Weaving Mental Threads
Exploring the Touchpoints Between Parallel Game Worlds in an Ended World Setting

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Abstract

This master thesis researches parallel digital world design in computer games in the setting of An Ended World. The main focus of the research is the touchpoints between two or more worlds and how the inputs from a designer can influence the type of experience received by the player.

The overall research takes inspiration from both game and interaction design and follows a very user-centric approach with numerous play sessions and a workshop. The final outcome is presented in the form of attributes and a prototype built as a modification for an existing game.

Keywords: parallel worlds, ended world, digital games, mental threads, touchpoints, world-building
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# Table of Contents

1.0 Introduction ......................................................................................................................... 6

1.1 Research focus & framing ....................................................................................................... 7

2.0 Background ............................................................................................................................ 9

2.1 Parallel and alternative worlds in media & fiction ............................................................... 9

2.2 “An Ended World” ................................................................................................................ 10

2.3 What do I mean by “world” in this case? ............................................................................. 10

2.4 What defines a good immersion in video games? ................................................................. 11

2.5 Player types ......................................................................................................................... 12

3.0 Research approach & methodology .................................................................................. 14

3.1 Project plan .......................................................................................................................... 14

3.2 Existing examples & play sessions ..................................................................................... 15

3.3 Speculative design workshop ............................................................................................ 15

3.4 Prototyping .......................................................................................................................... 16

3.5 Ethical considerations .......................................................................................................... 16

4.0 Design process .................................................................................................................... 16

4.1 Existing examples – two games: Bioshock 2 and Dishonored 2 ....................................... 17

4.1.1 Bioshock 2 and playing as a Little Sister ....................................................................... 17

4.1.2 Dishonored 2 - Aramis Stilton's manor ......................................................................... 18

4.1.3 Bertelson’s 8-part framework ....................................................................................... 19

4.1.4 Given examples and different players .......................................................................... 20

4.1.5 Conclusion ..................................................................................................................... 22

4.2 Speculative design workshop using roleplaying ................................................................. 22

4.2.1 The creation of the parallel world(s) ........................................................................... 23

4.2.2 Conclusion ..................................................................................................................... 26

4.3 The mental threads between worlds .................................................................................. 26

4.3.1 Why are the player types relevant? .............................................................................. 31

4.4 Building a prototype using G.E.C.K. ............................................................................... 31

4.4.1 World v.1 – The basics .................................................................................................. 32

4.4.2 World v.2 – The immediate switch ............................................................................. 33

4.4.3 World v.3 – The mental, narrative world ...................................................................... 35

4.4.4 World v.4 – Adding a quest ......................................................................................... 38

5.0 Main results & final output ................................................................................................ 40

6.0 Conclusion & future work .................................................................................................... 43

7.0 Evaluation of the completed work ..................................................................................... 44
1.0 Introduction

From the beginning of time humankind has created imaginary worlds that exist alongside “ours” – from the dealings of gods and other mythical creatures (think: Yggdrasil and the nine realms from Norse mythology) to the world of spirits and entities who keep on living in some other existence (afterlife) or are stuck somewhere in between (numerous ghost stories). People have always been curious about what’s around them and the alternatives it could provide. From cultures around the globe we can find texts describing the worlds of gods, creatures and spirits, providing the early human not only primitive explanations about their lives, but also comfort, fear and excitement.

A lot of both early and more modern world re-imagining is linked to eschatology (the part of theology that is concerned with the ultimate destiny of humanity – the end of the world). Religious texts, from where the term comes from, being of course the best examples. Most major religions have their own version(s) of not only the end of the world, but also what comes after.

Eschatology, however, even though originating and most commonly used in religious context, does not only have to be applied to the end of humanity as mentioned above, but can be used in a broader sense. Instead of using the term to describe the end of the world as a form of apocalypse, we will, in case of this project, be approaching it more as an end of an era or end of life as one knows it, taking inspiration from science fiction – especially perhaps (post-)apocalyptic fiction and its common theme: a catastrophic change that results in the demise of old order and the creation of new one (Moon, 2014). An end of an era can hold in itself a number of worlds already, as it transmissions from one to another, from one stage to next.

As the stories about imaginary worlds told mouth-to-mouth became pieces of literature, most commonly known to people nowadays through sagas, fairy tales etc. and later science fiction and fantasy, the development of technology allowed them to be told through movies and TV shows. The widespread of computing has brought more interactive media to our lives, as some claim that computer games is to 21st century what cinema was to 20th (Zimmermann, 2013). Games have become the medium for storytellers while offering a new approach to the story – the possibility to partake in it, interact with it and therefore, be immersed in it. Immersion (as it is a term, that can be shaded with controversy) in this case as the phenomenon in which the subject feels part of the experience as a whole, encompassing all spheres of attention (Ermi & Mäyrä, 2005).

