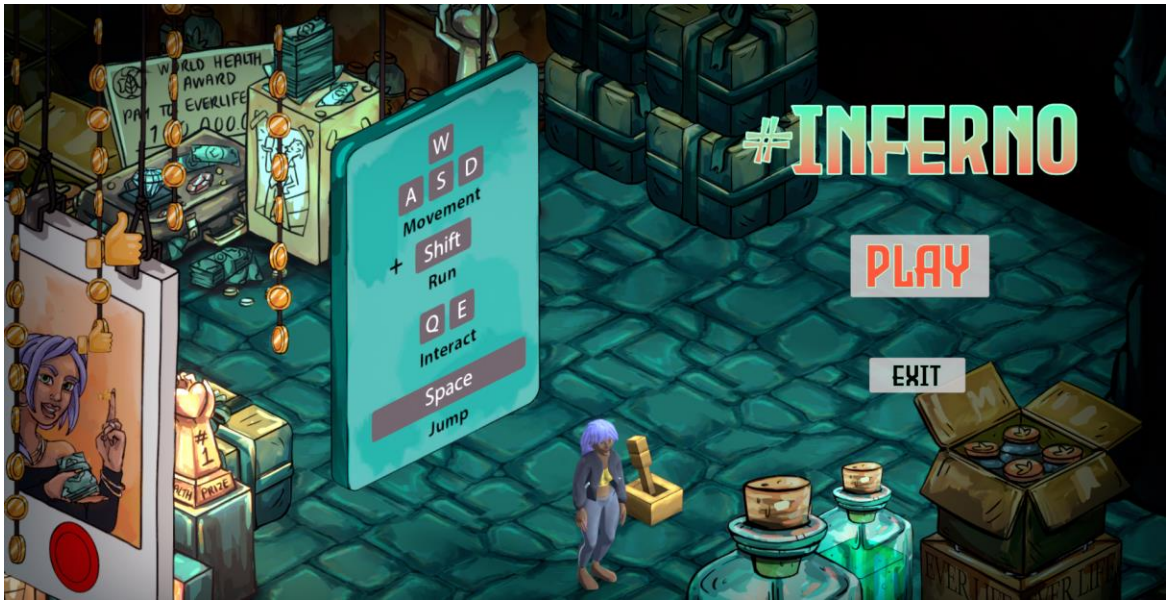
Master Thesis Report

Spring 2023



Sarah Marcussen

Sofie Kjær Schmidt

Eleni Zakynthinou

Program: *Visual Game & Media Design, KADK*

Course: *Master Thesis Project*

Supervisors: *Jakob Ion Wille, Jesper Juul, Arthur Steijn*

Characters Count: 64.685

Date: May 25th 2023

Abstract 3
1. Introduction 4
2. Methods 5
3. Theory 6
3.1 2.5D games 6
3.2 Isometric Graphics 7
3.3 Visual Design 8
3.3.1 The seven Elements of Design 8
3.3.2 The Relationship Between Visual Elements 8
3.3.3 Adaptive Gameplay Aesthetics 8
3.3.4 Visual Cues in Level Design 9
3.4 Rational Game Design 9
3.5 Affordances 10
3.6 Environmental Storytelling 10
3.7 Transmedia Storytelling 11
4. Project 12
4.1 Story World 13
4.2 Art 15
4.2.1 State-of-the-Art 15
4.2.2 Art Direction 16
Studies & Research 16
Making 2D and 3D appear 2.5D 17
Mood 18
Level Style Guide 19
4.2.3 Art Production 21
Level 1: Greed (Sofie) 21
Level 2: Fraud (Sarah) 23
Level 3: Vanity (Elena) 26
4.3 Gameplay 27
4.3.1 Rational Game Design in #Inferno 28
The Lobby 28
Level 1: Greed (Sofie) 29
Level 2: Fraud (Sarah) 31
Level 3: Vanity (Elena) 32

4.4 Visual Communication 34
4.4.1 The Shape language of Interactable Elements 34
4.4.2 Color Coding 36
4.4.3 Environmental Cues 37
4.4.4 Lighting as a Guide 39
5. Playtest 41
5.1 Description 41
5.2 Analysis Method 41
5.3 Results 42
5.3.1 Story 42
5.3.2 Art 42
5.3.3 Gameplay 43
5.4 Remarks 43
6. Discussion 44
7. Conclusion 44
8. References 45

Abstract

This report deals with the development processs of the masters thesis game project #Inferno. An isometric puzzle game prototype constituting three levels that explores a witty modern take on the story world of Dante's Inferno through the use of visual storytelling embedded in the design of space. With a focus on visual design and how visual design can support the communication of narratives and gameplay, the report firstly elaborates theories and methods within the field of game design that deal with visual design and storytelling. Subjects that are relevant to the research and thus the production. Hereafter, the report explains briefly the team's approach to the project as three artists and designers, before it dives into the process of settling the story world, and the research-based approach to deciding the art direction and gameplay. Through selected examples, the report covers in detail how the visual design came to be for each of the three levels in the game, with explanations for how the visual design tie into the established story world and gameplay mechanics. In the subsequent section the report then dives into the playtest conducted in May 2023 and covers the key results it yielded. In the end, the report discusses the playtest results in relation to the research questions and overall state of the project, before finally wrapping up in a conclusion with a plan for the future works.

1. Introduction

With a common interest in designing and developing visual art for productions targeting the culture and entertainment industries, our professional goals for the thesis project were to improve our competences in directing, designing, and creating finalized visual content for digital media projects. As game design is our educational backdrop, working on a game project naturally seemed to be the fit. However, it was our interest in investigating the process of creating story worlds and producing visual content for games that finally led us to the decision. On a personal level, we were driven by the urge to find out how we can produce and use visual assets for communication of gameplay and narrative. From a broader perspective, this personal starting point expanded into bigger questions about the challenges game designers face when they are creating assets.

As we came across these reflections, it became evident that we wanted to investigate the following aspects:

1. *How can we design visual elements that support the communication of gameplay, and control the flow of information over the course of the game?*
2. *How can we design visual elements that support the communication of narratives, and ensure consistency across all levels both narratively and visually?*
3. *What are some of the challenges a game designer faces when making assets for a game project and how can these challenges be accommodated in the process?*

Since our key interest is visual design, and we each have differing interests and capabilities when it comes to the production of 2D and 3D assets, we decided to address the research questions from a game project focused on 2.5D. 2.5D refers to the art and process of making 2D assets – *sprites* – appear 3D in their representations, by using colors, lighting, and shadows to make the assets pop out from their otherwise two dimensional "flat" plane (Knight, 2021). We see the use of 2.5D in side-scrollers like *Spiritfarer* (Thunder Lotus Games, 2020), where layers of overlapping assets create an illusion of depth. However, in our project we wanted to approach the 2.5D style from an isometric viewpoint as seen in games like *Hades* (Supergiant Games, 2018), where 3D spatial elements are combined with isometric graphics. The isometric viewpoint allowed us to explore the possibilities and limitations of 2.5D art in terms of production and implementation, while at the same time accommodating the team's differing skills. In the creation of the story world for our game, we were inspired to do a modern and witty take on the classic work *Dante's Inferno* by Alighieri Dante (1321), by addressing contemporary subjects like internet culture and social media as nowadays' cradles for sins.

Since we were a team of three artists with little to no experience in programming, our primary focus was on the visual and narrative aspects of the project. We built our project based on assets available in the Unity asset package *TopDown Engine* (More Mountains, 2018), with a few programmatical additions made by the team.

2. Methods

To investigate how we could design visual elements that support the communication of narratives and gameplay, we looked into theories dealing with the principles of visual design, gameplay, design psychology, and visual storytelling. These sources include: “Visual Cues in Level Design” by Adam Henry (2015), “Adaptive Gameplay Aesthetics: A disruptive game design framework” by Chris Solarski (2018), “Rational Design: The Core of Rayman Origins” by Chris McEntee (2012), “The Key Elements & Principles of Visual Design” by Teo Yu Siang (2021), and a section about *Affordances* covered by Don Norman in his book “The Design of Everyday Things” (1988).

Besides the importance of understanding what and how different visual design techniques could be used in our project, equally as important we needed to understand the best practices of making story worlds, and how game spaces can be designed to promote storytelling. Early on, we therefore dived into the texts “Narrative as a formal system” by Bordwell & Thompson (n.d.), “A Creator’s Guide to Transmedia Storytelling” by Andrea Phillips (2012), and “Game Design as Narrative Architecture” by Henry Jenkins (2004), because their concepts on storytelling and world building created the theoretical starting point we needed for designing our story world.

Starting out by firstly explaining the terminologies on 2.5D games and isometric graphics, we proceed to cover the theory mentioned above, including explanations on why these sources were relevant for our project.
Hereafter, we dive into a brief introduction to our process. In this section, we cover how we approached the project as three artists, and how and why we shared the Art Director role.

In the same chapter we dive into an analysis of key elements in our project relevant to our research questions. Starting out each section with a deep-dive into our team’s decisions regarding the overall direction for the Story, Art and Gameplay, we end the sections by zooming in on the choices we made for our individual levels based on the common starting point. Thus, we analyze the reasons behind our decisions, and cover how we used theory in the decision-making process.

To shed light on the analysis, we will in the subsequent chapter go over the key results from the playtest conducted in May. To process these results, we have used the *Traditional Coding* method described in the book “Qualitative methods for Consumer Research“ by Thomas Bjørner (2015; see appendix A for description). We used this method, as decoding the results according to reoccurring topics and issues, helped us pinpoint what aspects of the project need rework.

After this chapter, we proceed to a discussion on the playtest results and the current stage of the project in relation to the research questions, before finally summarizing the project in a conclusion with a plan for the future works.

3. Theory

Before we dive into the project's development and examine the research questions at hand in relation to the production, we will first cover the theory that we used in the production process. We will define what we mean by 2.5D games and isometric graphics, and touch upon the principles of visual design applicable for this type of graphics. We will cover theory on how visuals in a game space can act as gameplay cues and comediators of storytelling, and elaborate theories on the process of making a story world for a game.

3.1 2.5D games

While 2D games refer to games where gameplay and assets are all two-dimensional, like we see in *Stardew Valley* (ConcernedApe, 2016) and side-scrollers such as *Spiritfarer* (Thunder Lotus Games, 2020), 2.5D refers to games that combine 2D and 3D elements. In the article *"What are 2.5D Games? How they differ from 2D and 3D Games"*, the author Ste Knight (2021) distinguishes between two types of 2.5D games that can be described as such:

1. a game where the assets are mostly 3D, but the gameplay is 2D
2. a game where the assets are 2D, but the gameplay takes place in a 3D environment

The first one addresses side-scrollers which use 3D models as characters and background assets to evoke a depth of field. Among these types of games, we find games like the classic *Donkey Kong Country* (Rare, 1994) and a more recent title *Unravel* (Coldwood Interactive, 2016). The second type refers to games like those seen from a top-down view or an isometric perspective. In these types of games, 2D objects appear to be 3D due to the camera angle. In the example of top-down, we find games like *Wildermyth* (Whisper Games, 2019) and for the isometric view, we see titles such as *Hades* (Supergiant Games, 2018) and *Disco Elysium* (ZA/UM, 2019).

Fig. 1: *Wildermyth* (Whisper Games, 2019). Example of a game using 2D sprites in a 3D environment, seen from a Top-Down View.

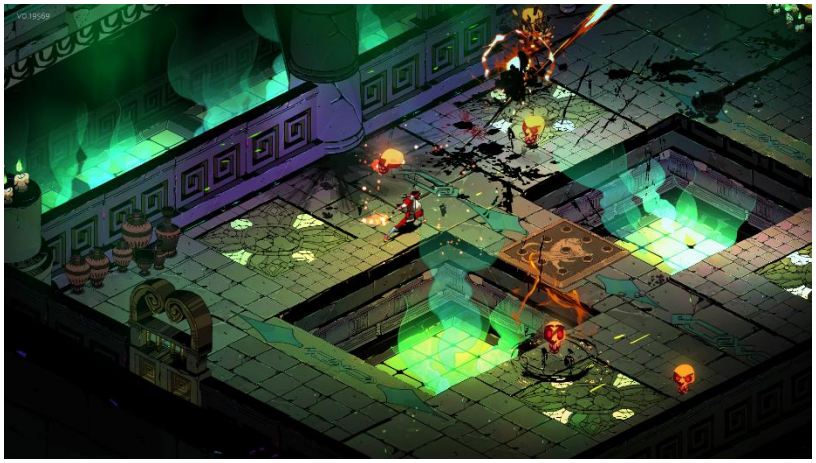


Fig.2: *Hades* (Supergiant Games, 2018). Example of a game using 2D sprites in a 3D environment, seen from an Isometric View

3.2 Isometric Graphics

While top-down simply describes games where the action is seen from some elevated viewpoint, the isometric perspective defines a very specific type of graphical view as explained in the article *"What is isometric game & How to make it"* by Süleyman Cengiz (2021). The isometric perspective is a three-dimensional view that makes the viewer look down on the game world with a fixed camera angle of 30 degrees on the X-axis and 45 degrees angle on the Y-axis as seen in fig 2 above. Visually this means that for 2D assets to be isometric, they need to follow a grid of diamond (rhombus) shapes arranged according to the formerly mentioned angular setup. The result is 2D assets that are twice as wide as they are tall and have three sides visible: a top and two facing sides (see fig.3).

