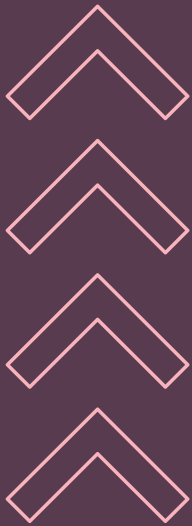


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Final degree work
Video Game Design and
Development

THE ART OF CREATING A WORLD AND LIVING IN IT

IMMERSION IN VIDEO GAMES: THE BARRIER BETWEEN A VIRTUAL AND REAL-WORLD



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“To those people who supported me and believed in me until the end when others did not, without you I could not have made it this far.”

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Thanks to all of you for pulling me a little when I needed it.

Abstract

This document presents the immersion in video games and what makes video games unique in this field. It shows a complex narrative world, ready to be turned into an RPG game and everything necessary to bring it to life: art, narrative, code, and tools such as Unity, Blender, etc.

Keywords

Videogame, Concept Art, Narrative, Illustration, Fantasy World, Worldbuilding, RPG



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INTRODUCTION

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As a rule, all video games are presented in a world of which they can give information, but they are always contextualized in a space. These spaces range from very sparse fragments of a world, as in most fighting games, to entire worlds as in any exploration game, RPG or MMORPG.

However, we must clarify that, when we refer to the world, we do not speak of the planet where they are but of the 'universe', the set of characters and creatures, planets, physics laws (including the magical ones if proceeded) that make up that universe.

Thus, the proposed TFG is supported by this concept.

1.1 Work Motivation

I have always loved fantasy worlds, magic, dragons, and other magical creatures. As a child I always imagined these worlds that, hopefully, I would be in someday.

However, reality is a cruel world, and such a thing cannot be done (for now).

When I first encountered video games, from the beginning they felt like the closest way to be in these worlds and experience one.

After years of searching for a perfect videogame, I found it, and the joy was short-lived when I found out that the game had been cancelled. Heartbreakingly sad. But that's what it was.

I had neither the resources nor the knowledge to make the video game I was looking for. But now I do. So, I decided to go for it and create what would be a very basic version of a game that would make me consider whether it was really necessary to leave the house.

1.2 Objectives

Therefore, the objective of the proposed TFG is to investigate and reinforce what makes the player feel that the game is alive and give a sense of immersion of the video game world. For this purpose, the characteristics of a single-player RPG video game will be used as a basis. From these bases, the following will be attempted:

- Design a book of one of the areas of the world as if it were an old book written by people from the area.
 - Delve into the history/narrative of this zone
 - Build beings (fauna and flora) that based on natural evolutionary principles can exist in this zone to increase the sense of immersion.
- Build a demo of the area, very very small (compared to the real extension of the world).
 - Model and animate creatures and give them a behavior that matches the descriptions in the book described above.
 - Create an immersive environment using assets,VFX, and lighting sources.

1.3 Environment and initial state

I start this project with some idea of what game to make but no clear direction. I don't know for sure what line to pursue in terms of the book, nor do I know what line to follow in terms of the game. There are many things I need to learn in order to be able to do this project as I hope it turns out.

Most of these are from different fields, but I'm excited that 80% of them are related to art. Among them are all the development of stylized assets.

1.4 Related subjects

- VJ1216 - 3D design
- VJ1218 - Hypermedia narrative and video game analysis
- VJ1223 - Video Game art
- VJ1226 - Character design and animation
- VJ1231 - Artificial Intelligence (AI)



CHAPTER 2

HYPOTHESIS

The key question of this project is: What is immersion?

A simple way to explain what immersion is to treat immersion as a characteristic of video games, which allows or makes it possible for the player to feel part of the game or its world.

However, there is a somewhat more complicated but specific way of defining immersion. To do this, we must divide the term into 2 aspects: flow and spatial presence.

Flow can be defined as the absorption of the task itself as natural actions in the mind. It is not limited to video games, this state is also achievable with activities such as sports, driving or playing an instrument.

In this aspect, video games can be considered an optimal medium for the flow. Unlike other activities, video games vary in difficulty, and the level of skill and challenge is variable. They are mostly made to make the player progress and tasks become more complicated with the player's own progress. A well-designed video game knows how to maintain this balance and therefore has a good flow range.

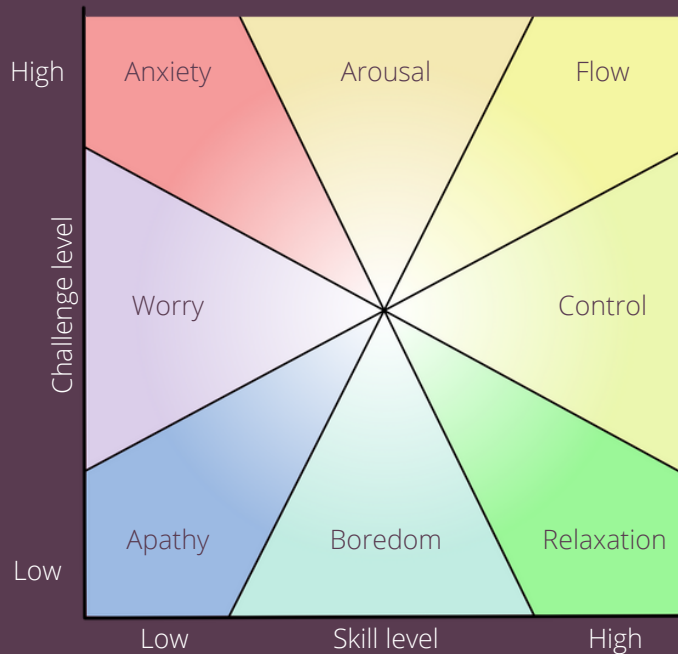


Figure 2.1: Csíkszentmihályi Flow Chart

The flow is therefore defined by the type of player, the difficulty, and the gameplay of the game.

What the vast majority of gamers will say is that one of the ways to achieve quick and easy immersion is to have hyper-realistic graphics in your game. However, this is not true. Many companies and especially AAA studios put a lot of effort into making their game hyper-realistic in order to make it immersive. However, flow is not directly related to spatial presence, although it may seem otherwise.

Spatial presence is a newer term than flow, and, although it makes it more interesting, it also makes it more complicated to deal with. As its name suggests, it is the ability to feel inside the game, to the degree that the reference point of reality is that of the game rather than one's own environment. The factors that determine it are richness and constancy.

The richness value is attributed to the amount of detail and the diversity of the world in which the immersion is intended can be felt. Here you could take into account the above statement about AAA games, since they usually have more details than an indie game (as a general rule, but not always).

It is advisable to have several channels of sensorial information without being overwhelming for the player.

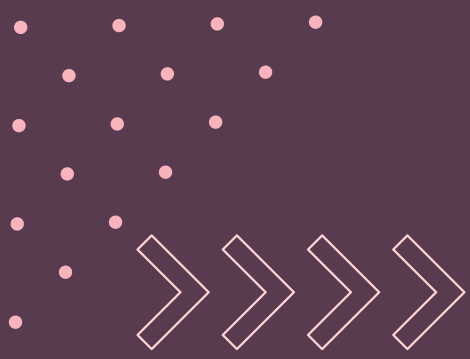
For example, what you hear may be related to what you see. That is, if a barrel is broken, the sound corresponding to its destruction should be heard. In the same way, an animal walking when going at a certain speed, should change the animation when it goes faster to one of running instead of walking.

Cognitive demand also plays an important role in immersion. While the world may be highly detailed, with good graphics, a richness of high spatial presence must be accompanied by a stimulus and motivation of the player to explore this world. If the player cannot interact with the world, it cannot be fully immersive.

And of course, we must not forget the narrative, people and plot. They are very important, plus they can help or completely destroy the consistency of a world. Consistency is what keeps the player tied to the world, within it. The incongruities presented in the worlds are among the most disruptive elements in any artistic medium. In movies or books, it is not so exaggerated either. However, to be fighting a war in which the fate of humanity depends on where we only have a few minutes before the evil demon boss enters this plane through a portal loses importance when you must wait with a loading screen to get to the tower. So much haste was perhaps overstated. Loading screens have always been an object of dispute for players, being one of the most disruptive elements of video games par excellence. Others, though not comparable, could be misplaced collectibles, who's to say why anyone would leave pieces of diary pages all over a continent waiting for someone with too much time to put them back together again.

It is clear that coherence is something fundamental in this field, and we must not forget that it is still a world on a screen, and until full immersive virtual reality techniques are perfected, we will continue to see video games through a screen, being aware of the latter.

The UI is responsible for constantly reminding us of this. We are well aware that in real life you are not able to see your inventory, statistics or anything like that. For this reason, the UI has also been criticized. However, I personally believe that it is difficult to reach a balance in which a UI is operational, intuitive and easy to use and that it is not disruptive.



CHAPTER **3**

PLANNING

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In order to complete my main objective, I chose to first do some research on immersion and, with the knowledge I gained in chapter 2, I made a number of decisions about the game and the book:

The book would be written in first person and would have a "spoken" style, i.e. using punctuation marks and other resources, it would be written in the same way as you would talk to someone.

The game would have as few UI elements as possible and limit the use of the loading screen to where it is strictly necessary.

Following this rule, the information the player could receive would depend on whether, in the real world, he could get this information or not. For example: when looking at an enemy/creature normally RPGs show level, hit points (hp) or similar stats. While it is true that this is a measure to guide the player, I think a game without this kind of information would not only be possible but also more immersive.

However, I do not pretend that the player is uninformed or has little information. A player, especially a veteran gamer, understands that the appearance of enemies/creatures says a lot about their behaviour and statistics.

As a concept artist, it's also my job to reflect what a creature looks like with its design. I think if its design is good, just looking at it should send messages to the player about what kind of creature it is and how it behaves. This is where the consistency we mentioned earlier comes into play. It doesn't make sense that a round, very cute, pot-bellied little creature is a scary enemy. It could be, of course, but then it would be giving contradictory messages to the player, and although it is a resource to take into account that if used correctly can be an ace up the sleeve, doing so requires a knowledge of game design that I lack and besides, as a creature artist I'm not interested in doing this kind of thing. I always design concepts based on the creature's abilities and natural evolution to make it as intuitive and coherent as possible, that is, as immersive as possible.

As I have said before, it is the details that at first glance may seem imperceptible, which in the end complete and consolidate the atmosphere of the world.

Seeing leaves falling in the forest, fireflies at night, or different sounds as you pass over different types of terrain. These are elements that we tend to overlook because we have them so mentally digested that it doesn't cross our minds to question whether they always happen. These kinds of details are what solidify the world and its laws.

