. To smooth the transition between a holy warrior to a corrupted one a midphase is added. This phase does not replace any attacks but instead empowers them, and adds a new one, these phase transitions are communicated with animations and effects, offering the player a small break in the fight.

Fig. 15; The boss powering up to the midphase, he now wears a crown made of light and his sword shimmers with energy. But what's that dark goo seeping from his eye?

Fig. 16; The midphase special attack, the boss flies up and barrages the player with numerous small homing projectiles, these begin by tracking well but moving slowly, speeding up and losing tracking with time. The attack pushes the player closer to the boss, being safe from the attack near him.

Fig. 17; The boss enters phase 2, being visibly in pain and losing his mind. Dark energy pulses towards him as he absorbs it, becoming corrupted.

Fig. 18; Fully corrupted, Aldus harnesses dark magic to attack the player. His hand growing claws, his sword glowing with a purple aura and his head pulsating with pustules made of black goo. No longer being the Lord of Light, but instead the Lord of Blight.

Fig. 19; As Aldus transforms he releases a giant wave of dark energy, shattering the building and sending debris flying everywhere as the entire area is engulfed in a void. The now open view of the floating islands surrounding the arena and the constant swirls of dark energy set the mood for a final boss phase while not being too distracting.

Fig. 20; A powerful stomp attack causes ripples of long lasting dark pillars to expand outward, limiting the player's area of movement and leaving them more vulnerable to other attacks. To complement this idea it has a very low cooldown before the next attack is done and is by itself very slow and avoidable.

Fig. 21; A long range slam attack closes the distance quickly and creates a lingering AOE zone at the point of impact.

Fig. 22; The boss rushes across the arena 3 times at an increasing speed, getting hit directly causes the player to be launched up and then hit into a wall. This attack forces the player to make multiple consecutive dodges, teaching the player to conserve their stamina.

Fig. 23; An attack chain ending in an AOE blast, see Fig. 24.

Fig. 24; The ending of an attack chain, causing a large AOE blast and forcing the player to distance themselves from the boss.

With all of these attacks (and a couple of more), the boss has a total of 17 attacks creating a diverse pool of choices that removes any sense of repetition. The boss changes between these different attacks depending on their phase, using the basekit in the first phase, adding another ranged attack in the midphase, and lastly switching out a majority of the basekit for the dark attacks. Some attacks are however kept to the last phase as to create more continuity; it is after all still the same boss, even after turning monstrous.

While most attacks are simply just to create visual spectacles and a more diverse kit, some serve a higher purpose. Many of them control the spacing between the player and boss, forcing them to change their playstyle a bit and adapt to the incoming barrages, this would be something like the melee chain ending with an AOE (see Fig. 24) forcing the player further away, or the flying midphase attack (see Fig. 16) which forces the player closer, as well as giving the player a brief pause. Other attacks such as the rushes teach the player about stamina management and how important it is to conserve stamina for dodging the enemy, with the light dash (see Fig. 12) preparing the player for the 2nd phase dark dash (see Fig. 22), this evolution of attacks also provides continuity and a sense of the fight ramping up. By having a weaker version in the earlier stages of the fight, the player is prepared and knows what to do when they're attacked by the stronger version. The most influential attack is however the stomp (see Fig. 20), by using this the boss practically changes the arena and forces the player to think quickly and adapt, changing the flow of the combat. With all of the core boss combat done the work moves on to fine tuning things and adding extras to heighten the experience.

To make the fight more fair to the player and give them more of a fighting chance as the battle goes on the boss now drops health pickups when changing phase (see Fig. 25), these pickups reward the player and help direct the flow of combat. By revitalizing the player they give them a second spurt, making them more confident and more likely to go on an offense, this leads to the more in-depth thought pattern of choosing whether or not to heal now or later and developing deeper strategies. It shouldn't be too rewarding however, as of now you are only rewarded with