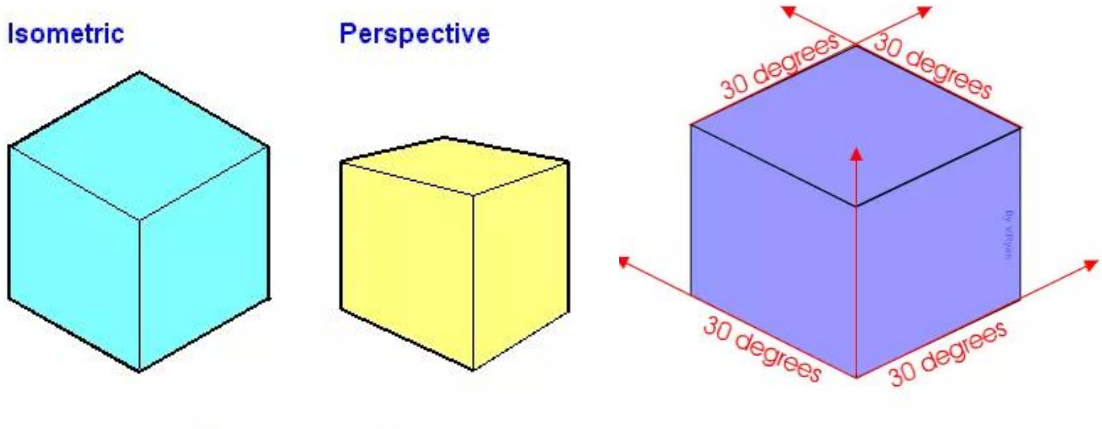


Fig. 3: Illustration of how an isometric drawing differ from a perspective drawing (Cengiz, 2021)

Different from the top-down view, the isometric technique "creates the perception of height in the player and enriches visuality" (Cengiz, 2021). However, opposed to graphics drawn from perspective projection, isometric graphics do not provide "depth perception" because of the fixed 30-degree angle. Because of this lack of depth perception, we needed

to look for other ways within the practices of visual design to simulate three dimensionality in isometric graphics. Furthermore, we needed to figure out what techniques could be used to match 2D and 3D assets visually. In the proceeding sections we will therefore dive into principles of visual design and go over what visual rules we followed, to create visually cohesive assets.

3.3 Visual Design

3.3.1 The seven Elements of Design

In the article *Elements of Design: Understanding the 7 Elements of Design*, published by Masterclass in 2021, the seven elements of design are covered. The seven elements of design are the visual building blocks that are used when making any visual design or composition and which, in combination with each other, form the final image, graphic, interior design or logo. The seven elements of design are the following:

1. Line
2. Value
3. Texture
4. Form
5. Shape
6. Color
7. Space

By working with these building blocks during asset production, we wanted to see how we could use them to achieve the perceived depth that we were aiming for as well as matching our 2D and 3D assets.

3.3.2 The Relationship Between Visual Elements

Similarly, to *Elements of Design: Understanding the 7 Elements of Design* (Ibid), the article *The Key Elements & Principles of visual Design* (Siang, T. 2022) also covers the use of visual building blocks. However, it goes into greater detail regarding the overall composition of visual elements, their relationship and how this affects the viewer.

1. Unity
2. Gestalt
3. Hierarchy
4. Balance
5. Contrast
6. Scale
7. Dominance

Along with the seven elements of design, we aimed to use these tools to look at how we shaped, scaled and positioned our assets in relation to each other, and how that affected the player´s perception of them.

3.3.3 Adaptive Gameplay Aesthetics

In *Adaptive Gameplay Aesthetics: A Disruptive Game Design Framework* Chris Solarski (2018) writes about the use of different shapes in video games and what they communicate. He describes how spheres are perceived as dynamic and smooth, cubes as solid and stable and triangular objects as physically disturbing to handle due to the sharp points (ibid). Throughout the project, we used this to guide our decisions when it came to the shape language used for our different assets, specifically the ones that the player would interact with, as we wanted them to communicate something specific.

3.3.4 Visual Cues in Level Design

In the article *Visual Cues in Level Design* by Adam Henry (2015), he writes about how visual design can be used to communicate to and guide the player through a level. Throughout the article, Henry gives examples of different ways in which art and design can work together so that the art visually communicates the game design and gives the player the right visual cues at the right time. Some of the examples Henry gives are coordinated placement of assets, color coding, icons and the visual communication of the state of an object.

During the project, we made use of these principles to determine the placement of our assets, as well as how we colored them and used this to give feedback to the player.

3.4 Rational Game Design

In the article *Rational Game Design: The Core of Rayman Origins* (2012), Chris McEntee, a game architecture and design student, examines how rational game design was used in the making of *Rayman Origins* at Ubisoft Montpelier.

“Rational design is all about eliminating unnecessary information, making things inherently readable, understandable and apparent, introducing mechanics in an orderly and easily digestible fashion, and preserving the learning and difficulty curves of a game, known as macro flow.” (McEntee, 2012).

One of the most important aspects of rational game design is to only give the player the information that is required for them to progress in the game while leaving out any information that might confuse or otherwise make the experience less smooth. One way of doing this is to gradually introduce new mechanics to the player, so that they are not presented with a lot of new mechanics all at once, which could easily become overwhelming and difficult to navigate.

Another important aspect of rational game design is how new mechanics and gameplay elements are introduced. Like McEntee mentions, this way of designing games is about “making things inherently readable, understandable and apparent” (Ibid), hereby referring to how the individual object communicates its function. This means that everything in the game world has to communicate its purpose without the use of written tutorials, making it easy for the player to distinguish non-interactable and interactable objects, as well as how the interactable elements work.

This also ties into the visual design. As McEntee writes: “By combining a strong silhouette with color and scaling, a gameplay element can be extremely apparent, readable and clear almost immediately” (Ibid). To support the goal of making every object inherently readable, the assets in a game should make use of shapes, sizes and colors to signal to

the player what they do as well as whether they are friendly or hostile (example with Rayman Origins assets. & characters).

3.5 Affordances

Rational design ties deeply into acknowledged concepts within the broader spectrum of design theory, among which include the study of *affordances* of objects. In the book *"The Design of Everyday Things"* (1998), Don Norman adressses the concept of *perceived affordance* which, in contrast to *affordance* that deals with the actual relationship between the properties of an object and the capababilities of an agent, refers to what an agent *thinks* they can do with an object (Norman, 1998, p. 9). What the agent thinks they can do with an object may or may not match its actual affordances. A chair, for instance, affords ("is for") support and affords sitting (ibid.). But some door handles do not clearly communicate whether they should be pushed or pulled to open a door.

In relation to game design, it is therefore important to consider if the objects you are designing also communicate their intended use – mechanically, visually and auditorily. Moreover is it important that the player receives feedback from their action. If we pull a lever in a game, we expect the lever to move accordingly to the direction it was pulled. When the lever cannot be pulled anymore, we expect it to stop. Chris McEntee pointed out the importance of making elements extremely readable. Adam Henry highlighted the effectiveness in using distinct visual cues to communicate objects intended use. In summary, we therefore needed in the design process of the assets to carefully consider their function in the game. For some assets, the function is to communicate a story.

3.6 Environmental Storytelling

"Game designers don't simply tell stories; they design worlds and sculpt spaces.", states the author Henry Jenkins in his article *"Game Design as Narrative Architecture"* (2004, p. 5). Game Designers should think of themselves as "narrative architects" and realize the potential of game spaces to become comediators of storytelling (ibid.).

While not all games tell stories, the games that do tell stories tend to fit within the old traditions of spatial storytelling encountered in hero's odysseys and quest myths, Jenkins states (ibid., p. 6). He points out how game designers often are more apt to tap into the film and literary genres - fantasy, adventure, science fiction, horror, and war (ibid., p.7). Genres that traditionally are more invested in world-making and spatial storytelling. Games, especially games that allow players to move around in a space, have the potential to realize the spatiality of stories, by providing a "much more immersive and compelling representation of the narrative worlds" (ibid.). To learn how to fully realize the potential for game spaces to tell stories, game designers could look at how amusement park designers work with the technique of

“environmental storytelling” (ibid.). With citations of the Senior Show Designer for Walt Disney Imagineering, Don Carson, Jenkins highlights how Disney has focused on infusing the story elements into the physical space of their amusement parks (ibid.). Since visitors spent most of their time moving through physical spaces, it makes sense to make the environment do most of the storytelling. To heighten the thrill, the trick is to make the spatial story elements play on the visitors’ memories, expectations and knowledge of the world. Working with environmental storytelling can help designers create immersive narrative experiences for their audience. Jenkins proposes four ways this can be done in game design:

1. **Evocative Spaces:** spaces that *evoke* our preconceived memories, knowledge and experiences of a story world, e.g., Disney’s amusement parks.
2. **Enacting Stories:** spaces in which players are to perform or witness a story. Often a travel narrative where events are timed, and obstacles’ design facilitates the protagonist’s forward movement.
3. **Embedded Narratives:** spaces that become a memory palace, where story elements are revealed to the player through exploration, like in detective stories.
4. **Emergent Narrative:** spaces rich in narrative potential that allow players to construct their own narratives.

(Jenkins, 2004, pp. 8 – 18)

Since we based the story world of our game on that of *Dante’s Inferno,* we thereby chose to design what Henry Jenkins defines as an “evocative narrative experience” (ibid., p. 18). For this type of narrative experience to succeed, it is is important that we cultivate and play on the memories and expectations that players might have of Dante’s Inferno, both in terms of gameplay, narrative and visual design. But before we can work on creating an evocative narrative experience with visuals ripe with storytelling, we need to understand the concept of transmedia storytelling and how to make a story world.

3.7 Transmedia Storytelling

Transmedia storytelling is a narrative technique that involves expanding a story or fictional world across multiple media platforms, with each medium providing its own perspective, plotlines, and characters that contribute to the overall narrative. It offers opportunities for audience engagement, world exploration, and the creation of a more immersive and expansive narrative experience. It allows for the exploration of different perspectives, expands the story's reach, and invites audiences to become active participants in the storyworld.

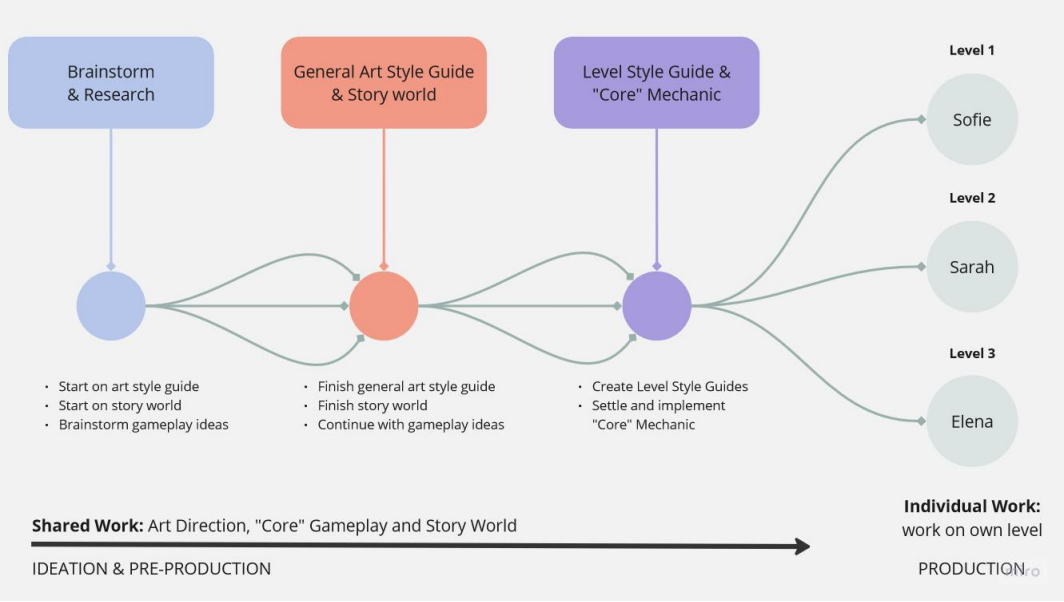
Guidelines of worldbuilding in transmedia storytelling, according to Andrea Phillips in his book ‘*A Creator’s Guide to Transmedia Storytelling’*:

- ***Establishing a Rich Storyworld:*** Worldbuilding involves creating a detailed and immersive fictional universe for the transmedia narrative to unfold. It includes elements such as geography, history, culture, technology, and characters within the storyworld. The author emphasizes the importance of crafting a coherent and engaging storyworld that captivates the audience's imagination.

- ***Consistency and Coherence:*** The storyworld should maintain its rules, aesthetics, and narrative integrity throughout various extensions. This consistency helps create a seamless experience for the audience and enhances their immersion in the transmedia narrative.
- ***Extending the Storyworld:*** Phillips highlights the advantage of leveraging multiple platforms to explore different aspects of the storyworld. This extension can involve creating additional narratives, characters, and storylines that deepen the audience's understanding and engagement with the transmedia universe.
- ***Interactivity and Exploration:*** Incorporating interactive elements that allow audiences to participate in shaping the storyworld or to uncover hidden details and narratives. This interactivity enhances the sense of agency and investment in the transmedia experience and encourages the audience interaction and exploration

4. Project

As a team of three artists, equally eager to develop our artistic abilities and produce art assets for the project, we agreed in the beginning to share the art director role. The way we approached this shared role is visualized in fig. 4.



During ideation and pre-production, we were all invested in settling the story world, deciding on the gameplay mechanics, and assembling the art style guide. We explored several ideas for what the story world could be, and ideated on different types of gameplay e.g. grid-based puzzles and sidescrollers (see appendix B), to identify what would match our skills and project goals. Not only did this create a mutual agreement on the project's direction. It also helped us clarifying the team's competencies, which eventually led us to decide on making a simple gameplay mostly based on assets available in the Top-Down Engine for Unity (More Mountains, 2018), to accommodate the lack of coding skills.

In this chapter we will dive into selected highlights from our project's development and process relevant for to our research questions, describing how we settled on our story world and decided on the art direction, before covering key aspects from the production of each level in the game in relation to art and gameplay. During these sections, we will explain how we used theory in the decision-making processes as well as our experiences from the early studies to carve the path for project's direction.

