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The design of movie-based theme park attractions:
Exploring *environmental storytelling* to create immersive dark ride experiences

by Frederic Caeyers

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SUMMARY

My research dives into the world of theme parks, more specifically into their theming and the immersion it creates for attractions.

Disney's and Universal's parks, which are found all over the world, are two of the most well-known movie-based theme park resorts. They both respectively make billions of dollars of revenue annually (Statista.com, 2019).

Yet the theme park industry isn't as studied as the video game or the movie industries.

There is little theory on how to create these parks, especially the *narrative environment* in which guests are immersed (Lukas, 2016). I thus wondered: how can the concepts of environmental storytelling help design movie-based theme park attractions?

I focused on the *environmental storytelling* (Jenkins, 2007; Carson, 2000) of theme park attractions, which means how the environment conveys the story. I took this concept from video-game-level design and used it on a theme park dark ride. I studied the four dimensions of this concept, namely: *Evocative Spaces, Enacted Stories, Embedded Narratives and Emergent Narratives*.

Using research-creation, I explored those concepts by designing an attraction that is based on the movie *300* (Snyder, 2006). In a reflective way, I expose my practice as a theme park designer and how I use environmental storytelling. For this I used *Photoshop* to digitally draw and paint my designs. I also used *Maya* to 3D model the environments and *No Limits 2* to create the roller coaster.

The artistic output of my research is a concept art of the attraction. The academic output is having an understanding of the process of creating immersive attractions through environmental storytelling. My results show that the *evocative space* dimension is the most pertinent for designing an attraction. Moreover, the four dimensions used for video games are not sufficient for theme parks, and another one is needed: kinetic storytelling.

RESUME

Cette recherche s'intéresse au monde des parcs à thème, plus particulièrement leur façon de représenter leur thème et l'immersion créée pour les attractions. Les parcs de Disney et Universal, que l'on trouve dans le monde entier, sont deux des parcs à thèmes les plus connus. Ils génèrent tous deux des milliards de dollars de revenus par an (Statista.com, 2019). Pourtant, l'industrie des parcs à thème n'est pas autant étudiée que celle du jeu vidéo ou celle du cinéma.

Il y a peu de théories sur la façon de créer ces parcs, en particulier l'environnement narratif dans lequel les clients sont immergés (Lukas, 2016). Cette recherche se demande alors comment fonctionne l'immersion narrative dans les parcs à thème. Comment le concept de narration environnementale peut-il aider à concevoir des attractions de parc à thème basées sur des films ?

Je me concentre sur la narration environnementale (Jenkins, 2007 ; Carson, 2000), c'est-à-dire la façon dont l'environnement transmet l'histoire. Ce concept vient des études du jeu (conception de niveau de jeu vidéo), et est utilisé pour analyser la création d'un *dark ride* : des montagnes russes dont certaines parties se déroulent en intérieur. J'ai étudié les quatre dimensions de ce concept : les espaces évocateurs, les histoires spatiales, les récits imbriqués et les récits émergents.

En utilisant une approche de recherche-création, j'explore ces concepts par la création d'une attraction basée sur le film 300 (Snyder, 2006). D'une manière réflexive, j'expose ma pratique en tant que concepteur de parc à thème et la façon dont j'utilise la narration environnementale. J'ai utilisé Photoshop pour dessiner numériquement, Maya pour modéliser les environnements et No Limits 2 pour créer mes montagnes russes.

La production artistique de ma recherche est un concept art de l'attraction. La production académique est un ensemble de connaissances sur le processus de création d'attractions immersives grâce à la narration environnementale. Mes résultats montrent que la dimension évocatrice de l'environnement est la plus pertinente pour la conception d'une attraction de ce type. Par ailleurs, les quatre dimensions utilisées pour les jeux vidéo ne sont pas suffisantes pour les parcs à thèmes, et une autre est nécessaire : la narration cinétique.

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ACRONYM LIST

STEP = Student Themed Entertainment Project

AECOM = Architecture, Engineering, Construction, Operations, and Management

TEA = Themed Entertainment Association

USD = United States Dollar

IP = Intellectual Property

VFX = Visual Effects

2D = Two-Dimensional

3D = Three Dimensional

NAD = Arts Numériques, Animation et Design

UQAC = Université du Québec à Chicoutimi

DEDICATED TO

My mother Jaroslava Wernerova, without whose passion for the movie and themed entertainment industries, I would have never had the knowledge and insight which was needed to complete this research.

My sister Stephanie Caeyers, who had to take care of my mother while I was gone from home to do this master and who I saw work hard on her master and this inspired me.

My research director and teacher Laureline Chiapello, who pushed me to finish this passion research project of mine and who is making her own notable efforts to her industry.

My other teachers: Jocelyn Benoit, Dave Hawey, Benoît Melançon. Who pushed me to be a better researcher and to follow my passion for themed entertainment.

The theme park industry, which has suffered greatly during this COVID-19 pandemic.

Zack Snyder, the director of the movie *300* (2006), whose amazing work in cinema has inspired me all my life.

ACKNOWLEDGEMENTS

FOREWORD

I have always been a fan of theme parks. Ever since I was born, my mom took my sister and me to visit a lot of the parks in Europe and then later in North America and Asia. The video game that most influenced my life is, of course, *RollerCoaster Tycoon* (Sawyer, 1999). I liked it so much that I decided to work for a theme park magazine/website and then also as an intern at a theme park design company. Some of my favorite parks include *Islands of Adventure*, *Six Flags Great Adventure*, *Phantasialand*, *Europa-Park* and *Tokyo DisneySea*.

While I worked as a journalist for a theme park magazine/website (*Pretparken.be*), I started to notice that even if many people love going to parks, they do not wonder about how these parks are created and what makes them so special. Going to a park is for most people just a day out of the house, which is fine, but it is so much more than that. These days, there is much information available about almost every existing subject. People have never been so up to date on all technologies and inventions. We can study by ourselves how to create art and movies. Yet when we turn our focus on theme park-related theory, there is hardly any to find. The only type of lesson I have found is a short Imagineering class on Khan Academy (*Imagineering In A Box*) and there are only a handful of books about actual theme park design, but they are not academic research. I would like to ignite a new wave of researchers in this field and reveal the depth of the theme park industry to the public.

Working for the Belgian theme park magazine *Pretparken.be* allowed me to focus even more on having a critical view of parks. *Pretparken.be* critics post articles each week about new and old attractions and theme parks, and they also have a guide to most of Western Europe's theme parks with a detailed view of all their attractions, entrance fee and opening hours. They also released a paper magazine called *Breaksection* with more in-depth articles.

I already was a connoisseur because my mother is a theme park and movie critic, so this allowed me to look at parks in a nuanced way. When I started working for the magazine/website, I was responsible for taking pictures and updating their *Instagram* page, so this gave me more of an artistic view on parks. I began to pay more attention to the visual aspect of parks and their attractions. For example, I started asking myself these questions: What do they look like? What makes them attractive? Are the attractions good to capture on a camera? Etc.

Therefore, I chose to study theme parks for my master in digital arts, and I am happy to present my thesis that delves into the world of dark rides, more specifically into movie-based dark rides.

INTRODUCTION

Disneyland and Universal Studios are well-known theme parks that are associated with entertainment and immersion. Their most popular attractions include *The Twilight Zone: Tower of Terror*, *Pirates of the Caribbean*, *Harry Potter and the Forbidden Journey*, *Revenge of the Mummy*, *Space Mountain,* etc. However, people forget that these are part of a whole billion dollar industry. Indeed, before COVID-19, the theme park industry was blooming:

> Attendance at themed attractions at the major operators has exceeded half a billion visits for the first time in history. This is equivalent to almost 7% of the world population. And not only that, but this number keeps growing. Just five years ago, the market capture of the industry was only 5% of the global population.
> (AECOM, Themed Entertainment Association, 2019, p.4)

The attendance numbers from AECOM's (Architecture, Engineering, Construction, Operations, and Management) and TEA's (Themed Entertainment Association) index show us that theme parks are a popular destination and that more than half a billion people have visited theme parks in the year 2018 alone. The result of this is that Disney has earned 21 billion USD in 2018. But the COVID-19 pandemic did take a huge toll on the industry. Most of the parks all over the world were closed for over a year and this is thus a significant loss in the companies' income. However, most parks have reopened their doors and these numbers will probably come back to what they were.

While theme parks are a billion-dollar industry, we are still in a spot where the theme park design industry isn't as studied as the video game or movie industries, even when the attending rates were very high, as in 2018.

It seems as if outside the theme park enthusiast communities, theme parks are not discussed.

When we go see a movie in the cinema, we get completely immersed inside what's happening on the silver screen, but with theme parks this immersion gets lifted to a whole other level as we are physically involved in the environment. The idea that the environment conveys the story has been identified as *environmental storytelling* (Carson, 2000; Jenkins, 2007). The biggest difference between a movie and a theme park is that a movie only has a story to immerse the viewer, while theme parks use the environment to immerse the guests[1].

There are some theme parks where we get completely immersed inside the worlds that are created with great care for details, from the parking lot to the toilets.

Disney and Universal Studios theme parks are an example of that, and their attendance number and revenue indicate their high popularity. As a theme park enthusiast, I have visited a lot of different parks in my life, and I can confirm that the Disney and Universal Studios parks have one of the most immersive atmospheres of the theme park industry:

> What set the Disney theme parks apart from other earlier amusement parks such as Tivoli Gardens and Coney Island was the tighter integration of narrative with attraction. (Schweizer & Pearce, 2016, p.97)

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[1] In themed entertainment, the term "guest" is used to talk about people just like "player" is used in video games or "viewer" in cinema.

This is because of their perfect formula between narrative, theming and attractions. They tell stories inside a complete fantastical world while you are on a roller coaster or a train ride or even while eating lunch. There isn't a single area in their parks where you get taken out of the magical world that is built. There are some other parks that are also noteworthy: *Europa Park*, *Efteling*, *Toverland*, *Busch Gardens*, *Phantasialand* or *Sea World*. Yet they miss the connection that guests have to the movies that the Disney and Universal Studios parks are based on. Because of this connection, the guests are instantly fully immersed inside the created worlds.

We will see that the connection their guests have with the created worlds comes from the *environmental storytelling* (Jenkins, 2007), which Universal Studios and Disney use to their full advantage. The rides play with people's memories of the movies and/or stories.

I feel that with my experience and expertise, I can at least try to bring my love for theme parks over to more people and maybe be one of the pioneers of a new field of study, that has the same potential as video games or movies do.

Therefore, I asked myself: How can the concepts of environmental storytelling help design movie-based theme park attractions?

In order to do so, my thesis is organized as follows:

In the first section, I will talk about what has been researched and give more information about four key aspects of my research: theme parks, transmedia, immersion and dark rides.

Then I expose the problematic current state of theme park research and the representation of theme parks in academic literature. In the theoretical framework, section I will delineate my key concept, namely *environmental storytelling* (Jenkins, 2007). *Environmental Storytelling* (Jenkins, 2007) and its four types, namely *evocative spaces, enacted stories, embedded narratives* and *emergent narratives* explain the ways in which we can tell a story through the environment in video games and theme parks. I then explain why I chose to base my research upon it. In the methodology section, I will explain my research-creation approach. This will lead to the results section, articulated around the attraction I created: "Vengeance of the 300". This is a concept for a Gerstlauer dark ride roller coaster that I designed to be based on the movie *300* (Snyder, 2006). I will show a step-by-step breakdown of my workflow to design the attraction and finally show the painted results of what the attraction looks like. Following my results, I suggest a modification of the *environmental storytelling* (Jenkins, 2007) concept, namely adding another type I call "kinetic narratives". I also show that *environmental storytelling* (Jenkins, 2007) needs to be complementary to a traditional cinematic narrative.

1. LITERATURE REVIEW

This chapter serves as an overview of the already existing research about theme parks and the creation of immersive attractions. First, I will talk about theme parks and their history. Then, I will explain how the industry is a transmedia one. After this I will detail the immersion that theme parks provoke. I will also present dark rides as a type of attraction. Finally, I will conclude by showing the problems that this literature review brought forth.

1.1- The state of knowledge

In this section I will present what has been researched already in themed entertainment, and which aspects of these I will take to aid me in my research. Using this literature, I will define theme parks, transmedia, immersion and dark rides.

1.1.1- Theme Parks

Theme parks are an old business:

> The sounds of people screaming in delight, the overlapping theme music, even the hoarse sounds of visitors attempting to carry on a conversation above the din, are not haphazard. They are an integral part of an amusement park tradition that goes back more than 100 years. (Grice, 2016, p.135)

It has even become a billionaire industry. If we look at the attendance numbers from AECOM (Architecture, Engineering, Construction, Operations, and Management) and TEA's (Themed Entertainment Association) index, then we can see that more than half a billion people have

visited theme parks in the year 2018 alone. This is a huge total and if we counted how much the

parks earned by entrance tickets alone, that amount for Disney would be a little over 21 billion

USD in 2018, and that is just one company. This is without all the costs that Disney spent, but by

estimating that they usually build only one attraction per park per year that costs an average of

100 million USD, this amount still doesn't even come close to what they earned by entrance

tickets alone.

While theme parks are still a confidential subject in research, it is worth stressing the work

of Scott A. Lukas about theme parks and theming in general. His book chapter, *Theming as a*

Sensory Phenomenon: Discovering the Senses on the Las Vegas Strip (Lukas, 2007) is a research

on theming in Las Vegas and what it means for consumerism and tourism.

Theme Park (Lukas, 2008) is a more general book about theme parks and what they encompass,

the different types of theme parks that exist in the world and how we define them.

Finally, A *Reader in Themed and Immersive Spaces* (2016) explores the different aspects

that we can find in themed and immersive spaces such as theme parks and museums. These

aspects include for example immersion, history, dark rides, theming, or the human senses.

> In the early period, the root of the contemporary industry, theme parks began to
> distinguish themselves from the amusement park and cement their identities
> through a set of narrative attractions, many of which still exist. The dark ride emerged
> as a chief facilitator of narrative though other genres were present. (Baker, 2018, p.3)

A theme park can be seen as many things. Some people would define a county fair as a theme

park, others might say that about an amusement park. But what makes theme parks stand out

from those can be found in the name itself: theme. "Themed spaces have, in their foundation, an overarching narrative, symbolic complex, or story that drives the overall context of their environs" (Lukas, 2016, p.3)

What makes theme parks so much more special over fairs and amusement parks is that the whole park is themed with different areas ranging from for example wild west to pirates to science fiction to cartoons:

> Themed spaces are very often inspired by history, either in their general conception or in single parts or details: they feature recreations of historical civilizations, which are made accessible in the form of traditional architecture, clothes, sounds, as well as through references to their culture, religion, mythology, and other forms. (Carlà, 2016, p.19)

A theme park's job is to immerse guests inside worlds that are connected by stories that you would normally never be able to visit, and they often use historical themes to portray these immersive worlds. Yet inside these parks, the themed areas need to attract guests, they are not merely movie studios where the decorations and environments are static. What these themes add - that any other type of park doesn't - is that the attractions which can be found inside the themed areas are so well incorporated that most of the time we cannot see them from the outside. We are only able to enjoy them while riding. This is something that isn't a characterization of most theme parks, but is major for Disney and Universal Studios parks. This is what makes them so special.

> The theme park, as it expands beyond its proper site – as an enclosed space that contains thrill rides, shows, restaurants and food, and other attractions that are all tied to thematic landscapes that reflect our most popular fantasies – becomes a fully

fledged social and architectural form that continues to impact more and more people throughout the world, even if they do not realize it. (Lukas, 2008, p.8)

Universal's Islands of Adventure stands out of all the Universal parks. What makes *Islands of Adventure* so intriguing is that it is not solely based on one company's IPs[2], but a mix of multiple ones, like for example Marvel, Harry Potter, Popeye, Jurassic Park, etc. This and the fact that they work so well together keeps the guests immersed inside the park. Guests completely forget about their 'boring' day-to-day life and get thrown inside a larger-than-life environment. Even before they enter the park guests come out of the parking lot to be greeted by a 'fake' downtown city area that is called the *Universal City Walk*, equipped with a cinema, restaurants, shops, lake and hotels. This is where guests can choose between two pathways: one goes to the *Universal Studios Park* and the other to *Universal's Islands of Adventure*. Guests are already fully immersed inside the movie world that Universal designed and built. The biggest difference between the two parks is that *Universal Studios* is themed to be a movie studio where every attraction is a separate soundstage. A soundstage is a big empty hangar of sorts where movie creators can fully build sets

Figure 1 Picture of Hogwarts at Islands of Adventure. By Frederic Caeyers.

Figure 2 Picture of Universal Studios Hollywood's Lower Lot. By Frederic Caeyers.

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[2] Intellectual property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce. (WIPO, 2020, online)

that are contained (see figure 2)[3]. *Islands of Adventure* is themed to be the movies themselves. Consequently, guests are not walking in soundstages, but in the actual movies. This heightens the feeling of being a protagonist in your own story (see figure 1).

Finally, the attractions that can be found in the park themselves are important. Universal and Disney both have hit the mark with their movie-based attractions. According to Freitag (2016), movie-based theme park attractions are attractions that use movie technologies and techniques to create an attraction that tells the story of (or based on) an existing movie and thus can also be seen as a ride adaptation of the movie in particular. They are different from other types of attractions, like regular standalone roller coasters or flat rides, or even a dark ride with an original story (these don't rely on people's memory of an existing story or culture and focus more on giving people new experiences).

In this thesis I focus on movie-based attractions. Because I have an education in VFX and I believe that movie-based attractions allow for an *immersion* that cannot be found on other attractions because of the guests' ability to live the movie.

There are many movie-based attractions to be found in all the Universal Studios and Disney parks around the world, but some well-known ones include *Jurassic Park: River Adventure* and

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[3] The pictures are respectively from Hollywood and Orlando, but the differences in the two parks can be seen in both Orlando Resort parks as well.

Harry Potter and the Forbidden Journey. These are respectively based on *Jurassic Park* (Spielberg, 1993) and *Harry Potter* (Columbus, 2001).