Therefore, to achieve this goal:

3.1 Tasks and subtasks

- Concept Art and reference
- Book:
 - Get Dungeons and Dragons and Anima References
 - Choose Art Style
 - Making Table of Contents
 - Narrative Development
 - Development of beings
 - Layout
- Video game/Demo:
 - Get References of similar games.
 - Choose Art Style (3D)
 - Assets Modelling
 - Basic Code
 - AI and entity behaviour
 - VFX and lighting
- Write final memory
- Presentation

3.2 Timeline

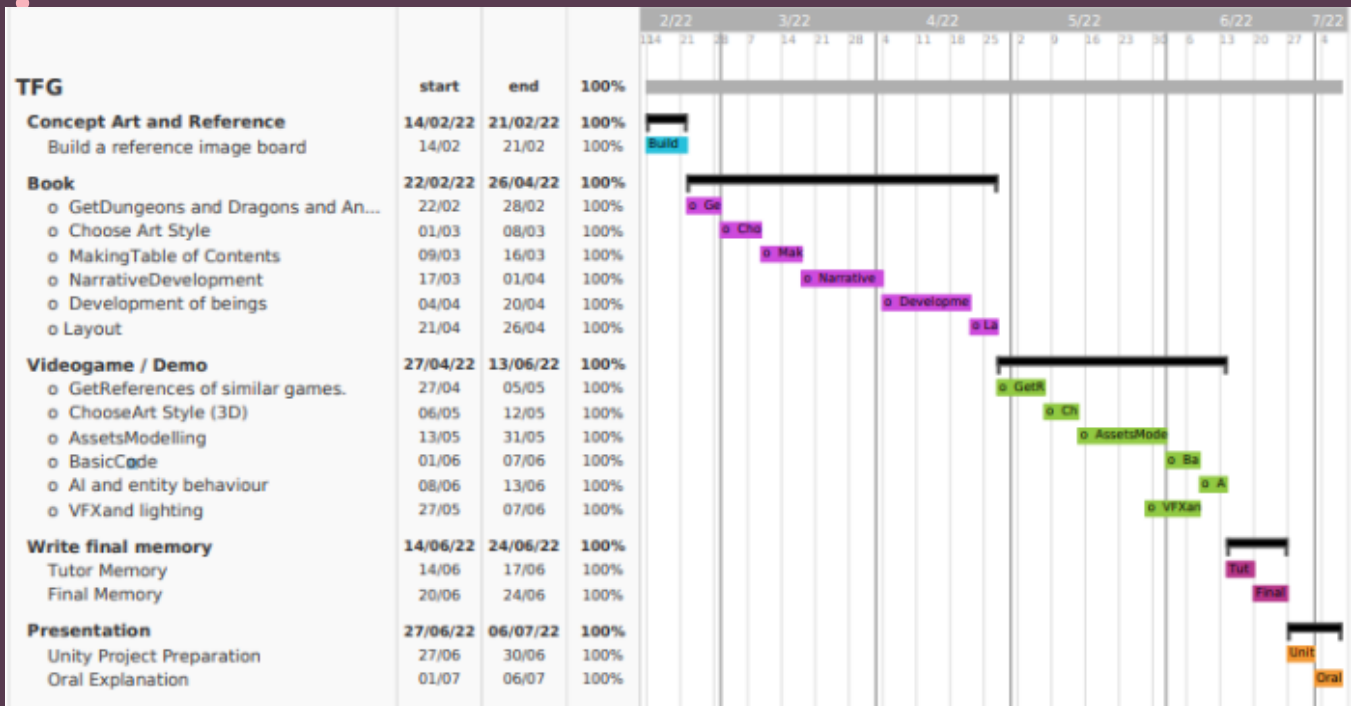


Figure 3.1: Initial Planning (Gantt Chart)

3.3 Tools

- **Paint Tool Sai:** The design and digital art programme I use par excellence. Although it's not as complete as Photoshop, it's the one I feel most comfortable with. The 2D art will be developed with this tool will be:
 - Concept Art: Images and iterations of the process when creating a character or animal.
 - Character Design: Illustrations to be found in the book, from animals and people to buildings and landscapes. people to buildings and landscapes.
 - Book Overlays: PNG of the stains on the pages, to give the impression of an old book.
 - Textures: Textures used for the trees and models in the demo.
- **Blender:** 3D modelling software, very complete and free. It has a very large community, and you can find a lot of information about it, and it is very well documented.
 - Environment: Trees, grass, rocks, and every inorganic mesh.
 - Creatures: Organic netting, animals, and other characters.

- Unity: Game engine that has been seen in the degree. I'm comfortable using it, plus it has a lot of tutorials.
- Canva: Document editing software.
 - Narrative Book

3.4 Resource evaluation

Resources used for this project:

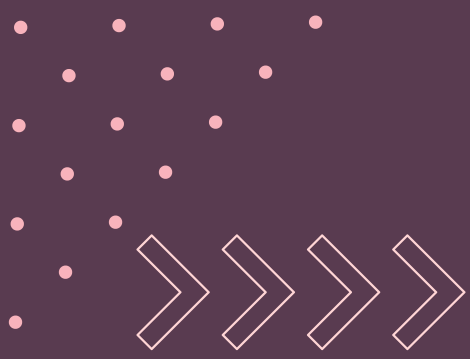
- Computer:
 - Intel Core i7-10700 2.90 GHz
 - MSI GeForce RTX 3070 VENTUS 3X OC 8GB GDDR6
 - 16 GB RAM
 - Seagate BarraCuda 3.5" 1TB SATA3
- RGB Harpoon Corsair Mouse
- Tempest K9 RGB Backlit Teclado Gaming RGB
- XP-PEN Innovator 16
- LG 22MK400H-B 22" LED FullHD FreeSync
- Corsair HS70 Pro Wireless Auriculares Gaming Inalámbricos 7.1 Crema

Total cost of the physical resources: 2600€

Bearing in mind that the work I have previously done has cost €15/hour, and the estimated hours of the project are around 300, the total cost will be €4500. Plus, the equipment costs we would have a total cost of 7100€.

3.5 Expected Results

- A book where the different legends and stories of the chosen area are compiled, as well as various creatures as if it were an exploration diary.
- A small demo in which the player will be able to interact with the environment and be immersive with respect to what was previously discussed in this document.



CHAPTER **4**

WORLDBUILDING

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4.1 World Origin & Inspiration

This world, Halleggron, I had been working on it since I was in the last years of high school and fortunately, I could work on it more in the narrative subject. It is a high fantasy world, it has its own laws and has a whole series of characteristics and functions that do not match the real world.

I took great inspiration from the high fantasy worlds of Dungeons and Dragons as I have always been a fan of this kind of games and of course RPGs.

4.2 Magic

In this world there is no magic per se, instead reality is divided into 2 essences:

- A physical one (Ley), which is part of everything tangible, both living and dead. Only 'magic' and those creatures that are "non-physical" such as spirits do not contain it.
- A "spiritual" one (Kruma) that is part of the "warp" which only the gods and those who can "practice magic" have access to. Not everyone is capable, and among those who can, there are two groups:

- Sorcerers, who have this "right" at birth but are bound to a specific way of altering the Kruma that is conferred upon them precisely at birth.
- Mages, who are not bound to any particular way of altering the Kruma, but who require much more time than sorcerers to reach their potential. Mages learn and study how to alter Kruma, so it takes them longer to do so, but they can learn from various sources and are versatile, unlike sorcerers.

While anyone can become a mage, doing so requires someone with prior knowledge to teach their secrets, and this is often quite expensive and hard to come by.

Usually, it is sorcerers who teach mages, but there are also cases of mages teaching other mages. However, not everyone has magical potential, that can be seen in the same way that a person's ability to perform actions such as memorizing or singing can be trained, but for those who are more "talented", it will be much easier.

Being a sorcerer is a rare thing, it is not clear how or under what characteristics sorcerers are born, many studies have been done in relation to it and indicate that it could be pure affinity or also by blood inheritance.

4.3 Geography

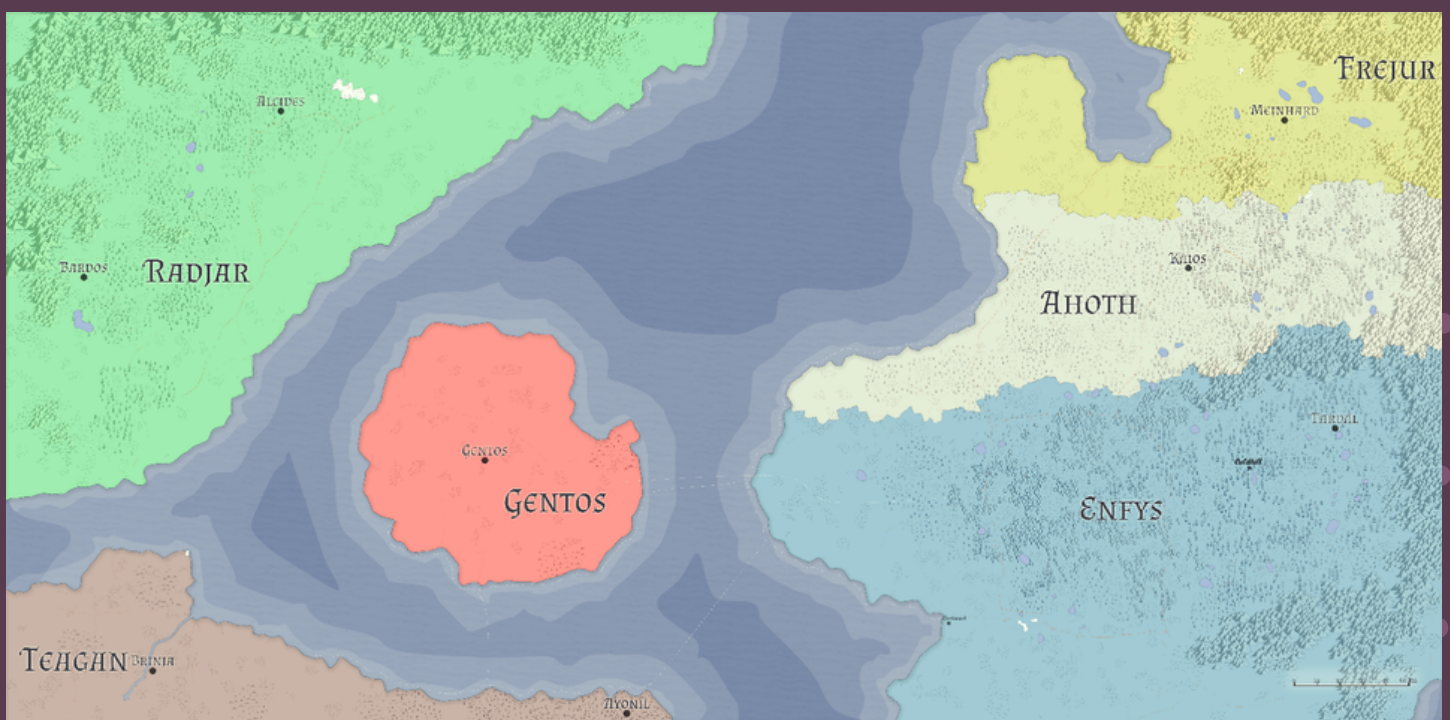


Figure 4.1: Hallegron map

Halleggron is divided into 4 major continents:

- Radjar in the west. A territory with a temperate climate in summer and cold in winter.
- **Gentos**, capital of the world that does not belong territorially to any house and where the biggest market of all Halleggron is located, making it the socio-political-economic centre par excellence.
- **The lands of the East**, as the name suggests, to the east. Divided into three territories. Each of these territories is ruled by a different house. They are cold lands that know no heat, only the lands to the west on the coast enjoy some mild weather in summer.
- And finally, **Teagan**, the southern continent, the land where the game demo is set. This is the warmest land of all where the fertility of the areas is very remarkable for agriculture and has very extensive areas of immense and dense forests.