4.1 Story World

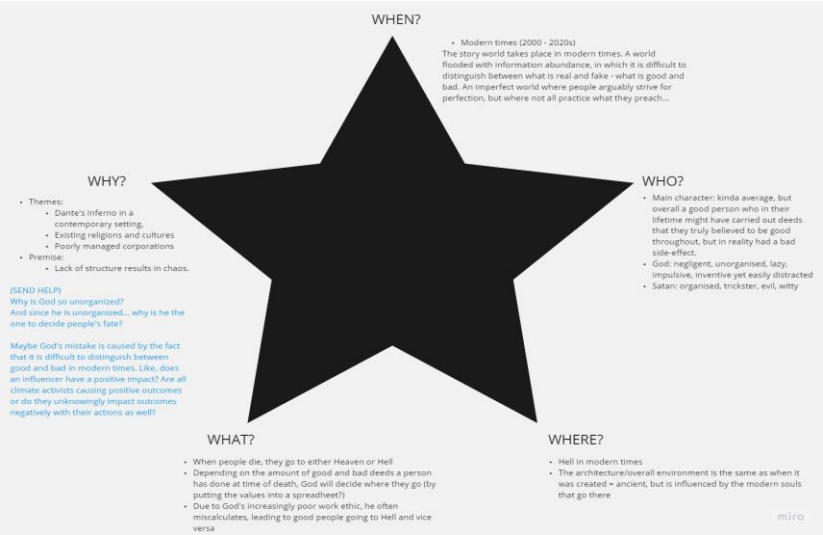
Throughout our brainstorming sessions, we explored various references to determine the type of narrative we aimed to convey in our game. Our objective was to develop a puzzle game where the story is conveyed through environmental design and gameplay. One of the initial ideas was to create a universe where we can 'host' several different environments - *levels* - where we can split the art direction between us. Among the ideas considered were incorporating dreams as a thematic element, allowing the hero to traverse through dreamscapes to unravel the story. Another concept explored was an emotional journey, where the hero experiences various emotions such as anger and sadness. However, effectively communicating these abstract themes proved challenging, so we decided to look into an existing form of storytelling, that of Dante's Inferno, as a source of inspiration.

1st Story Iterration : Established World VS Generic Character

Initially, Dante's Inferno emerged in a later stage of our brainstorming process. Our creative journey commenced with Sarah's concept of God's incompetence in determining who enters heaven or hell. This led us to develop a protagonist who, despite being wrongly sent to hell, receives assistance from God to navigate through the multiple levels of hell and ultimately find a path to heaven. The inclusion of humorous elements and engaging characters such as God and Lucifer, served as inspiration for us to pursue the proposed concept. The potential for creatively visualizing various locations within hell further motivated our decision.

We quickly encountered issues visualising the world. While we established hell as the primary setting, we collectively decided against a visual representation of God and Lucifer in the game. This decision was made to avoid potential

controversies and respect diverse religious and personal beliefs surrounding the depiction of these entities. So their representation should be through the story and environmental design. However, our protagonist was the only playable character, who was intended to be a plain - almost ghostly- figure, with no story background about their personality or past, other than being a regular human who mistakenly was placed in hell. At that point we started looking into Dante's Inferno, in hope that we could get some more information about the layers of hell depicted in the classic, as well inspiration for secondary characters, like Virgil and demons that rule in hell.



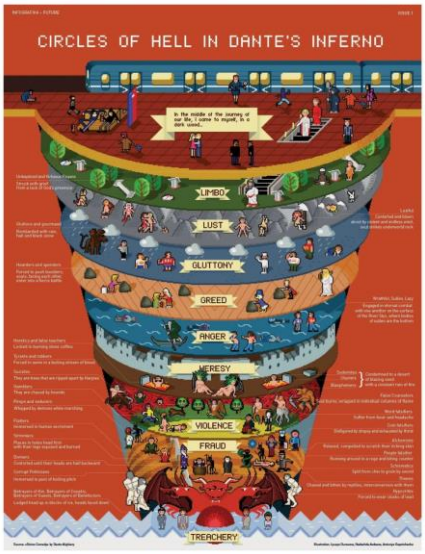


Fig. 5 & 6 : The old map of our storyworld based on Dante's Inferno, alongside Dante's Circles of Hell (for larger images, go to Miro via link in appendix C).

Eventually we came to the conclusion, that is extremely difficult to narratively visualise an established concept like Hell, without considering the protagonist's background and point of view. Following Dante's references were helpful researching themes for different layers of Hell, however it did not provide with the 'soul' of what we were having in mind, transfering the classic to a modern medium of digital games, with humour and our personal flavour.

2nd Iteration: 'Personalized Hell'

We quickly came to realize that creating a world and its rules without paying attention to the main character is an impossible task. It seems obvious when it comes to writing for films or books, since the narrative is usually through the protagonist's point of view. However, this is not the case with games. The player has the chance to discover corners of the world that the plot does not necessarily pay attention to. As Mark Wolf mentioned in *"Building Imaginary Worlds"* (2012), you cannot stop the player from examining and engaging with the world. A well-constructed imaginary world can captivate the audience, drawing them into the story and encouraging their exploration and interaction with the world and its inhabitants.

So we decided that we need to completely change our approach, and create the world around the protagonist instead, a *personalised Hell*. We were certain that we would use *Dante's Seven Deadly Sins* as the theme of our levels as well, but it seemed harder than expected to visualise it in a modern setting, as the key words in our design pillars were modern and humorous. We drew inspiration from various cultural and historical influences in designing the architecture of Hell with

a modern twist, in order to build a rich, ancient world with secrets. Highlighting however, the societal beliefs, values and events that shaped the modern society and therefore, our protagonist.

Naturally, the narrative took a different direction with this decision.Our protagonist instead of an innocent, poor soul that is at the wrong place at the wrong time, is now a person that commited several sins in their lifetime and is going through a punishing journey to face their actions. In order to keep the humorous, light tone of the game, our protagonist is an influencer that was scamming her followers throughout her career. We imagined her personality to be repulsive, unlikable, full of herself, but charming enough to keep the players interested to find out more about her past. We studied what makes someone '*attractive'* from a psychological point of view and how this can influence player impressions of characters. In addition, we researched how stereotypes can function psychologically, as well as the benefits and limitations they impose. According to Katherine Isbister in her article *"Better Game Characters by Design"* (2006), stereotypes help to make characters immediately accessible, memorable, and surprising. Stereotypes are a great way to leverage things a player already knows, thereby suggesting how to react to a character. So, by using the stereotype of a corrupted influencer, we ensure that the players will create a narrative beyond the plot that we present them.

4.2 Art

In this chapter we will briefly cover the process of settling the art direction for the project and through selected examples, dive into the visual design of each level.

4.2.1 State-of-the-Art

Starting out by collecting references of games we found inspiring such as the titles by Supergiant Games: *Bastion, Transistor,* and *Hades* (Supergiant Games; 2011, 2014, 2018). The Art Director, Jen Zee, is a well known artist among the creative circles for her ability of mixing 2d elements in 3d spaces. All Supergiant titles have been art directed by her, despite the different art styles that all have. Her ways of mixing the styles by keeping the visual identity of the studio coherent, has been extremely influential for us. Since we art directed the game together but we have different styles from each other, we had to study the games and research techniques that we can all execute.
Another game that influenced our initial brainstorming is *Archaica (Two Mammoths; 2017)*. *Archaica* is a puzzle game that uses laser beams and mirrors, similar to our light beams and mirrors for the gameplay. It is visually appealing and engaging to the player, while using spacial design for increasing the complexity of the puzzles.

4.2.2 Art Direction

As explained in chapter 4, we agreed on sharing the responsibilities related to the Art Director role until we had settled upon a course and could split to focus on our own level. As part of this shared work, we created a general art style guide (see fig.7). A guide which had to serve as the leading star for the art production. It describes a set of rules and visual design pillars to be followed across all levels, no matter their thematic differences.

In this section, we will cover how we established the general art style guide and why we settled for this direction.

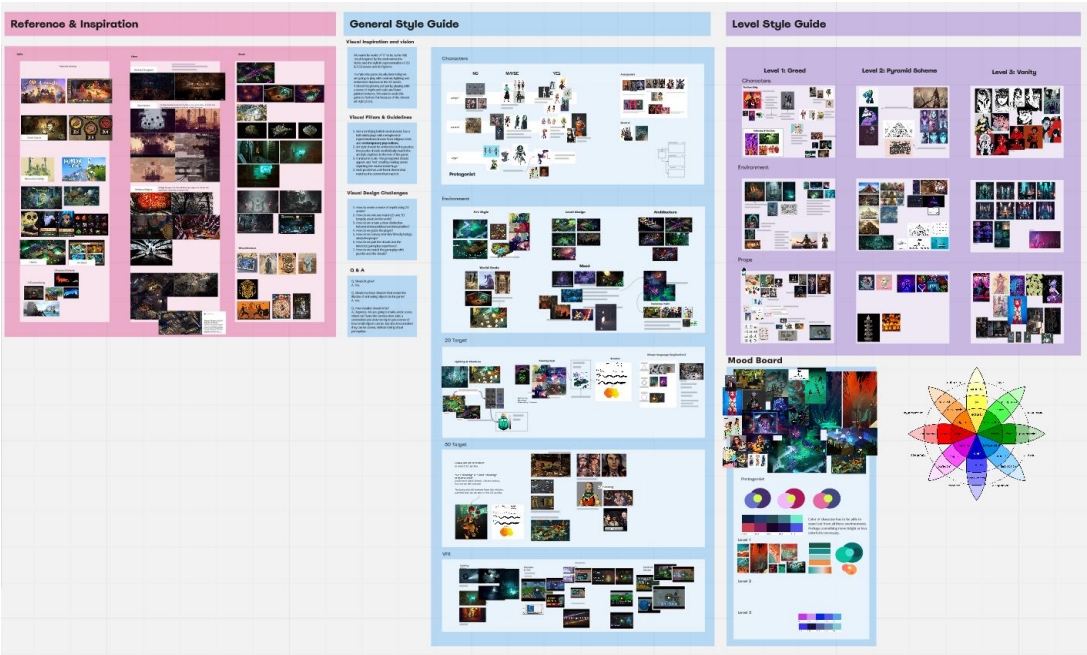


Fig. 7: Art style guide. From left: Reference & Inspiration board (pink), General Style Guide (blue), and Level Style Guide (purple). To see the board, go to appendix C for link.

Studies & Research

Heavily inspired by the state-of-the-art games covered in section 4.2, we embarked on our journey into the making of the art style guide. We conducted a few art studies simultaneously with research and ideation of possible types of gameplay. These art studies involved investigating the possibilities and limitations of working with isometric graphics in Unity, and how we could utilize visual design theory when producing this type of visual asset. One of the most influential studies was the investigation of how to cope with light and shadows in sprites in Unity (see fig. 8).

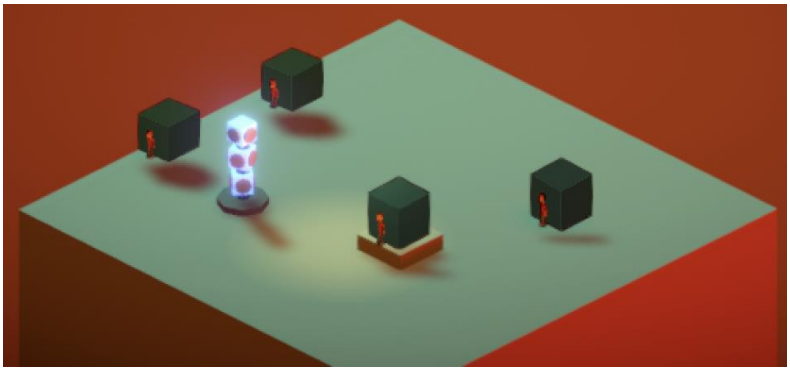


Fig. 8: screenshot from art study of isometric graphics in Unity.

In this exercise, we discovered that since isometric graphics cast weird offset shadows, due to the 30-degree angular corners being lifted from the floor surface, using Unity's inbuilt shadow casting functionality was not a viable option. By studying the painting techniques used in the games *Hades (Supergiant Games, 2018)* and *Bastion* (Supergiant Games, 2011) (see fig. 9), we realized as confirmed in section 3.3 on visual design theory that, embedding highlights and shadows in the sprite textures to simulate a reception of light would be the best approach to make 2D assets appear to interact with lights and thereby to blend in as objects that possess volume.

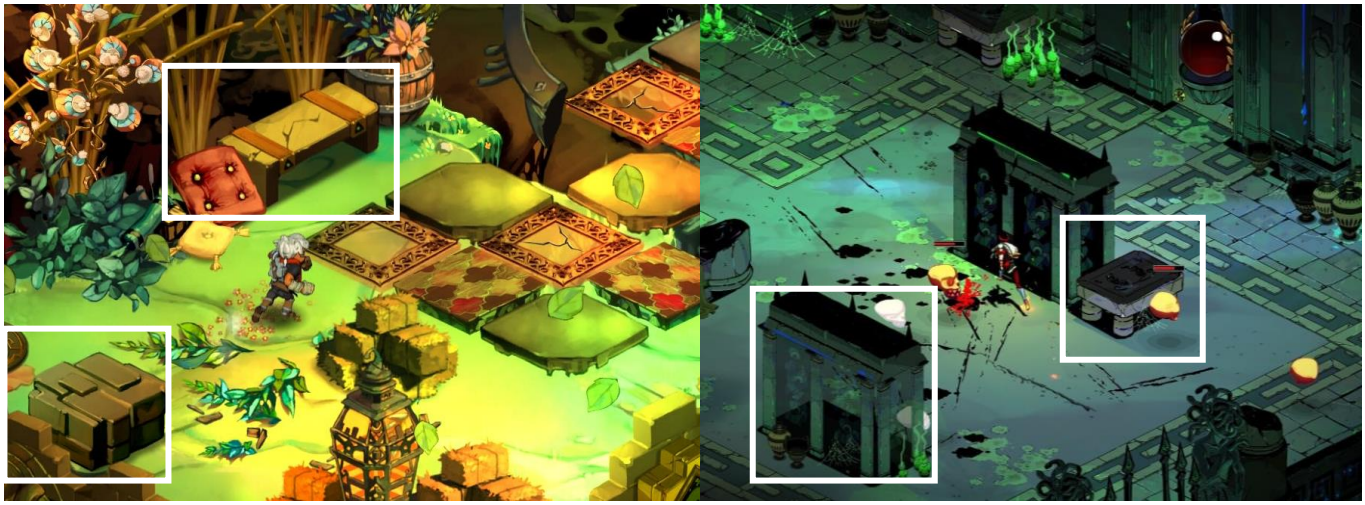


Fig. 9: Examples of how light and shadows was embedded in the textures of the sprites in the games, Hades (Supergiant Games, 2018) and Bastion (Supergiant Games, 2011), to make the assets blend in naturally with the 3D environment

The process of embedding highlights and shadows into the sprite textures also couple with the term *value* covered in section 3.3, which refers to the lightness and darkness of a color. Working with lighter and darker shades of colors can help simulate depth. Sprites placed in spaces with little light should have their textures painted in darker color values than those placed in light.