Jurassic Park: River Adventure is a boat ride that plays on the guests' movie knowledge to create a boat tour of the dinosaur enclosures as if you were on a safari. But things soon take a wrong turn when the dinosaurs are escaping the enclosure. The way that this attraction uses the movie's story and setting to create a theme park experience is transmedia, which I will explain in the next part.

1.1.2- Transmedia

Theme parks are labeled as *transmedia* by several authors (Freitag, 2016 and Baker, 2016). According to Baker (2012), the original attractions were actually created by movie crews. The first rides were designed by movie directors, editors and writers. They both got created at roughly the same time (19th century), and so this allowed for the two industries to grow interwoven together. "Both theme parks and one of their historic predecessors, namely, amusement parks, have been closely linked to the cinema from their very beginnings." (Freitag, 2016). For example, theme parks already used cinema projectors and screens at that time and some of the first dark rides even gave the opportunity for the use of 3D glasses. That is why the theme park industry is referred to as *transmedial* by Freitag.

> Many of the various theme park elements and design strategies that critics have identified as having been "borrowed" from the movies are, in fact, not exclusive to

either theme parks or movies, and thus constitute transmedial rather than intermedial phenomena. (Freitag, 2016, p.125)

Going further, Freitag says that critics identify elements of theme parks as borrowed from movies, but actually they are not just "borrowed": those elements are fully used in both media and that is the reason why it is *transmedial*.

For theme parks, this means that elements and design strategies from theme parks and movies are used in both industries. This also means that theme parks can be seen as canon for the movie industry, they both use the same techniques to create experiences for the viewers and riders. Each uses a production design, the same editing techniques, the same sound and language techniques (Freitag, 2016). The two industries live hand-in-hand and help each other become better.

Today it is hard to picture theme parks without their cinematic influences. There isn't a world without Disney's parks bringing everyone's inner child back by letting them relive their movies and series in real life. These cinematic influences allow for an immersion inside these worlds that can't be found anywhere else.

1.1.3- Immersion in theme parks

In this part we will see how we get immersed inside theme parks. That feeling you get from the moment you arrive in front of the entrance. You are no longer the sad and stressed

person from your daily life. You become a character inside this world where you can be whoever

you want to be. Or at least you believe you can, but that's what matters: believing.

Disney and Universal Studios' parks work so well because of this.

Disneyland's slogan is "The Happiest Place on Earth", and this might not be so far off from

reality. Why do we actually go to theme parks? We might go to experience that 'magic'.

> When you are inside a theme park, while you are watching one of its shows or spinning aboard one of its rides, you are thinking about the theme park, not about your humdrum life, relationship problems or issues with the boss at work. The whole idea of going to the theme park is that you can escape the problems of your everyday life and instead play in a virtual reality in which those problems are washed away and replaced with a world of immersion, joy, ecstasy and excitement. (Lukas, 2008, p.7)

Disney and Universal really got it right with their narrative storytelling on their attractions. From

the attractions portraying the riders as characters inside a movie, to the mascots walking around

the park, the park goer's inner child comes out and the guests are allowed to be happy without

anyone's judgment or other people's irritations. Of course, it is a little bit harder to get this feeling

when the park is overrun, and you have to wait hours for an attraction. But this is where dark

rides shine, as we are still immersed because of the *narrative immersion* (Adams, 2004). The

guests tolerate some minor setbacks, like an overrun park and long wait times, because they

want to know the continuation of the story and want to know what's to come. This is all because

a dark ride is not simply an attraction. It is a whole experience in which guests are immersed.

1.1.4- Dark rides

We can see dark rides as being heavily themed attractions that are story-driven and use their indoor setting to their full advantage to contain the environment so that the riders are not distracted by anything outside from the attraction. Baker (2012) describes a dark ride as an indoor ride that uses the environment to interact with projectors, animatronics, computers and other decorative elements to immerse the riders in a story by using cinematic theories.

> Common features that came to define a Dark Ride attraction were drawn from the combination of these following elements:
>
> - an enclosed structure that creates a darkened or dimly lit enclosure;
>
> - the use of lighting in the form of triggered spotlighting or backlight effects;
>
> - a powered ride system based on a passenger vehicle attached to a track that follows a meandering, seemingly random path;
>
> - a reliance on scenography to create the ride experience, which includes forms of spatial trickery and animatronic activation of simple figures, scenery and props; and
>
> - sound effects, which could range from simple triggered sounds, such as horns and buzzes, through to voice-over narration and even complex, full musical scores.
>
> (Zika, 2009, p.16)

Dark rides are characterized by their immersion inside a story and this story starts from the moment you enter the queue line. Because not only is the attraction itself a narrative journey, but while waiting to go on the ride, the guests are already immersed -in what is called the pre-show- and get ready for the attraction. Zika is a researcher that focuses a lot on dark rides, which allows for an advancement of theory in the industry.

For example, in *Transformers: The Ride* in *Universal Studios*, the guests get prepared for battle as new 'recruits'. There are TV screens showing short clips of the situation and what needs to be done.

With this, the waiting is no longer just waiting, but a *mise-en-situation* for the attraction to come. These kinds of pre-shows are a typical characterization for movie-based theme park attractions. We can sometimes find them elsewhere, but then the ride will have been based on an existing story or fable or myth and not a movie.

One of the best examples of a complete dark ride, other than *Transformers: The Ride* is *Revenge of the Mummy*, which can as well be found in *Universal Studios*. The ride is talked about as the ultimate psychological thrill ride (Theme Park History, 2018) because of its immersive atmosphere that swallows the guests from the moment that they walk through the entrance door. Due to *Revenge of the Mummy* winning the award for best indoor coaster for many years in a row, it has been given legendary status. From the moment the guests enter the building they are no longer in *Universal Studios*, but they are transported to the film set of a non-existing *Mummy* movie that seems to be cursed. The TV screens in the first area of the queue line show the backstory of what is happening on this fictional movie set.

From the moment guests walk to the second part of the queue line, they are immersed inside an Egyptian tomb that is dimly lit and where a background atmospheric sound is playing so all the guests' senses are being stimulated.

The way a place smells can have a profound effect on the way that you think about it and remember it, so your early olfactory impressions, unencumbered by other senses, are very important. If you want to add to your sensory inventory, keep your eyes closed and just listen. Every environment has characteristic sounds, dependent on a number of things, including reverberation times, reflection, absorption, and background noise. Now, feel the texture of the ground or floor under your feet and, if you can, reach out and touch a surface. Without having looked at the space, you have now compiled a complex—and perhaps memorable—impression of it. (Grice, 2016, p.143)

This is why *Revenge of the Mummy* is an 'ultimate' dark ride. The attraction already starts when you're only waiting to get on the actual roller coaster itself. From the different types of materials used to make the attraction look like a real tomb, to the fake spider webs that can be found in the station. The attention to detail allows the guests' senses to be stimulated.

The roller coaster is not the most intense when you look at the layout, but that's because the focus lies on all the props and effects that are happening around the coaster. There are animatronics that were actually made robotic because the movements were so realistic that the guests would get too scared (Theme Park History, 2018).

There are also screens, holograms and fire elements installed on the ride. Fire is very interesting because then you are letting the guests feel actual danger by feeling the heat of the close proximity flame throwers. Schweizer and Pearce talk mainly about the water and pyrotechnics of *Pirates of the Caribbean*, but the same can be said for other attractions like the *Revenge of the Mummy*:

The preponderance of water means you can actually get wet, and also creates a strong olfactory sensation that is entirely unique to the physical theme park attraction medium: you can actually smell the world, with its dank, moldy, dusky aroma; it is at once evocative of a pirate world, but also smells distinctly like a theme park ride. Additional practical effects, such as pyrotechnics, also add smells and even temperature changes. (Schweizer & Pearce, 2016, p.98)

Mixing all of these details together makes dark rides very challenging to design.

1.2- Problem

Theme parks have shown to be one of the showrunners when it comes to the entertainment industries, they are well on their way to becoming the most profitable entertainment media if we look at AECOM/TEA's 2018 attendance statistics and their rise from previous years (AECOM, 2019). Yet the lack of schools or studies in theme park creation in comparison to movies or video games is disappointing. On top of this, outside of Walt Disney Imagineering and Universal Creative, which are not widely known by people outside of the theme park enthusiast community, there is no recognition of the other theme park design studios by non-enthusiasts.

Because of the lack of a theme park education, the media is not seen as its own:

> Theme parks have wrongly been seen by many as superficial forms of culture – as places where people go to do things that don't matter much in the grand scheme of things and thus which amount to inconsequential spaces. (Lukas, 2008, p.7)

The literature fails to classify theme park design: if it's level design or if it's architecture or engineering or something else completely. It might be all of these combined. The creators and designers have to be generalists. But in today's world and society, in order for an industry or job to be recognized, it needs to be able to be classified. So that only adds to the problem that theme parks are understudied:

> I suggest that there needs to be greater seriousness and attention given to the study of the nuances of themed and immersive spaces. These spaces have been relegated to the junk pile of social research in that they either are not studied at all or they are

addressed through simplistic, reductionistic, and essentialist analyses. (Lukas, 2016, p.168)

Lukas also talks about how there is a lack of actual design research in themed and immersive spaces. He suggests that there should be more practitioners and designers that conduct research on theme parks so that the themed entertainment industry would be more accepted in academia.

Yet there are many fan-made books which are not research, but more guides on the parks and their stories. For example, Theme Park Press is a publisher that brings out a lot of books about mostly Disney and what there is to do in the parks. But these books cannot be seen as scientific research. This is misfortunate because similarly to the movie and video game studios, these theme park studios work hard to deliver impactful environments and attractions to entertain the world.

Because of this lack of recognition and lack of education in theme park design, the designers have to look at other fields of research about other media to base their theories on.

Having an exterior movie-based attraction doesn't allow for the same atmospheric control that an indoor attraction does and therefore, I looked at how dark rides would give me an advantage.

Due to this lack of research, I suggest looking at video game research to find a way to study my practice as an attraction designer. In game studies, I found Carson and Jenkins' research

on *environmental storytelling.* Carson previously worked for Disney and thus I looked at Disney and Universal Studios' power to create immersive attractions. Thus, I decided to conduct a research-creation by designing an attraction that is based on a movie and ask: How can I design a movie-based theme park attraction?

2. THEORETICAL FRAMEWORK

In this part I will present my theoretical framework, which is based upon the work of Jenkins (2007) and his concept of *environmental storytelling*.

Because of the lack of theme park research, I had to look at video game design. Carson (2000) and Jenkins (2007) wrote about the *environmental storytelling* concept that can be used both for video games and theme parks. I will explain what this concept is and then detail it. In his seminal work *Narrative Spaces* (2007), Jenkins classifies four different types of *environmental storytelling*: *evocative spaces, enacting stories, embedded narratives,* and *emergent narratives*.

2.1- Environmental Storytelling

Outside of cinema studies, one field which is promising and useful to create theme park environments is video game design. Game studies, and more specifically video game design research, stress that level design and theme park architecture have a lot in common (Jenkins, 2007; Rogers, 2010). Game levels and theme park attractions both try to tell their user a story and some similarity can be used for designing them. Video games are also based around a player/guest that roams around the world freely, and the environment is created so that the player can discover what it has to offer and be guided into the direction of the next mission or attraction. Using game design theories thus sounded like a promising path to study theme park design.

Moreover, authors coming from the theme park industry like Carson (2000) state that even though video games and theme parks are two completely different industries with different audience demographics, they both use the same foundations to build worlds that give the allure of a shared experience where humans make a connection in new worlds.

Rogers, in his book on game design *Level Up* (2010), stresses that: "Everything I learned about game level design, I learned from Disneyland." (Rogers, 2010, p.208). He talks, more specifically about how a story is told through architectural design. Rogers writes "I found that theme parks are designed to move guests from one adventure to the next in the most effective way possible, much like a well-designed game level" (Rogers, 2010, p.208). Theme parks are planned to never let the guests leave their *immersion* inside the story by carefully planned pathways and themed areas.

This shows that the theories can be used for games and parks, and the influence is more like a circle, reciprocal, and not straight forward. Theme parks, video games and also movies all use each other to elevate themselves and this is a beautiful partnership. This falls back on the concept of *transmedia*.

I focused on *environmental storytelling* as described by Jenkins (2007). This concept comes from video game theory and refers to how we can tell stories through the environment

where the players traverse. A great example of *evocative spaces* in theme parks is a *dark ride* like *Pirates of the Caribbean* in *Disneyland*. It takes aspects from history and movies like buildings, color scheme, big story elements, special effects and creating the best possible theme park attraction, so that people can go inside their beloved fantasies and experience them in real life. Being able to immerse guests into the world of the whole movie inside two to three minutes (because most attractions are around that length) is one of the hardest parts of creating an attraction, because if your story isn't coherent or there are elements missing, the whole attraction is bad:

"Any contradictory element may shatter the sense of immersion in the narrative universe." (Jenkins, 2007, p.57).

Jenkins states that even if one small factor is off, the riders will not get the full experience and will feel that something is wrong. You have to respect the IP (Intellectual Property) perfectly. People who have seen the movie will know even subconsciously that the story is not coherent or not working.

By analyzing video games, Jenkins classifies four different types of *environmental storytelling*: *evocative spaces, enacting stories, embedded narratives* and *emergent narratives*.

2.1.1- Evocative Spaces

The first are *evocative spaces* (Jenkins, 2007). This concept focuses on games that rely on literature, previous media or tradition to tell a story. These spaces base themselves on the fact that the players already have a knowledge of the story, and they build on that.

Revenge of the Mummy is an example of an attraction that uses *evocative spaces*, as it is based on the movie *The Mummy* (Sommers, 1999) as well as history and mythology.

2.1.2- Enacting Stories

The second type of narrative spaces are *Enacting stories* or *Spatial stories* (Jenkins, 2007). This is a type of *environmental storytelling* where the player roaming around the environment drives the story. "They are stories that respond to alternative aesthetic principles, privileging spatial exploration over plot development." (Jenkins, 2007). Guests can just roam around freely and explore the environment, and their spatial discoveries are the story: jumping off a cliff, discovering a new enemy, sliding on ice, avoiding fire, etc. This is how classic video game level design works. However, this makes telling a story difficult in the classical sense: it is more about going through an 'adventure' between point A and point B than discovering a profound meaning. An example of this type can be found in the *Uncharted* (Naughty Dog, 2007) games, where the player is not exploring the levels using a classical story, but the exploration becomes the story.

2.1.3- Embedded Narrative

Then we also have *Embedded Narrative* (Jenkins, 2007), this is another type that is defined by having an underlying story that is discovered by progressing through the main story. These narratives usually give players clues or side stories that build on the main story.

"The detective story is the classic illustration of this principle, telling two stories – one more or less chronological (the story of the investigation itself) and the other told radically out of sequence (the events motivating and leading up to the murder)." (Jenkins, 2007, p.58)

The spectator, or player, has to build the story themselves to discover the 'truth'. The story is a body of information for the player to reconstitute. An example would be the detective genre in movies such as *Shutter Island* (Scorsese, 2010). Jenkins gives the example of the game *Myst* (Cyan, 1993) where the player finds themselves on an island and they have to retrieve clues to find out what happened.

2.1.4- Emergent Narratives

Lastly, we have *Emergent Narratives* (Jenkins, 2007). These are seen in sandbox games like *Minecraft* (2011) or *The Sims* (2000). In these games the player can pretty much do whatever they want, but they are still contained within what the game designers created and made possible.

For Jenkins, this turned game designers into "architects of narration" more than traditional storytellers. I drew a schematic where we can see how Jenkins equally presents the four dimensions of *environmental storytelling* (see Figure 3). I think it can be applied to theme parks and I will show that this framework will allow us to understand how a story is told through the space of a theme park.

Therefore, I asked myself: How can the concepts of environmental storytelling help design

movie-based theme park attractions? How does theme park environmental storytelling work?

Figure 3 Schematic of Jenkins' concept of Environmental Storytelling. By Frederic Caeyers.

3. METHODOLOGY

Using a research-creation approach, I designed a dark ride attraction that is based on the movie *300* (Snyder, 2006), thanks to my previous experiences and literature. First, I will present the research-creation approach. Then I will detail my objectives and data collection methods. Finally, I also bring forth the limits of my research as well as my desired contributions.

3.1- General approach: Research-Creation

Research-creation is a methodology to conduct academic research on art-related subjects. More specifically, it is used to conduct research through artistic practices. I focused on the design and analysis of my own drawings and paintings. By doing this not only did I improve my knowledge and skills of design, but I also found elements that will help other readers:

> An approach to research that combines creative and academic research practices, and supports the development of knowledge and innovation through artistic expression, scholarly investigation, and experimentation. (Social Sciences and Humanities Research Council, 2018, online).

Conducting this research implies becoming a reflective practitioner while doing the research creation (Bruneau & Villeneuve, 2007). Reflective practice means "The process of learning through and form experience towards gaining new insights of self and/or practice." (Finlay, 2008, p.1) This involves examining assumptions, being self-aware and having the ability to critically evaluate one's own work. The point of being a reflective practitioner is to recapture practice experiences in order to gain new understandings about the subject you are researching.

Schön's concept of knowing-in-action means that we know and learn by going into action and doing: "Our knowing is ordinarily tacit, implicit in our patterns of action and in our feel for the stuff with which we are dealing. It seems right to say that our knowing is in our action." (Schön, 1983, p.49). So in research-creation, the practitioner's research tries to access and formalize this tacit knowledge.

I have experience working for the themed entertainment company *KCC Entertainment Design*, I was a 2D and 3D concept design artist. I focused on turning 2D concept art into realistic 3D models. Sometimes, to be able to create these models I had to design a bit of extras in 2D so that it would be able to exist. What I found so special about my experience working for a theme park design company is that I noticed how each employee had to be somewhat of a generalist. Everyone had to know a bit of every step of the process of designing and building 3D theme parks. The 2D, 3D and architect teams were all working closely together and back and forth to help each other progress in designing the parks. I thus participated in the design of the parks, and have acquired a form of practical knowledge about it.