If we look at computer games as a medium that tends to create virtual environments inside themselves in which the interaction happens (Bastos, Gomes, Santos & Maia, 2017), we can claim that majority of games are involved in some form of imaginative world building. This usually leads to a situation where the user is simultaneously interacting with two worlds – the world we call “real”, what is physically around us, and a world provided by the medium – the digital game world. However, unlike the first, the digital worlds have the possibility to easily add another layer of worlds, which in turn would have the user potentially interacting with three or more worlds at the same time.

Below I will explain this idea further and shred light to the actual focus of this research project about the journey between multiple worlds in a digital game environment.
1.1 Research focus & framing
Even though one can claim that when playing a computer game, the user interacts with at least two worlds simultaneously, for the sake of clarity, I will be dismissing the “real” world in this section as the focus of the research is rather on the multiple worlds inside the digital environment.

Overall, the area of interest lies in parallel worlds inside the same environment of the digital game itself and the touchpoints between them in a setting of *An Ended World* (figure 1). This means that I will be looking at the overall level / environment design, user’s interactions inside and *with* the worlds given and the worlds’ reactions to that. However, I claim that the touchpoints between don’t necessarily need to be the exact moment when the world “switches” but could also be emotional and/or story-driven and happen inside the player’s mind rather than only on screen. That could happen in the form of mental links, symbolism or just plain comparison.

![Figure 1. The setup of this research focus. The two parallel worlds exist in the same digital environment. The interactions / transmissions in between are marked as touchpoints.](image)

I believe that while there exists research done on immersion in computer games and the design of digital worlds, the interaction of multiple worlds in the same environment is a topic that could provide interesting findings for practitioners in both interaction and game design. This paper should be taken as a mix of the two, as the research focus will be on both the design choices made in the digital world and on user interaction and response to them. I believe that a lot of the work done in this paper rests heavily on the existing theory of level and environment design with interesting input from research about immersion in digital games.

However, even though game design plays a strong role in this research project, it is important to note that my goal is not to create a computer game and rather to explore the design of parallel worlds and different ways of creating and persevering links between them.
Figure 2. Since the research will still mostly focus on digital worlds in games, it might be useful to present the main core of this project also through an MDA framework (Hunicke, LeBlanc & Zubek, 2004). The Aesthetics (the emotional responses evoked by the player) will be the main area of focus. The arrows and the text below the circles represent the role of other categories when reaching towards the aesthetics. The arrow pointing from mechanics to dynamics is grey because this project will not be focusing on the actual gameplay. Text below circles represent what’s important for this project.

Since the project will be revolving around the idea of An Ended World, I have chosen to focus on specific type of games and interfaces: based on already existing products, the research will be done on 3D environments and (mostly action & RPG) games built for PC/consoles. That is due to a few things – first of all my own experience (both technical- and gaming-wise), secondly, because the existing projects on this topic are on these platforms and thirdly, because I believe that the topic chosen would serve the users better on a bigger screen (as opposed to mobile, for instance).

**The main research question can therefore be worded as follows:**

*How can the design of elements and mechanics of the parallel digital worlds build mental strings in between the worlds (and evoke different types of experience from the players when interacting with the 3D game environment)?*

To continue this question in more detail:

- How can the gamers’ (from here on a clarification: those who do not have to engage in “play research” as scholars (Perron, 2006)) user type affect their interactions with the world(s)?
- What kind of different emotions could the way the parallel worlds are built in An Ended World (with everything in them, including sounds, lighting and characters) evoke in players? What is these emotions’ relation to different types of immersion in video games in this setting?
- In which way does the design of the touchpoints (both the literal scripted switch between the 3D environments and the emotional / imaginative connection from the player) change the way the worlds are perceived or made sense of?
- What kind of different mental strings can the design of the digital world(s) form?
2.0 Background
Before diving deep into the design process of this paper, it might be a good idea to explain some of the decisions made in relation to this project: the choice of working with parallel worlds (and not just various imaginary worlds, for example) in An Ended World setting was not random, as it was the author’s idea of relying on culturally already strong foundation that has the potential to evoke emotions better than some other topics.

2.1 Parallel and alternative worlds in media & fiction
It is first important to explain what I mean when talking about parallel worlds in the same environment, as I tend to use the term quite loosely.

One could argue that the so-called “real” world is already divided into multiple realities: they could be social, religious or political, for instance. The country UK is not just 48 million (2015) of human adults but also exists in this world as a liberal democracy or a maritime archipelago (Law, 2015). It is hard to find anyone who would argue against that, meaning that the idea of some form of multiple worlds (whether they be called that or something else), is at least somewhat accepted.

Even though the majority would agree with the statement about UK above, the number of people saying the same thing about the world of spirits, for instance, would probably be much lower. However, the topic of other world(s) lying beside ours, containing in itself unknown entities, has been a popular topic throughout science fiction and horror stories for ages and it’s unlikely that this will change.