Making 2D and 3D appear 2.5D

As the art studies gave us an understanding of how to work with isometric graphics, we could start outlining the visual guidelines. Among these guidelines we established a method for how to create visual cohesion between 2D and 3D

assets (see fig. 10). Since we had decided to make isometric graphics with a visible black lineart to give the game a comic-style look, it made sense to look at how games with a similar visual target like *Figment* (Bedtime Digital Games, 2017), *The Walking Dead* (Telltale Games, 2012 - 2013) and the game series *Borderlands* (Gearbox Software, 2009 - 2022) had dealt with texture painting of their 3D assets.

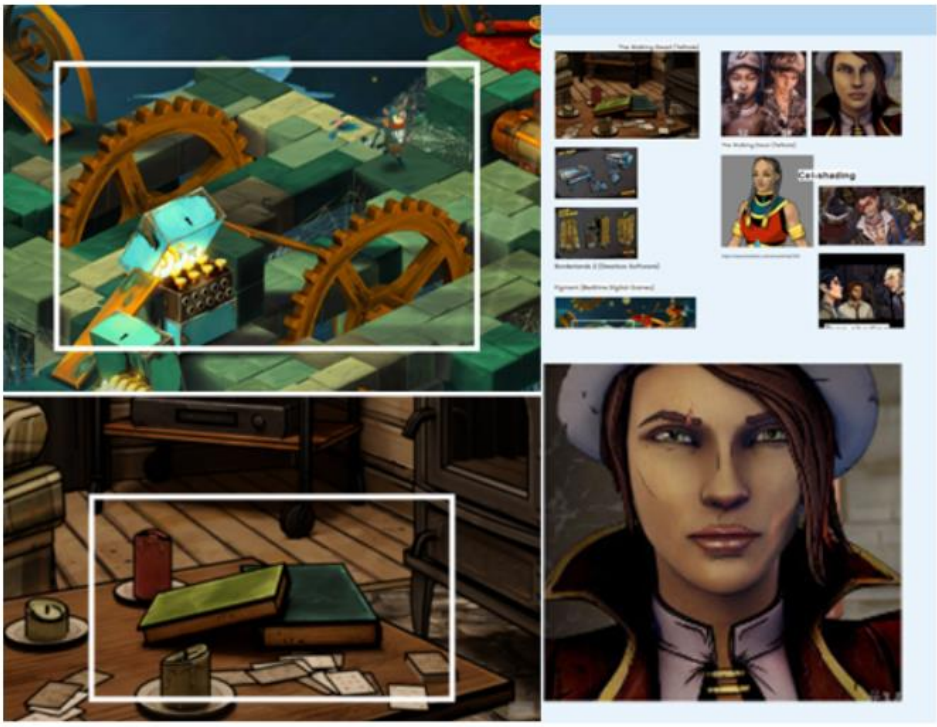


Fig. 10: Studying techniques for making hand-painted comic-like textures for 3D assets, by looking into the games Figment (Bedtime Digital Games, 2017), The Walking Dead (Telltale Games, 2012 - 2013) and the game series Borderlands (Gearbox Software, 2009 - 2022)

In this study, we concluded that by making hand painted textures using the same brushes as for the isometric graphics, and by drawing black lines along the edges of the mesh, we would reach a sweet spot where both types of assets appear to possess properties from one another that result in a similar 2.5D look.
Later in section 5.2.2 on “Art Production” we showcase how our 3D assets turned out using this approach.

Mood

Where *Dante’s Inferno* paints a very grim imagery of the punishments that sinners have to endure for an eternity in Hell, we on the other hand wanted to take a more lighthearted approach to the story in our modern depiction. We wanted to make a witful social commentary on the dark side of social media and internet culture, exposing the oddities that occur in digital content and the difficulty in sometimes deciphering the true from the false.

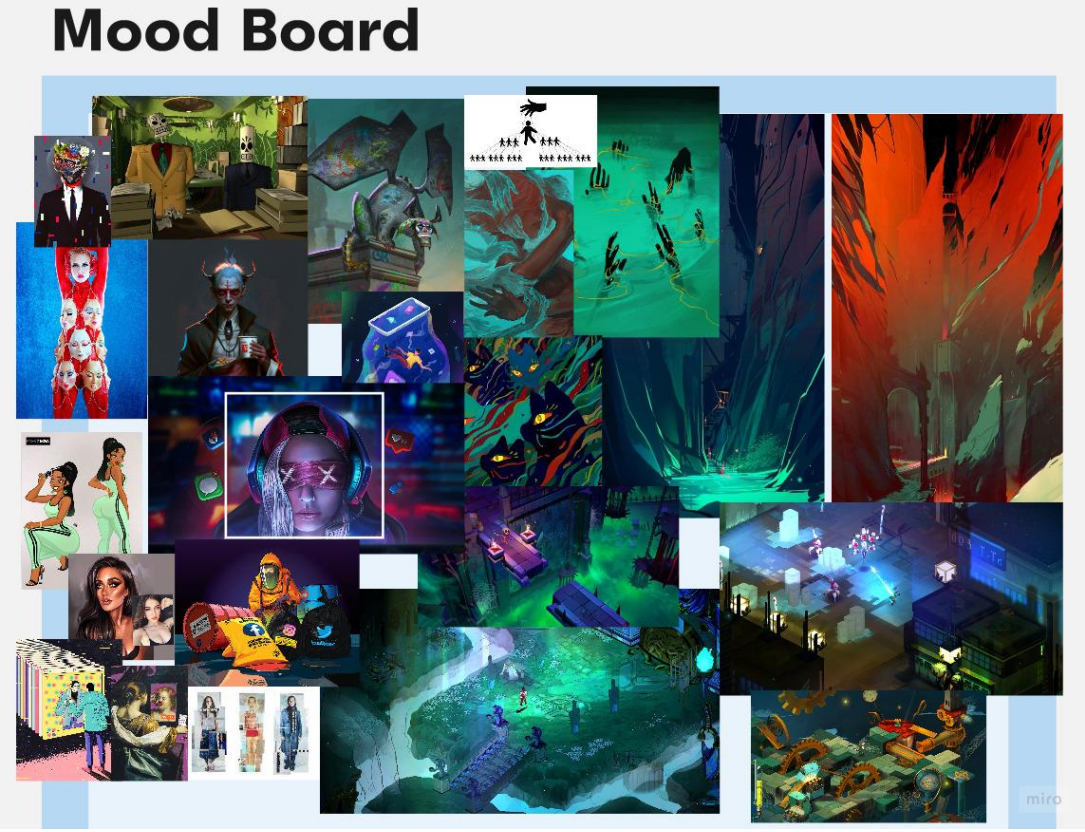


Fig.11: Mood Board (see appendix C for link to Miro)

Therefore, we decided that the mood visually should play with the duality between fantasy and realism - fake and real – through high contrasts in colors, light and dark values, and small and large-scaled assets. Lighting should be sparse and limited to areas of interest to emphasize the narrative idea of the protagonist having to uncover hidden truths. Thereby the mood leans into our primary sources of inspiration for the visual design, *Hades* (Supergiant Games, 2018) and *Transistor* (Supergiant Games, 2014).

Level Style Guide

After finishing the General Art Style Guide, we split up and started working on our individual *Level Style Guides (see fig. 12)*. In this process we each had to elaborate how we intended to communicate our level's theme visually and narratively, with examples of environmental content we envisioned could fit. Since we had decided to create what Henry Jenkins describes as an "evocative narrative experience" (2004, p. 18), with a story world based on that of Dante's Inferno, it was important that we in the process of deciding the content for our levels, thought about how we could tap into the memories, knowledge, and experiences that players might have of this world. Because while we intended to do a modern take to "communicate a fresh perspective on that story through the altering of established" (ibid.), tying our story world to its original, narrative foundation, would help people to make sense out of the context.

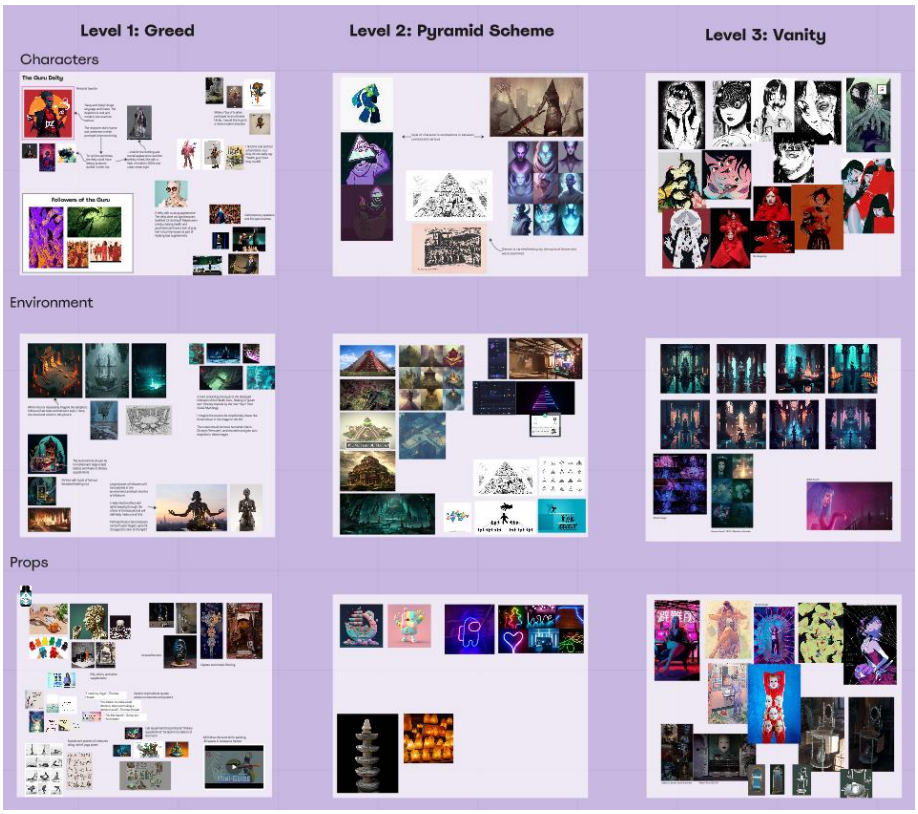


Fig. 12: Level Style Guide (see appendix C for link to Miro)

While building the level style guide, we had several discussions on how we could design the environment to communicate the setting of hell, and translate the seven deadly sins into a modern setting. What would be regarded as sinful acts today in the age of advanced technologies? What do we today associate with the sins greed, fraud, and vanity? The three sins that we decided to focus on, because they gave us the most narative and visual flexibility in terms of production and communication of content.

Level 1: Greed

The level addresses scam companies' and influencers' desire to make money at the expense of others' wellbeing, by selling life-style products to consumers with the promise of their vitality boosting properties. The goal is to make a fortune, no matter the cost. The level thus tackles the issue of being blinded to see the truth because of one's desire for goods.

Level 2: Fraud

The level tackles the issues with crypto valuta and ownerships related to NFTs – Non-Fungible Tokens. A newly invented type of digital asset, often representing a piece of art, music or video. Because NFTs and crypto valuta are new, unregulated inventions they are an easily accessible tool for influencers who wish to push fraudulent NFT projects to their fans.

Level 3: Vanity

The level deals with the desire for beauty, self-image and distorted representations of beauty on social media, leading people to undergo surgical procedures or follow unhealthy guidelines to meet unrealistic beauty standards. A controversial side of social media culture, influencers are well known for their practices of promoting undisclosed brand deals of beauty and image-related products, to be '*on trend*' and admired by their followers. Perfect is the new *fake.*

4.2.3 Art Production

In this section we will cover a few highlights from the art production and briefly explain the content produced for each level.

Level 1: Greed (Sofie)

As described above, the inspiration for the visual content for level 1 comes from the idea of modern days' greedy life-style manufacturers and promoters exploiting easily fooled customers to make a fortune. The prop and environment design were therefore based on items associated with this type of company, with the essential addition that they should reflect the protagonist's past of making money on social media by promoting fake dietary products. To set the scene for such a narrative, the environment was intended to express a mixed atmopsheric vibe between a temple and a warehouse. Abundant with gifts, pill glasses, boxes, money, furniture, and advertisements, the environment was crammed with stuff (see fig.13).

Fig. 13: (a) Excerpts of 2D assets, (b + c) and examples of the richly furnished space

While this might oppose the visual design pillar of *space* covered in section 3.3, describing that their needs to be a

balance between crowded and empty spaces to avoid players becoming overwhelmed, it was decided to make the space richly furnished with assets to emphasize the theme of greed.

The puzzle targets for the level were decided to represent social media posts that change appearance upon hit to visually communicate the two-faced aspect of the products; changing from a false, positive message to a reveal of the true, grim message (see fig. 14). The idea for the visual design of the puzzle targets was thought of as a witty way to visually communicate the story about the protagonist's involvement in sinful acts as a promotor.

Fig. 14: Examples of Banners changing appearence upon hit in level 1.

One of the greatest concerns with level 1 is the color scheme. The turquoise-greenish color palette paired with orange-yellow hues was chosen based on the first colors common association with nature and thus dietary supplements that emotionally could promote feelings of trust and amazement, and the orange-yellow colors' ability to express serenity. Combined they form a neat complementary color palette that leans into the themes for the content. However, as the color cues decided for the interactable objects likewise are orange-yellow, there is a risk of players mistaking non-interactable elements for interactable elements (see fig. 15). A point emphasized by the game developer Henry Adams in section 3.3 on visual cues in game design.