I also had the opportunity to work on a student theme park design project (STEP) during the summer of 2020, where I was asked to be the associate art director. My task was designing the overall look of the park as well as designing some buildings and painting a hero shot. A hero

shot is a piece of art that shows off the mood and atmosphere of an attraction and can be used as a marketing item.

For this research, I focused on the 2D and 3D digital design of the attraction. Because of this focus on only two specific steps of the workflow, it permitted me to work by myself without the help of a team. I started with line art sketches and continued with painting on Adobe Photoshop. After that I used the paintings to model the environments without textures in Maya and created the roller coaster track in No Limits 2. Finally, I imported the 3D models in No limits 2 to have both the track and environment in one file.

Schön differentiates reflecting in-action or on-action. (Schön, 1983) The biggest difference is the moment you reflect and evaluate yourself. In-action means that you will reflect on yourself and analyze your work while still working. On-action means that you will reflect and analyze your work after you have finished it, to look back on what has happened and see what you have learned from it.

I continuously took a step back from my work and wrote down how I worked and what I learned from doing those steps trying to do reflection on-action and in-action. Using an iterative workflow, I adapted my design and looked back at the concepts while working.

3.2- Objectives

Here I give a detailed view at the three objectives I set out for myself.

3.2.1- Objective one: choosing and analyzing the movie

To be able to choose a movie, I had to look at what kind of attractions have already been created and more importantly what kind of movie I find inspiring and could see created as a movie-based theme park attraction.

I have decided to go with Zack Snyder's *300 (2006)* because there have only been a handful of rides in a Greek theme. The biggest ones being *Poseidon* in *Europa Park*, *Troy* in *Toverland*, *Poseidon's Fury* in *Universal's Islands of Adventure* and *El Laberinto del Minotauro* in *Terra Mitica*. By choosing *300* (Snyder, 2006) I am not purely restricted to the movie's set and decorations, I can also look at Ancient Greek and maybe even Persian history to create the environment of the attraction.

I analyzed the movie *300* (Snyder, 2006) while writing down my findings and drawing some concepts while watching the movie.

I was also inspired by *Revenge of the Mummy* at *Universal Studios Orlando*, the Golden Ticket Award winning attraction for 12 years in a row. It was the first psychological thrill ride (Theme Park History, 2018) which means that the attraction preys on common human phobias such as fear of the dark, insects, speed, heights and most importantly the fear of the unknown.

Following that psychological aspect, *300* (Snyder, 2006) is a *revisionist superhero* (Pagello, 2013) movie, which means that Snyder's superhero stories are a critique on previous ones and tell a grittier, darker story. Being able to adapt this dark and gritty story and world into a theme park attraction can be a challenging task, but psychological attractions have a great potential for immersion.

As explained by Krippendorf in *Content analysis: An introduction to its methodology* (1980) analyzing media content is:

> Analysis of the manifest and latent content of a body of communicated material (as a book or film) through classification, tabulation, and evaluation of its key symbols and themes in order to ascertain its meaning and probable effect."(Krippendorff, 1980, p.1)

While I analyzed the movie, I looked at what the most important aspects, themes and characteristics are and then I debated what the effects of these are and what they mean.

More precisely while analyzing the movie, I looked at the environment: type of architecture, props, etc. For example, I analyzed if it is actual historical architecture or if there is some use of fantastical elements. Then I observed if I can also utilize actual historical references or if I am bound to the movie alone. For the architecture, decors and sets I based myself on Lamster's *Architecture and Film* (2000) and Ramirez's *Architecture for the Screen: A Critical Study of Set Design in Hollywood's Golden Age* (2004).

Other than that, I also looked at the characters in the movie and saw what kind of style clothing and emotions are shown the most. I wrote down what kind of experience I had while watching the movie. See if it is because of the music or acting or colors that are visible on the screen or something else completely.

The sound design also does play a big role and therefore I used Chion's (1990) research on sound in movies.

I did this analysis by re-watching the movie a couple of times and pausing on the most important frames or on scenes that stand out to me where I can get the most information about the setting and theme and what elements I could use in my attraction design. I then noted on which minute they are set. Every time I found something important that should be remembered, I wrote this down in the log. For example, key elements from certain scenes have to be implemented into the attraction so that the guest would recognize some elements from the movie.

3.2.2- Objective two: creation

The focus of the attraction is its theming. Everything revolves around the big theme of the attraction and about how we can show with the least possible elements what kind of world the guests are in.

I created a blueprint and a story so that afterwards I could design the attraction by making 2D concept art. During all of these steps, I kept a log of my thoughts and ideas through a journal (Adams & Jones & Ellis, 2015). I made sure to keep all the iterations of my sketches and designs so that everyone can see the progress and the process (Adams & Jones & Ellis, 2015).

When all of this was finished, I started drawing a top-down view of the layout of the attraction and where the track, buildings and props will be placed. So that I could have the correct spacing to tell the story in a short amount of time.

Once the top view was done, I could start drawing the concept arts of the attraction. All these elements can be found in the chapter "CREATION".

3.2.3- Objective three: analysis

Following Schön's reflection-*in*-action, while drawing and painting I looked at what stands out the most and caught my attention. For example, when a sketch was complete or if I couldn't seem to continue working, I wrote down why and what the reason was, or what I learned by sketching and how I could improve it in the next step. This allowed me to analyze my work while still being in the creative phase and also keep track of my workflow.

The readers can thus have a clear view of how I went through the process of designing the attraction:

Experiences often hold our attention because we have trouble understanding or explaining them; we want to better, or differently, know what some thing, event, or

person means to us, and we can generate this understanding by writing. (Adams &
Jones & Ellis, 2015, p.70)

Writing those thoughts and the steps that I took, allowed me to look back at what I have done,

in a reflection-*on*-action way. With a fresh mind, this information gave me context to write about.

This also allowed me to analyze my work and thoughts a second time after the events.

3.3- Limits of the research and contribution

Because of the limited time frame to finish my research, I was only able to create 2D and

3D designs of one attraction. I wish I could have done a more detailed model, such as having

textures, but what I have is enough to conduct an analysis.

The research also has its limitations because it is based on my own practice, so it will not be

helpful for everyone, yet I give enough detail and rich descriptions so that people can relate to

and adapt my reflections for their situation.

As for the contribution, I wish to make my research accessible to other novice theme park

designers. So that they could better understand the difficulties behind designing attractions.

I also wish to make more people love the theme park industry and give them insight into what it

takes to design such wonders.

4. CREATION: Vengeance of the 300, the dark ride

Figure 4 Vengeance of the 300 Logo. By Frederic Caeyers.

"Vengeance of the 300" (see Figure 4) is a concept for a *Gerstlauer* (*Gerstlauer* is a German roller coaster design and manufacturing company) dark ride roller coaster which I designed using *Photoshop*, *Autodesk Maya* and *No Limits 2 Rollercoaster Simulation*. It is a family-oriented thrill ride for teens and up, which is based on the movie *300* (Snyder, 2006). It uses a vertical lift as well as three launches to make the train go over its 1330-meter track, featuring a maximum height of 35 meters and one inversion (see top-down view on Figure 5).

Figure 5 Top down view of the attraction. By Frederic Caeyers.

As in the movie, the story takes place in Greece in the middle of the Greco-Persian war. The Persians are dishonoring the Greek culture by destroying their statues, symbols and

everything else which is in their path. They are killing the men and taking women and children captive to serve the Persian ruler: Xerxes.

The Spartans, coming from the south of Greece, are on their way to Thermopylae to fight the main Persian army.

I will present my workflow of designing the attraction by presenting a step-by-step process of creation for each scene.

4.1- Preparing the design

In this phase I watched and analyzed the movie, with this information I then went on to brainstorm about the attraction and how I want to design it.

One of the biggest difficulties I had while designing was that I needed to pay attention to not just draw things because they look good but instead pay attention to the narrative behind the designs. That's why I kept the *evocative space* concept (Jenkins, 2007) in mind. I had to focus on giving guests a story and environment which is based on something pre-existing so that they enter into a world which is familiar, playing on their previous experiences and memories.

> The story element is infused into the physical space a guest walks or rides through. It is the physical space that does much of the work of conveying the story the designers are trying to tell. [...] The trick is to play on those memories and expectations to heighten the thrill of venturing into your created universe. (Carson, 2000, cited by Jenkins, 2007, p.56)

Therefore, I had to stay in the proper references. If I didn't do this, then any external element might have taken the guest out of the immersion. I started gathering references, from both the

movie and its concept art and history. I took screenshots from the key scenes and saved them along with the movie concept art in my references. I paid attention to the architecture, colors, costumes and stylistic elements that could be 'larger-than-life'.

First, I focused on making the elements seem as if they come from ancient Greece. Which is one of the types of evocative spaces that I encountered in the movie.

> The most compelling amusement park attractions are based on stories or genre traditions already well known to visitors, allowing them to enter physically into spaces they have visited many times before in their fantasies. These attractions may either remediate a pre-existing story or draw upon a broadly shared genre tradition. (Jenkins, 2007, p.57)

I watched *300* (Snyder, 2006) another time to have a fresh look at the movie. The atmosphere of the movie has a very surreal (a mix between mythological and fantastical inside a historical story) feeling and a dark tone at the same time. Even though the movie is set in ancient Greece, there is a contrast between the historical buildings, costumes and the fantastical creatures in Xerxes' army and Xerxes himself. This is because the movie is based on Frank Miller's graphic novel, which is defined by its highly stylized style and desaturated feel. The desaturation and over stylization of the fights and blood gives another level of surrealness.

While watching I noticed how there are not a lot of different colors and how red and sepia/beige are the most prominent in every aspect of the film. The costumes are very simplistic and focus on showing the human body instead of the types of armor and clothing used. There is also a difference between the Greek and Persian costumes as the Persian ones are dressed with

full body armor. This is to show that the Greeks are proud of themselves, yet are vulnerable, contrary to the Persians.

The architecture that is visible in the movie is pretty simplistic and doesn't focus on temples as most movies on Greece do. Instead, the architecture in the movie is very unpretentious and blocky. I was also thinking of what kind of attraction I can create where I will be able to tell parts of the story. The setting and

Figure 6 Picture of the water roller coaster type attraction Poseidon (Europa-Park). By Europa-Park.

locations that stand out from the movie are definitely the tall grass fields as well as the temple on the rocks and the Hot Gates with their spiked rock cliffs. These were elements that I should put in the attraction so that people will be able to recognize that it's based on or utilizes elements from *300* (Snyder, 2006).

Because water is a part of the setting of the first movie and the main setting in the second, the attraction that came to my mind first is a boat ride that has roller coaster sections (see Figure 6). It just seems fitting to have a boat as a vehicle, because in that era, people preferred transport on the water than on land, because there was a lot of walking on land (Nessel & Uhner, 2019) and walking takes a lot more time. So people were traveling and trading to other cities by boat. I could also create a walk-through attraction, but that isn't as intense as a ride because in a vehicle you let something else control you instead of being able to walk and stand where you want. A walk-through attraction is also more slowly paced and cannot include high drops.

Finally, I found that the movie *300* (Snyder, 2006) is like a series of paintings. As we can see in figure 9, the director paid close attention to the composition of the image. All the attention leads to Leonidas who is standing straight. The scene reminds me as well of the *Oath of the Horatii* by Jacques-Louis David (1784) (see Figure 8). Because the painting and the scene use a similar setting and composition. The painting is about sons going to battle. The scene is even shown in slow motion just to slow down the time so we can have a look at this scene and enjoy it more as if we were in a museum looking at a painting.

This can be seen in the concept art of *300* (Snyder, 2006) too. So I wanted to make sure that in the park, whatever angle you look at the attraction, it needs to be beautiful, just as the cinematography (see Figure 7).

Having accumulated all this information pointed me towards creating an action-packed attraction that evokes the stylized action and set pieces that are shown in the movie.

Figure 8 Oath of the Horatti. By Jacques-Louis David. (Wikipedia, 2020, online).

Figure 7 Screenshot from the movie 300. By Warner Bros (Snyder, 2006).

I then established the synopsis, which is as follows:

<u>Act 1</u>

<u>Part 1</u>

In this attraction, the action is set in a small mountain town in Greece. The Spartans are recruiting villagers to help protect the town from further destruction and to fight for the honor of Greece and fulfill their duty to their families. The Spartans are using the theater, which has been half destroyed during a previous Persian assault, as a recruitment station. The captain of the army is looking for honorable soldiers that are willing to do whatever it takes, even if it means death. The captain tells the new soldiers that the Persians are winning and will not stop until the whole village is destroyed and everyone is killed or captured.

The guests, considered as inhabitants of the village, go through the subterranean tunnels of the theater to get to what is the barracks where they must wait to enter. Once inside, a general of the Spartans addresses the guests and tells them what happened as well as their mission; to defend the town from further destruction and push the Persians back to the sea. However, the

Persians have outsmarted the Spartans and start attacking the barracks and this subsequently sets the room on fire. The guests flee outside to encounter a tree to which some of the visitors are nailed. While Spartan soldiers stop the Persians from advancing, Leonidas appears to give the guests a motivational speech and enrolls them, but also gives them the option to exit the attraction and not continue to the chariots. But the guests are ready to reach Leonidas' goals: destroy the Persians at all costs and keep Greece free.

Act 2
Part 2

Once having escaped the Persian attack, the guests find themselves inside a house where a chariot arrives. The guests board the chariot in four rows of four people and are now ready to start their roller coaster journey. With Leonidas, the guests first obstacle to overcome is to get the divine blessing of the Ephors (priests) to go into battle. But a difficult road lies ahead to meet the Ephors. The guests must reach their lair which is at the top of a mountain temple. Unfortunately, the Ephors do not think that the soldiers should fight. But Leonidas convinces the soldiers to fight anyway to defend Greece and their honor, so they decide to leave the Ephors and go anyway, escaping by jumping down the cliff into the water below, thus the soldiers arrive back in the village.

Part 3

The chariot takes the guests back to the village to what is the library. The library is once again under attack by the Persians and the scrolls and flags catch fire. The guests hesitate and try to flee by reversing, but Leonidas gives them the courage to continue to the village. They go through the battle.

The guests accelerate through the burning village in search of the Persians, but they get pushed in between cliffs where the Persians are shooting arrows at them. The chariot manages to dodge the arrows and arrive on the top of the cliff. Deciding to win at all cost, Leonidas and the guests push the Persians down the cliff … but fail to stop so they get dropped off the cliff as well.

Act 3
Part 5

The guests, now clueless, find their way through the sharp rocks and lava where they encounter a massive stone head. The head opens its mouth and makes the chariot accelerate through the mouth out into paradise: a landscape full of luxurious flora and water where the chariot 'dances' on the trees and on the rocks. They are dead, but Greece will stay free.

Part 6

Finally arriving at a temple-like structure, the chariot is slowly lifted upwards in a room with water running next to the track and finally making a turn into the temple that is the station and getting off.

INTENTIONS

My goal is to make the guests feel impressed and in awe while going on the ride, believing they've entered this world of chaos. I also want them to feel powerless in the beginning and powerful towards the end. The themes of the attraction can be seen as: order against chaos, honor against dishonor, freedom against captivity.

4.2- Analysis of the creation of my attraction

In the next segment, I will analyze my creation process in the scenes' chronological order. Starting

with the exterior and continuing with the queue all the way until the end of the roller coaster.

The scenes are divided in how I designed them and according to the different parts of the story.

Prologue: The Courtyard
Exterior, Themed Land, Open Area

Figure 10 Birds Eye view of the courtyard area. By Frederic Caeyers.

> *The action is set in a small mountain town in Greece. The Spartans are recruiting villagers to help protect the town from further destruction and to fight for the honor of Greece and fulfill their duty to their families. The Spartans are using the theater, which has been partially destroyed during a Persian assault, as a recruitment station. The captain of the army is looking for honorable soldiers that are willing to do whatever it takes, even if it means death. The captain tells the new soldiers that the Persians are winning and will not stop until the whole village is destroyed and everyone is killed or captured.*

The courtyard is the themed land where we can find the Vengeance of the 300 attraction (see Figure 10). Although not yet the attraction, this area allows the guests to be immersed inside the universe while making their way to Vengeance of the 300. The area is characterized by a temple which can be found on the rocky cliffs.

Figure 11 Top down view with highlighted courtyard location. By Frederic Caeyers.

1- Preparation

For the shapes and location of the courtyard (see Figure 11), I focused on straight lines and sharp corners with some hints of bends and curves. These straight lines add a more dangerous feeling, yet having bends and curves allows for some resting points and ease. The straight lines and sharp corners also stand for the law and strength which Sparta represents in

the movie. The hints of bends and curves represent the tender moments (which are few) from the movie where we can see the other more loving and soft side of Sparta. This can be seen in the scenes right before the Spartans leave for battle. More specifically with the love scene. So I was designing evocative spaces.

In the general layout of the attraction entrance, I focused on the *enacting story* (Jenkins, 2007). As this is the area where the guests will walk around and choose whether to go on the attraction, just take pictures, visit the shop, go to the restaurant or even just explore the area. That's why I have it as an open space with multiple entrances and exits, so if guests are inside the themed land they do not easily get lost and there is a middle space to come back to and reorient themselves. The multiple exits are for avoiding turning back the way they came from.
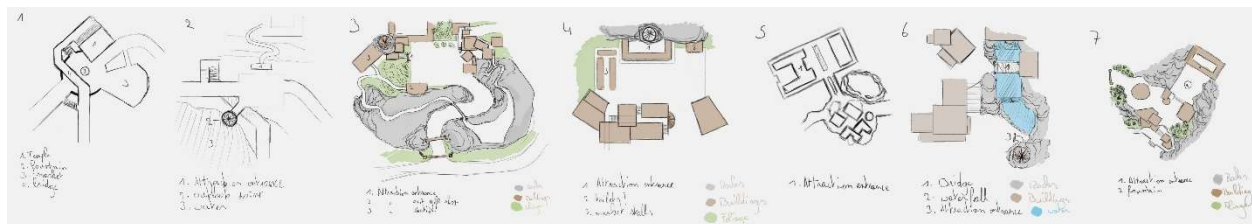
Figure 12 The first seven layouts of the area around the attraction entrance. By Frederic Caeyers.