30% of your max health upon a phase change, meaning that one cannot rely on them singlehandedly.
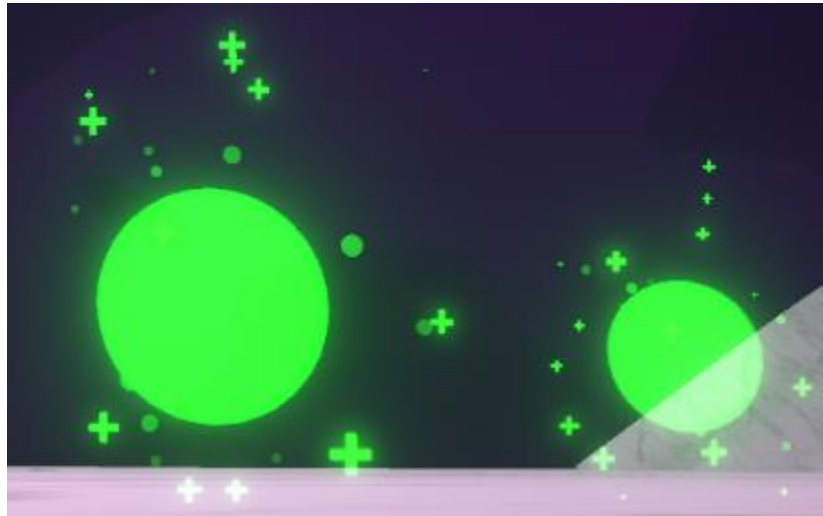
Fig. 25; Health pickups dropped by the boss, available to be picked up or ignored for a later and more dire time.

Enforcing the build up and providing exposition is a range of dialogue (see Fig. 26) which pops up in certain circumstances. While many are before the boss fight, there are also some in the middle of it; namely during phase changes. These dialogue lines are meant to smoothen the phase changes and provide insight into how the boss is thinking, as well as explaining the conversion from light to dark energy.

Fig. 26; One of the dialogue lines which pops up as the player is approaching the arena, providing exposition and building up tension for the fight itself.

Finally, the boss is given 2 different songs which play in the boss' respective phases, they both sound similar but are vastly differen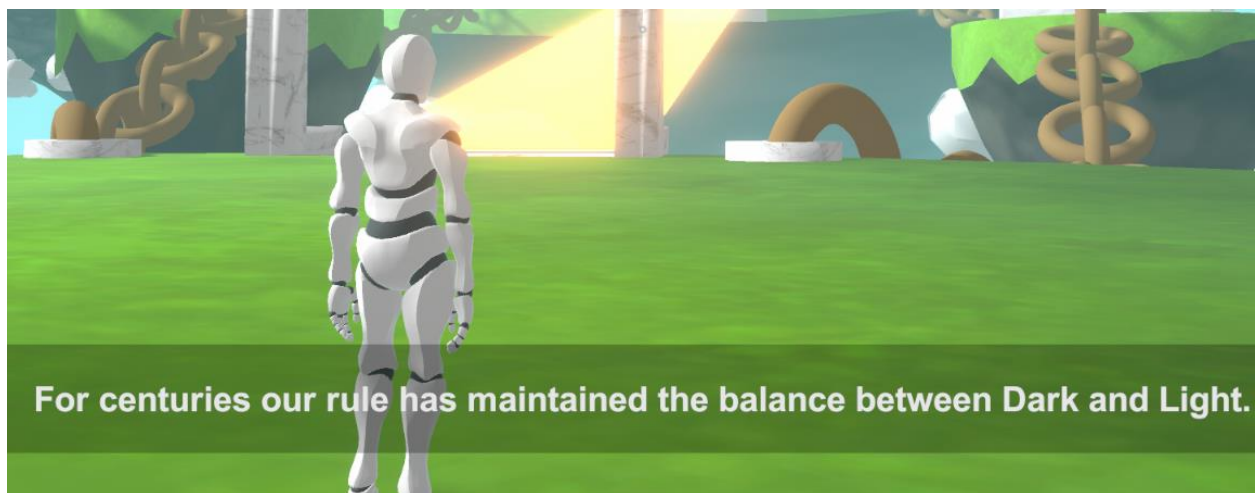t in tone. The first being a sort of epic confrontational boss theme with brass horns and war drums, and the 2nd being a more chaotic and apocalyptic sounding theme using the same instruments but being more stressful and having a choppier, aggressive tempo. Due to time being short they are both sourced from youtube, while doing their job well it would still be preferable to have custom composed music to make the boss a one-of-a-kind scenario.