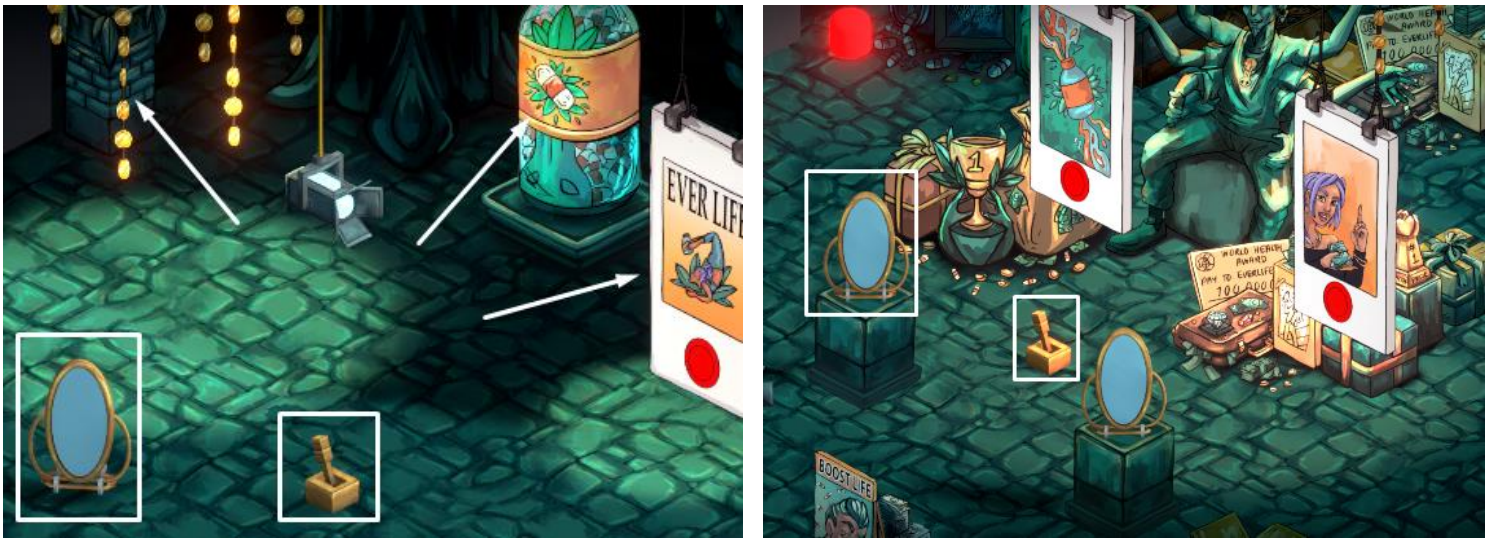


Fig. 15: Examples of the problematic overlap between the color palette of level 1 and the color cues for the interactables.

Level 2: Fraud (Sarah)

Based on the theme of crypto and pyramid schemes, the visual content for this level was heavily inspired by crypto-related objects such as NFTs, crypto wallets, adresses and charts as well as their different currencies (fig. 12). Additionally, the environment made use of triangular shapes as symbols of the pyramid, which the hands of the protagonist´s followers were reaching for, hoping to get a share of the wealth generated by the protagonist´s NFT project (fig. 16, 17, 18, 19 & 20).

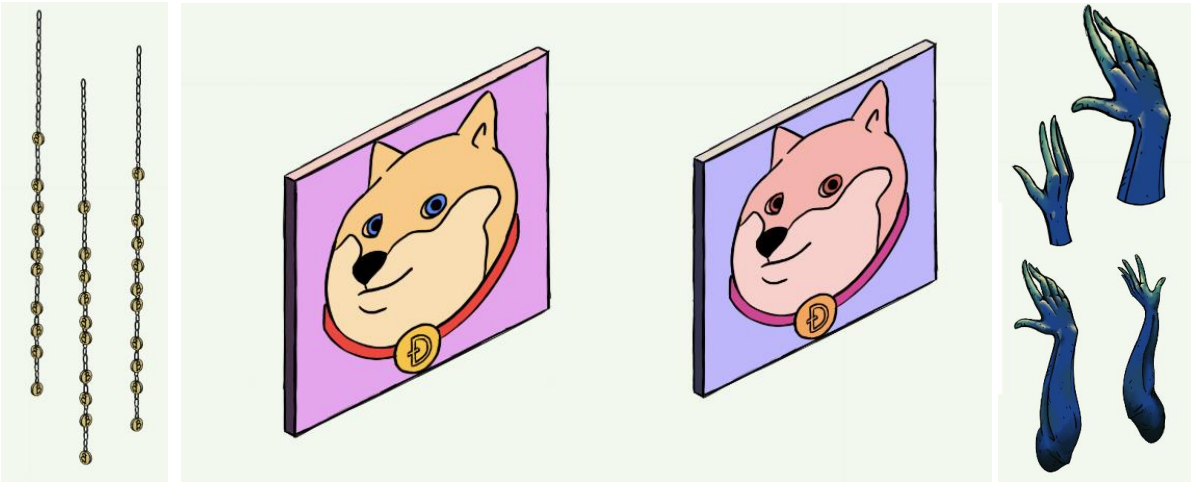


Fig. 16, 17, 18 : Concept art for level 2

Fig. 19, 20: Pillars and Architectural concepts for level 2

Furthermore, the visuals for the main part of the puzzle were also inspired by pyramid schemes and how they´re designed to appear confusing and lack transparency. Before the puzzle is solved, the player sees a statue holding a screen showing the balance in their crypto wallet, sitting on top of an unrecognizable shape made up of squares. However, as the puzzle gets solved and the squares rotated they end up taking the shape of a pyramid, like a pyramid scheme that has to be analysed in order to be revealed (see fig. 21).

Fig. 21: The pyramid texture is made to symbolise the protagonist´s followers, carrying the scammer at the top.

In terms of the color palette, the level mainly uses blues and greens. The deeper blues were used for the reaching hands of the protagonist´s followers (see fig. 18), as this was a color that invoked feelings like grief and sadness (see fig. 22).

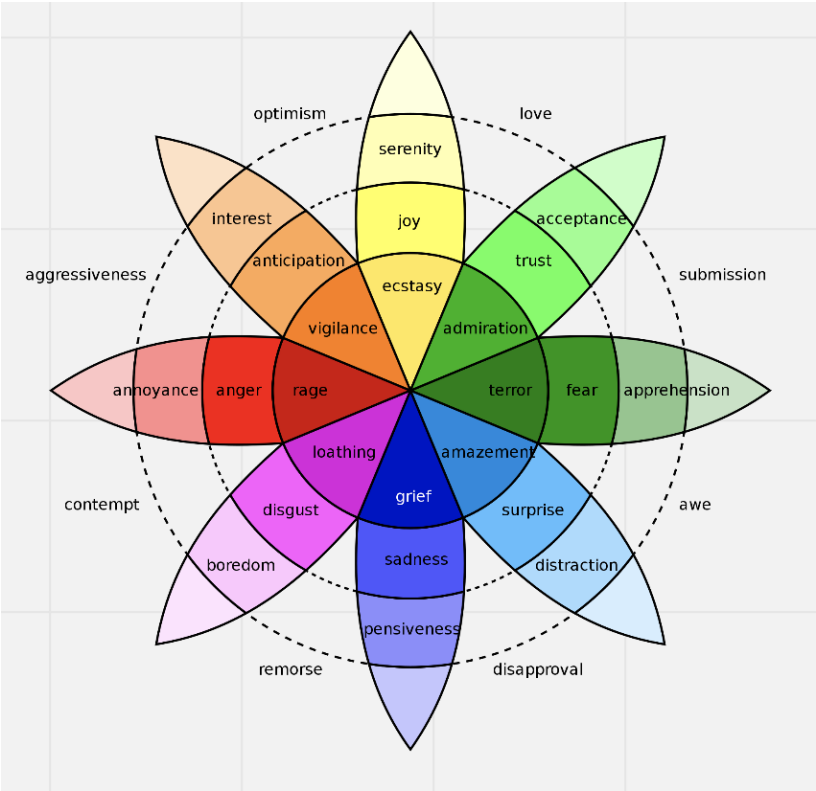


Fig. 22: Color wheel and it's symbolic meanings

Brighter shades of blue were used on the floor, which gradually turned into more green nuances further up the walls, to symbolize the difference in the living situation of the wealthy influencer compared to the followers that got scammed. Colors like green and yellow were chosen since they are associated with more positive emotions like trust, acceptance and serenity (see fig. 22). The brighter blues and greens were also used on the pyramid and the statue on top, getting brighter the closer they got to the person on top of the pyramid scheme (see fig. 23 & 24).

Fig. 23, 24

Level 3: Vanity (Elena)

As mentioned at the Level Style guide above, the third and final level in our prototype represents the sin of Vanity. Main inspiration of the level was the use of mirrors as game mechanic. Mirrors are the literal represantation of vanity, so it was only natural to incorporate them to the visual design as well. However, there is another natural reflective surface other than the mirror, that of water. Water is a prominant element in the level, with running streams emanating from sinks attached to the pillars and walls, to a layer of water covering the floor, creating a surface that reflects the whole room. The presence of this natural reflective element enhances the gloomy and cave-like atmosphere of the room, resembling an *esoteric* feeling, as if being inside your own mind. The messages written on the mirrors about body image resonate as a reflection of one's inner voice, as noted by playtesters, thereby reinforcing our creative choices (fig. 25).

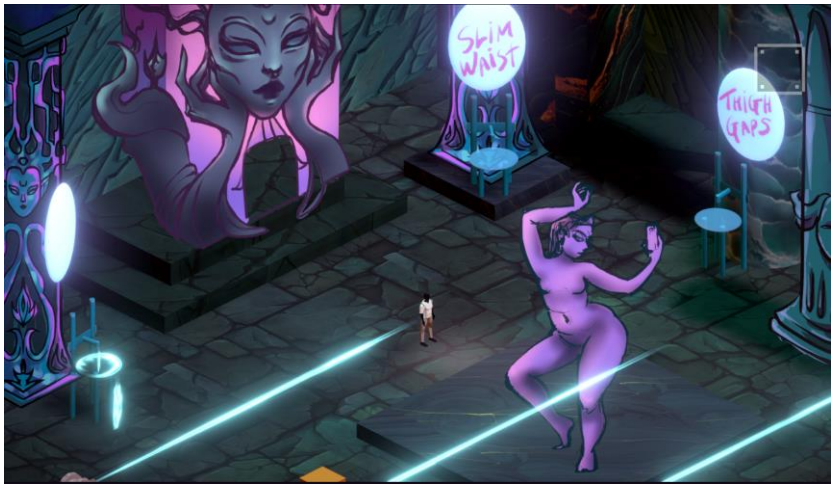


Fig. 25

To further enhance the mystical exprerience, we relyed upon the use of colour theory. The colour palette is consisted by cool-toned purples and green-toned blues, with neon pinks and turquoise for highlights. Purple is symbolising luxury, power, ambition, but also remorse, disgust and loathing (see fig. 22). The strong contrasting symbolism beautifully complements the message of the level, enhancing its impact. In addition, blue-green hues symbolise isolation, sadness, rotten, reflecting on the personality of the protagonist.

As for style, we named it *futuristic buddism*. It has a mix of traditional thai influences with futuristic alien-looking civilisation. The thai style (curvy natural shapes, spikey ends, gold) is mostly seen in the woman's statue located in the middle of the room (fig. 23, 25), as well as in the props (pillar shape, candles, incenses) (see fig. 24).

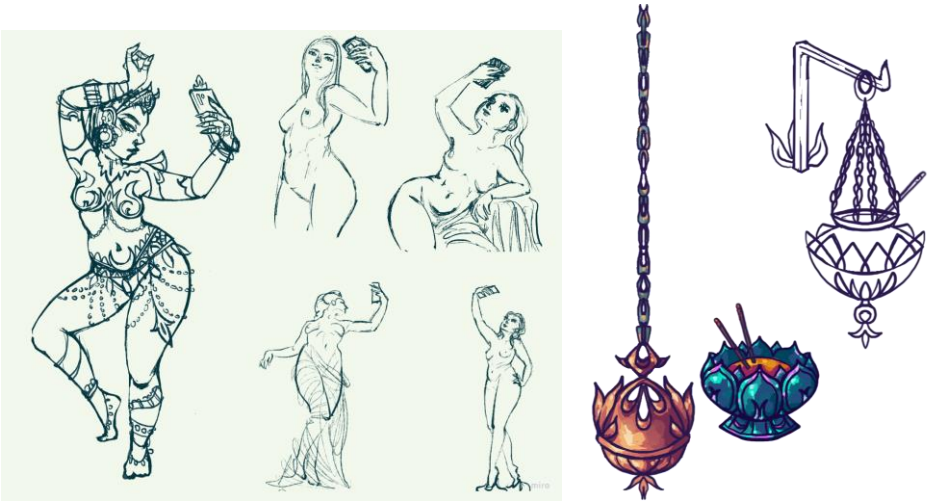


Fig. 23, 24 : Concept art for level 3, showing the influences by thai artistic style

Femininity is one of the key words of this level. Aside from the obvious visual choices, like the statue of a woman posing to take the perfect selfie and the 'ideal' body types written on the mirrors, there are more subtle symbols across the room, that enhance the feminine energy and almost inspires a feeling of empowerment. Such symbols are the crescent moon (moon in mythology is feminine while sun masculine), the vulva, and the water lillies (birth and resurrection). Some are more hidden than others, like the vulva (fig.26), which is present through the architecture and prop design.