For the first layout (see Figure 12, 1), I focused on having a centerpiece temple that can be visible from each entryway, and having a circular center fountain with an attached market to the side. I added these to make the main square a bit more alive and dynamic. The main reason I focused on the cliff temple is to evoke the scene in the movie where Leonidas goes to the Ephors.

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For the second layout (see Figure 12, 2), I was thinking more about working with the terrain, having water at the bottom and then a boardwalk next to cliffs, and the attraction entrance would be on top of the cliffs with a path leading up a hill to a type of mansion. This was to evoke the whole Thermopylae scene where you have the ocean on one side and the mountains on the other. The mansion on the hill would be a hint to the scene where we see the Persian messenger riding to Sparta, and the guest can see the village on the hill.

For the third layout (see Figure 12, 3), I focused more on the nature aspect of the movie, I added two giant cliffs to the main entrance of the area so that people cannot see what's inside until they go in between them. Which could be an *embedded narrative* as the guests would discover new things by progressing into the environment. These cliffs also represent the 'Hot Gates' of the movie. I added a lot more building overlap and have a centerpiece which I want to let the ride go up to with a lift and then exit. I also added smaller pathways with stairs that give you different ways to access some locations and added a 'goat path' like in the movie on top of the cliffs. So I evoked two different worlds: some elements of the movie and some others from historical Greece.

For the fourth layout (see Figure 12, 4), I focused more on buildings, but still kept the little monument temple on top of the lift hill because I think this will be an interesting element to either start the ride with or end it as a big drop, as it evokes the film. I added my original idea of having market stalls next to the entrance and then for the buildings I added some pathways that

go through them. I took reference of the building structure from the themed land of Greece in Europa-Park and the lift hill temple is again an evocation of the temple in the movie.

For the fifth layout (see Figure 12, 5), I tried looking for some interesting layouts already existing in games, so I took some bits from *Assassin's Creed Odyssey* and adjusted them a bit while still focusing on having a centerpiece. This is an evocation to a third reference, so now I evoke the movie *300* (Snyder, 2006), historical Greece and *Assassin's Creed Odyssey*.

For the sixth layout (see Figure 12, 6), I tried focusing more on having some water and having everything on a smaller scale and grouped together. Because in the movie the city scenes that we see are very small scale with small streets and low buildings. The entrance is also not a big building but just some kind of archway or gate underneath the cliff. I still have this element because I still think it is a pivotal scene in the movie. Pretty much everything is in straight lines in this layout, but this feels a bit too structured for what I try to tell, I prefer when there are some shapes that break the forms and some more overlap. So that there is some variation in shapes which also gives you a more cozy atmosphere. I also added a bit of water with a small waterfall to introduce that element of coziness. I like making areas cozy because it allows for guests to feel more relaxed when they are in an area, but in this layout I feel as if it takes too much space and the water should only be hinted at a bit as it is not a huge part of the first movie. To have an *evocative space* I cannot introduce outside elements which have nothing to do with the reference that I am basing myself on, because this takes people out of the story.

For the seventh layout (see Figure 12, 7), I tried focusing a bit more on a historical Greek layout, with the huge Parthenon at the top and stairs that lead up to it. I tried adding some cliffs around the attraction entrance and some overlapping buildings with a wheelchair path going around the stairs. I also added more trees this time, but I didn't include the cliff with the round temple on top. I wanted to see what that would give in terms of roller coaster layout difference. I did this to have a completely different design idea as I was so focused on the temple before.

Figure 13 Two iterations of my favorite aspects. By Frederic Caeyers.

After that I start working on iterations of my favorite aspects from some of the first seven designs (see Figure 13). That's why for the first iteration I wanted to mix the outlook part with the seventh layout and add the cliff temple of the other designs as lift hill and centerpiece. I thought that having the exit pathway run over the pit and have the ride go under this pathway and then through a waterfall to be an element that could evoke the pit fall from the beginning of the move. But this is a bit too chaotic and unorganized to be based on *300* (Snyder, 2006). Even though the movie feels very chaotic, it is structured chaos, to show the honor and duty of the Spartans. To

Figure 14 A colored version of iteration 7B, so that the different elements are more visible. By Frederic Caeyers.

translate the structured and organized culture of the Spartans from movement in the movie to

an environment where everything is about duty and honor, I changed the layout so there are more straight lines. The roller coaster would also not be the centerpiece; instead it would be pushed to the side and only guests exiting the ride would pay attention to the ride dropping from the temple (see Figure 13, 7A). So that the courtyard is larger and more open.

That's why for the second iteration (see Figure 13, 7B & Figure 14) I focused more on having symmetrical shapes and a lot more straight lines and squares to evoke the honor and duty
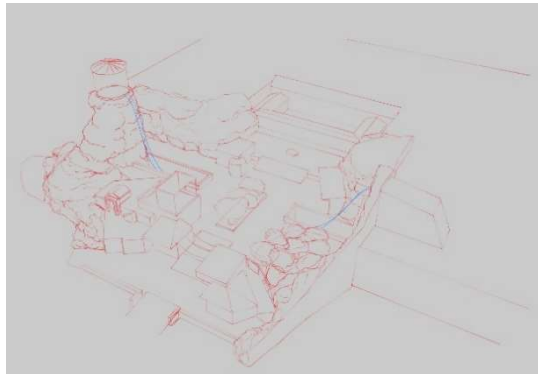
Figure 15 The Birds Eye block out of the attraction entrance area. By Frederic Caeyers.

theme of the movie. This time though I let the ride drop in between the path and come up on the other side. This element can be seen on the attraction *Chiapas* at *Phantasialand*. Having the train interact with the pathway allows to save some space, while allowing the guests to see a part of the roller coaster (see Figure 15).

I fixed the stairs so that they are completely straight, and I added the whole buildings behind the rocks that will hold the dark ride section of the attraction. By adding this building, I was able to visualize the scale of the ride, and I can see how long the coaster can be and how much the ride would cost.

I really liked this second iteration because it has different elements that worked in already existing theme parks such as having a compact but spacious layout while having the ride interact with the themed land. So I decided to draw it in perspective to see if it works. For this I created a simple 3D block out in *Maya* to get the correct measurements and heights with the right perspective. Like this I could see if it would work and if the area and attraction would be visible to the guests from each location so that the guests are really enclosed within the world of the built environment and are not taken out of the *immersion* (Freitag, 2016). The big building or any outside elements should not be seen from the guests inside the park.

I then designed the buildings. I started drawing a side view of the staircase area (see Figure 16). I tried to focus on having multiple types of buildings mixed with each other, so that not everything
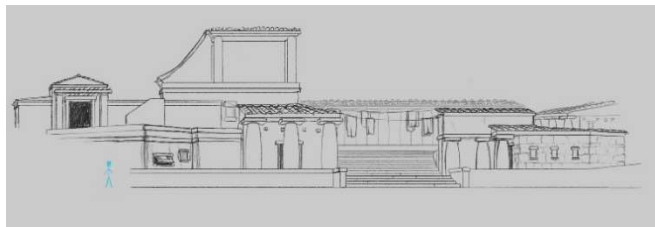
Figure 16 Side view of the buildings of the entrance area. By Frederic Caeyers.

looks the same. For the roofs and columns, I looked at the architecture in *300* (Snyder, 2006). I then noticed that the buildings were all a bit flat and that the height difference was not big enough to become 'majestic'. So I decided to add another level on top of one of the buildings which will become a type of veranda with a big cloth hanging on the side. This will add dynamism to the otherwise straight and blocky feel of the architecture. I also added lines with drapes above the staircase just like the ones we see in *300* (Snyder, 2006). These also break the very blocky and static feel of the environment. I wanted to arrive at a homely feeling, so that it seems like a village that has been lived in, but suddenly attacked so everything is frozen in time.

Entrance

For the entranceway of the attraction, I only had the idea to recreate the court building from the beginning fight scene of Leonidas and his father. But having just this building without an actual entrance would not attract the guests' attention. An entrance needs to be visible from far and needs to stand out and make you think of the movie on which the attraction is based, to function as an *evocative space* (Jenkins, 2007).
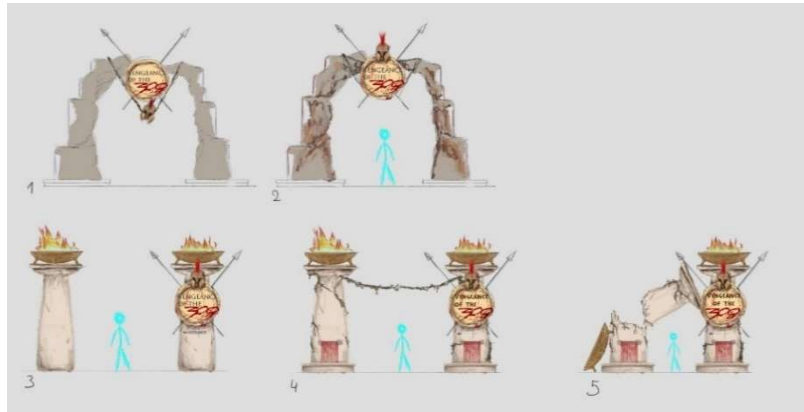
Figure 17 First entranceway designs for the roller coaster. By Frederic Caeyers.

First I decided to draw an archway made out of rocks, because a big part of the movie is set in between rocks and cliffs. But just having rocks is not interesting enough and doesn't show the guest that this is based on *300* (Snyder, 2006) or even ancient Greece. So I added what is a very recognizable element from the movie and the time period and that is a shield with spears and a helmet (see Figure 17). The story of the roller coaster starts in an armory, so the soldiers' gear plays an important role for the storytelling. Having this on the entrance shows guests that this is indeed a Greek attraction. But then the guests still wouldn't know what the name is, so I turned the shield into a sign on which I put the name "Vengeance of the 300", This title expresses the Spartans fighting back against the Persians for attacking them and bringing destruction.

I was not completely convinced with the rock archway because it doesn't show the Greek theme enough. So I looked back at the movie

Figure 18 V1 Entranceway design for the roller coaster. By Frederic Caeyers.

and decided to take the columns that can be seen on most buildings, but instead to make the entrance stand out more I put fire cauldrons on top of them. This way the fire will give a sense of danger to the guest and also give light if it is dark so that the entrance stands out. For this design I put the shield on one of the columns instead of in the middle because it breaks the symmetry. To give the sense of danger and a dark tone, as the movie has, I added blood waterfalls and some rotten foliage. I also changed the font to be a bit more rural as the attraction is located in a small village. For the last design, I even broke one of the columns and made it look as if it was destroyed. Which fits more with the story of the town being attacked.

The columns alone weren't a big enough entrance to emphasize the epic feeling I tried to convey, and I still needed a big building façade to hide the warehouse. Then I decided to draw a regular building that can be seen in the movie (see Figure 18). It would work normally, but this was not 'grand' enough. I needed a building that symbolizes Greece and which is a pity to see destroyed. Therefore, I changed the building to a theater, which is classic ancient Greek architecture, and it evokes its civilization and culture (see Figure 19).
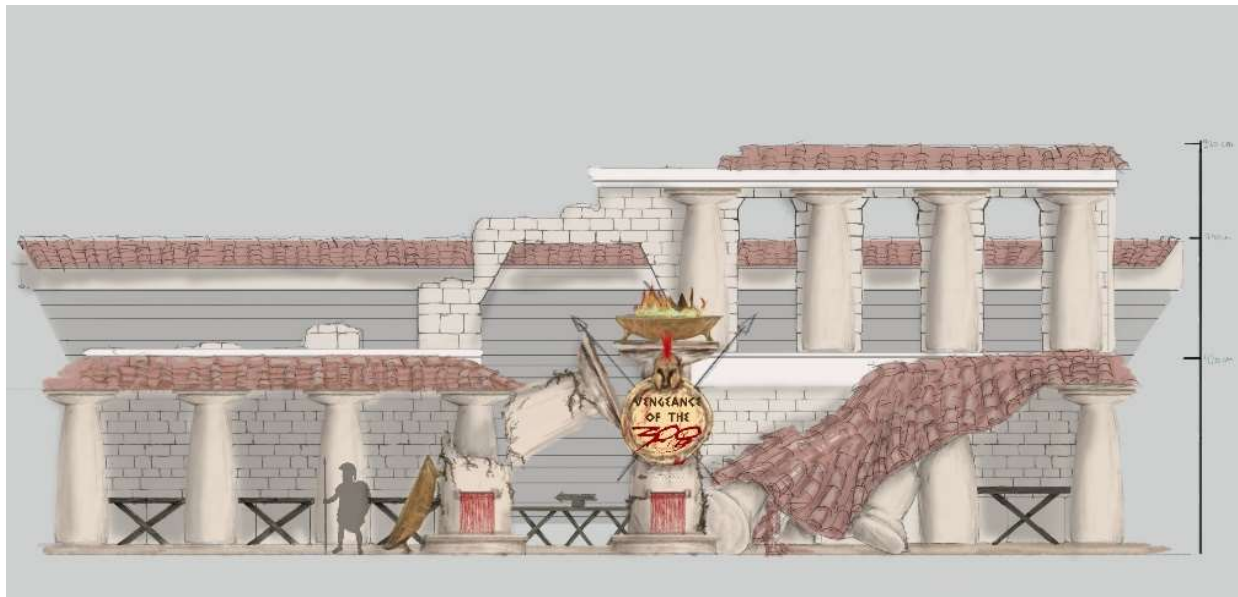
Figure 19 V3 design of the entrance for the roller coaster. By Frederic Caeyers.

2- Final design

Before the guests even get to go in line for *Vengeance of the 300*, they get to walk around the village scene which I designed to have a restaurant, a shop, restrooms, a viewing point for the main drop of the roller coaster, the exit gift shop and the entrance theater.

For the overall building style and materials, I looked at how *300* (Snyder, 2006) depicts the architecture to get the evocation of the movie (as seen in Figure 20).

Figure 20 A shot from 300 depicting the architecture. By Warner Bros (Snyder, 2006).

As you can see, the columns are thicker than the historical ones. It adds a bulkier and stronger feeling instead of elegant and slick. The bulky and strong feeling is important because as we can see in *300* (Snyder, 2006) all the Spartans are strong built and show how powerful Sparta is through the amount of muscles that the characters have. The pillars are a reflection of this strongness. Sparta is not elegant and beautiful; instead it is strong and functional.

I took some reference from the 'Greece' area in *Europa-Park* by looking at the way they designed the buildings to be stacked on top of each other. *Europa-Park* played more on the generalizations that the population has about a vacation to Greece with white buildings and blue water (Carlà-Uhink, 2020). This is something I tried to avoid by not using white and blue in the color palette. The only blue would be the water.

Because of the lack of scenes in *300* (Snyder, 2006) where we can see buildings and houses, I also had to look elsewhere for reference. Therefore, I looked at *Assassin's Creed Odyssey* (Ubisoft, 2018) as it is set in roughly the same period and has a lot of different buildings (see Figure 21). For example, in this image you can see the rooftop sunroofs that I used on the restaurant.

Figure 21 A screenshot from Assassin's Creed Odyssey. By Ubisoft (2016).

The materials used are largely beige or white and gray. The roofs have a washed-out red color. Which also evokes the main color used in the movie to depict Sparta: red. The movie *300* (Snyder, 2006) has a very specific washed-out color palette and this has a big impact on the atmosphere of the movie. The washed-out colors allow for the dark and gritty feeling I got while watching the movie. There are no standout colors except for the red capes of the Spartans. The impact this has is that the only memory of color in the movie I have after having watched the movie is red. The movie is very desaturated and uses a dominating sepia color filter. That is also one of the reasons I chose to have the roller coaster indoors, so I can have control over the complete color palette and lighting. If the ride were outside, a sunny day would change the way we perceive the colors. The colors evoke the color atmosphere of the movie by using sepia/beige for most of the environmental objects. The red color comes from either Spartan flags, their capes or fire.

The element which guests would notice first while walking in the outdoor area, and that is evoking the movie, is the temple where Leonidas goes to see the Ephors. This temple is a crucial scene in the movie right before the fighting begins, so I wanted to showcase this in my attraction as a stronger evocative space (as seen in Figure 10 and Figure 22). I wanted this temple to play a central role in the layout as this is an important scene in the movie as well as a memorable set piece. The temple also plays a role for the first drop of the roller coaster (more on this later in scene 4: The Ephors). For this drop I took reference from *Chiapas* in *Phantasialand*. *Chiapas* has a big drop that goes underneath the pathway and back up the other side.

Figure 22 Shot from the movie of the Ephor temple. Warner Bros (Snyder, 2006).

The second-biggest element and also the entrance of the roller coaster is a theater. I looked at historical theaters as reference for mine. But I mixed the entrance with elements from the movie (See figure 10 and figure 23). The theater shape itself is based on actual historical theaters in Greece. But I added the thick columns that we can see in *300* (Snyder, 2006) as well as a spartan shield, spears and helmet.

The scene allows the guest to have a first impression of the Greek world and they can see something is wrong because of the destroyed theater. They are curious to find out what happened and that guides them to the attraction entrance. For the storyboard, I painted the entrance with a sunny, warm atmosphere to play on the difference between the happy beginning and then the dark that follows (see Figure 24).
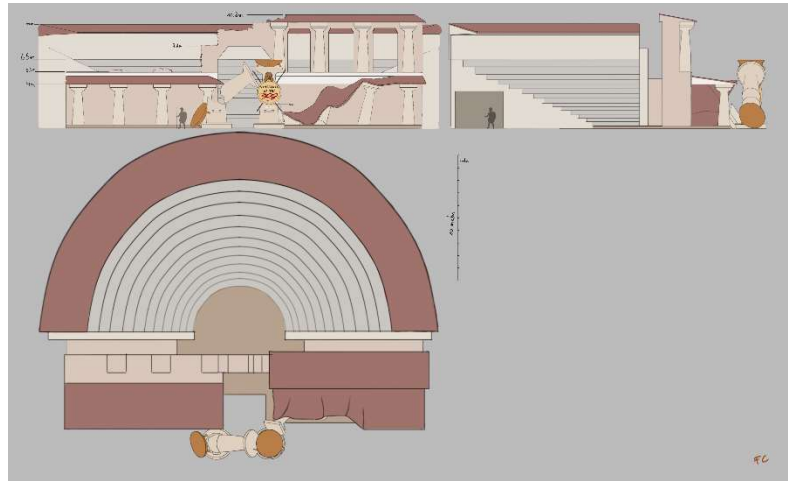
Figure 23 Elevation of the theater. By Frederic Caeyers.