4.4 Religion and Politics

"At the origin of the empty world there was an entity, Haleggron. It was time, earth, water, light and darkness, life and death. It represented the whole, existence itself.

Haleggron possessed everything and at the same time nothing. He possessed sadness; he was alone before the immense nothingness. He divided his power into 7 eternal beings, to whom he gave consciousness and faculties, so as not to be alone. The first and oldest he endowed with knowledge and spirit, so that he could understand and learn, he called him Sephir. To the second, he bestowed his endurance and determination, so that he could protect that which was most precious, and Viljer was his name. He bestowed his cunning and ingenuity on the third, Jalnost, so that he could solve any riddle. The fourth being was given the name of Krenagos, with his strength he could break down any obstacle, and Bolhur, the fifth, was given the ability to sense and spread his happiness to those around him. The sixth, Aldus, would spread vitality wherever he went, and the youngest, Ikram, could create incredible tools with his hands.

" Haleggron, after giving life to these beings, gave them the void and said: "I give you all that I possess so that you may turn what I give you into a world in which you will be happy. As he said this, he vanished and split into 2 orbs, 2 essences. One, Ley, covered all the existing void and the other, Kruma, flowed through Ley and divided it. In the centre of the world, an obelisk was erected where the gifts of Ley and Kruma were kept. The resulting world was named Haleggron in honour of the entity that gave them life."

Not everyone believes these stories, so there is a wide range of beliefs among the world's inhabitants. Some worship the old gods, others believe they are just children's stories. There are also those who believe that they once existed but have disappeared, but they do not worship or pray to them, they are only aware of their existence.

The political situation is under constant tension. The territories, except for Gentos, are ruled by seven houses.

- In the western lands:
 - House Qoyan to the south, with Bardos as its capital city.
 - House Kalarz to the north of Radjar in Alcides as the main city.
- East, from north to south:
 - House Arthanos, in the colder lands of Halleggron with the mining town of Meinhard as its capital.
 - House Vulkblood in the centre of the continent with Kaios as its capital.
 - House Gavran in the eastern forest territory, with Fardar being the capital city.
- In the southern continent:
 - To the west, the Jelenhort house, being the main farmers and exporters of food and drink with Brinja as their capital.
 - To the east, in the lush forests of the territory, the house of Hevislang, with Ayonil as its capital.

The vast majority of houses are quiet, but some have disputes with each other, and in earlier times there have been wars over territory and raw materials.

4.5 Teagan

" *Teagan is the territory where the game is set and where the author of the diary (the aforementioned book) grew up. In the book you can find about Teagan described by the author himself in first person and where he explains his experiences and the information he collected.*



CHAPTER **5**

NARRATIVE

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5.1 Inspiration and first approach

The narrative, much like the world type, was inspired by Dungeons and Dragons and series such as games of Throne and games like World of Warcraft.

5.2 Book Narrative

The narrative of the book is different from that of the game. Although both deal with the same world, we could consider the book as an object that the player could get inside the game in his journey through Teagan. Where he can get information about the territory.

The intention is to achieve a writing with a first-person narrator with a completely subjective discourse based on the author's experience, an explorer who at no time makes it known whether he is alive or dead.

In this way the player may or may not blindly believe what the writing says, however, as this is intended to aid immersion, the knowledge the player gains are recorded in a personal (player) diary and this knowledge is reflected in the game by unlocking features.

5.3 Game Narrative

I wanted the narrative of the game to be one of the most important and main resources and mechanics, so that the player would be attracted and rewarded to explore and learn a little more about the world and its history.

An example of narrative as a resource and mechanic has to do with the scarce UI and information mentioned above. If the player were to encounter a beast he does not know, he should be guided entirely by its appearance and way of moving, just like life itself. However, if the player had talked to someone, found some document or somehow unlocked information about the beast in question, it would appear in the journal, giving information to the player about e.g., behavior patterns, diets, what time it hunts or sleeps etc. Giving the player key information to be able to deal with the creature. Also, by observing behaviors or killing the creatures, these journal entries can be unlocked.

This applies not only to creatures or beasts, but also to characters or areas. For example, if the player had listened to a conversation between two NPCs where they talk about a legend or a secret, the player would unlock that dialogue option giving the player the chance to discover more of the story and have more access to information. The NPC could be threatened to tell the secret to others and thereby gain their favor or the NPC would owe the player a favor.

5.4 Main Character

The player is a mage of great abilities, so the player is given the option to learn various ways to manipulate the Kruma. He is a traveler who is entrusted with the mission of collecting the relics of the ancient gods, formerly disappeared but awakened long ago. The player will have to make use of the aforementioned narrative resources along with his own combat skills and intelligence to be able to handle both.



CHAPTER
6

GAME CONCEPT

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6.1 Synopsis

Hallegron is an open-world ARPG where the player manages a talented mage who must carry out an important mission for the development of the world. During the game, the player will roam the world and meet all kinds of side stories with narratively rich NPCs that will feed and grow the immersion of the game with details such as those discussed above and information as a main resource.

6.2 Game concept

The whole idea of the game was inspired by previously mentioned games such as Dungeons and Dragons, Skyrim and World of Warcraft. I intended to create a living, breathing world that would encourage players to be explored and discovered, not just do the main quest. It is intended to create a game that rewards players for their curiosity and completely immerses players in a fantasy world.

6.3 Key features

Hallegron has several key features that enrich the world and its gameplay:

- **Hallegron:** the game world, a complex world, both narratively and code-wise, where the player is given a wide range of possibilities to act.
- **Information** as the main mechanic: It compels and rewards the player for his concern for the world and curiosity. However, it does not punish the player for not exploring the world, but the reward for doing so should be enough to incentivize the player.
- **Customizable combat system:** just like Skyrim, the player can fully customize his game experience. Even if the player is a mage, nothing forbids him to go with swords or bows and totally ignore magic. Magic is just one more way to choose where the player has the last word.
- **Camera:** A first-person camera that favors the player's immersion.
- **Graphics:** although an easy way of immersion would be with hyper-realistic graphics, as it is a high fantasy setting, the stylized style is somewhat closer, in addition to maintaining coherence with the world.

6.4 Genre

This is an ARPG. An ARPG is a type of genre variant of RPGs, which stands for Action Role Playing Game. Other games with of this genre are Skyrim or The Witcher.

6.5 Target audience

The players to whom the game is directed, following Bartle's model, would be those players who identify themselves as Explorers. Since the game was build around my own personality and preferences the target players are players like me, who like to observe and see a live world.

6.6 Platform

Hallegron will be only playable on PC. Since the combat system around magic involves a specific keycode it would be difficult to implement it on other platforms.



CHAPTER **7**

GAME MECHANICS

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7.1 Core gameplay

The core gameplay of Halleggron is to fight enemies, explore the world and discover the narrative that involves it while levelling up, learning magic, and discovering new ways of combat and progressing of the game.

7.2 Game flow

Since the game is an open world, there is no “correct” way of playing it nor exists an order to go through.

The main quest is linear and is the only exception of the above statement, but this doesn’t mean the player must succeed on the main quest to play the rest of the game.

The player can go through the secondary quests and narratives without even touching the main quest, but as the main quest is the core of the game, it can not be finished if the main quest is not finished.

7.3 Gameplay & mechanics

The player will start with basic equipment and will progress with the narrative to unlock more powerful mechanics, magic and weapons.

The main mechanic is the information and the capacity of obtaining it (as stated above). Ways to obtain information are:

- Talking to NPC
- Killing monsters / creatures
- Discovering books, journals, etc

The main quest sends the player through all the world to recover the ancient gods' relics. To do so, the player will have to fight them to gain the access to it. Once defeated, the god will grant the player their powers, unlocking new mechanics and other narrative quest

7.4 Movement and controls

- W,A,S,D: Move
 - Shift: Run
 - Left Alt: Sneak
 - Space bar: Jump
- Mouse: Camera orientation



CHAPTER **8**

CONCEPT ART

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Since both the game and the book are settled in Teagan, all the images bellow are from the southern continent.

8.1 World Concept

Once the worldbuilding was finished, I used Pureref to organic all the inspiration images from fantasy forests similar to what I was going for, so it was easier for me to use them.

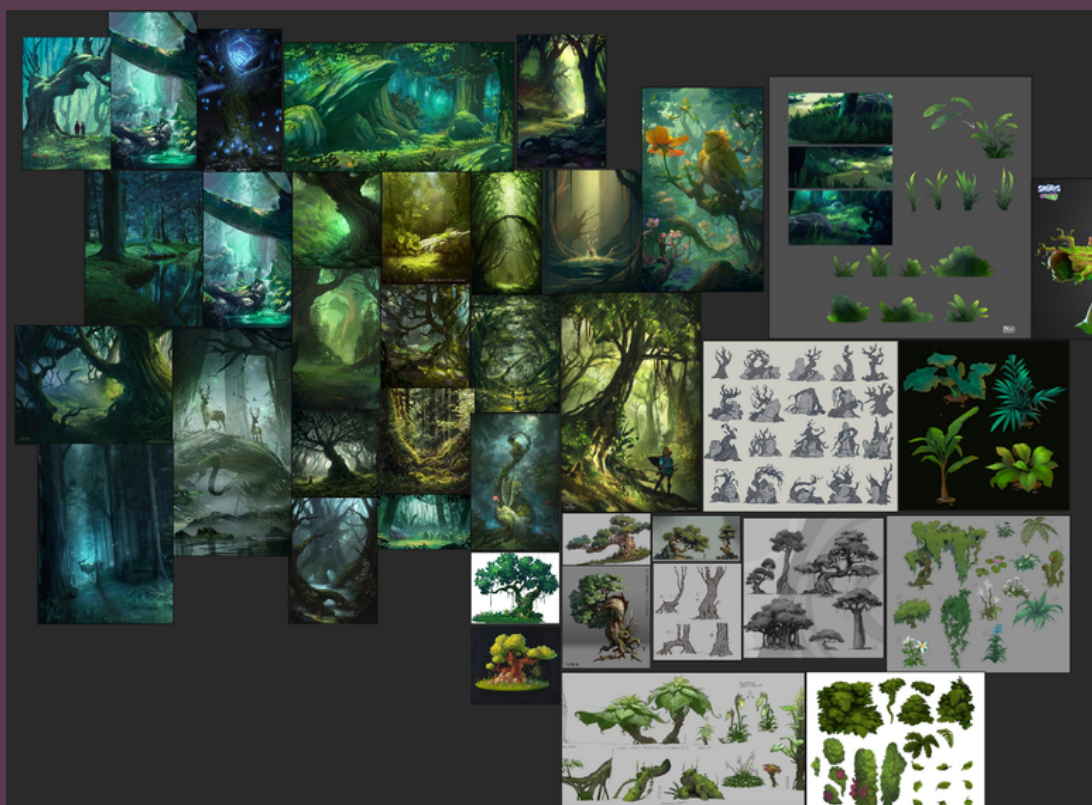


Figure 8.1: Fantasy Forest Concepts for Inspiration

I was sure, the Teagan forests were lush forests, with tall and intricate trees with lots of moss and vines covering them. Almost as if humanity never existed.