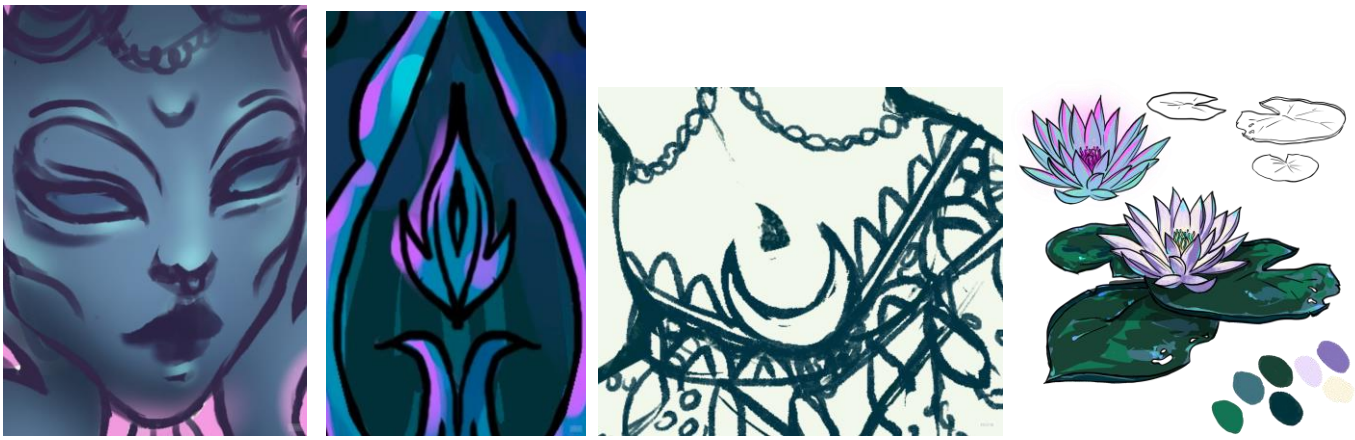


Fig. 25,26,27,28: Symbols across the visual design of level 3

4.3 Gameplay

4.3.1 Rational Game Design in #Inferno

Since *#Inferno* is a short game, we wanted to keep the gameplay simple. For this reason, we used the principles from rational game design to design it, as this let us introduce the mechanics gradually and combine them to create variation, instead of having many mechanics that would be difficult to fit into such a short experience. Based on the narrative of the game, we came up with the core mechanic of directing a beam of light, a symbol of shining a light on the truth, to hit targets in order to solve puzzles. Once all targets were hit and the puzzle was solved, a door to the next level would open and the player could progress.

The Lobby

To introduce this, we created a short level called “the lobby” where we would introduce the functionality of the light beam as well as how to redirect it. We did this so that the player could get an understanding of it before it was combined with other mechanics (fig. 29).

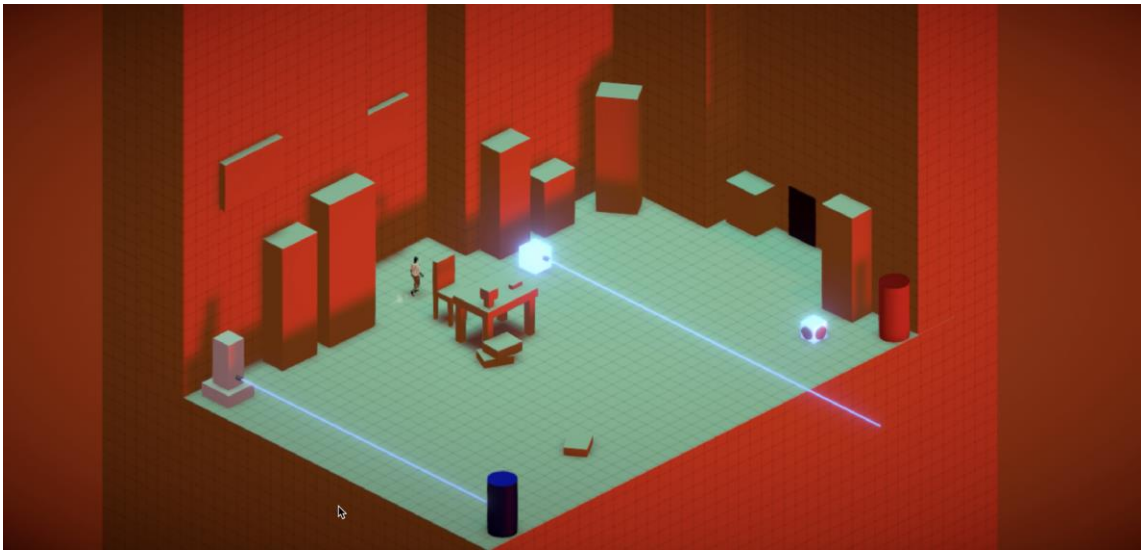


Fig. 29: greybox with placeholder objects.

The greybox consisted of a room with a desk, stacks of books, archive cabinets and bookcases, all made with Unity´s default shapes. For the puzzle, we added two light beams, two targets and one mirror. The first beam (bottom left) was positioned to hit the target (the blue cylinder), while the second beam had to be redirected to hit its target (red cylinder) using the mirror (glowing box next to red cylinder) The first part of the puzzle was solved for the player to introduce the objective of the puzzles before making them figure out the purpose of the mirror.

In later versions, both beams and targets were moved closer to the door, so that we could be sure that the player would see it opened once all targets were hit (fig. 30 & 31):

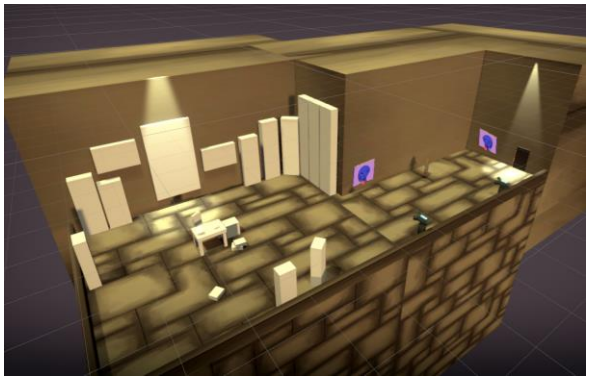


Fig. 30 & 31: Later version of the lobby, although still with a lot of placeholder assets.

Level 1: Greed (Sofie)

After introducing the core of the puzzles, we wanted to add some variety by combining it with other mechanics. Since the game takes place in an environment with ancient architecture, it felt natural to go for old mechanisms to influence the light beams. We came up with two as that was the amount, we would have room for with the number of levels we had. These mechanisms were levers, which could move objects up and down, and wheels, which could rotate them. We saw these as tools to create variation, as they could be used with several of the other puzzle elements (fig. 29):

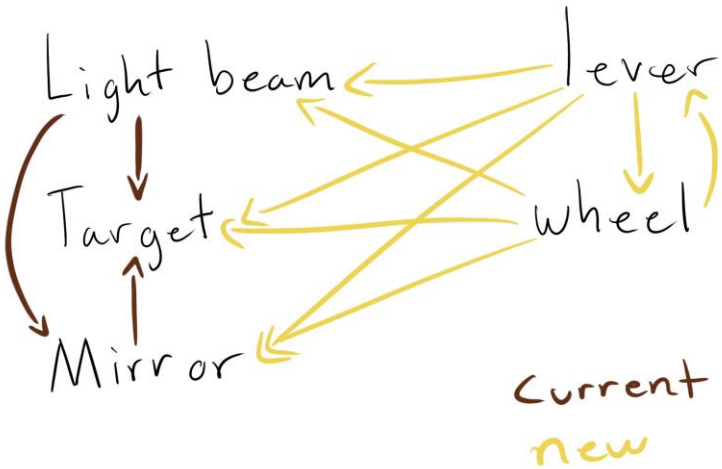


Fig. 29

To keep the game simple in the beginning, we started with levers that would move light beams up and down. To explore the lever mechanic further, level 1 was divided into three sections with a puzzle in each. The first one was like the one in the lobby, except the beam had to be lowered with a lever to hit the target (fig. 32 & 33):

Fig. 32 & 33

In the second section the mirror was removed and instead there were two light beams, two targets and one lever. Here, the lever was used differently as it affected both light beams at once, moving one upwards and the other downwards. The challenge was to find the spot where both light beams hit their targets, opening the path to the last section (fig. 34 & 35)

Fig. 34 & 35

In the last section, the puzzle consisted of two light beams, two mirrors, two targets and one lever. However, the mirrors were unreachable for the player and therefore stationary. This puzzle was similar to the prior one but with a slight increase in difficulty as the light beams were harder to align (fig. 36 & 37):

Fig. 36 & 37

Level 2: Fraud (Sarah)

In this level the wheel mechanism was introduced. The goal was to increase the difficulty while maintaining simplicity as this was the player´s first encounter with the wheels. We excluded the levers from this level so that we could set up the wheels for future use in level 3 where we would combine them with other mechanics. As the layers of hell grew smaller the further the player got (fig. 6), level 2 had two sections. Due to uncertainties about how difficult the game would be and if the player needed less difficult sections in-between new mechanics, the first puzzle was made very simple. It consisted of a light beam, a mirror and a target, elements the player already knew (fig. 38 & 39):

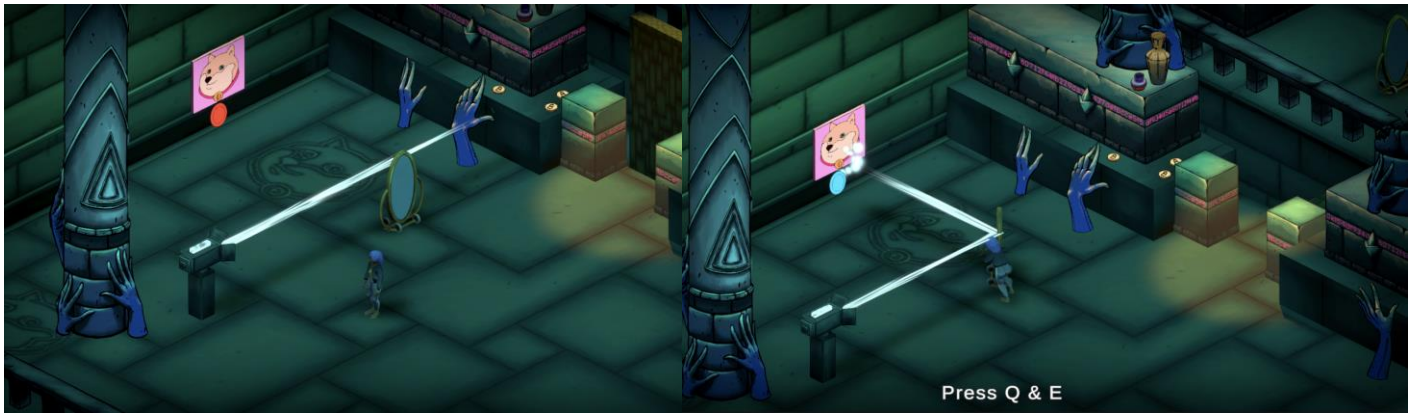


Fig. 38 & 39

Completing the puzzle would open the bridge, leading to the next section. In the next section, the wheels were introduced. This puzzle consisted of three wheels, three beams, two mirrors (one pushable and one stuck in rubble) and, at first glance, two targets. Each wheel would rotate one layer of the pyramid which would affect the beams coming from them as well (fig. 40):

Fig. 40

As the beams were at different heights, they could only hit the target at the corresponding height. As the player began solving the puzzle, the final target would reveal itself to be out of reach for the only beam that hadn´t hit its target. To fix this, the player had to use the mirror in the rubble to direct the beam upwards, before using the pushable mirror to point it to the target (fig. 41 & 42):

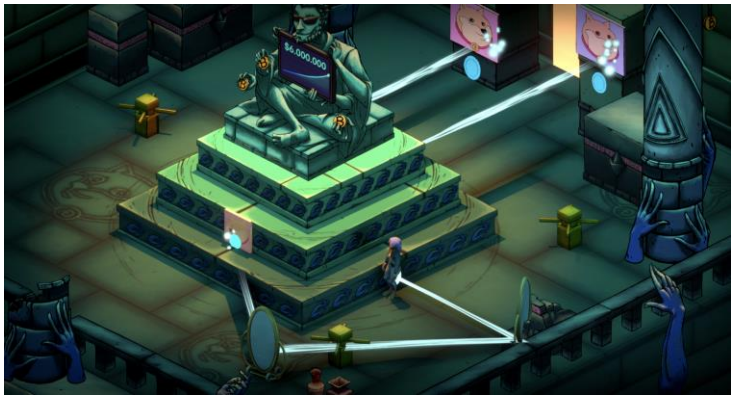


Fig. 41 & 42

Level 3: Vanity (Elena)

So far, the player has been introduced to light beams, mirrors, targets, levers and wheels. As this was the final level, we wanted to combine the mechanics from the three previous levels into one puzzle. Level 3 had just one section, with a big statue in the center. On the statue were targets that the player had to hit. The level also had one lever, one light beam, two wheels and five mirrors in total; three hanging on pillars and two pushable ones on the floor. By mixing these

mechanics, the player had to move the light beam up and down to make it bounce around the room using the mirrors (fig. 43 & 44).

Fig. 43 & 44

While all mechanics were known to the player level 3 used the mirrors differently by having the beams hit multiple mirrors before finally reaching the target. By interacting with the different elements, the player had to find the right combination of height and rotation to solve the puzzle and reach the end.