Figure 24 Painting of the Entranceway. By Frederic Caeyers.

Scene 1: The Barracks Pre-Show

The guests go through the catacombs of the theater to get to what is the barracks where they must wait to enter. Once inside, a general of the Spartans addresses the guests and tells them what happened as well as their mission; to defend the town from further destruction and push the Persians back to the sea. However the Persians outsmart the Spartans and start attacking the barracks and setting the room on fire.

The guests will be queueing in front of a big door to wait their turn to enter the barracks and get their mission report (see Figure 25).

Figure 25 Top down view of the barracks scene location. By Frederic Caeyers.

1- Preparation

The idea was to have a captain of the army speak to the guests to give them some background information about the situation and to prepare them for battle. While the guests would be in the barracks, the Persians would start attacking and the guests would have to exit in the direction of the chariots.

2- Final Design

Figure 26 Painting of the barracks pre-show. By Frederic Caeyers.

The show area consists of a stadium standing area with five rows. Per row there is space for around 20 guests. The guests will have a view on a stage where there is a soldier who addresses the guests as soldiers. The show ends with the area behind the stage catching fire and the doors on the left open, letting the guests exit the burning room (see Figure 26).

This pre-show gives a narrative advantage by having an actual theater show. Because sometimes just having an environment is not enough to tell a story. Without a narrative, each guest will experience the environment differently. Having a Greek barracks go up in flames might be positive for some and negative for others. Although the actual fire is environmental storytelling.

But it also allows the guests to experience the story while queueing for the roller coaster. Having this pre-show lets the guests watch the story unfold instead of just standing and waiting.

Scene 2: The Tree Pre-Show

*The guests flee outside to encounter a tree where some of the villagers have been nailed to. Leonidas appears and gives the guests a speech to **give hope**, but gives the option to exit the attraction and not continue to the chariots.*

After exiting the barracks, the guests now come into a courtyard where they can see a tree that

is covered in bodies and there seems to be no way through (see Figure 27).

Figure 27 Top down view of the tree scene location. By Frederic Caeyers.

1- Preparation

I wanted to design a scene so that Leonidas would be seen by the guests before going on

the roller coaster. This way he can evoke the epic feeling of the movie even before the roller

coaster begins by having Leonidas stand in front of the tree. I wanted to add the tree scene from

the movie in the beginning of the attraction, because just like in the movie, the Spartans come across it on the way to battle.

2- Final Design

For the second pre-show, I have the scene where the Spartans and Arcadians stumble upon the burnt village and find a tree with all the villagers nailed to it. I picked this scene as it is an important morale change in the movie as it pushes the soldiers to seek revenge, because it is such a provoking element. In the attraction the guests just came out of a burning room, so they need a motivational speech. I still implemented the choice for the guests whose morale doesn't get back up to exit and not ride. This also allows for people who cannot go on the roller coaster

Figure 28 Painting of the tree scene. By Frederic Caeyers.

to at least experience the show. The tree evokes the scene from 300 (Snyder, 2006) where the Greeks come across a burning village where all the villagers have been nailed to (see Figure 28).

Scene 3: The Village

Once having escaped the Persian attack, the guests find themselves inside a house where a chariot arrives. The guests board the chariot in four rows of four people and are now ready to start their roller coaster journey. The guests must ask the Ephors (priests) to get divine blessing to go into battle. But a difficult road lies ahead to reach the Ephors.

After having heard the speech from Leonidas, the guests have a choice to exit the attraction or continue to the house. In the house the guests will board the chariot to continue their journey (see Figure 29).

Figure 29 Top down view of the village location. By Frederic Caeyers.

1- Preparation

Before the guests get to the actual village, they would have to get onto the trains. For the trains, I tried to base myself on a chariot because this is one of the vehicles that would be used in Greece. The guests would have to board the chariots in a place
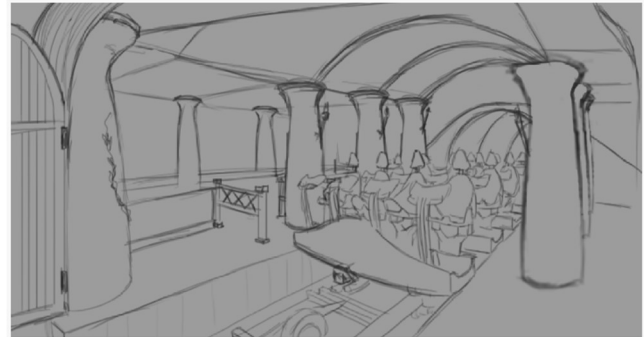
Figure 31 first design draft for the station. By Frederic Caeyers.

which represents Greece. I wanted the beginning to be somewhere relatable and not destroyed yet. Therefore, I tried to base myself on a house interior (see Figure 31). The guests would go into this kind of house to board the chariot. The house evokes safety and also the colors and warmth of Greece. So I tried to show this by having the pillars that are usually beige, have hints of red as well and the floor would be made out of tiles. The ceiling above the rails also has an indent to

Figure 30 Props from the game Assassin's Creed Odyssey. By Ubisoft (2016).

have a painting on it. The station can be accessed by wheelchair users by the left side and by the regular guests through the staircase and queue on the right side.

It is filled with Doric columns as the rest of the park, which gives the impression that this is indeed the underground level of a house. The columns will have small torches to give a warmly lit atmosphere. The exit of the station will be closed off with a door that will open when the guests are on the ride so that what is following is still a secret until the guests are already ready to go, in order to build on the feeling of not knowing what's coming next.

Figure 32 First iteration of the opening village scene. By Frederic Caeyers.

For the following village scene, I looked at different dioramas from *Assassin's Creed Odyssey* (Ubisoft, 2018) and how they depict a kind of market and village vibe (see Figure30). For example, I analyzed the types of materials that are used and how they can be added to the already existing buildings which I had in the courtyard to create a small village. I tried to design the village so it seems as if it was abandoned in a hurry because of the Persian attack (see Figure 32). Therefore, things are still in place and torches are still burning, but it is empty and only the eerie atmosphere and thunder can be heard.

I tried going for smaller buildings that are stacked next to each other. I also wanted to add a kind of overhang above the track to improve the leveling of the scene and as well to have an

Figure 33 Second iteration of the opening village scene. By Frederic Caeyers.

area to put the Spartan flags on to show that the Spartans have arrived. For the type of buildings, I looked for a city outskirts vibe (a small temple, a chimney, wooden construction, rocks) to give the impression that the chariot is going towards the outskirts of the city to arrive at the Ephor temple (which is in the mountains). However, the scene at this point felt too closed in and the temple seemed out of place with too big columns and too small a roof and it is obstructing the whole left side of the environment. This gives a feeling of being enclosed and vulnerable instead of being ready for battle. Therefore I changed the layout so the temple is angled more horizontally with the track and that the columns are thinner and the roof higher. This allows the scene to have a bit more breathing space, as it is still supposed to be the tranquil part of the experience (see Figure 33).

2- Final Design

To design the station of the coaster, I thought about the continuity from the previous scenes (burning armory, temple ruins) and how I can make an intermediate step into what is supposed to be a cozy town. Therefore, when coming from the second pre-show, the guests arrive in a typical Greek house where they see the train, or more specifically, the chariot for the first time (see Figure 35). I used mythological elements mainly for the train designs to have the chariots be dedicated to the gods (See figure 34). The red train is dedicated to Zeus which can be seen by the lightning bolts on the front of the train. The green train is dedicated to Athena, goddess of wisdom, which can be seen by the olive tree and owls on the front of the train. This reinforces how there is a mythological undertone and thus the attraction being surreal.
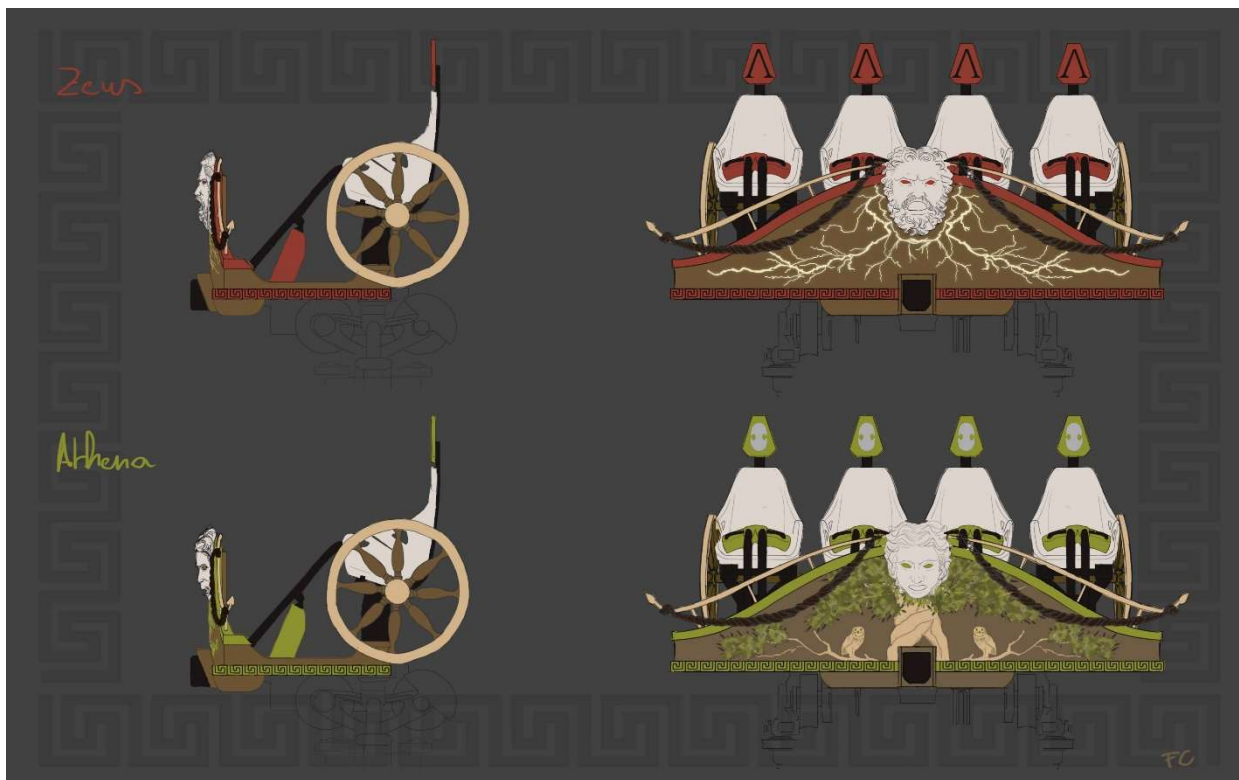
Figure 34 Designs of the trains. By Frederic Caeyers.

Figure 35 A painting of the station interior. By Frederic Caeyers.

The chariot rides through a quiet and calm village scene where the train rides through slowly (see Figure 36). Then thunder can be heard which is a metaphor for danger and to go seek shelter. The opening scene of *300: Rise of an Empire* (Murro, 2014) is characterized by its stormy atmosphere and slow motion lightning. Therefore I have lightning sound effects in the first scene of the roller coaster to evoke the second movie. I have a reference for the second movie just to acknowledge that there was a sequel made. The second movie starts with a battle during a lightning storm. The train begins speeding up and ends up in front of a tomb.

The empty town seems as if it has been abandoned because of the war, because there are no people and everything is left in place with the lights still on.

Figure 36 Painting of the village scene. By Frederic Caeyers.

Scene 4: The Ephors

The guests must travel through their lair which is found inside a tomb and climb the temple mountain. The Ephors do not agree that the soldiers should fight. Leonidas and the soldiers want to fight either way to defend Greece and their honor so they decide to leave the Ephors and go anyway, escaping by jumping down the cliff into the water below.

When the guests board the chariot, they go through a village to get to the Ephors to ask for permission to go to war with the Persians (see Figure 37).

Figure 37 Top down view of the Ephors location. By Frederic Caeyers.

1- Preparation

To build up the tension for the Ephors I thought about how I can build on the fear of the unknown for the guests. While riding through the empty village with eerie music playing, the guests will already have a sense of fear. So I did this by playing with the music and the sounds. At first I only had music but I tested it out and it didn't have a great impact on me, so then I decided to add some speech while the train enters the tomb. This had a much greater impact because the way the dialogue is said is very eerie and scary.

To get the look of the tomb and the interior, I looked at how *Assassin's Creed Odyssey* (Ubisoft, 2018) shows the Greek tombs in their game (see Figure 38). I did this because in *300* (Snyder, 2006) we don't actually see any tombs. In the game the tombs are dark with many pillars and full of snakes. From playing the game, the first time I went into a tomb I was scared because I didn't know what to expect.
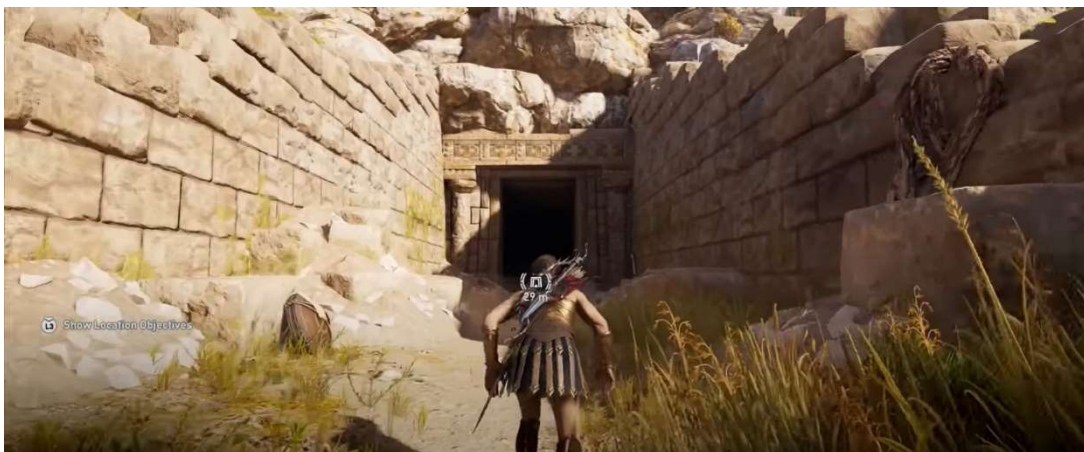
Figure 38 Screenshot reference from Assassin's Creed Odyssey. By Ubisoft (2016).

2- Final Design

The scene is a path the guests need to take to get to the top of the temple to ask the Ephors for permission to go to war. However the Ephors are corrupt monsters. So I wanted to suggest to the riders in advance that this is not a positive journey.

Figure 39 Painting of the tomb entrance, By Frederic Caeyers.

The train slowly goes inside the foggy and broken tomb (see Figure 39). The tomb is a place where the Ancient dead rest, but because the tomb is broken it means that the dead are not resting as they have been disrespected. The main hall is also destroyed; the pillars have fallen to the ground which has caused the roof to collapse. The pillars are a metaphor for stability and strength, but they have fallen so it means that there is no stability anymore; a sacred building is destroyed, which is an insult towards culture and respect. Until now nothing is going well, and the train is being guided further into darkness.
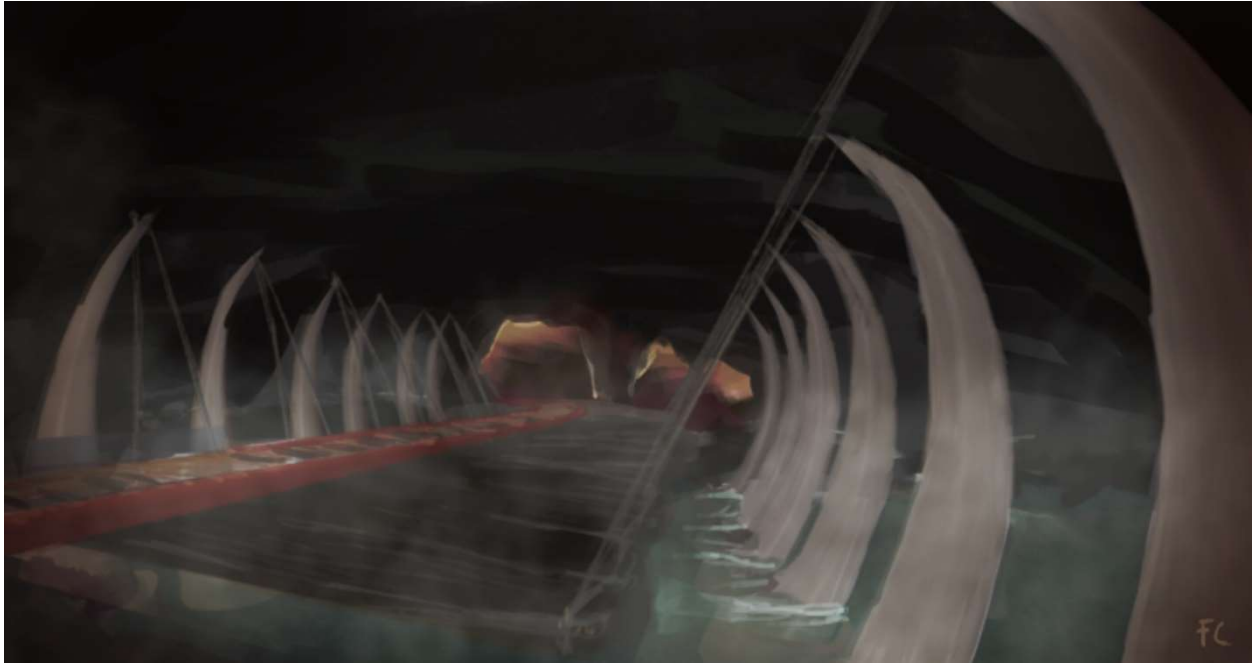
Figure 40 Painting of the elephant tusk bridge. By Frederic Caeyers.