Since the gods' awakening, these forests started to emanate Kruma again. This territory in specific is under the dominion of Aldus, God of Life. The main intention here was for the player to feel little and useless in front of the giant trees and vegetation.

In order to accomplish this, intricate and curved trees were, in my opinion, the best I could use for that, not also because they are less plain but because they feel more alive than the classic straight ones.



Figure 8.2: Tree Concepts

The colors were also chosen among the ones of the figure 8.1 images. Greens but not too saturated since it would be too "toon styled".



Figure 8.3: Concept Color Palette 1

8.2 Creature Concept

The creatures of the forests are both real creatures we find in our forests, like deers, and fantasy creatures. Since the forest is controlled by the God of Life, Aldus, they vegetation has also become part of the animals too and I decided to mix animals and plants.

These kinds of creatures are called elementals, which are imbued in Kruma (Aldus Kruma since he rules here) and are neither vegetable nor animals but can use magic and thus are more powerful than normal creatures.

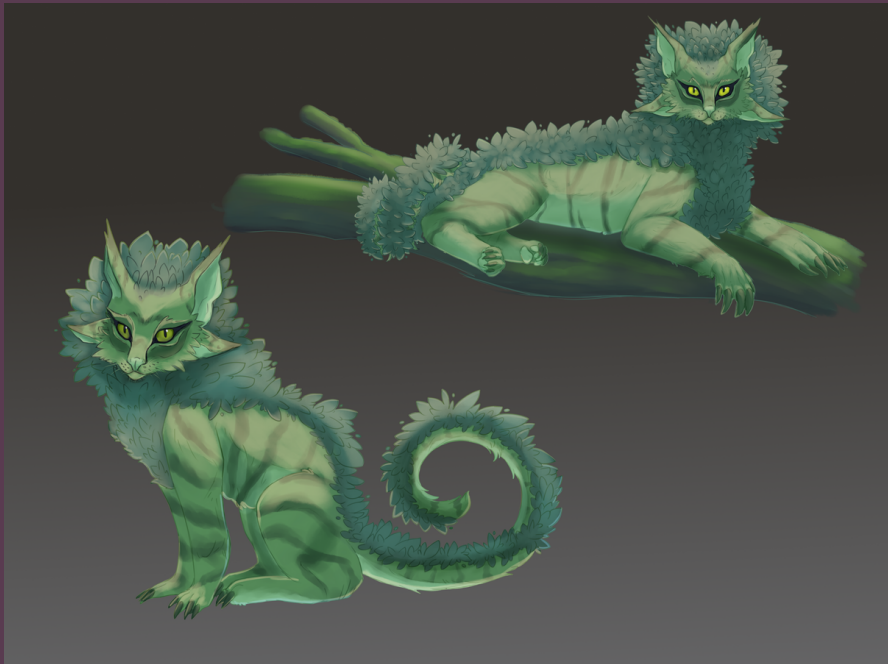


Figure 8.4: Creature concept (Carnivorous elemental)



Figure 8.5: Creature Concept (Jade Deer)

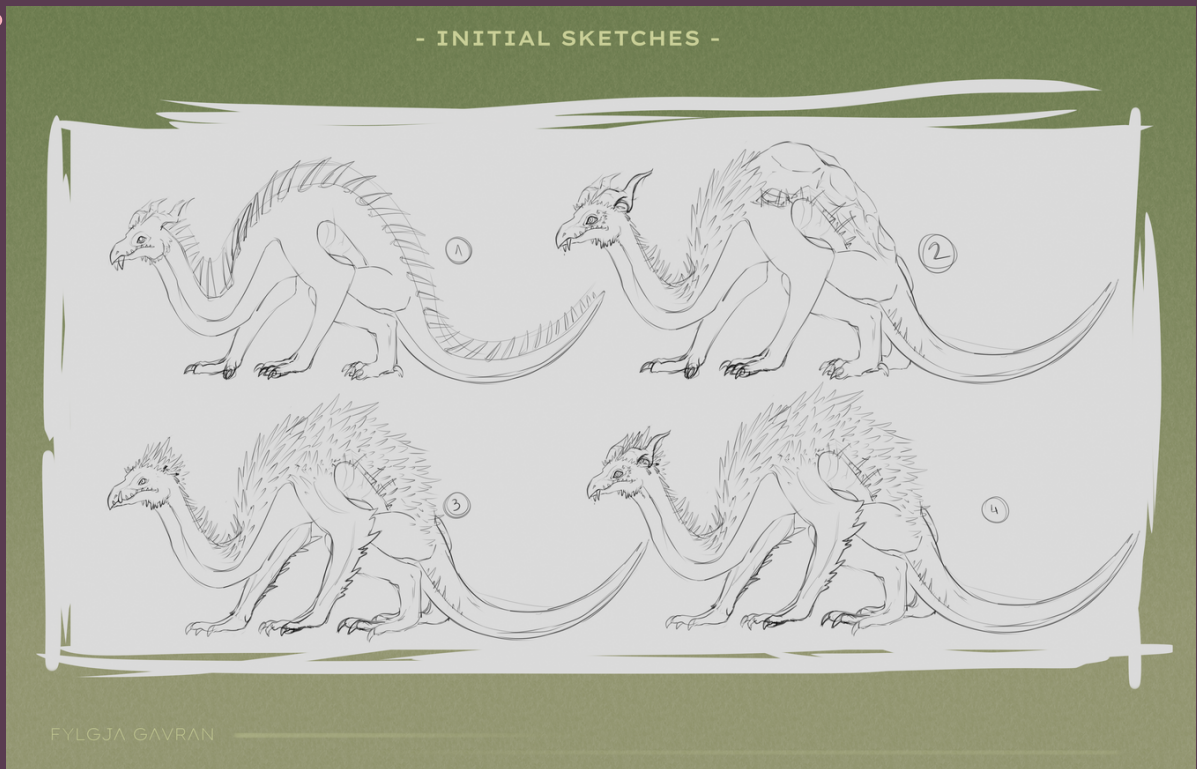


Figure 8.6: Cirecail Concept (Early concepts)

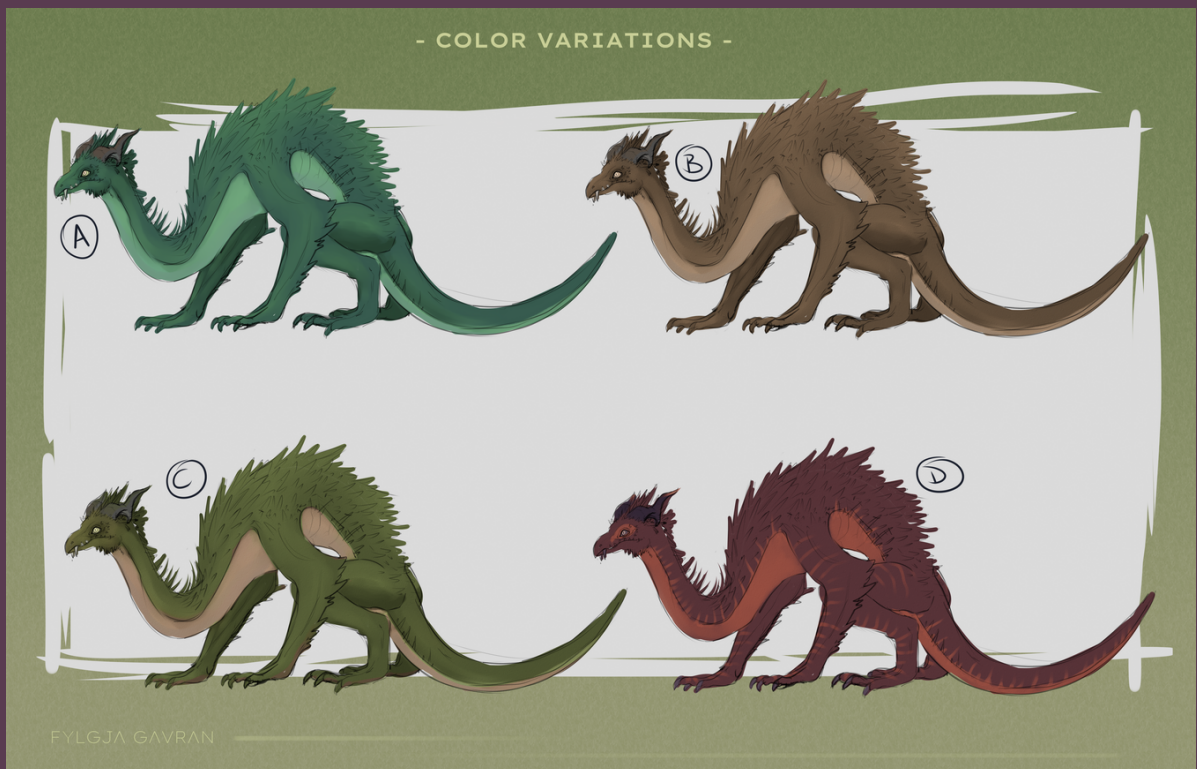


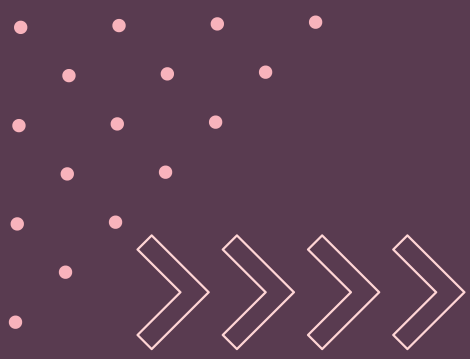
Figure 8.7: Cirecail Concept (Color variations)



Figure 8.8: Teagan Salamander Concept



Figure 8.9: Possible animal specie (codeName: Bonifacio)



CHAPTER 9

GAME ART

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9.1 Vegetation

The vegetation assets were made on Blender. The trees were made following a tutorial for stylized trees, the grass and animation of them too. All of them count with LOD. Only LOD0 has animation, this is accomplished by changing the shaders of the leaves since the trunk of the tree remain with the same polycount through the LOD.