To get an overview of the progression of the mechanics and difficulty, we mapped out when what mechanics were used throughout the game (fig. 44)

Fig. 44

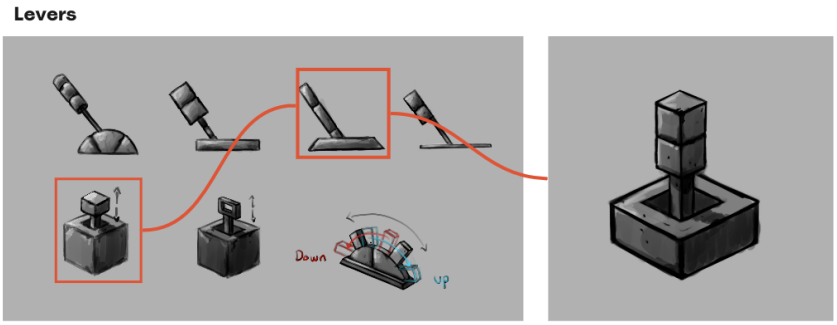
We can see that in the overall structure of the gameplay, it gradually introduces one new mechanic per level by starting with the core mechanic and then adding one variation at a time. However, there are also places like the last two puzzles in level 1, where the increase in mechanics doesn´t affect the gameplay much, as the mirrors can´t be moved. In contrast, there seems to be a spike in the number of mechanics between the puzzles in level 2, where we go from a puzzle like the introduction in the lobby to multiple of a new mechanic in the next one. This could also indicate that the level of difficulty might not have a stable increase which could be tweaked in the future. This, however, is also influenced by how the visuals communicate the gameplay, which we will look at in the next chapter

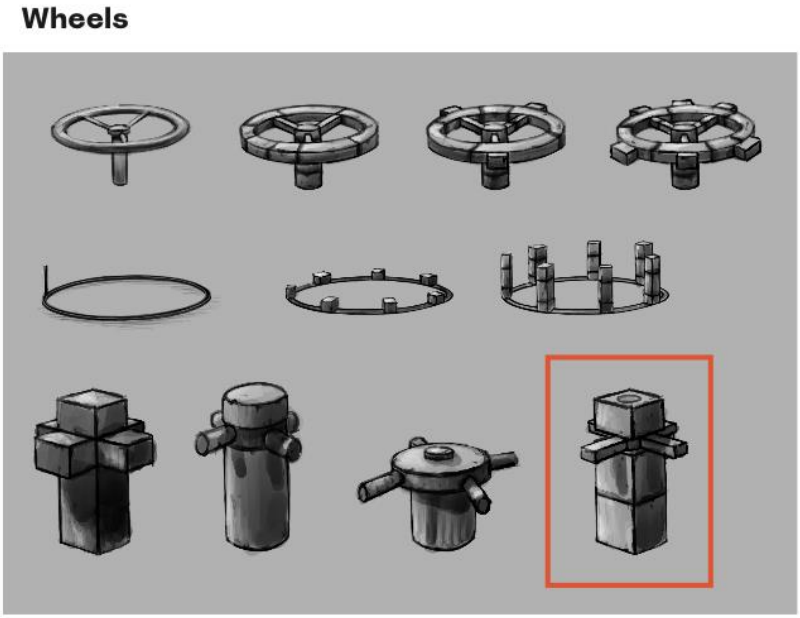
4.4 Visual Communication

In this chapter we will look at how the visuals were used to communicate the gameplay of #Inferno.

4.4.1 The Shape language of Interactable Elements

The first thing we looked at was the design of interactable elements like mirrors, levers and wheels. While making the concepts we kept in mind the affordance of the objects and that it should match the affordance perceived by the player (Norman, 1998, p. 9). To achieve easily readable designs, we designed them to have constraints, as the surest way to make something easy to use is to make it impossible to do otherwise (Ibid). While all three elements were safe to interact with, they were different as levers and wheels were immovable while mirrors could be pushed and rotated. Therefore we decided to give levers and wheels square shapes to communicate their stability (Solarski, 2018, p. 7), whereas mirrors had round shapes because they were dynamic objects (Ibid) (fig. 45, 46, & 47).





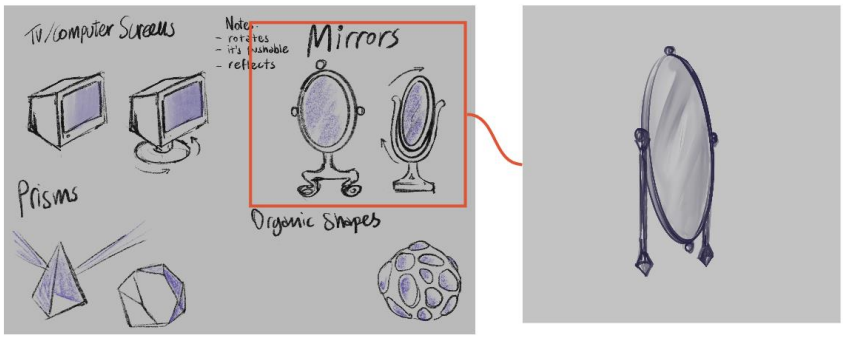


Fig. 45, 46, & 47

Maintaining the shape language and affordance of the lever was simple as the square base to communicate that the handle could only move one direction. For the rotation of the wheels, it was a little different as the part of the wheel that the handles were attached to had to be round. This clashed with the shape we were going for, and so a square base and top were added to keep the square shape. This also limited the possible movement of the handles to a horizontal rotation. While we had many different ideas for the mirror like prisms or screens, we chose the mirror in the end because the player would be familiar with the object and its ability to reflect. The final design also included wheels that would allow the mirror to be rotated.

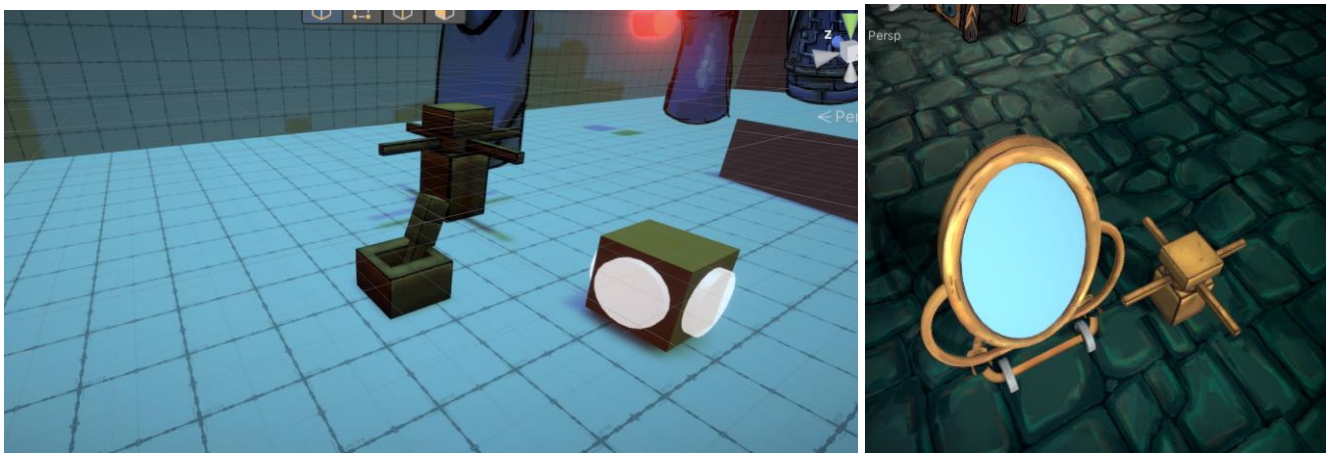


Fig. 48, 49: Textured versions of lever, wheel & mirror assets.

4.4.2 Color Coding

In *#Inferno*, we relied heavily on color coding to guide the player and distinguish between interactable and non-interactable elements, as color cues are the best way of sparking intuition in the player (Henry, 2015). Early on, we decided that interactable elements like levers, wheels and mirrors should share the orange color, as this color would stand out from the environment and catch the attention of the player (fig. 49). Orange was also chosen as it is a color that invokes anticipation and interest in the player (fig. 22).

Another gameplay element that used color coding were the targets. They had to stand out and be easily recognizable while also communicating to the player whether they were being hit or not. A look at *Halo 3* (2007) shows examples of color communicating state, in this case the amount of regenerative health of the fusion coil in *Halo 3* (fig. 50).

Fig. 50

Based on this we decided on red for inactive targets and a contrasting bright blue for active ones (fig. 51 & 52).

Fig. 51 & 52

4.4.3 Environmental Cues

We focused on including cues in the environment that could indicate the function of an object to the player. An example of this is in level 2 where the player encounters rotating objects for the first time. To indicate that the pyramid is different from the rest of the architecture and can move, we added signs of it scraping across the floor around it (fig. 53).

Fig. 53

We used sketches to get an idea of what it could look like, with plans of also using it to introduce the movement of the mirror in the lobby. Here, we also looked at the seven elements of design and how we could indicate movement using curved lines (MasterClass, 2021) (fig. 54 & 55).

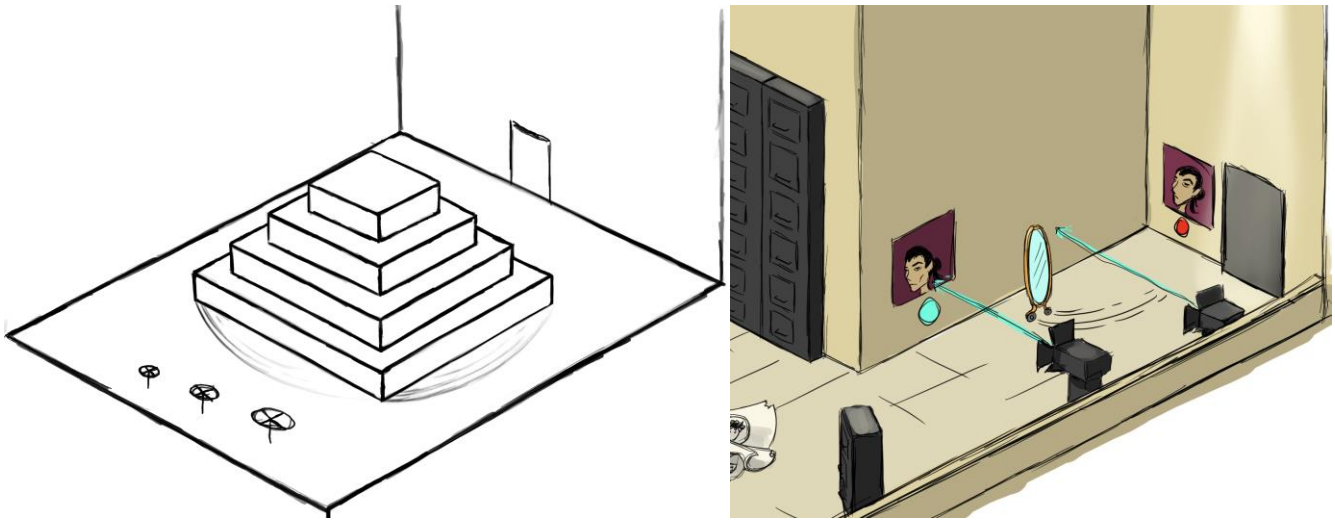


Fig. 54 & 55

4.4.4 Lighting as a Guide

Another tool we used to guide the player was lighting. This was used throughout the levels of the game to highlight important areas or indicate which way to should go. Examples of this can be found in level one, where lighting was used to highlight puzzle elements (fig. 56 & 57).

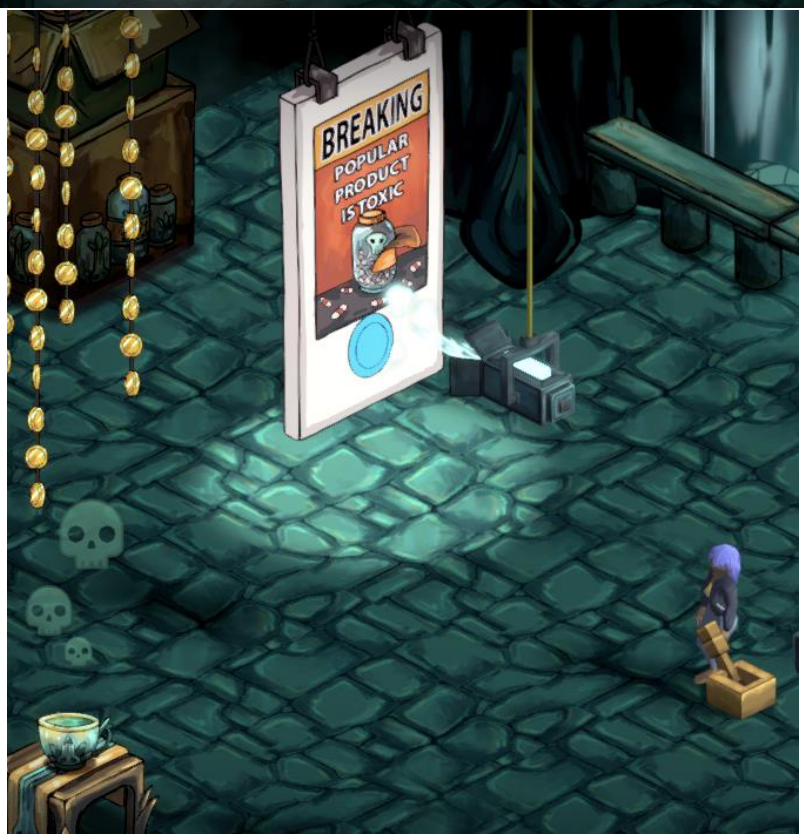


Fig. 56 & 57

This way the lighting also helped interactable elements like the levers stand out, which were new to the player at this point in the game.

5. Playtest

5.1 Description

To prepare for the playtest, we first wrote an outline of what our goals were for the test and what questions we wanted answered (see appendix D). We used this as a starting point, as it gave us an overview of what aspects of the game our questions would have to touch upon. As our focus was the visuals, the majority of the goals revolved around how players interpreted the visuals and the story world, so that we could figure out if we were successful in communicating it to them. We also included goals regarding the gameplay and what the goal of the game was, to see if the visuals did their job in communicating this. For each of these goals, we described why we wanted this information and how we were going to get it from the tests.

The format of the playtest was remote, meaning that we sent a build for testers to play, along with a survey for them to fill in after testing the game (see appendix E). While this method meant that we would not be able to ask the testers to "think out loud" or see their facial expressions and reactions as they played, we determined that having a larger number of testers was more important, as it would give us a better understanding of what worked well and what did not. Having a larger number of tests would also mean that the results would be more indicative of the general tendencies of the testers, whereas testing on a smaller group would not give the same overview.

As of today (May 24th), 19 participants in the age group 18–40 have tested the prototype. Participants constituted mostly people in our network, and a bias in the results must therefore be considered.

Due to the short frame of this report, we will only cover the key results most relevant to our research questions. But all results and feedback can be read in the survey (see appendix E).

Fig. 58: testers playing the prototype in the comfort of their homes.

5.2 Analysis Method

To process the key results from the survey, we have followed the Traditional Coding method (Bjørner, 2014) by organizing the feedback according to their topic (Gameplay, Narrative, and Visuals) and clustering it under three main labels – major, unique, and residual. While this might not have been the most efficient approach to process this sort of data, it gave us an overview of what are the most frequent subjects and words that the participants chose in their

answers to the questions. Are there any patterns in how people experienced the visuals, for instance, and what responses stand out from the “norm” - I.e., unique responses.