The train then continues through a broken wall and comes inside a cave system. There is a small river with a wonky wooden bridge over it that is held up by elephant tusks (see Figure 40). The water is a metaphor for that there still is life and hope even in this dire situation. It is widely known that water signifies life. Because for example the Nile runs through the desert, but around the Nile there is greenery and plant life. However the elephant tusks mean that there were elephants killed to support this bridge, this is a metaphor for the Persians being here because elephants did not exist in Greece and in the movie we can see that the Persians use elephants. Yet the cruelty of these tusks holding up a bridge is what is directing the train towards the Ephors.

So by now the metaphor shows that the way towards the Ephors is filled with death and destruction and cruelty, which shows that the Ephors are not 'good' and that they have sided with the Persians against the Greeks. After having passed the bridge, the train passes through the mouth of a huge snake skull. Following Genesis, snakes stand for cunning and sneakiness, as

well as evil. The snake skull allows for a scene of initial fear by its grandeur and sharp teeth. But also allow for a metaphor for that the Ephors are snakes, or more specifically traitors. Because they have been corrupted by the Persians to betray the Greeks. This is also why they had built the bridge out of elephant tusks; which were not to be found in Greece, but only in Africa and Asia, which the Persians controlled.

While passing through the caves, there are voices coming from the distance saying how Greece will fall. But then when the train arrives near the snakehead, it is clear because of the gold that the Ephors have been bribed. By the point the train reaches the chain lift, it's clear this is not going to be a happy story (see Figure 41).

Figure 41 Painting of the snake mouth. By Frederic Caeyers.

The train then comes to a complete stop inside the snake's mouth. And slowly starts getting pulled up vertically inside the snake. The train, being surrounded by guts, continues up when the outside light starts shining at the end of the tunnel. When the train is reaching the top, pillars start to become visible surrounding the opening. It is now clear that this is the temple on the cliff which can be seen from the park pathways. The train then stops at the top where the riders get an overview of the park for a few seconds when suddenly the train is set loose and gets dropped straight down (see Figure 42) underneath the pathway and gets shot up the other sides to go back into the mountains.

Figure 42 Painting of the temple drop. By Frederic Caeyers.

Scene 5: The Library

The chariot takes the guests back to the village to what is the library. Here the library is once again under attack by the Persians and the scrolls and flags catch fire. The guests try to flee by reversing, but Leonidas gives them the courage to continue to the village.

After having escaped the corrupt Ephors, the chariot gets back into the city and more specifically to the library. When the Persians set it on fire (see Figure 43).

Figure 43 Top down view of the Library location. By Frederic Caeyers.

1- Preparation

For the library launch scene, I looked at references of ancient libraries and how they had walls full of scrolls as well as statues of busts around the room. I first started with a basic

triangular roof structure and having columns on the end of the room, but this was very boring and had nothing to do with the story and wouldn't be interesting to see burn as it has no narrative impact (Figure 44). So I tried
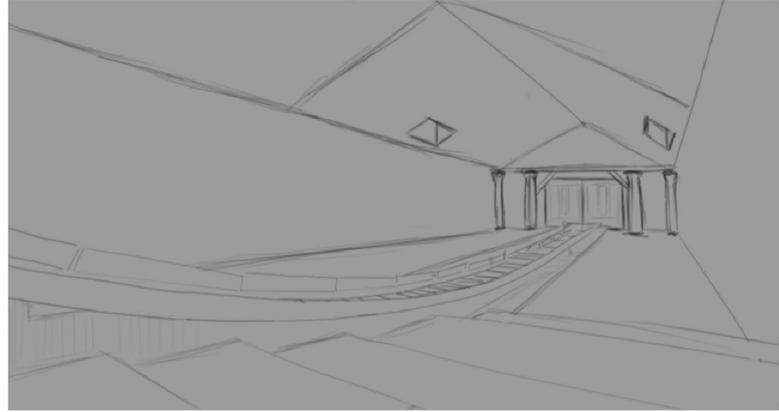
Figure 44 First iteration of the interior building scene. By Frederic Caeyers.

making the interior a bit cozier by adding an open roof with a balcony and some more columns (see Figure 45).

Yet the room still seemed to empty and not important enough to be seen burning.

This is because I was having struggles to find good reference for interior pieces as in the movie *300* (Snyder, 2006) there are not any interiors, and most real-life references of Ancient Greece are ruins without intact interiors. I did find some visualizations of libraries, which could work great as the scene where the train will reverse, as a library is another symbol of civilization and if this catches fire it is an attack on knowledge, and is disrespectful of a civilization. For example, the burning of the library in Alexandria in 48 BC, which caused the loss of thousands of years of knowledge.
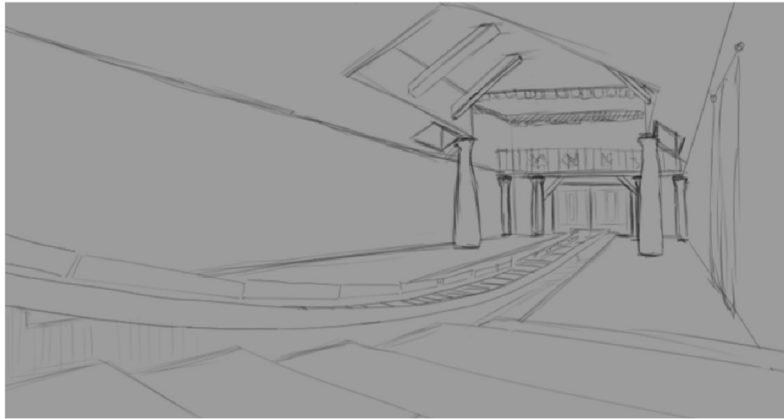
Figure 45 Second iteration of the interior building scene. By Frederic Caeyers.

Therefore I designed the room to hold scrolls (as there were no books at this time yet) and also some statue heads. Now seeing the room burn should make the riders feel bad and scared as a library is almost something sacred. I also added some drapery which would make the fire spreading more logical. I also added more columns because while researching ancient Greek buildings I noticed that the buildings were supported by a vast number of columns. Such can be seen in the stoas all over Greece. A
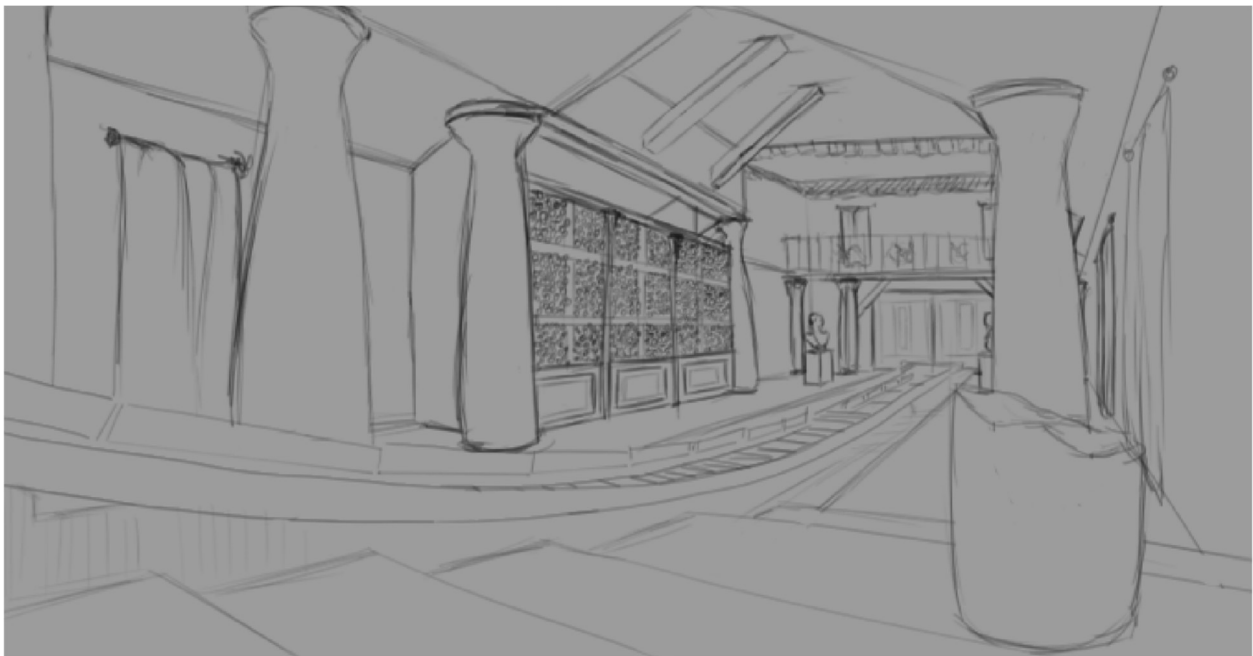
Figure 46 Sketch of the library scene. By Frederic Caeyers.

stoa is a long-roofed corridor, mostly found around marketplaces, to protect the citizens from rainfall or harsh sunlight (See Figure 46).

78
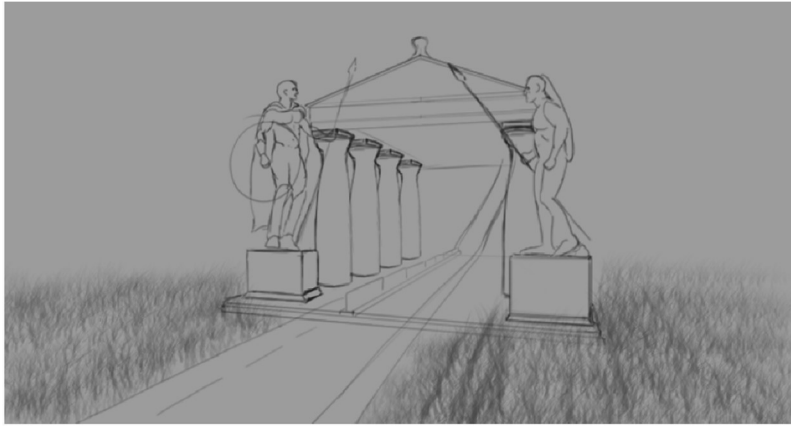
Figure 47 The first iteration of the launch scene. By Frederic Caeyers.

For the next chronological scene, I thought about having the train exit the burning building and entering the fields that are so prominent in the movie *300* (Snyder, 2006). The fields are a metaphor of a calm before the storm. In the fields I had to make a transition to the destroyed village, therefore I went for a basic Greek temple look and added two statues in front of soldiers to symbolize that the battle has started. The launch will start when the chariot reaches the statues and the columns close by the track will make the chariot seem even faster than it is (see Figure 47).

The launch will feel as if you are pulled into the darkness that lies beyond the entranceway, like pushing your foot completely down on the gas pedal in your car.
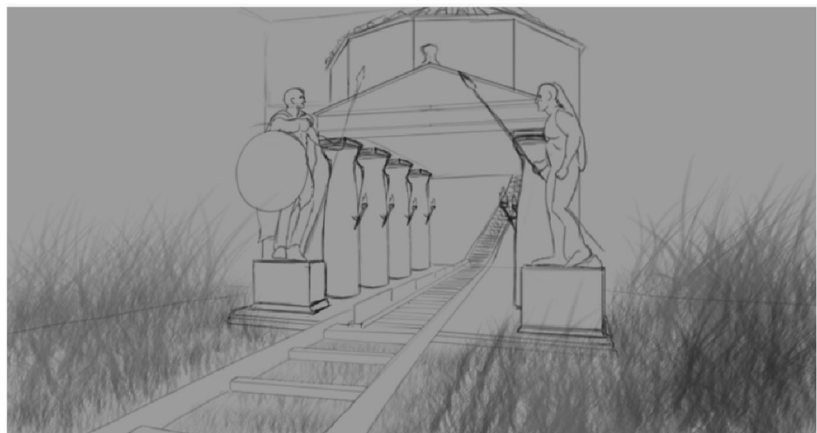
Figure 48 The second iteration of the launch scene. By Frederic Caeyers.

I then decided that it should be somewhat visible that the entrance goes into a high building (because the loop after the launch is high) so I added this building and I also decided to make the grass taller so that the back walls would be hidden a bit more (See Figure 48).

2- Final Design

For the library I used references of Greek and Roman library interiors. The library will start catching complete fire while the train stops inside the room, right before it flies out of the building. The guests will hear a voice screaming from outside the library that the Spartans have to surrender (see Figure 49).

Figure 49 Painting of the burning library. By Frederic Caeyers.

When the train reaches outside, it comes into the wheat fields that we can see in *300* (Snyder,

2006). Just before it accelerates through the entrance gate to get back to the city (see

Figure 50).

Figure 50 Painting of the wheat field temple. By Frederic Caeyers.

Scene 6: The Burning Village

The guests accelerate through the burning village in search of the Persians but they get pushed in between cliffs where the Persians are shooting arrows at them.

Quickly making their way after the Persians, the chariot now finds itself in the street of the cliffside village which is already burning down (see Figure 51).
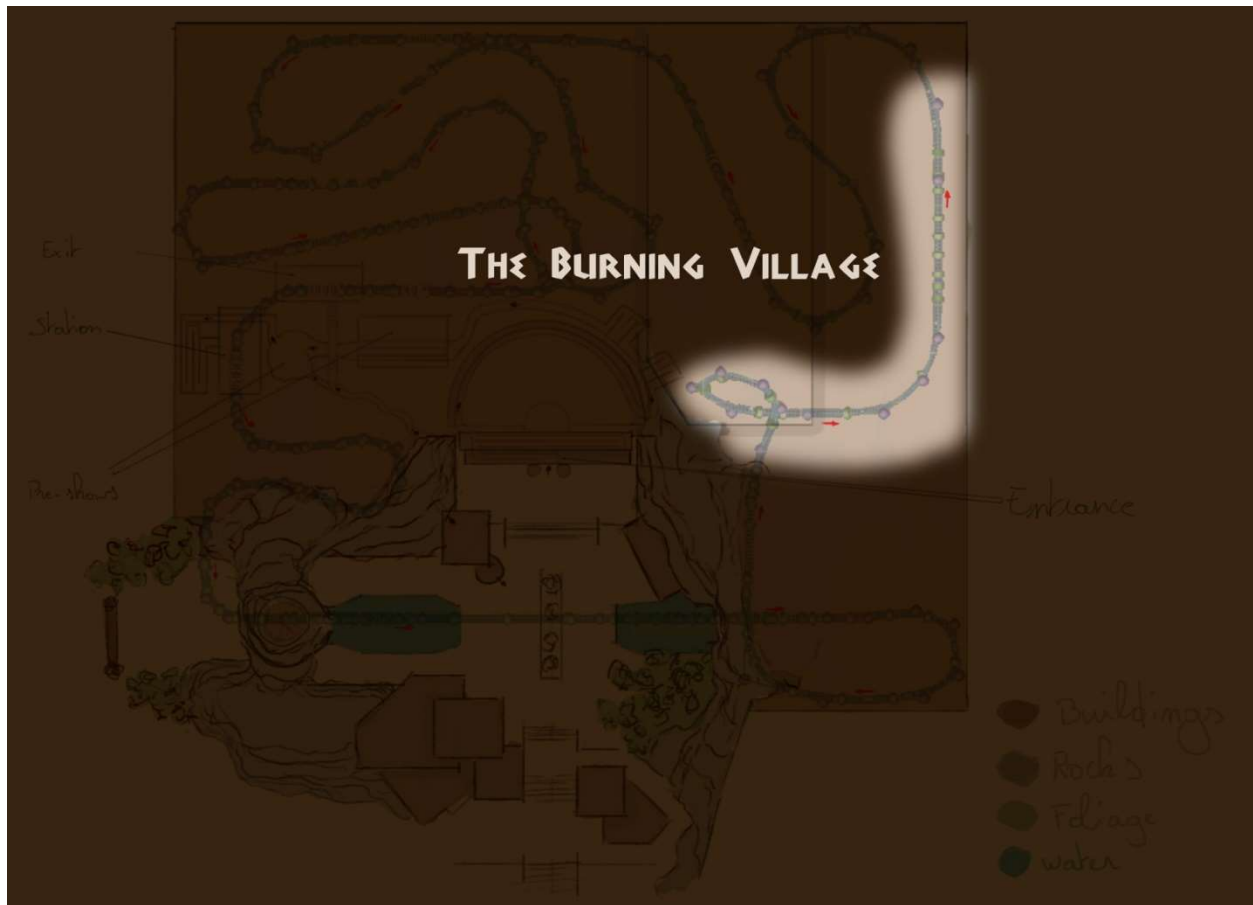
Figure 51 Top down view of the Burning Village location. By Frederic Caeyers.

1- Preparation
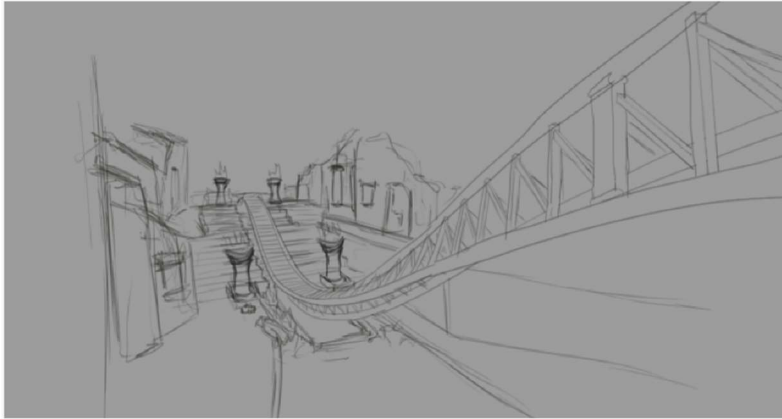
Figure 52 The airtime hill destroyed village scene. By Frederic Caeyers.