Figure 9.1: Green Tree Variant1 (LOD0)

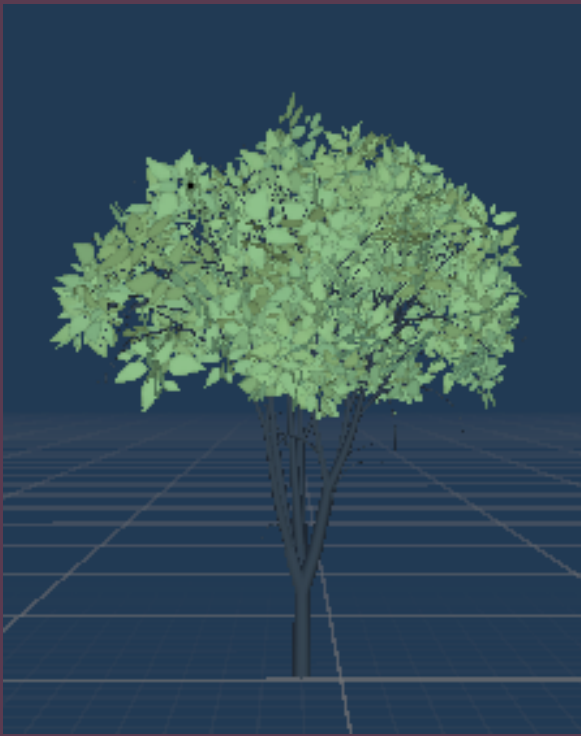


Figure 9.2: Green Tree Variant1 (LOD1)

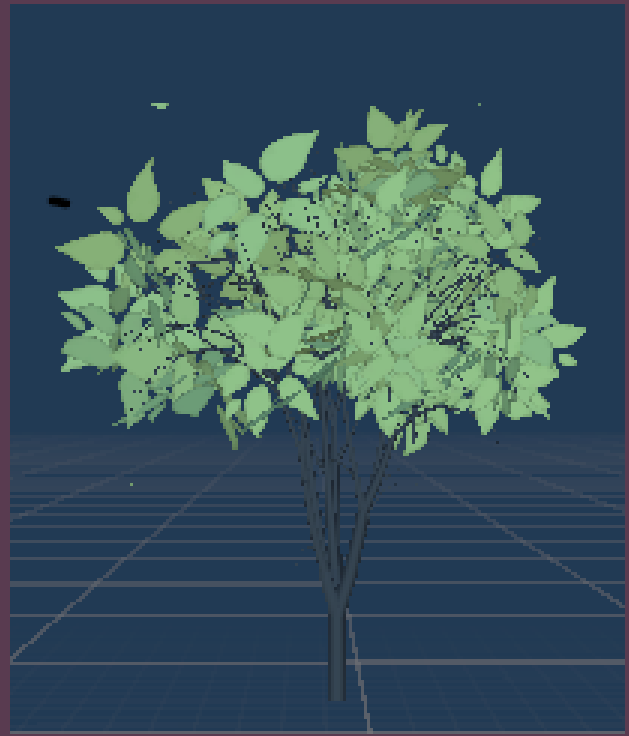


Figure 9.3: Green Tree Variant1 (LOD2)

The Polycount of LOD0 is 6k triangles, LOD1 is reduced to 3k, and LOD2 to 1k. This is accomplished by reducing the leaves count, which are created by a particle system and converted later to mesh and scaling them up to trying to cover the same volume in all LODs.

Also, only the LOD0 has an animation, the animation will be explained in the 9.3 of this chapter.

Other variations of the trees are:

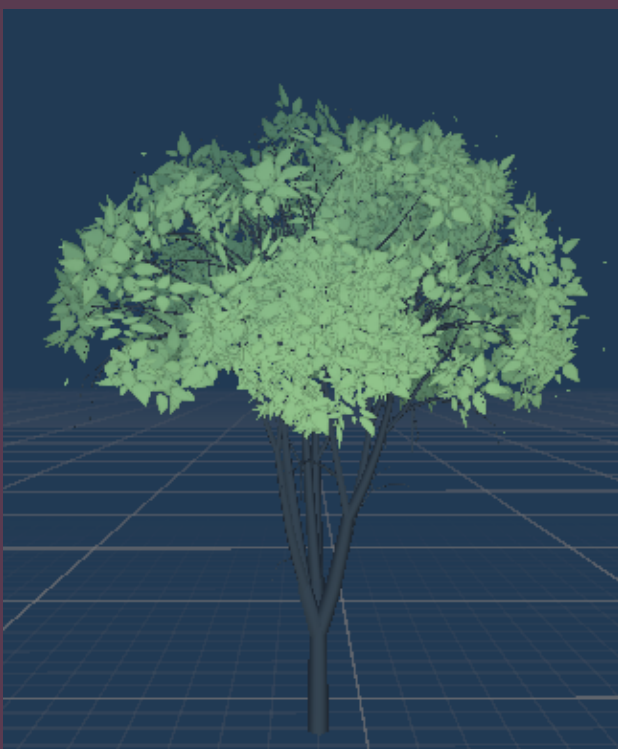


Figure 9.4: Green Tree Variant2 (LOD0)

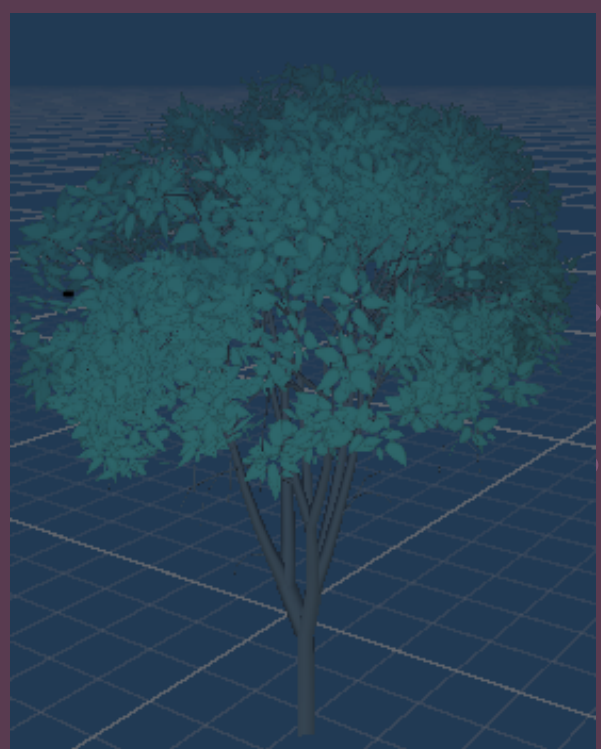


Figure 9.5: Green Tree Variant3 (LOD0)

- The main difference between them are the textures used in the shader (will be explained later).

- The tree figure 9.5 is the same as the 9.1 but the shader has different colors. This will create an easy way of stop repetition in the environment.

The grass was made using a similar method, since only LOD0 has an animation.

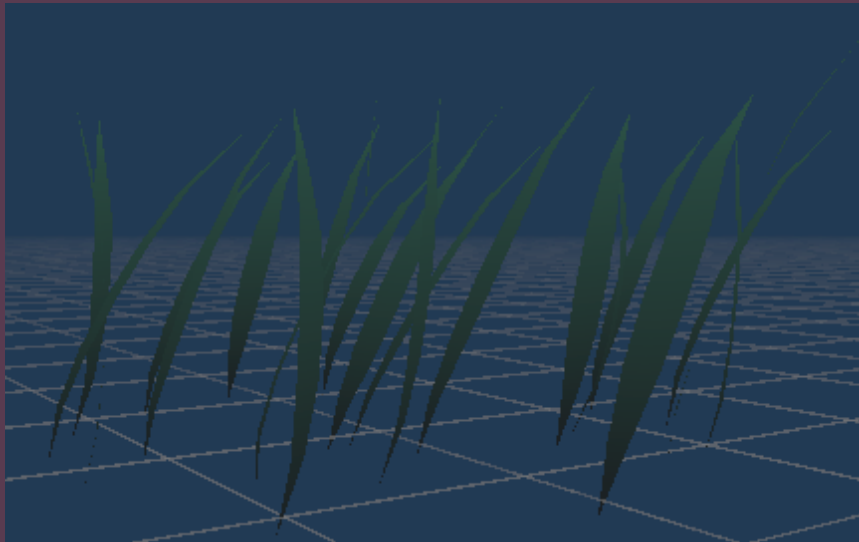


Figure 9.6: Grass (LOD0)

9.2 Creatures

The deer was made with a prefab set from Skecthfab which came with three animations (idle, walking and run). The material was also changed, since the prefab came with a different style and the colors and texture was realistic so I painted the model according to the color palette obtained from the PureRef images (figure 8.1).



Figure 9.7: Deer Model

9.3 Shaders

The shaders used were different depending on:

- Whether the model was a LOD0, or others. Only the LOD0 have animations since this helps to improve the game's performance.

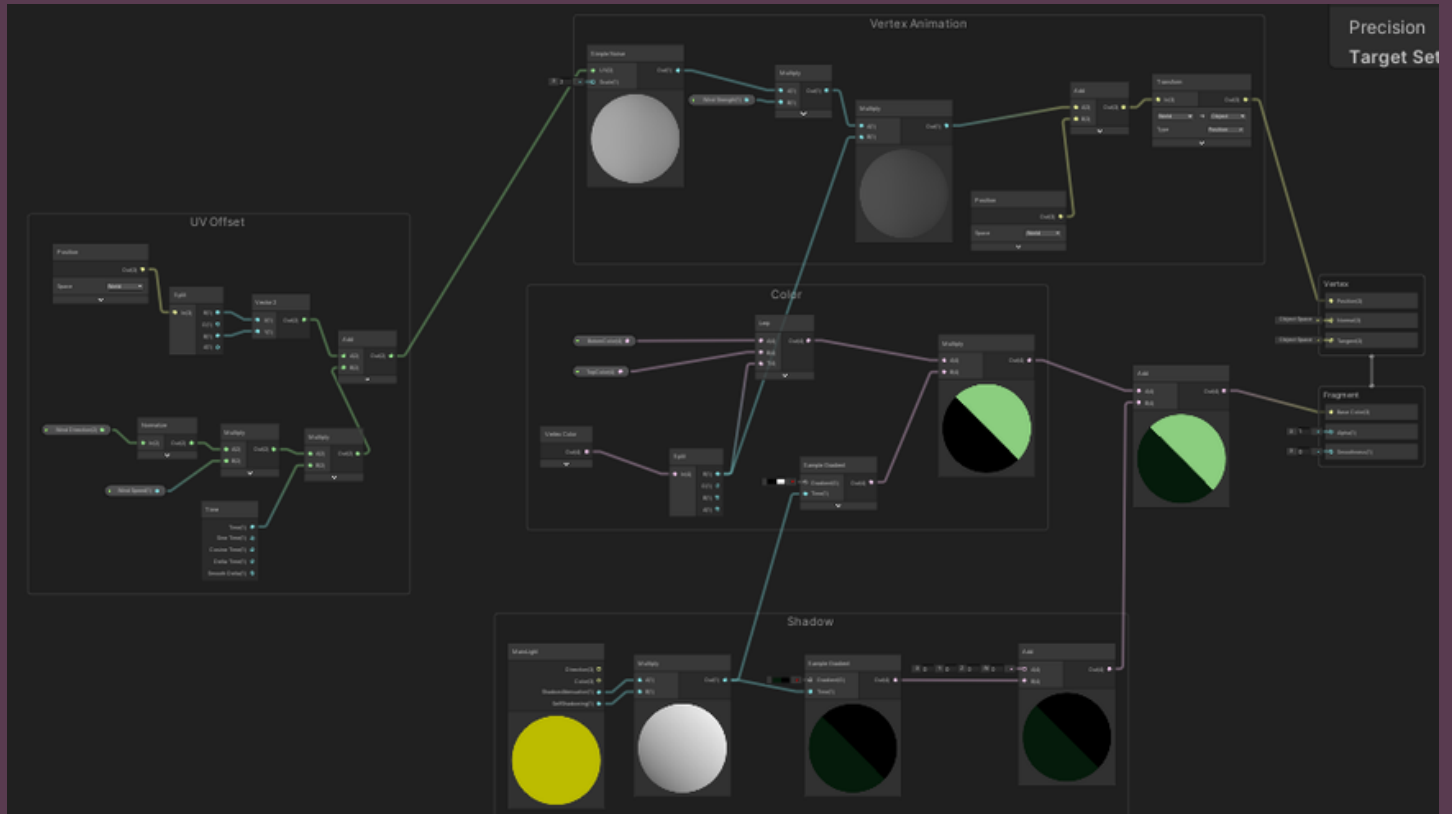


Figure 9.8: Grass Shader (LOD0)