6. Results

6.1 Summary

As the practical work is concluded we are left with a functional boss enemy that has;

- 17 Different attacks, all of which are unique and function differently, as well as having different purposes to dictate the flow of combat and structured after the Dark Souls design mentioned in the background chapter.
- A clear theme for the boss, shown in many aspects and following the rules set in the background chapter.
- 2 Seperate fight phases, accompanied by esthetical changes in the boss, fvx, music and environment and mechanical changes in behavior and attack patterns.
- A boss arena made to embody the theme of the boss and provide a sufficient build-up towards it.
- Balancing factors such as health drops, attack telegraphing, move based cooldowns and more.
- Dialogue providing exposition, build-up, and depth to the character.
- Moments where the player can showcase skill, such as parrying attacks that can reward the player with a stun window.
- Moments designed to teach the player to play better, such as attacks that require stamina management or dodge timing.

There are however some known issues bound to the game engine. In certain areas such as the visual effects the frame rate slows down as the engine cannot handle the amount of particles, the things causing this issue are known and would require optimization. They have however been deemed not too game breaking to require correction inside the project itself. Other issues such as the boss going out of bounds are rare but can be connected to the boss going too fast and therefore going past Unity's collision boxes. This has been combatted partially with raycasts, but as to not ruin the feel of the move nothing further can be done and it remains a rare occurrence for him to glitch out. One of his other moves has been modified to allow him to re-enter the arena, but the

time for him to use that move could vary vastly and would require further modification which may not   be   worth   it   for   such   a   rare   glitch.

6.2   Response Collection

To help determine whether the project was a success or not we will try to enlist 5 different playtesters of varying skill levels to test and provide feedback. The questions are structured as to answer the problems put forth in the Problem Formulation chapter and determine if the boss is lacking in any of the important areas. This feedback will be categorized in x different questions to gather both positive and negative responses;

- How skilled do you consider yourself in games with harder boss fights? (As to categorize the responses)
- How visually impressive was the bossfight?
- Did you perceive the fight challenging? And was it fair?
- Was there something special which stood out?
- How would you summarize/describe the boss? (Meant to test if the player could clearly understand the intended theme of the boss)
- What did you think about the environment?
- Did you feel like the fight was repetitive? Or did the boss mix things up regularly.
- Was there something you thought needed improvement with the boss?

Responses:

Lucas L.

- "Bad and inexperienced at harder boss fights, mainly play on console"
- "Yes it looked very cool, I liked it"
- "It was very challenging, I am not skilled enough to decide if it was fair or not. Way too difficult for me at least"
- "I liked the special effects"
- "He was the protector of the balance. Didn't like me for some reason, probably because I broke into his home. After a while the darkness consumed him, which happens to the best of us, no hard feelings. Kinda rude of him to kill me tho not gonna lie."
- "It looked pretty. Boss arena looked cool, good to have walls. The arena change during the second phase looked very cool, I liked it a lot."
- "No, I think the boss mixed up his attacks well enough."
- "Not really."

Sidenotes: Lucas stayed away from the boss for a majority of the time and had to use god mode, only attacking with magic. He had troubles getting to know the controls due to normally playing

on consoles. Lucas is also a friend of mine and one can see that he wasn't upmost serious at questions like the summarization of the boss, nevertheless the response holds value in different areas. When playing, Lucas seemed impressed at the fight and the attacks.

Dawid L.