For this scene I had the idea of having the airtime hill go over some kind of stairs that are in the middle of the city street (see Figure 52). The coaster passes through some fire cauldrons because these could be found all over ancient Greek cities to light up the main streets. As for the buildings I just went for basic designs as can be found outdoors and in the opening scene, but now I drew them so they are destroyed. I will also add fire all around in the windows. The red color of the fire will be a symbol for fear and the fire will give off heat so that the riders feel it which adds another level of fear. I will also have to add some Persian weapons and elements around this scene to show that it is indeed under attack by Persians.

2- Final Design

Figure 53 Painting of the burning city. By Frederic Caeyers.

In general the train will pass through here so fast that the riders will not notice many details except seeing some burning buildings. Instead I wanted to focus on the compact layout of the track full of small bunny hops as well as sharp and tight twists and turns. This will make the riders feel as if they're being thrown from side to side and that they will fly out of their seat and thus that they are not in control and losing (see Figure 53).

Scene 7: The Cliffs

The chariot manages to dodge the arrows and arrive on the top of the cliff where the chariot pushes the Persians down the cliff but fails to stop so gets dropped off the cliff as well.

The chariot flies out of the village to follow the Persians to the cliffs to get rid of them once and

for all (see Figure 54).

Figure 54 Top down view of the Cliffs location. By Frederic Caeyers.

1- Preparation

My ideas for this particular scene changed a lot overtime. At first my plan was to not even have cliffs, but have the chariot pass
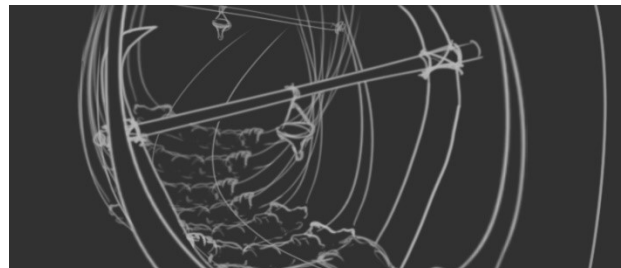
Figure 55 Sketch of bone structures. By Frederic Caeyers.

through a bone structure to have a metaphor for death (see Figure 55). But as I already used this in the previous scene, it would be lazy to use the same idea again. Then I went with the idea to only have the upper cliff section where the chariot would arrive in a Persian camp. The camp would include a tent with some Persian soldiers guarding it (see Figure 56). But this scene would've been too different from the burning village to be consequent.

Therefore I decided that the village would be a cliffside village and that the path out of the village would require the chariot to go in between the cliffs, which evokes the hot gates from in 300 (Snyder,2006) and the way up could be seen as the goat path that

Figure 56 Sketch of the cliff scene. By Frederic Caeyers.

the Persians used to defeat the Spartans. The cliffs itself would be a bit too boring; therefore I had the idea that while the chariot rides through, that it could be under fire by arrows.

When the chariot reaches the top of the cliffs, it comes in front of a destroyed temple where an elephant comes marching through the entrance towards the riders right as the chariot drops down into a pit. The soldiers can still be projected onto the smoke that can be found in this area, but the most important aspect would be the elephant.

2- Final Design

Figure 57 Painting of the cliff drop. By Frederic Caeyers.

The final scene depicts the chariot coming towards the cliff edge, which is not visible

due to the smoke (see Figure 57). So the riders will not expect to drop straight down at all. The

elephant coming forwards above the drop is an evocation of *Jurassic Park: River Adventure* at

Universal Studios, where there is a T-Rex who does this. I felt that having a big elephant is quite

frightening. When looking at the Persian empire, one of the things that stands out is the use of

elephants. It was because of these elephants that the Persians had such a military advantage

over their rivals, due to their sheer size and power. This power and size is dramatized in 300

(Snyder, 2006) and used as a hindrance for fighting on a cliff. I also added light coming from the

Underworld so that the elephant is lit from beneath, which makes it seem even bigger than it is.

The smoke in the scene allows for projectors to project Persian soldiers inside the room and

have them be animated to fall inside the pit as the train arrives.

Scene 8: Underworld

The guests, now clueless, find their way through the sharp rocks and lava where they encounter a massive stone head.

Having defeated the Persians, the chariot now finds itself in a volcanic cave (see Figure 58).

Figure 58 Top down view of the Underworld location. By Frederic Caeyers.

1- Preparation

I took reference from the movie *Clash of the Titans* (Leterrier, 2010) and its sequel that the underworld seems like a volcanic area. But the idea could evoke any type of hellish landscape such as even Dante's Inferno (see Figure 59).

Figure 59 The second iteration of the heartline roll scene. By Frederic Caeyers.

Therefore I added volcanic rocks with some vents. The chariot would do the inversion above one of the vents where the smoke of the volcano would hit the guests. The heartline roll is also following a rock archway so it seems as if the chariot is riding on the rocks. There will also be lava flowing underneath the chariot to continue the red theme and have the heat of the underworld.

However I shortened the length of the underworld to just be the track between the cliff drop and the launch after and instead having Elysium be the whole last two sections.

The underworld section now only takes about three seconds to pass through, but I still wanted to keep it to have the big contrast between the red and heat from the lava and afterwards the blue and the calm of paradise.

To have a transition between the two I added a big stone head where the chariot will go

through its mouth to reach paradise. It acts as a gateway and by the yellow light coming out of

its eyes along with a thunderstrike the riders will understand that this is Zeus coming to save the

brave soldiers from the Underworld.

2- Final Design

Figure 60 Painting of the Underworld. By Frederic Caeyers.

The chariot drops down the cliff on a 100° steep descent into a cave full of spewing

volcanoes and running lava (see Figure 60).

Scene 9: Elysium

The head opens its mouth and makes the chariot accelerate through the mouth out into what seems to be paradise; a landscape full of flora and water where the chariot 'dances' on the trees and on the rocks. Finally arriving at a temple-like structure. The chariot is slowly lifted upwards in a room with water running next to the track and finally making a turn into the temple that is the station and getting off.

Zeus grants the chariot passage to paradise because of the riders' bravery. This can be seen by

the light starting to shine while the riders are in hell (see Figure 61).

Figure 61 Top down view of Elysium location. By Frederic Caeyers.

1- Preparation

Initially Elysium was only going to be the final turn of the roller coaster (see Figure 62). But this changed when I decided to shorten the Underworld. Now Elysium starts from the final
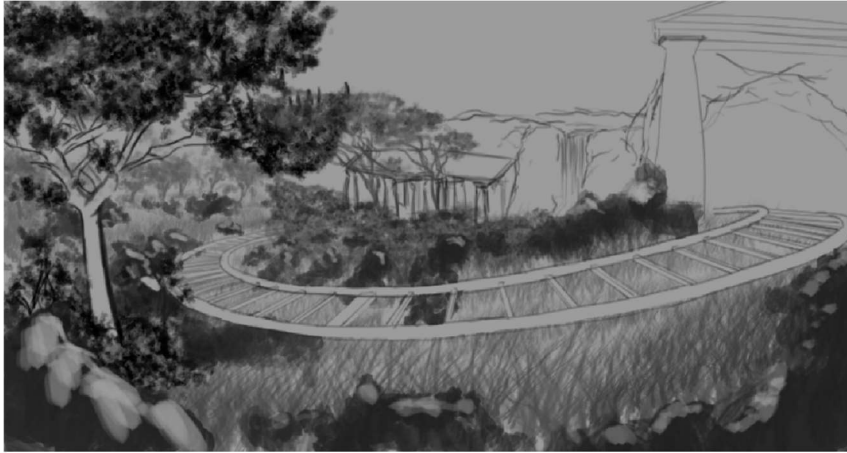
Figure 62 A sketch of the final turn into the station. By Frederic Caeyers.

launch until the station.

When the train reaches the top of this lift hill, a door opens, revealing a garden full of plants and trees and a waterfall. The plants symbolize life, even though the guests are in Elysium, they have saved the village from the attack. The chariot then enters a type of bastion where the guests get off and exit to the park again.

I wanted Elysium to be like a dance through nature with a lot of water, as up until now there mostly has been lava and fire. Water is the opposite of this. The water also feels magical due to it giving light. The idea of having magical water allows for the scenes to be seen as mythical.

2- Final Design
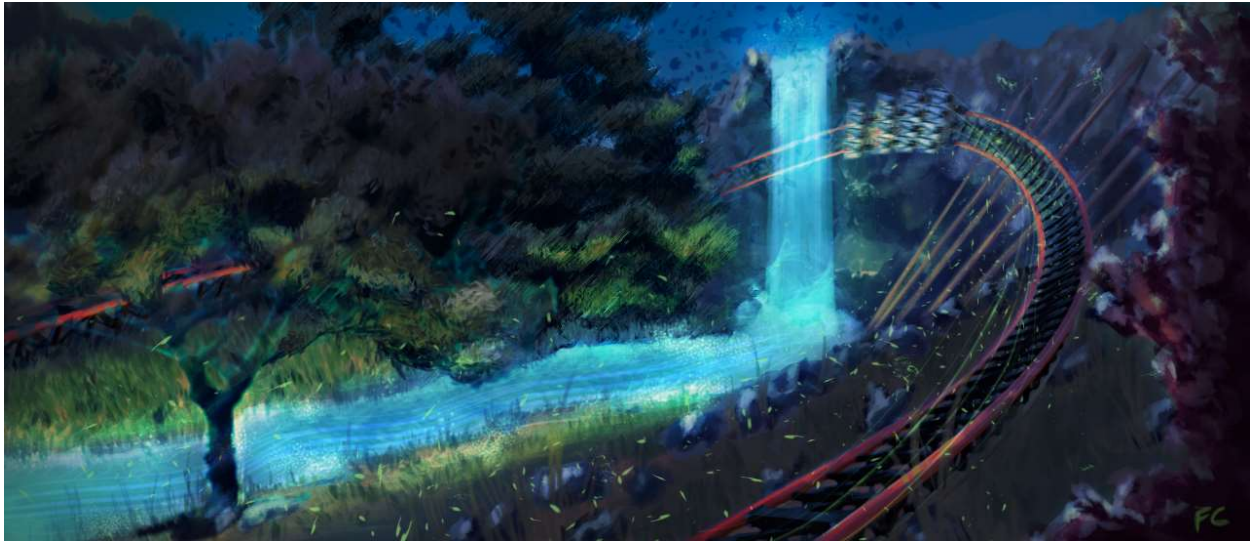
Figure 63 Painting of the Elysium waterfall. By Frederic Caeyers.

The first thing that the riders will see when entering Elysium is the waterfall. The chariot

will skid against the cliffside underneath the water, which will have a chance of getting the riders

a little wet and after that continue to dip towards the river and in between rocks (see Figure 63).
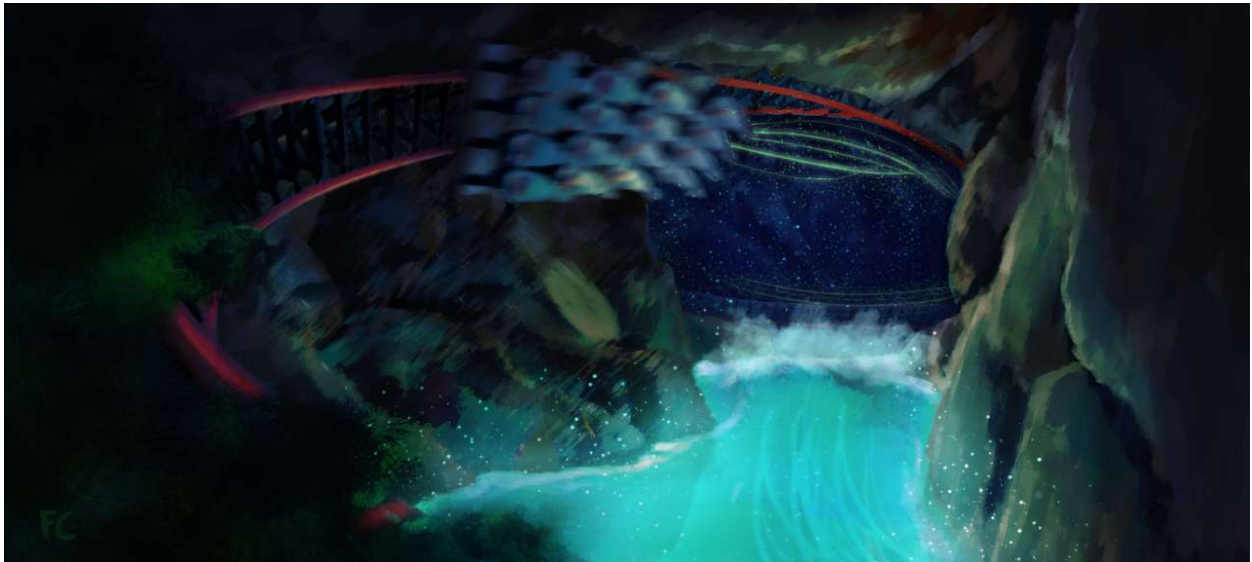
Figure 64 Painting of the barrel roll. By Frederic Caeyers.

The chariot then enters a cave where the track makes a wide turn around a waterfall pit and transitions into a barrel roll over the river (see Figure 64). The train then moves down through the river to make a splash and arrive in a temple. The temple has a courtyard full of olive trees and a dark hallway. The olive tree is the symbol of the goddess Athena in Greece and thus this is why I chose to add them to evoke people's feeling of Greece.

Figure 65 Painting of the fire ascend. By Frederic Caeyers.

The chariot enters the hallway and the cauldrons on top of the pillars get lit. Water also starts running down the steps next to the track while the chariot slowly ascends towards the big doors (see Figure 65).

The doors open and reveal a peaceful garden full of olive trees and a waterfall. The chariot slowly goes around the turn and rides into the temple to come back into the station (see Figure 66). The exit station is not the same as where the guests boarded the ride. As I did not want the guests to see the people who come off the ride as this would break the immersion of later being in Elysium.
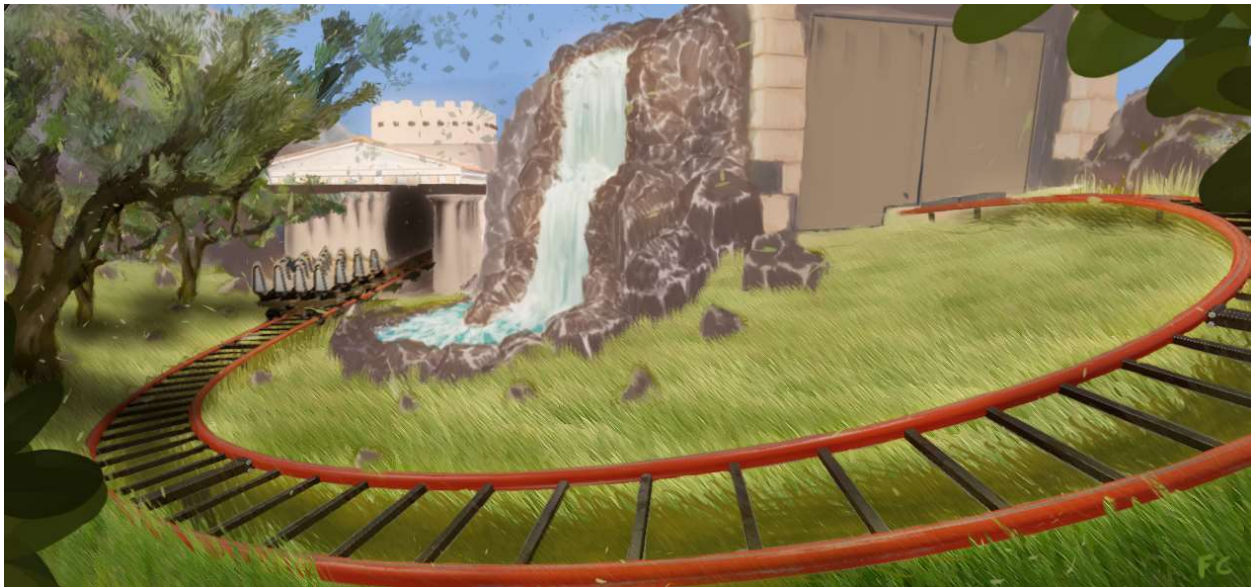
Figure 66 Painting of the final turn. By Frederic Caeyers.

4.3- Conclusion on the attraction

All in all, this attraction primarily aims to entertain and to make people forget about their daily lives and imagine that they are transported to ancient Greece. This is why I paid attention to all the different aspects of Greek architecture and mythology. I even made sure that guests who cannot ride roller coasters would be able to enjoy the environment by having a themed land and pre-shows after which the guests can exit the ride once having seen the shows. There is also a way for handicapped people to enjoy the ride by having an accessible entrance and exit without any stairs.

Secondly, the attraction is meant to emotionally move the rider. This experience can vary from person to person, but my goal was to include different emotions like, for example: courage, fear, sadness. I wanted to adapt *300* (Snyder, 2006) and create an immersive environment for guests to enjoy. Therefore the details of the *environmental storytelling* were very important and I put a lot of work in applying Jenkins' concept and respecting the movie's synopsis. This is why I also made sure to have a video of the roller coaster to allow everyone to visualize the atmospherically immersive experience by having the final sound and music that I took from the movie. I designed the coaster track to align with the soundtrack of the movie and that the different elements move along with the music.

I also sought to challenge the popular opinion that death and war is something which is best avoided in a theme park environment (Carlà-Uhink, 2020) as my whole narrative is based on

war and death. I am convinced that it is difficult to tell stories in such an historical context without accepting that there were these themes and actually showing them to the audience as a movie would. These themes should not be ignored, more specifically war, which was such a big part about ancient Greece. For example, *Revenge of the Mummy* at *Universal Parks & Resorts* also incorporates 'death' as theme, but hides it as guests "serving for eternity". In my opinion, this is even worse than death. Therefore I chose to treat these themes of death and war.

5. DISCUSSION AND CONCLUSION

This research asked the questions of **how the concepts of environmental storytelling can help design movie-based theme park attractions** and how theme park environmental storytelling works.