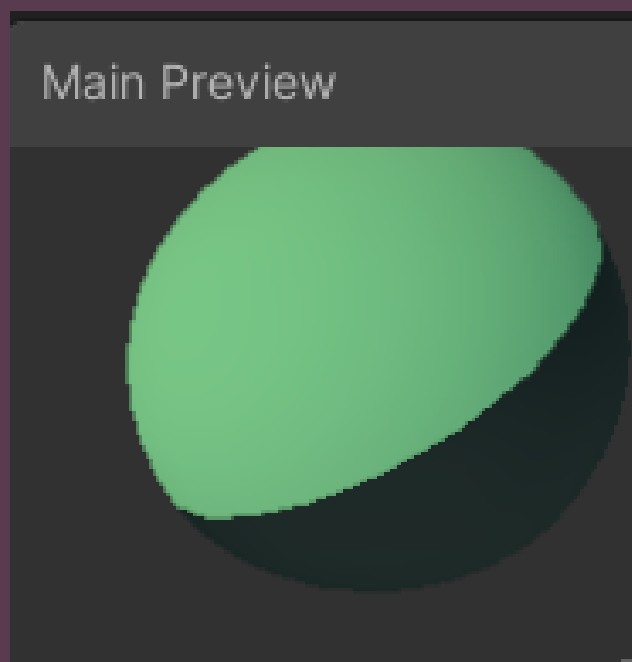


Figure 9.9: Grass Shader (LOD0) preview

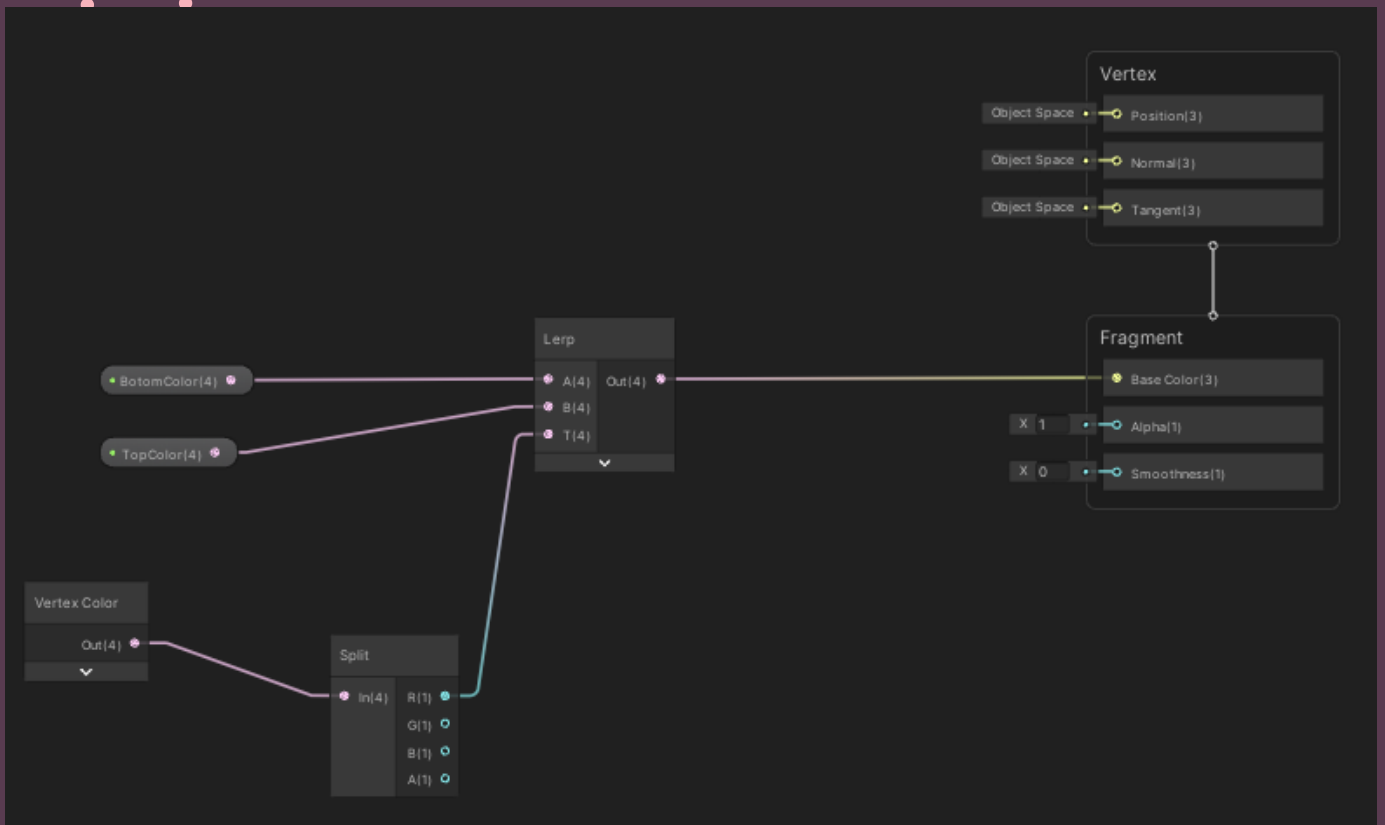


Figure 9.10: Grass Shader (LOD1)



Figure 9.11: Grass Shader (LOD1) preview

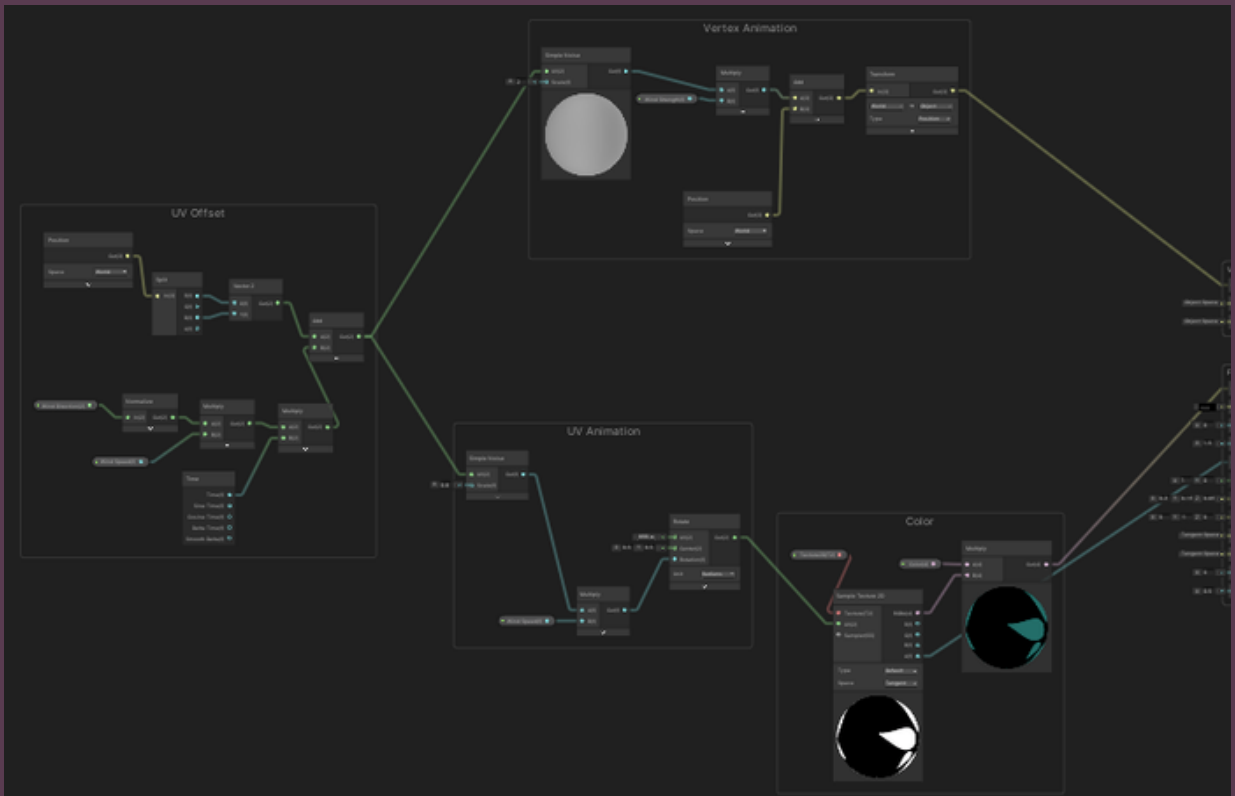


Figure 9.12: Leaf Shader (LOD0)

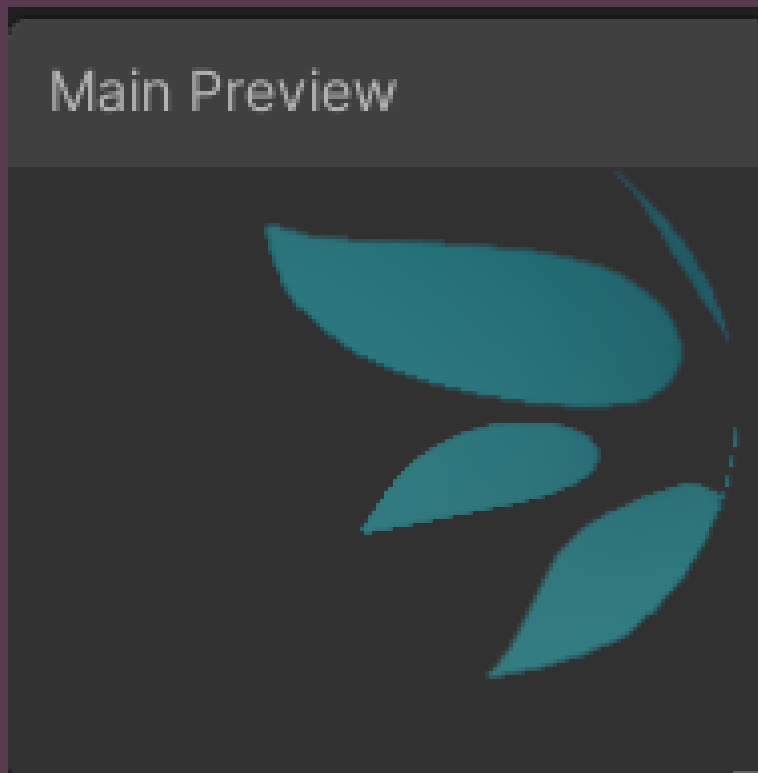


Figure 9.13: Leaf Shader (LOD0) Preview

9.4 VFX

For the VFX I used particle systems.