- I have played one skilled based game, Assassins Creed Odyssey. I finished the main story and some of the challenge boss fights. I would categorize myself as a mediocre skill based game player.
- The visuals on the first phase were grandiose in scale and pretty detailed, the second phase thought was quite boring, as it mosty was a black void. The "attack" that switches phases was pretty cool.
- It would have been very hard to do and probably had to do multiple times to learn the attacks, I did it with god mode but if i didnt i would probably have been frustrated with my lack of progress, because its above my skill level.
- I had a hard time using some of the controls, as i personally would have had alt as dodge, and middle mouse button as lock on, outside of that some of the enemy attacks lagged the game pretty hard, and the victory screen with the amount of health pickups lagged pretty hard to.
- He felt like some sort of overarching obsessive bad guy, with probably some alright motivations to keep his kingdom and people safe. Otherwise he seamed like a pretty powerful guy, and us as the player was the underdog.
- The first phase was pretty cool in the arena with good detail, but the second phase seemed like just a black void, which didn't make it very impressive.
- The bosses attacks didn't feel repetitive at all, they were switched out depending on what was advantageous for the boss, and it was good that the attacks changed for the second phase.
- During the boss battle the boss dashed out of the arena and got stuck in the throne, but he jumped in shortly after so it didn't break much of the flow.

Sidenotes: Dawid is also a friend of mine but has remained objective with their response, providing more valid and useful feedback. They also had to use god mode due to not being in the target group of the project. The issues listed by him are known and described earlier. Dawid however seemed to enjoy the fight and reacted positively to it. While tested two other students watched by and expressed how the fight looked impressive and cool.

Iqbal H.

- "Not very good since I don't play a lot of games, especially RPG and such"
- It was actually very good, considering only one person worked on it
- It was hard, very hard
- It was very similar to Genshin Impact which impressed me.

- His transformation mid game was very cool and made the game more interesting
- The environment was also good, I liked how it was calm in the beginning but then everything gets destroyed.
- The boss made me use every ability I was given, both melee and magic attacks, dodge etc.
- I don't think there is much to improve cuz most of the glitches were cuz the engine couldn't handle it.

Sidenotes: Iqbal played without locking onto the boss and seemed to have fun playing it. He utilized more of the attack kit than the two previous participants but had some troubles in the beginning due to familiarizing himself with the controls. He did however not use god mode as much, and instead only used it for the occasional healing.

André D.

- Pretty skilled, a souls fan
- Very Impressive, nice effects in the transitions and boss attacks!
- Nicely telegraphed attacks and nothing that felt unfair, overall a nice challenge. Could have a bit more feedback on attack hits.
- The boss AI was solid even when slightly scuffed!
- Artorias meets Gwyn.
- I liked how the arena shifted with the boss and never distracted from the fight.
- As mentioned before I'm impressed with the AI and feel that the attacks were used an appropriate amount for the player to learn them without much issue.
- Just feedback on hits!

Sidenotes: André is the only player of the target group I was able to find before time started running short, he learnt the boss attacks quickly and adapted to fight against him; only having to heal a couple of times. He expressed genuine enjoyment of it and a fellow teacher stood by and watched, who was also impressed at the visuals. When he said Artorias meets Gwyn he means that the first phase had a slower swordsman with light magic and the 2nd phase had a more chaotic and dark combat style using charges and jump attacks. The boss also slightly glitched out after being hit by the wind tornado attack somewhere in the 2nd phase, something about the rotation of the boss being skewed by 90 degrees. It was however still able to continue attacking and function. Hit feedback refers to small staggers or blood splatter.

To summarize the responses:

- 2/4 playtesters were totally inexperienced
  1 was mediocre
  1 was inside the target group

- 3/4 were 100% impressed by the visual effects, with the last tester disagreeing on the art direction of the 2nd phase but still being impressed by the 1st phase

- 3/4 thought the boss was too difficult for them, with one thinking they would be frustrated if they had to learn the fight by themselves. The last tester was experienced and thought that everything was balanced and "a nice challenge"

- What they thought was special about the fight the most was;
  Special   Effects
  Difficulty   with   controls
  Similarity   to   Genshin   Impact   (something   which   impressed   him)
  The   boss   AI's   robustness

- They   summarized   the   boss   as:
  A protector of the balance (between light & dark), and that the boss didn't like the player for breaking into his house. And that the dark forces overtook him. An overarching bad guy who did bad things for a just cause to protect his people, and that he   acted   as   a   powerful   opponent   to   an   underdog   player. That his transformation was cool and shook things up. (The participant answered this way due to not having payed attention, they instead focused on gameplay and visuals and despite being guided repeatedly to what the question meant he answered like this) A blend between the Dark Souls' bosses Gwyn and Artorias, one a bright but withered king and   the   other   a   dark   consumed   warrior.