The processed data can be seen via the link in appendix F.

5.3 Results

5.3.1 Story

In response to the question *“what do you think is the overall story of the game?”* a varied number of interpretations were shared. 10 out of 19 interpreted the story arch to deal with sins, hell, and the idea of a person going through hell and/or facing inner demons. A few other participants guessed that the story dealt with current societal problems, a girl’s insecurities, and issues in life. 4 out of 19 did not get the story.

When we look at the responses to the question *“what do you think is the theme of level X?”,* it is evident that some of the levels do not completely succeed in communicating their themes through the visuals. While a few people guessed that level 1 dealt with “greed”, most participants described the theme to have something to do with money, fakeness, dietary supplements, and desire, while for level 2, many participants mentioned crypto and money. For both levels, participants were on the right track. But the results point towards a need adjustment in content and communication. However, in the context of level 3, most participants guessed the theme of vanity with topics like beauty, lust, and self-image.

5.3.2 Art

In response to the question *“how visually cohesive do you find the levels?”*, the majority of the test participants described the visual design across all three levels as being cohesive in both style, mood, and colors, with a few mentioning the evident issues with inconsistency in line art thickness, texturing, and level of detail, which were points of critique we expected to receive, as our levels certainly vary artistically in some aspects.

Nevertheless, the overall assessment of the visual design leans towards the positive side of the 1 - 5 scale, with 5 stating “perfect cohesion” (see fig 58).

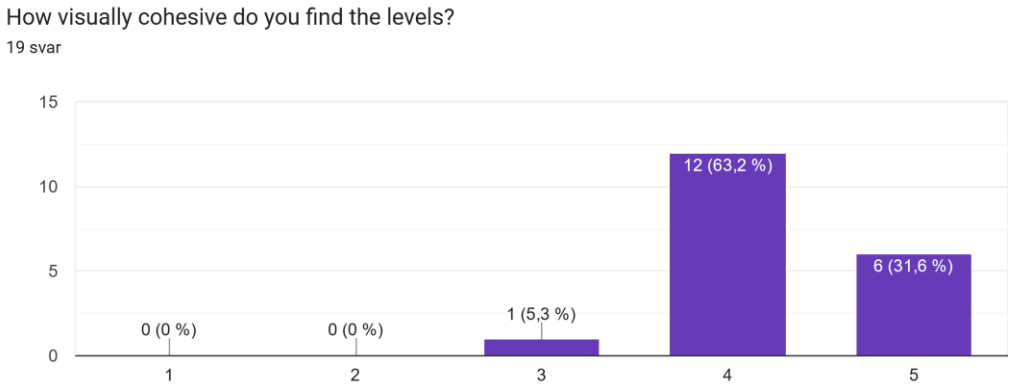


Fig. 58

In response to *"If you remember a scenario where the visuals created confusion, please describe it here"* a few participants commented on the difficulty in gauging the height of the light beam due to the lack of depth perception. One participant wrote *"at a few points it was hard to accurately judge the angles at which the light was to hit the targets"*. Besides this, some also got confused when the player disappeared behind obstacles and if all lit objects were objectives. This feedback points to a need to reassess the level design and placement of objects in some instances, as well as a need to fix the difficulty in evaluating the height of the beamer.

5.3.3 Gameplay

In response to the statement "Describe the goal of the game", 17 out of 19 testers understood what the goal of the game was, with one tester summarizing it as *"Align beams to hit the target using levers and mirrors".* Only two testers gave inconclusive answers.

In response to *"Please write if you have any criticism, comments and/or suggestions regarding the gameplay",* all testers commented on the tedious character controls and the difficulty in handling the mirror object, suggesting that a "grab" function could help relieve the current frustration of moving the mirror. Some testers also commented on the issues with the character clipping through assets, and the WASD movement controls not following the expected: "up-left-down-right" movement pattern.

The testers' dislike of the character controller can also be read into their responses to the question "Did you enjoy moving around in the world", which clearly shows a mixed level of satisfaction, with 5 stating "Very much" (see fig. 59).

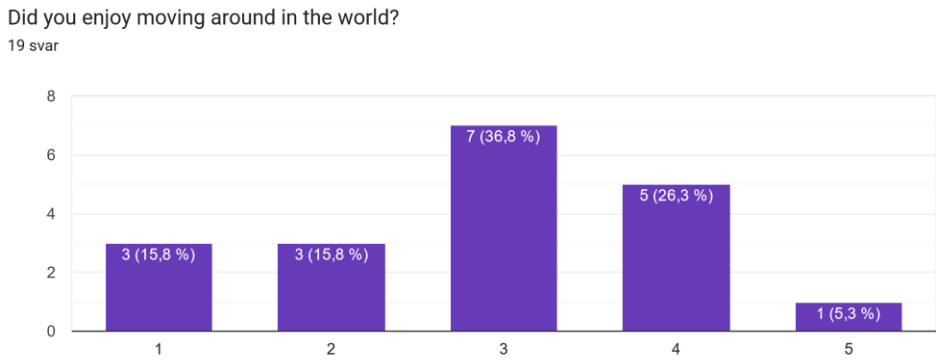


Fig. 59

5.4 Remarks

With videogames, the game designer simply sets the limits and certain parameters. It is a genre where you have to trust your players and, more importantly, be aware that games, unlike stories, do not always have to hit their target. A joke or story, you either get it or do not. But games are about repetition, so you may experience a lame match of a great game, only to later have great experiences with it. Trust your players and do not worry too much if they read the game

differently from what you intended; the fact that they can read it personally means that they can construct with it something that is important to them, and that is the clearest sign that your game has succeeded. (Isbister, 2006).

6. Discussion

Overall, our game prototype has demonstrated its ability to effectively communicate our research questions to the player. The results indicate that we are on the right track with the visual design, but that there are visual flaws and inconsistencies in detail and painting techniques that need to be dealt with to accomplish a streamlined visual design across all levels.

Regarding the narrative, we were anticipating a lot more confusion about the story and the themes, due to lack of dialogue with other characters or a narrator that guides the player. However, most players could guess the themes of each level, indicating that our environmental design is on point. Some players had difficulty finding the relevance of the levels with each other, however after looking at the game's title, they understood the reference from Dante's Inferno and realised that the underlying themes revolved around the seven deadly sins.

As for gameplay, the testers disliking the character controller did not come as a surprise. The existing character controller from the Top-Down Engine is not intuitive but relieves us from coding the character movements ourselves and it is sufficient for testing the prototype. On the contrary, the puzzle design received the highest score from our testers, with almost everyone understanding the goal of the game and the mechanics.

We take great pride in these results, as we dedicated a significant portion of our pre-production time to meticulously designing the game, even if it meant sacrificing the visual quality.

7. Conclusion

This project was an extreme learning experience for all of us. We had the opportunity to test various methods regarding narrative, visual design, puzzle design and gameplay; learn how to implement code and put up a game that can be controlled remotely from multiple computers. We were fixing compile errors and broken assets more often than drawing for our levels. We tested our limits as a team as well as individually, but we always came back to our workspace ready to find a solution together.

If we had more time to work on the project, we would have spent it in implementing a more intuitive player controller, designing a very appealing protagonist, polishing our visuals, and adding a dialogue system as we originally intended. At the moment you cannot get any narrative information other than from the environmental design, which is a shame considering we have built a rich story world full of charming charactes and humorous lines. We hope to implement

sound effects however before the graduation exhibition, as we have a Sound Designer on board who is designing as well as implementing all sounds to the game.

In the future we would like to continue the game, by adding more levels and promoting it as a demo. We will definitely collaborate with a programmer to re-build it properly and take over the tech dependencies from us, so we can focus on the subjects that interest us the most, like visual design, puzzle and narrative design. Our Sound Designer will be able to compose a score for us, and we will be able to brainstorm more levels of sins for our personalised Hell. We are looking forward to work more on this game and hopefully be able to fund itself in the future.

8. References

Literature:

Alighieri Dante (1321). *Devine Comedy, Inferno*

Bjørner, T. (12th of January, 2015). Section 3.1 Traditional Coding: *Qualitative methods for Consumer Research - The value of the qualitative approach in theory and practice*. Henning Persson. 1st Edition.

Cengiz, S. (2021). *What is isometric game & How to make it.* Source: https://mobidictum.biz/what-is-isometric-game-how-to-make-it/ (Accessed: 17/05/2023)

Henry, A. (2015). *Visual Cues in Level Design*. Game Developer. Source: https://www.gamedeveloper.com/design/visual-cues-in-level-design (Accessed: 22/05/2023)

Isbister, Katherine (2022). *Better Game Characters by Design,* CRC Press

Jenkins, H. (2004). *Game Design as Narrative Architecture.*

Knight, S. (2021). *What are 2.5D Games? How they differ from 2D and 3D Games*. Source: https://www.makeuseof.com/what-are-2-5d-games-2d-3d/ (Accessed: 17/05/2023)

Lemarchand, R. (2021). *A Playful Production Process – for game designers (and everyone).* Mit Press Ltd.

Macklin, C. & Sharp, J. (2016). Chp. 5 "*The Iterative Game Design Process"* from *Games, Design and Play – a detailed approach to iterative design.* [Book]

MasterClass (2021). *Elements of Design: Understanding the 7 Elements of Design*. MasterClass. Source: https://www.masterclass.com/articles/elements-of-design-explained (Accessed: 22/05/2023)

McEntee, C. (2012). *Rational Design: The Core of Rayman Origins.* Game Developer. Source: https://www.gamedeveloper.com/design/rational-design-the-core-of-i-rayman-origins-i- (Accessed: 22/05/2023)

Norman, D. (1988). *The Design of Everyday Things*. Source: https://www.saxo.com/dk/the-design-of-everyday-things_don-norman_paperback_9780465050659

Phillips, Andrea (2012). *A Creator's Guide to Transmedia Storytelling: How to captivate and engage audiences across multiple platforms,* McGraw-Hill

Siang, T. (2022). *The Key Elements & Principles of visual Design*. Interaction Design Foundation. Source: https://www.interaction-design.org/literature/article/the-building-blocks-of-visual-design (Accessed: 22/05/2023)

Solarski, C. (2018). *Adaptive Gameplay Aesthetics: A disruptive game design framework.*

Wolf, M. (2012). *Building Imaginary Worlds, The Theory and History of Subcreation.* Taylor & Francis Ltd.

Dante Alighieri (1321). *Devine Comedy, Inferno*

Games:

Blizzard Entertainment (1996). “Diablo”. Playstation, Microsoft Windows, Macintosh. Blizzard Entertainment

Bedtime Digital Games (2017). “Figment”. Nintendo Switch, Playstation 4, Android, Xbox One. Bedtime Digital Games. Criss Cross Games

Coldwood Interactive (2016). “Unravel”. Playstation 4, Windows, Xbox One. Electronic Arts.

ConcernedApe (2016). “Stardew Valley”. Windows. ConcernedApe.

Ensemble Studios (1997). “Age of Empires”. Microsoft Windows, Microsoft Mobile, Macintosh. Forgotten Empires, Tantalus Media, MacPlay. Microsoft.

Kiel Entertainment (2013). “Don’t Starve”. Android, Nintendo Switch, Playstation 4, Xbox One, Microsoft Windows, iOS, Linux, Playstation Vita, Playstation 3, Mac Operating Systems, Klei Entertainment.

Rare (1994). “Donkey Kong Country”. Super Nintendo Entertainment System, Game Boy Color, Game Boy Advanced. Nintendo.

Sandy White (1983). “Ant Attack”. Android, ZX Spectrum, Commodore 64. Quicksilva.

Supergiant Games (2018). “Hades”. Nintendo Switch, Playstation 5, Playstation 4, Xbox One, MacOS, Xbox series X & S, Microsoft Windows, Mac Operating Systems, Take-Two Interactive, Private Division.

Supergiant Games (2014). “Transistor”. Nintendo Switch, Playstation 5, Playstation 4, Xbox One, MacOS, Xbox series X & S, Microsoft Windows, Mac Operating Systems. Supergiant Games.

Supergiant Games (2011). “Bastion”. Nintendo Switch, Playstation 5, Playstation 4, Xbox One, MacOS, Xbox series X & S, Microsoft Windows, Mac Operating Systems. Warner Bros: Interactive Entertainment.

Telltale Games (2012 – 2013). “The Walking Dead”. Android, iOS, Microsoft Windows, Nintendo Switch, Playstation 3 & 4, Xbox 360 & One, etc. Telltale Games.

Thunder Lotus Games (2020). “Spiritfarer”. Thunder Lotus Games, Netflix.

ZA/UM (2019). “Disco Elysium”. Windows, macOS, Playstation 4, Playstation 5, Stadia, Nintendo Switch, Xbox One, Xbox Series X/S. ZA/UM.

Whisper Games (2019). “Wildermyth”. Nintendo Switch, Microsoft Windows, Linux, macOS, Mac Operating Systems, Worldwalker Games, Whisper Games.
Two Mammoths (2017). “Archaica: The Path of Light”. Nintendo Switch, Microsoft Windows

Video:

Lemarchand, R. (2022). “A Playful Production Process”. [Video]. Available at: https://www.youtube.com/watch?v=6CU8RJ3afMM&t=1124s

Hash, C. (2018). “The Distributed Art Direction of Edith Finch”. Giant Sparrow. [Video]. GDC session. Available at: https://www.youtube.com/watch?v=vy1mz8xWI-k

ThatGuyGlen (2021). “How Hades Was Made and Why its Early Concepts Didn’t Work”. [Video]. Available at: https://www.youtube.com/watch?v=CIk8Y9qkYx0

Images:

Henry, A. (2015). *Visual Cues in Level Design*. Game Developer. Source: https://www.gamedeveloper.com/design/visual-cues-in-level-design (Accessed: 22/05/2023)

Miscellaneous:

More Mountains (2018). *TopDown Engine*. [Unity Asset Package]. Available at: https://assetstore.unity.com/packages/templates/systems/topdown-engine-89636 (Accessed: 22/05/2023)