In the demo, as we will see later, 3 are included:

- Sunbeams
- Falling leaves
- Fireflies

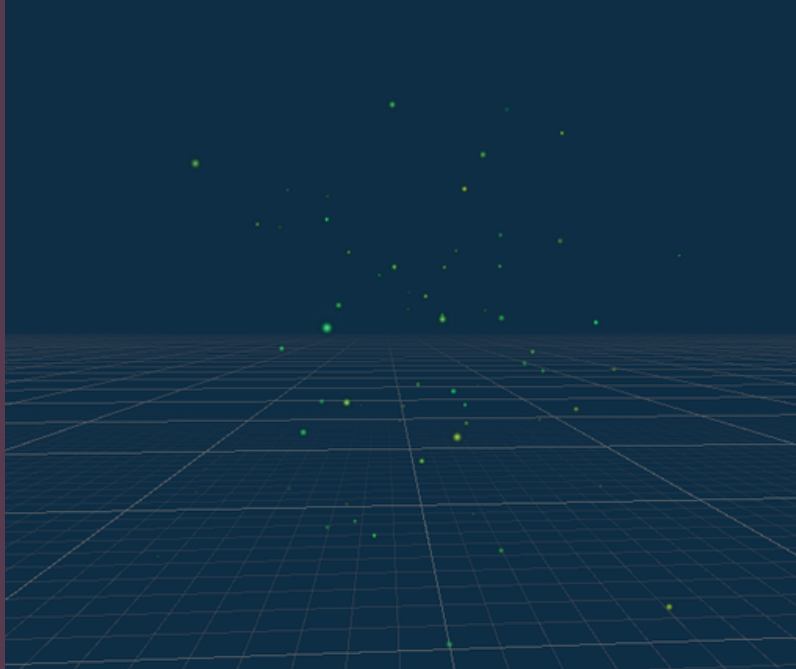


Figure 9.14: Fireflies VFX

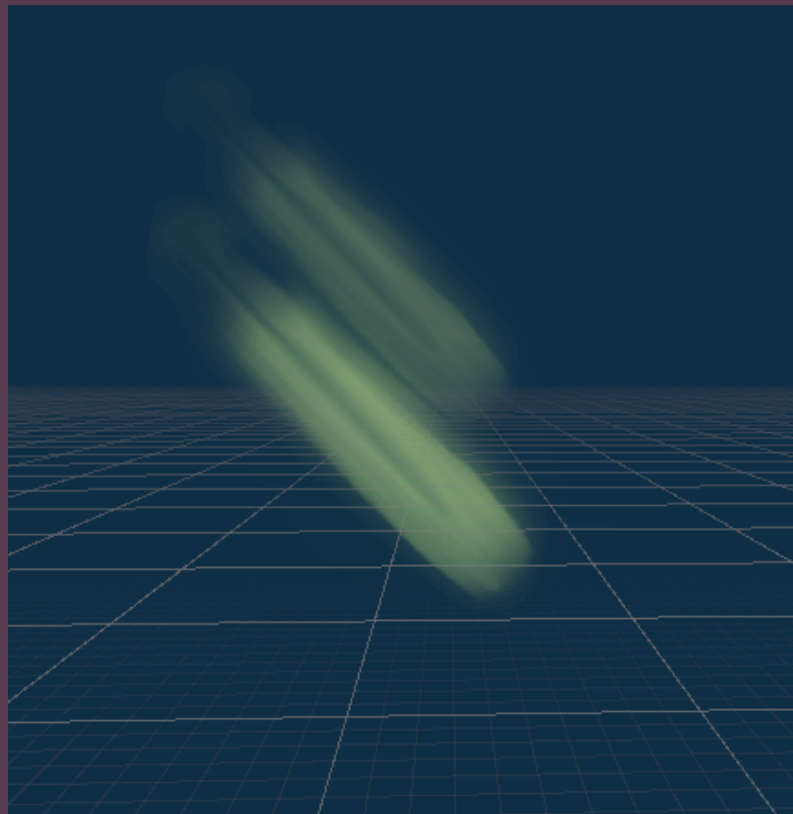


Figure 9.15: Sunray VFX

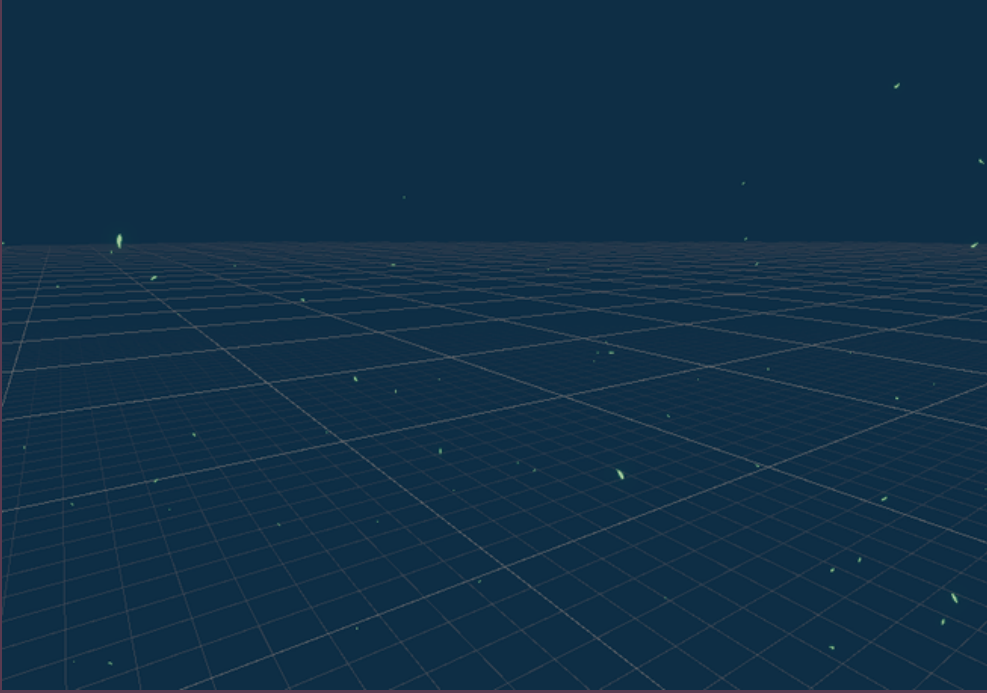
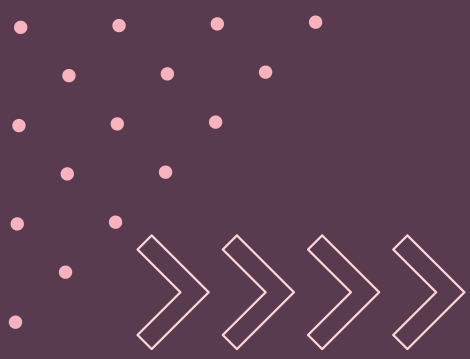


Figure 9.16: Falling leaves VFX

A detailed description of these is given in Chapter 10.



CHAPTER 10

DEMO

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The demo showcases a limited space of the Teagan Forest, limited by mountains.

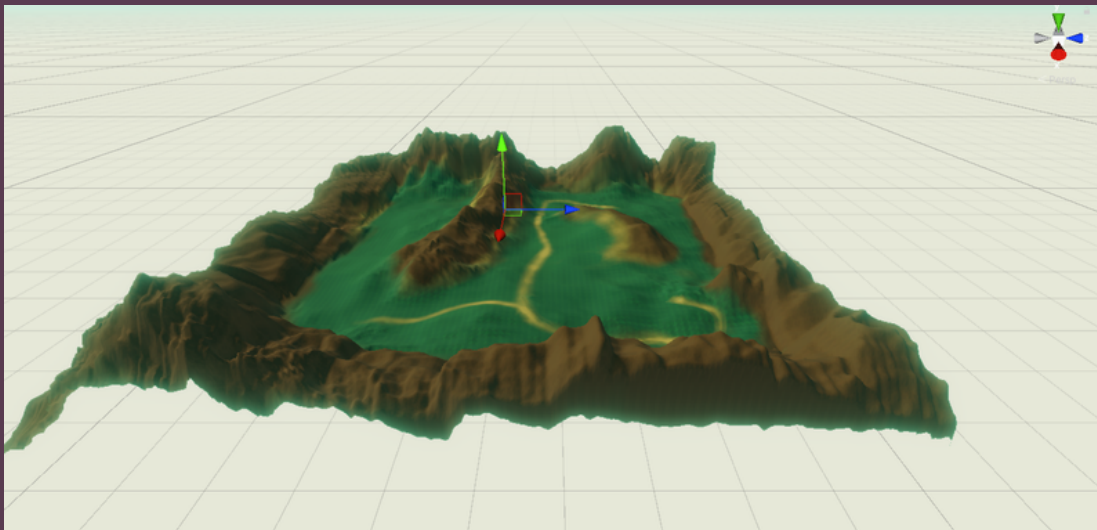


Figure 10.1: Demo Terrain

The mesh is created with the terrain properties of Unity.

With the terrain comes a NavMesh which is the responsible of the pathfinding of the creatures such as the deer. All the entities, except the player, have attached a NavMeshAgent, that allows them to move through the mesh.

All the creatures inherit from 'Entity' class wich contains the basics variables that every entity (creature, enemy, etc) needs which are:

- **The perception:** float that measures the awareness of the animal. The higher the possibility that the entity has to spot the player.
- **Perception Radius:** The area in which the entity starts to notice the player. Outside this area, the player becomes invisible to the entity. This allows to play with the different types of animals and made them customizable and scalable.

The entities are also controlled by a Behaviour Tree. This Behaviour tree is scalable and customizable so it can be used to create several behaviours for different animals. Thus, by mixing the behaviour tree and the Entity class, the creatures have unlimited possibilities since the base is already built.

Some examples of the demo graphics:



Figure 10.2: Terrain from above



Figure 10.3: Terrain Close Up

In the demo, the deer will wander around an area within a radius stated on the script if the player does not trespass the deer perception area, once the player does it, the deer will start to flee and won't stop till the player has exit the perception area again.

In addition, the demo features an in-game time system that works with the local time of the player's computer. Depending on what time it is, the lighting of the environment changes, and with it also changes the state of the day `partOfDay` (it is an enumerator) and this also alters the behavior of the animals and creatures and also of the VFX.

Fireflies, for example, only appear when `partOfDay = EVENING` or `NIGHT`. When it is morning or afternoon, they disappear and give way to the sun's rays. This system, as I mentioned before, is not only applicable to the VFX but also to the creatures, and can add a lot of detail to the way they behave, such as sleeping at night and only being active in the morning.

10.1 Post Processing

Post processing was necessary to wrap up the ambience and environment and also the help the immersion.

Fog, White Balance, Tonemapping, Bloom and Color Adjustments have been use to achieve a better environment and ambience that changes depending on the local time.



CHAPTER 11

CONCLUSION

Immersion in videogames is not easy to achieve. There are lots of different things that may seem useless or not necessary but the details and little things are what makes the immersion better.

Contrary to all believes high quality assets are not a must, furthermore there's no co-relation between high quality assets and immersion.