- They   thought   this   about   the   environment:
  Overall coolness factor about it all, and a special liking towards the phase change arena where   it   all   gets   destroyed.
  That the first phase arena was good with details but that the 2nd phase arena felt like an empty   black   void.
  That it wasn't too distracting from the fight itself and that it shifted in coherence with the boss   nicely.

- And   when   asked   if   it   was   too   repetitive   they   thought;
  That   the   boss   mixed   up   their   attacks   well   enough.
  That the attacks changed well to suit the situation and that it was refreshing when they changed   in   the   2nd   phase.
  That they pressured the player well enough and forced them to use their entire kit. And   that   the   AI   was   written   well   so   that   the   attacks   could   be   learnt   in   time.

- And lastly, they thought that some things needed improvement; Bug fixes regarding the boss glitching out of the arena. Optimization problems regarding visual effects. Hit feedback on the player and boss.

6.3 Analysis

Now that response data has been collected we can start to determine what was good and what was bad about the produced boss fight. For example, three out of four playtesters found the boss to be too difficult for them; as they were rather inexperienced in games such as this and were outside of the target group. However, the last participant André was inside this target group and expressed joy towards the boss, only finding a couple of flaws and an improvement to be made to the player; something mainly outside of the project scope.

The 3/4 testers who paid attention to the theme of the boss also summarized it with different alterations of the same core concept; that being the intended theme of the inner conflict between light and dark within the boss. These summarizations vary through the testers different ways of thought, Dawid could for instance be seen as more political as he draws conclusions towards a society scale, while Lucas spoke more objectively about what was in the project itself and André as a Dark Souls fan compared it to two of the series' bosses and recognized some of the inspirations while thinking more mechanically.

Even if the others were not as good as the boss as him they still gave valuable responses outside of the gameplay focus. 2/3 of the inexperienced-mediocre participants were wholly impressed at the visuals while the last one thought that the 2nd phase arena was a bit boring with just an empty void. While this was the intended theme it seems more could be done to make it visually appealing, this could however clash with the response gathered from the experienced one about keeping the arena un-distracting. It is after all a background element to complement the fight going on and should not pull the player's attention away. Otherwise everything about the boss fight seemed enjoyable for the participants and impressed them greatly.

In their playtesting runs this could be seen in how they reacted to the fight and environment. They openly showed excitement and exclaimed how cool certain things were in the fight as they experienced it, as a boss fight is as much as it is a test as it is an experience.

Myself, I am highly satisfied with the results and only find it lacking in a few sectors. The few bugs and issues could be ironed out with a bit more time to work, but as the deadlines approach I am afraid it will have to be left in its current state. This and a couple of other things shall therefore

be brought up in the Future work subchapter of the Concluding discussion.

6.4 Conclusions

Overall the responses gathered are as expected and point towards a positive application of the Dark Souls design to create an interesting boss fight. Does this however answer the question of "How do you design an interesting and memorable boss fight experience in a third-person action-adventure game?"? Not exactly. As humans are very subjective with different interests we see in our testing that a majority of the testers would not be able to fully enjoy the project due to their lack of experience, André points out finer details such as attack telegraphing and other terminology which the others would not be able to pick up on. It is therefore shown that the Dark Souls design can be a very tailored experience towards a smaller target group, but can also be applied more generally. The approaches to themes, visuals, and storytelling through dialogue have shown to create a fight interesting for all of the participants regardless of their skill level.

This means that while they might not appreciate the balancing and finer details, they can still feel that ultimate test of the players' skill and grandiose nature of a boss fight that Mike Stout describes them as being in *"Boss Battle Design and Structure"* (2010). The more accustomed André shows that given more time the other participants might have tried time and time again against the boss and learnt it's inner workings to finally conquer it, improving themselves and learning the game in the process and truly showing how a boss is a test of the players' skill. Given the short time of the testing period, however, this chance was never given to them and as such the results could be semi-inconclusive in terms of balancing.