Through my creation I explored the four different types of *environmental storytelling* that Jenkins wrote about: *evocative spaces, embedded narratives, enacting stories, emergent narratives*.

In this last part, I will discuss Jenkin's models in relation to my creation. First, I will see whether these four have been useful in designing my attraction or not. Secondly, I will suggest modifications to the model, which will constitute my formal contribution to knowledge on theme parks.

5.1- Using the four types of environmental storytelling

Globally, *evocative spaces* were the type of space I used the most in my creation. In general, I tried paying attention to adding *embedded narratives*, *enacting stories* and *emergent narratives* but these were very difficult to implement inside a theme park roller coaster.

5.1.1- Evocative spaces

I encountered a variety of types of *evocative spaces* that apply to my creation, so therefore I classified these while reading my logbook. My whole creation is a mix mash of these five reference types, and each brings another look on the world that I created.

Film

As my creation is based on *300* (Snyder, 2006), I had to pay the most attention to evoke the movie in the attraction. The ride must make guests think about the movie and make them remember from when they saw it. I looked at the scenes from the movie where we can actually see the city of Sparta. From those scenes I took the roofs and pillars as well as their colors to design the buildings in the attraction. Like for example the cliff temple, it plays a role for the first drop of the roller coaster. In the temple scene in the movie, Leonidas wants to ask the Ephors for their blessing to go to war and defend Greece from the Persian invasion. But he soon realizes that the Ephors are corrupted and have been bribed by the Persians to not let Sparta go to war. This is thus a pivotal scene in the story where Leonidas decided to go against traditions to fight.

For the second pre-show, I have the scene where the Spartans stumble upon the burnt village and find a tree with all the villagers nailed to it. I picked this scene as it is an important morale change in the movie as it pushes the soldiers to seek revenge, because it is such a provoking element. In the attraction the guests just came out of a burning room, so they need a morale boost. I still implemented the choice for the guests whose morale doesn't get back up to exit and not ride. This also allows for people who cannot go on the roller coaster to at least experience the shows.

The opening scene of *300: Rise of an Empire* (Murro, 2014) is characterized by its stormy atmosphere and slow-motion lightning. Therefore, I have lightning sound effects in the first scene of the roller coaster.

However, the notorious evocation of the movie is how evil the Persians are. I could not ignore this message and I had to choose between having a politically correct creation or staying true to the movie and portraying the Persians in this way. I opted to not show many Persians and just imply that they are there except for one scene.

I also used a lot of spears which play an important role in *300* (Snyder, 2006). Spears were seen as very effective weapons in the Bronze Age as they allow the soldier to keep a far distance from their enemy yet still perform killing blows. A sword forces the soldier to get close to their enemy which allows the enemy to get close as well. The spear is the characterizing weapon of

the Spartans and it is this weapon which allowed them to hold back the Persians. Although a spear by itself can be seen as a symbol for danger due to its long, sharp and triangular shape. I am using the spears as supports for the roller coaster track. So it seems that the spears which allowed the Spartans to fight the Persians are also helping to support the riders on their path.

On top of that I added a lot of columns because by looking at the references, this was what stood out to me the most when looking at references of Greece. I used the column type from the movie, it is thicker than the historical counterpart, so these pillars evoke the movie more than real life. It also adds a bulkier and stronger feeling instead of elegant and slick.

The colors are also something I tried focusing on as the movie *300* (Snyder, 2006) has a very specific washed-out color palette and this has a big impact on the atmosphere of the movie. The washed-out colors allow for the dark and gritty feeling I got while watching the movie. There are no standout colors except for the red capes of the Spartans. The impact this has is that the only memory of color in the movie I have after having watched the movie is red. The red color comes from either Spartan flags or fire. The movie is very desaturated and uses a dominating sepia color filter. That is also one of the reasons I chose to have the roller coaster indoors, so I can have control over the complete color palette and lighting. If the ride were outside, a sunny day would change the way we perceive the colors as happier. The colors evoke the color atmosphere of the movie by using sepia/beige for most of the environmental objects.

History

When there weren't any references from the movie that I could use, I looked at actual Greek history to complement the movie elements. For example, I used plants like the olive tree that can be found in Greece. I also looked at historical theaters as reference for mine. But I mixed the entrance with elements from the movie. The theater shape itself is based on actual historical theaters in Greece. But I added the thick columns that we can see in *300* (Snyder, 2006) as well as a spartan shield, spears and helmet. I also looked at temples like the pantheon in Athens and other temple structures to use as reference for the small temple in the opening scene of the roller coaster as well as the temple right after the library scene.

For the reverse launch scene, I looked at references of ancient libraries and how they had walls full of scrolls as well as statues of busts around the room.

Games

Because of the lack of scenes in *300* (Snyder, 2006) where we can see buildings and houses, I had to look elsewhere for reference. Therefore, I looked at *Assassin's Creed Odyssey* (Ubisoft, 2018) as it is set in roughly the same period and has a lot of different buildings. For example, you can see the rooftop sunroofs that I used on the restaurant. The game has also used elements from *300* (Snyder, 2006) such as the Spartan kick and the story of Leonidas.

I used the video game as a hope that people will know the game from either playing or having seen videos of it.

Mythology

It is difficult to talk about Greece without tackling mythology, it is such a deep-rooted link to the country that if I use one I have to include the other. In my creation I used mythological elements mainly for the train designs to have the chariots be dedicated to the gods for protection. The red train is dedicated to Zeus which can be seen by the lightning bolts on the front of the train. The green train is dedicated to Athena which can be seen by the olive tree and owls on the front of the train.

Mythology is easy to evoke as it is widely taught in classrooms and the general public thus knows about it.

Sound

Another thing I noticed is that it is very difficult to create an *environmental storytelling* experience just through art. It is somewhat possible, but you miss one of the biggest aspects of theme parks: sound. A theme park does not work without ambient sounds and music. The music is there to amplify the play on emotions for your immersion inside the story. What is also needed to tell the story is characters who speak. It's always better to play with sound as you do not want to make the guests read. Unless they are hearing deficient, and you need text for that situation. Text also does not bring over the emotion that a voice can.

The movement plays a big part of the sound as well. If the train goes quicker, then the sound should be more dramatic or have more beats per minute. If the train goes slowly then the music also becomes slower or more relaxed.

The sound also evokes the memories people have of previous experiences. For example, in the attraction I put the theme song of the movie, so this song gives people the emotion that the movie conveys.

All in all, *evocative spaces* were the most useful type of *environmental storytelling* to design my attraction. I used it in each scene, and it really helped me to have a narrative that is linked to the already existing information.

5.1.2- Enacting Stories

The *enacting story* concept is found inside my creation: it is the part around the big drop. As this is the area where the guests will walk around and choose whether to go on the attraction or just take pictures, visit the shop, go to the restaurant and explore the area. The guests are free to do what they want inside this themed land.

> Once again, we are back to principles of environmental storytelling: organizing the plot becomes a matter of designing the geography of imaginary worlds so that obstacles thwart and affordances facilitate the protagonist's forward movement towards resolution (Jenkins, 2007, p.58)

What Jenkins writes is that there have to be elements inside this open environment that guide the guests and players towards the next objective. I tried doing this by creating a staircase that continues up the mountain and reaches the biggest and monumental building of the area: the theater. The theater has an entrance gate of the roller coaster with two big columns that have running blood in them as well as a shield and spears which say the name of the attraction. So even though the temple on the hill catches people's eyes and shows the grandeur of the roller coaster, the guests should not have a problem finding the entrance to the attraction.

5.1.3- Embedded Narratives

The only embedded narrative that I have in my creation is that when the guest enters the land, they do not know what has happened here yet. It is only when they go deeper inside the village and towards the theater that the guests get to see the destruction caused by the Persians. Only when the guests continue in the attraction, they learn that the village is actually under attack; that's why there are chariots flying by the village and the theater entrance being broken. But quite quickly this embedded narrative becomes the main narrative, and the guests are in the middle of the battle against the Persians.

5.1.4- Emergent Narratives

Due to the nature of *emergent narratives* as being a 'sandbox' where the player can create their own worlds and stories, it cannot be found in my attraction, as there is only a directed pathway. Therefore, I do not have any emergent narratives within my attraction.

All in all, the *evocative space* was the most useful in my creative process. However, the model does not explain how to set a new kind of environment that isn't based on anything existing.

I drew a figure showing the respective importance of the different dimensions of Jenkins for theme park immersion (see Figure 67) according to my results.
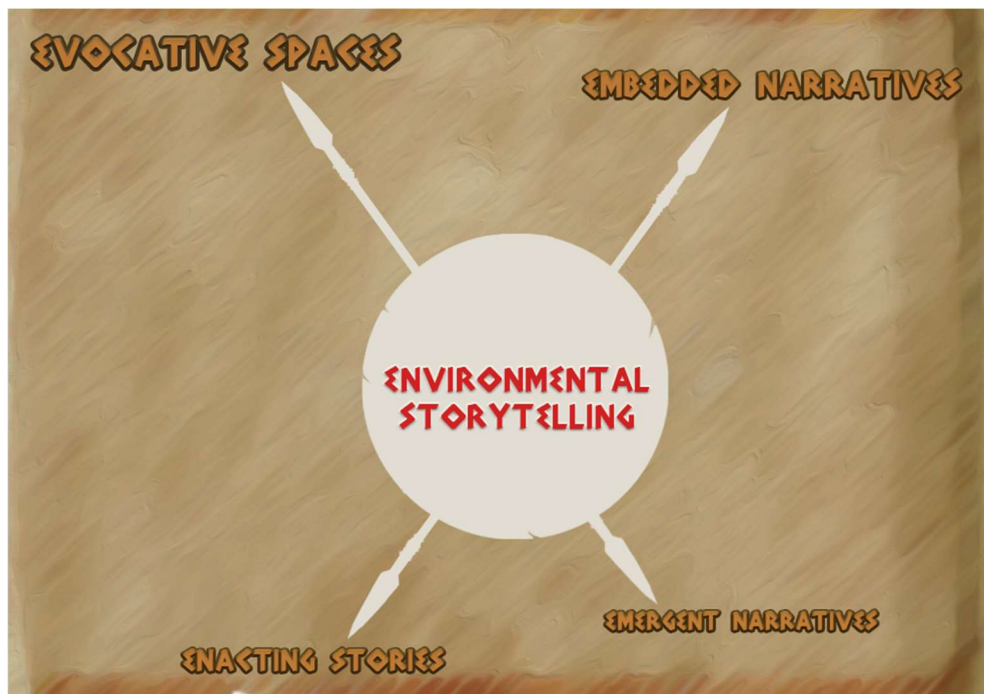

Figure 67 Environmental Storytelling schematic based on Jenkins' concept, adjusted after my results. By Frederic Caeyers.

5.2- Going further; Another form of environmental storytelling in theme parks: Kinetic narratives

One of the things which I noticed which had to be focused on a lot and cannot be found in the *environmental storytelling* model (Jenkins, 2007), is that the layout of the track along with its elements are part of the storytelling. If the coaster goes slowly, it means the area is more relaxed and the focus lies on the guests looking at the environment. If the coaster goes quickly, the focus is more on what physical forces are acting on the guests, such as the airtime and g-force, than the environment. The type of environment will also change depending on the speed and intensity of the coaster. For example, parts where the coaster flies through don't need as much detail as parts where the coaster goes slowly.

The track of a roller coaster is arguably its most important element: without track, there is no ride. The track defines whether the roller coaster is suited to a 'kiddie', 'family' or 'intense' market, which ultimately determines the height and speed of the attraction. Another variable is the type of roller coaster and the manufacturer. This choice defines what kind of elements the roller coaster can have and what kind of trains. I chose a *Gerstlauer Infinity Coaster* because these have short trains with lap bars. Lap bars allow for the guests to move their upper body freely and look around. If I had chosen a train with over the shoulder harnesses, then the guests would be stuck in one place and not be able to immerse themselves into the environment as much. The short train also allows for a more compact layout which saves space and allows the track to perform tighter turns which elevate the intensity. My goal was to design a family-friendly attraction that also includes some intense and frightful elements. Having inversions is also part

of the storytelling: for my creation I am focusing on having the train (a chariot) appear to ride on the ground as if it were a real chariot. Therefore, to ensure inversions make sense story-wise, I have the barrel roll in an area where the ground is water; the chariot rides on the rock walls to avoid this water. The last act is set in heaven and the chariot is doing a kind of victory 'dance' through the environment to celebrate having saved the village.

Jenkins almost purely focuses on static environments but doesn't focus on the movement through them. The speed of a roller coaster can also be seen as the speed in which a character in a video game runs or drives or flies. In this schematic (see Figure 68) below, I chose to add the Kinetic dimension, it is between the dimensions of *evocative spaces* and *embedded narratives*.

Figure 68 My Environmental Storytelling schematic. By Frederic Caeyers.

5.3- Limits to environmental storytelling in parks: Cinematic narratives

Cinematic narratives are very important in theme parks as the use of pre-shows allows the guests to experience the backstory before the guests actually go on the attraction. Cutscenes have become such a pillar in storytelling in video games that it is as if cinema has taken over video games. These 'cutscenes' can also be found in theme parks. The guest can be put in a room where they have to watch a show or watch a movie and only by doing this can they progress through the environment. In my creation in particular, I have two shows where the guests get to experience a fixed scene and only by experiencing it do they have the ability to continue.

These types of narratives allow for the creators to have full control over what story and message they want to send to the players or guests. Because now the players don't have the freedom to roam around. As stressed by Jenkins, this is classic storytelling. But it is sometimes needed to tell a coherent story to prepare for the environment. This is not specific to video games or theme parks.

This brings another negative point: the language barrier. When there are tourists from another country who do not speak the language or a hearing deficient person then the story in the film is completely missed and even though it is possible to have subtitles in the most common languages, it is not possible to have subtitles in every language which exists.

Due to this barrier of language, the environment becomes even more important because it is universal. There might be some minor changes in how different cultures view things but overall, everyone gets the same images. In the first show even without understanding the language, you would see the walls catching fire and in the second show the tree has bodies attached to it, so this is a big storytelling element without any dialogue.

5.4- Conclusion

To summarize, the answer to the question "How can the concepts of environmental storytelling help design movie-based theme park attractions?" is that *environmental storytelling* (Jenkins, 2007) is a great way to tell a narrative in a theme park, especially *evocative spaces*. Moreover, the techniques used in video games and movies are very pertinent for theme park design and thus further solidifies that theme parks are *transmedia*. Having the concept of *environmental storytelling* in mind while designing an attraction will help to tell a story that immerses guests inside the created worlds and does not let them be distracted outside of the environment. Using this concept allowed me to create a more immersive environment and gave me a different look on when I design.

The most important aspect to have in mind is if the ride never loses the immersion of the guest. Because "Any contradictory element may shatter the sense of immersion in the narrative universe." (Jenkins, 2007, p.57). This was the aspect which I had the most trouble with, but it is needed to pay attention that all the elements of your attraction environment are cohesive.

However, *environmental storytelling* does have some limits and it needs to be complementary to a traditional narrative; otherwise the story will not be understood by every guest who has not seen or played the movie or video game on which the attraction is based on.

I always questioned the research that I read as well as my own research which allowed me to have a better look on my creation. During my work I realized that an important part for *environmental storytelling* in theme parks was missing, that's why I think Jenkins' model should be revisited. More specifically, it could be complemented by another dimension for theme parks, **kinetic narratives**. This importance of kinetic narratives is a major result that I hope will help the reader to recognize that more research on theme parks is needed.

Having research-creation as my methodology was valuable as it allowed me to draw my thoughts and have visual results, which is important to have for an art-related research. I put a great effort in detailing my attraction, as I would do in a professional setting. However, because of the limited time I had for my research I was not able to completely finish the creation.

In the future I would love to see more people interested in doing a masters in themed entertainment design. This would allow the industry to have more research and thus hopefully for impressive creations that immerse the guests even more. I also want to show people how complex it is and how much work gets put into these huge parks. That it is not just a small thing

to design and create these rides and experiences. Due to this amount of work, I was not able to create a textured 3D environment. Which shows even more of how much effort goes into theme park design.

I am hoping that my research will not just aid the theme park industry but will also be helpful for video game and movie production design. Because as I stated, these industries are so close to each other due to their *transmedia* techniques. So that designers from all three industries can see how we can tell stories using the environment and how the environment and narrative are complementary.

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ANNEX

DISNEYLAND, ANAHEIM, CA
DISNEYLAND, PARIS, FRANCE
DISNEYLAND, TOKYO, JAPAN
DISNEY WORLD, ORLANDO, FL
       PIRATES OF THE CARIBBEAN [ATTRACTION]
DISNEYSEA, TOKYO, JAPAN

UNIVERSAL STUDIOS HOLLYWOOD, LOS ANGELES, CA
UNIVERSAL STUDIOS ORLANDO, ORLANDO, FL
UNIVERSAL STUDIOS SINGAPORE, SINGAPORE, SINGAPORE
       TRANSFORMERS: THE RIDE [ATTRACTION]
       REVENGE OF THE MUMMY [ATTRACTION]
UNIVERSAL'S ISLANDS OF ADVENTURE, ORLANDO, FL
       POSEIDON'S FURY [ATTRACTION]

BUSCH GARDENS TAMPA BAY, TAMPA, FL
BUSCH GARDENS WILLIAMSBURGH, WILLIAMSBURGH, VA
SEA WORLD ORLANDO, ORLANDO, FL
SEA WORLD SAN DIEGO, SAN DIEGO, CA
SEA WORLD SAN ANTONIO, SAN ANTONIO, TX

EUROPA PARK, RUST, GERMANY
       POSEIDON [ATTRACTION]

PHANTASIALAND, BRÜHL, GERMANY

EFTELING, KAATSHEUVEL, NETHERLANDS

TOVERLAND, VENLO, NETHERLANDS
       TROY [ATTRACTION]

TIVOLI GARDENS, COPENHAGEN, DENMARK

CONEY ISLAND, BROOKLYN, NY

TERRA MITICA, BENIDORM, SPAIN
       EL LABERINTO DEL MINOTAURO [ATTRACTION]