In fact, coherence is the only thing someone will need if anyone wants to create an immersion experience. What we, as players tend to forget, is that every game is a different experience, and not every game is for everyone.

But every game has been created for different purposes and that purposes maybe don't meet your own criteria. But we must not forget that videogames are experiences. Whole worlds alive that interact with the players that also allow the player to interact with the world. That is what makes videogames different from any other media, interaction.



CHAPTER 12

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APPENDIX A

BEHAVIOUR TREE CODE

The behaviour tree is made with the class "node".

The nodes contain functions as clear, and `getData` that allows the nodes to communicate with other nodes. Also, the nodes have a state, which can vary from `RUNNING`, `SUCCESS` and `FAILURE` which are the responsible of the functionality of the tree.

Then, there are two special nodes, the `Selector` and the `Sequence`. The `Sequence`, will have a sequence of nodes and if any of them fails, then all the sequence ends.

Then of course, the `Behaviour Tree` constructor, which is quite simple. It has a `root`, and an `update` method.



APPENDIX

B

TEAGAN ADVENTURER'S DIARY

This diary is a proposed book that could be found by the player in the game itself and contains information about the area.

As mentioned before, information is the basic resource for this videogame so the books, scrolls and texts would be accessible from a menu so that the player could read them carefully and thoroughly.

[Enlace lectura del diario](#)

Travel Guide:

Ayonil

(and its surroundings)



To anyone who may need it:

Greetings, traveler!

In your hands is my diary and field notebook in which I collected all the information regarding Ayonil and its surroundings for more than 50 years.

"Who am I?" You may wonder, my name is Paeris Wraantoris and I have dedicated my life to traveling through the lands of the southern continent. From the Golden Fields of Brinja to the coasts near Ayonil.

Since the awakening of the gods, the krama of beings has been destabilized and has made creatures mutate in totally incredible ways. At the end of this diary, you will find information about some of the beings I have encountered in my many adventures and travels. This does not mean that there are no more specimens to discover, on the contrary, I am sure that there are still sites to explore and creatures to discover. Feel free to add information or correct it as you discover it on your travels. This journal is designed to be updated and to serve as a definitive guide.

That said, may luck be on your side, and may Aldus protect you in your many adventures.

Paeris Wraantoris





Chapter 1: Welcome to the southern lands

In the world of Hallegron, lie lands full of magic, different cultures, and adventures for those who are willing to find them. It is a place of multiple cultures and, although in the past there were different races, only humans and some long-lived beings from ancient eras remain. Interspersed among inhabited lands, be they rural cities or kingdoms, are ancient ruins and forests teeming with more exotic creatures.

There are many adventures for those who wish to seek them, because since the awakening of the gods, more than 150 years ago, magic or "kruma" also awakened with them. Routes between cities and towns often force you to traverse wild territory or areas of outlaws. Each forest, plain, swamp or mountain range possesses its own dangers, whether they are evildoers or the creatures that mutated with the awakening of magic. While they may seem like creatures known to the naked eye, the truth is that they have the ability to manipulate the kruma, like wizards or sorcerers, which makes them fearsome beings and that, if you are intelligent, should be respected.

Although not all continents agree with the origin of our world, the ancient ruins and texts left over from the age of the gods shed some light on our past. Hallegron has a complex history and each continent has its own customs and culture.

Different houses govern their territories and apply their policies differently. Of course, not all houses have a favorable treatment between them and it is common to find themselves in times of dispute due to some quarrel or occupation of foreign territory.

Here on the Teagan Continent, agriculture and trade are the lifelood of our lands. The vast majority of the population, especially in the west of the continent, is engaged in agriculture, and those who work in the fields need to cultivate to eat or use their strength to earn their bread. It is in large population centers or state capitals where those who have degrees and are qualified can access a job that requires more preparation but with a large salary. Outside of these cities, it is very difficult to obtain large amounts of money without having an initial capital.

With Brinja as its city-state, the lands west of the Aldus Forest belong to the Jelenhort house, famous for its products, skills in trade, and charisma. They are one of the wealthiest houses, all their members are great merchants and anyone could say that they get everything they want. Despite being great merchants and having seen the world, many would say that they are traditionalists because they move away from magic and they only use objects and machinery from the Kalarz house to increase their performance. They don't seem to trust magic too much or anything that has to do with the gods.

To the west of the continent is my home, the Greenlands. Large forests, with trees so tall that their crown is not glimpsed. It is the territory under the mandate of the House of Hevislang, much more refined and demare than those in the west, there are those who say too much. They descend from a family with a long tradition of study and admiration for alchemy and medicine, founders of the academy of Ayonil (city state of this house) and are excellent botanists, in addition to having a good control of the kruma.

While not as wealthy as the Selenhort, the Hevislang crave knowledge and arguably under the influence of our god, Aldus, seek to unravel the mysteries of the formulas of life.

East Teagan

The continent of Teagan is also known as the continent or the southern lands. It is known in turn for the vast vegetation that covers the territory. From little flowers to large trees, Teagan boasts plenty of exotic flora and fauna. Although it was formerly common to enter the wild since the awakening it has become an adventure. Not only the creatures but also the vegetation overflows krama. I believe that this is because Aldus, as the guardian deity of life, brought about the creation of many beings with his return. However, according to my research, the deity most akin to the krama was Sephir, who ruled in Entys, on the Eastern Continent. I have not had the opportunity to travel myself to the center of Entys, only to the fishing settlements on the coast. Rumors said that there were creatures with magical powers and abilities never seen before, although I would like to check it with my own eyes, I am afraid that I do not have the necessary skill.

Adventurers have a very important role, they accept orders based on their ranks and they get rewards for jobs that no one else in their right mind would dare to do. Here in Teagan, certain requirements are needed, such as a minimum of botanical knowledge.

Here on the Teagan Continent, agriculture and trade are the lifelood of our lands. The vast majority of the population, especially in the west of the continent, is engaged in agriculture, and those who work in the fields need to cultivate to eat or use their strength to earn their bread. It is in large population centers or state capitals where those who have degrees and are qualified can access a job that requires more preparation but with a large salary. Outside of these cities, it is very difficult to obtain large amounts of money without having an initial capital.

With Brinja as its city-state, the lands west of the Aldus Forest belong to the Selenhort house, famous for its products, skills in trade, and charisma. They are one of the wealthiest houses, all their members are great merchants and anyone could say that they get everything they want. Despite being great merchants and having seen the world, many would say that they are traditionalists because they move away from magic and they only use objects and machinery from the Kalarz house to increase their performance. They don't seem to trust magic too much or anything that has to do with the gods.

To the west of the continent is my home, the Greenlands. Large forests, with trees so tall that their crown is not glimpsed. It is the territory under the mandate of the House of Hevislang, much more refined and demare than those in the west, there are those who say too much. They descend from a family with a long tradition of study and admiration for alchemy and medicine, founders of the academy of Ayonil (city state of this house) and are excellent botanists, in addition to having a good control of the krama.

Jade Deer

Jade deer or Wild Jades are almost mythical creatures. They are not easily seen, when they notice a threatening presence they flee. The few sightings that have existed of these animals have been in the deepest areas of the forest. It is not clear if they are diurnal or nocturnal, but more sightings have been made during the day.

As their name suggests, these deer have jade crystals and ores in their body. After more than 130 years of trying to learn more about these specimens, it can be concluded that not all minerals from all deer have the same characteristics. Each deer has unique characteristics that they do not share with the rest, however, the most common area where they appear is in their antlers and legs and they rarely appear in the form of a horn on the forehead or scattered throughout the body as if they were embedded. Their fur is green and they camouflage themselves very well so that it is almost impossible to distinguish them if they are not observed correctly.

The jewels of the Wild Jades are known as the name of the animal itself. It is believed that when the gods awoke, the essence of Aldus intertwined with that of common deer, giving rise to this very rare breed. The crystals they carry are highly coveted in alchemy and medicine, as well as being an excellent and highly valuable hunting trophy. However, it is estimated that not all uses of these crystals have been found. They are materials that require refinement and not everyone can use them. Improper use of such a rare and precious commodity could bring consequences from the council of the alchemical school of Ayonil.



Heal Wounds: Forces the wounded creature's body to heal its wounds using the wounded man's life force. If the creature cannot offer the necessary will or life force, it may die of exhaustion or pass out.

Although this ability has been observed by doctors and alchemists when studying its crystals already extracted from the animal, it is believed that the adverse effects disappear if the animal itself is used, however, this has been until now impossible to achieve since if it is not they extract the minerals from it, the deer is the one who controls the spells and it has not been possible for a wild Jade to heal wounds observed by humans.

Aura: Serenity: Anger, sadness, and fear disappear from all creatures around the crystal area. This effect is created by vibrating the crystal at a specific resonance. Currently studying to find a way to remove only the desired emotions without breaking the jade.

Verdant Breeze: (Can only be cast at night near a Jade Stone) A gently breeze wraps up all living creatures in the nearby area, healing mental and physical illness alike, and as in Healing wounds, the effectiveness involves the energy of the targets.

Although Wild Jades has not been seen attacking a human being so far, we do not know if they have combat abilities or capabilities.

Cirecaail



Cirecaails range from 10 to 30 cm in height and are about the size of medium-sized rodents such as rabbits. Some of them may have membranes on their front legs that allow them to fly. The horns of the Cirecaail have great variety and these seem to be hereditary, that is, the shape of the horns depends entirely on that of the parents.

They can stand on their hind legs and use their tails to hang from branches. Their skin is covered with long, tiny feathers, so much so that it looks like fur. The colours vary depending on the area in which they are found; white wild specimens have been observed in the northern continents to camouflage themselves in the snow.

Their claws and light weight allow them to climb vertical surfaces, as long as they are not smooth. They also have darkvision.

Cirecaails are known as pests throughout Teagan, however, they are also welcomed in foreign lands as pets. Their diet brings them to farm fields and small villages, and they live in small groups. Although they are considered a pest because of the number of specimens found, they have edible meat, not very tasty but which has allowed numerous settlements to survive in famines and their fur has been used as stuffing for pillows or for winter clothing.

Cirecaail are immune to poison and break down the toughest roots with their saliva. Because of this, it has been nearly impossible to contain them without the use of traps or violence.

Those Cirecaail with wings are extremely rare and are captured and sold as pets to aristocrats and nobles or are trained as messenger animals. They are very flexible and can scurry and fit into very small places.

Immunity to poison: Cirecaails are immune to poison, or very resistant. Their diet based on mushrooms and roots means that the older the Cirecaail is, the more resistant it is to poison. What might be lethal to a human, a Cirecaail can perceive as a mere trickle. This makes them very difficult to exterminate, especially if the colonies are very large and farmers must be more... imaginative and creative with these little animals.

Dark Vision: Cirecaails have night vision, they are not able to discern colours but shapes. They practically see in black and white but it gives them a great advantage for hunting at night.

Flight (some): Not all are able to fly, and those that do, are able to do so thanks to membranes that extend from the side of their abdomen to their claws. They are very rare specimens and are usually used to pass information and deliver small objects.

They are very reserved and do not usually approach humans. They are very fast and it is almost impossible to chase one. However, if bred in captivity, they prove to be very loyal pets and a great playmate for children.