There is also the question of designing one, while this project shows the process of designing a boss for a third-person action-adventure game the process might be different for other types of games. As mentioned in the background chapter under the subtitle of Other Game Types, a different game will want a different result. This means that for example, not as much work might be put into the boss AI, while a lot more design is put into the environment. The project does however showcase the 5 core principles behind boss fights, and how the boss can be designed to follow these and fulfill all of the needs to make an interesting experience.

When it comes to the memorability of the fight one can't for sure say that the fight will stick with them for long, but we can however see that the fight could easily be bound to simpler concepts. By analyzing the responses we can see that no individual thought the fight was sub-par or mediocre, instead all participants described it as impressive and were experiencing the fight for what it was. With the testers having bound the fight to simpler concepts and experiencing it with admiration and impressiveness it is more likely to stick in their memory for a while. Maybe it was a certain attack that they thought interesting, or maybe it was the grandiose scale and environment;

something might have given them a lasting impression which might resurface as they experience other fights of similar nature or think about video game bosses.

All of this shows that the Dark Souls design and approaches to themes is a working formula which developers can follow and take inspirations from to create interesting and memorable bosses that break the unending stream of unmemorable and mediocre boss fights. By following it we create a strong foundation consisting of the cornerstones established in the Background chapter with Theme, Movesets, Environment, Build-up and Story, creating a full experience for the player. It is however worth pointing out what was mentioned in the Challenges subchapter of the Problem Formulation, that the boss must fit in the game it's placed in. While the approaches that Dark souls take might not be useful for all different game types they can still be a valuable lesson on how to create themes and feelings behind the fights. As a developer your game might be something completely different from a third-person action-adventure game like mine but the Dark Souls design might still hold great information on how to improve your fights. Maybe you're wondering how to create a build-up, or you don't know how to create proper themes. Whatever the problem is, analyzing great works such as the Souls-series can teach you a lesson or two in creating better games   and   boss   fights.

7.   Concluding Discussion

7.1   Discussion

There is unfortunately a main flaw with the project results. The data collection could be done in much better ways, due to the project being set towards a specific target group and only 1 out of 4 participants being inside it the responses are angled from an "outsider" perspective, and the testing pool of only 4 people is also less than one would have hoped for. As such, many of the testers couldn't give valuable feedback regarding the balancing and mechanics behind the fight, and could only focus on the visuals and storytelling which are, of course, still integral to the boss fight experience. All of this is due to the playtesting being conducted in person towards people that I am familiar with, creating a rather skewed result where most were not primarily chosen by their experience. It would therefore be preferable to get a larger test group with more of the target group inside it, as time is short this could require something like online testing. By uploading the project and making a response form one could gather data from testers around the globe of various skill levels. This however comes with the problems of legitimacy, by holding the interviews and testing in person you know for sure who is testing it and you can pick up on response not detailed in an online form. Some of this could be seen in how when André and Dawid tested that others gathered and watched as they commented how good it looked, or how people like Iqbal had positive facial expressions of excitement as they battled the boss.

Otherwise something much simpler like asking people more randomly if they'd like to test the project could provide better results, as my environment is a school of game developers of varying backgrounds and interests. This testing method could however prove more unreliable when trying to gather testers due to people being busy with their own lives and work, leading to the online testing being the more valid alternative.

7.2   Future Work

As mentioned in my personal comment in the Analysis subchapter there are a couple of issues that could be solved with just a few more days. These have been noted in the Implementation chapter and are often down to un-optimized solutions and the game engine, with proper time these would be solved before anything new is introduced. Then some of the more feedback related things would be solved or implemented, this would only be the hit feedback that André D. noted as the others had more so problems due to being inexperienced.

This brings us to the next issue that players aren't accustomed to the controls and combat by the point they reach the boss. To solve this the arena build up would be changed to include an entire heavenly city which the player has to progress through while fighting regular enemies and finding loot. With a warm up level the player would be more prepared to fight the boss, as well as truly creating the entire theme of the entire area. The enemies in this area would be similar to the boss in his first phase, reflecting that holier-than-thou theme with angelic traits, however, something hidden should be added to represent the dark. To do this the city could include darker dungeons underneath the buildings, such that the bright exterior is simply a hollow shell to cover up the dark deeds being done underneath. Here in the dungeons the player would be assaulted by jailers as they wander through the halls of caged abominations and members of opposing ideals to the leadership.

As the world expands and grows to life the project would likely need to be elevated to an entire game company project or indie studio. The problems with this is that the chosen engine, Unity, is not fit for such large scale worlds that the game is meant for and the boss would require some heavy modifications to fit for a multiplayer fight. Therefore this project would serve more as a proof of concept on how a boss fight functions in a game similar to this one, and how the cornerstones established in the background chapter work as pointers on what your game could be missing.

Sources

Design Doc. (May 2nd, 2019) *Boss Battle Design ~ Design Doc*[Video]. YouTube. https://www.youtube.com/watch?v=wUPugc51udc

IGN Staff. (April 22nd, 2021) *10 Best Final Bosses in Video Games.* IGN. https://www.ign.com/articles/10-best-final-bosses-in-video-games

Josh Bycer. (19th July, 2021) *The Impact of Dark Souls on Boss Design.* Game Developer. https://www.gamedeveloper.com/design/the-impact-of-dark-souls-on-boss-design

Konami Digital Entertainment. (2013) *Metal Gear Rising: Revengeance*[Video Game]. Japan: PlatinumGames.

Mike Stout. (15th September, 2010) *Boss Battle Design and Structure.* Game Developer. https://www.gamedeveloper.com/design/boss-battle-design-and-structure

Namco Bandai Games. (2011) *Dark Souls*[Video Game]. Japan: FromSoftware.

Namco Bandai Games. (2016) *Dark Souls 3*[Video Game]. Japan: FromSoftware.

Namco Bandai Games. (2015) *Bloodborne*[Video Game]. Japan: FromSoftware.

Namco Bandai Games. (2021) *Little Nightmares 2*[Video Game]. Sweden: Tarsier Studios.

Nintendo. (2017) *The Legend of Zelda: Breath of the Wild*[Video Game]. Japan: Nintendo EPD.

Nintendo. (2002) *The Legend of Zelda: The Wind Waker*[Video Game]. Japan: Nintendo EAD.

The Only Thing I Know for Real[Composed by L. Mader, J. Christopherson, Recorded by L. Mader, Performed by T. Yen, B. Hudson, J. Death, L. Mader]. On *METAL GEAR RISING REVENGEANCE Vocal Tracks Selection*[Album Song]. Japan: Konami Digital Entertainment (2013).

Images

Fig. 2 from Alhin Row. (2021). *ArtStation - Bloodborne fanart: Ludwig, The Holy Blade*[Artwork].
https://www.artstation.com/artwork/w6QXZY

Fig. 3 from Boss Fight Database. (Aug 8th, 2016). *Zelda Wind Waker HD: Ganondorf Final Boss Fight and Ending (1080p 60fps)*[Video Screenshot, Timestamp 5:56]. Youtube. https://www.youtube.com/watch?v=bDxW1BRa_B0

Fig. 1 from Jimmy Donnellan. (Feb 11th, 2021). *Little Nightmares 2: Chapter 5 - 'Transmission' Walkthrough*[Screenshot].
https://culturedvultures.com/wp-content/uploads/2021/02/Chapter-5-Six-Fight.jpg

Fig. 4 from u/MistWolf27379. (Nov 2021). *I really like 1 on 1 Boss Fights where the player and opponent are in the same level and it becomes a battle of skill. What's your favourite? Mine is Jetstream Sam Boss Fight from Metal Gear Rising (I also like Genichiro from Sekiro and Vergil for DMC5), lemme know yours...*[Social Media Post, Video Game Screenshot]. Reddit. https://www.reddit.com/r/gaming/comments/qhi34g/i_really_like_1_on_1_boss_fights_where_the_player/

Appendices

Appendix 1: The Digital Dream Club. (Jun 21st, 2019). *The Vergil Effect - How to Make a Good Rival*[Video]. Youtube.
https://www.youtube.com/watch?v=acGnIzT9C3U&t