It is worth noting that in this paper we will be looking at worlds that lie exactly beside ours, meaning the focus will not be on creating a fantasy world as a universe itself, but rather the parallels (or mirroring) of the fictional digital worlds in games. Those parallel worlds could be constant existing universes: the example of *Stranger Things* (figure 3) with unknown entities living inside them, various ghost stories of the dead living beside us or just an alternative timeline (*Fallout* series), worlds created by the mind itself as a form of hallucination (*Beyond the Aquila Rift* & *We Happy Few*) or various versions of the same world in different parts of the timeline (*Effect & Cause* from *Titanfall 2* & general time travel fiction).

### 2.2 “An Ended World”

Besides parallel worlds, it might also be necessary to elaborate a bit further on the idea of *An Ended World*. As mentioned before, this project has taken inspiration from eschatology but decides to not focus on the religious nature of the term and rather embrace the end of a world as we know it – the fall of a current reality and the rise of a new way of being and living (Sofroniou, 2017).

The common themes one can associate with *An Ended World* (and now I will be taking inspiration from science fiction and (post-)apocalyptic stories) is downfall: the decline of moral values and personal freedom, decay, destruction and death. Throughout the ages human beings have shown morbid curiosity towards our own end or rapid changes that would (usually forcefully) make us live in a new kind of world, in many ways mimicking our current life but at the same time being rapidly different. (Post-)apocalyptic genre is a very primal genre, one intimately concerned with life and death, the struggle for existence, and “fear” — the engine of the genre and the main reason for why genre exists (Foroozeshnia, 2014, p.7).

However, I encourage the reader to not only think of *An Ended World* in a classical (post-)apocalyptic manner. As mentioned previously in the example of the many worlds of UK, a world ending might not be on an apocalyptic scale – it might as well mean an end of an era in a very specific context. Thinking in an even smaller scale – a death of a person could also be called an end of a world if we consider one’s consciousness a world of its own.

Overall, whatever the different scales of an end might be, they deal with similar powerful emotions: sadness, fear, anger, disbelief and morbid curiosity. Coming back to computer games it is not surprising that the genre remains to very popular also in this interactive medium (Valdes, 2014).

### 2.3 What do I mean by “world” in this case?

The word “world” is mentioned a lot in this paper and since it can be a very broad term, it would help the reader if I clarify it briefly below. Basically, when I use the term “world”, I mean two types of worlds:

- **3D digital world** – this is the physical rendered environment in which the interaction happens. This world includes 3D models, collision meshes, choice of light, music and everything technical. This is also the world where the scripted switch happens between the two 3D environments.

- **Mental (narrative & emotional) world** – This world unravels rather inside our heads than on the screen and is a vital part of different types of experiences. In this world the imaginative and emotional connections towards and between the stories, environments and characters happens and
is also where most of this project is located. The mental world is important to keep in mind as we continue with the topic of immersion in games below.

Of course, the two worlds are not separated and work in correlation with each other. It is, however, useful to also view them as two different domains, especially in relation to world-building, game dynamics and different types of immersion.

2.4 What defines a good immersion in video games?

As Ermi and Mäyrä (2005, p.2) put it: human experiences in virtual environments and games are made of the same elements that all other experiences consist of, and the gameplay experience can be defined as an ensemble made up of the player’s sensations, thoughts, feelings, actions and meaning-making in a gameplay setting. Even though this might seem to some as quite straightforward, the reality can often prove to be more complicated when it comes to the balance of abovementioned aspects and maintaining the attitude of playfulness (Sicart, 2014), belief of the designed game interface and the motivation to keep playing.

As mentioned before, the term immersion can be a battleground for many different opinions, however, it is generally accepted as a quality to turn experiences more appealing. One can choose to divide the immersion in video games into three categories: sensory immersion, challenge-based immersion and imaginative immersion, qualities of each based on the player’s expertise, mood, social context and motivation (Bastos et al., 2017). Besides the three types, there also exist various stages of immersing the player: engagement (the initial interest in playing the game or learning how to play), engrossment (how the game is constructed – world building, plot, mechanics: involves a high level of investment, the player’s emotions are directly affected by the game) and total immersion (player is cut out from reality, controlled by empathy and atmosphere – the graphics, plot, sounds) (Brown & Cairns, 2004). The project at hand will most likely deal with the last two stages of immersion, with strong emphasis on engrossment, as it will be looking at world building and the player’s actions while already playing the game.

What we can conclude from this brief overview of immersion in digital games, is that immersion is not something set in stone but relies heavily on the player type, mood, previous experience, that all affect what parts of the game speak to them the most, and the design of the world (if we discuss engrossment) – good graphics, resolution, technology, but also the choice of sounds and ambience (Grimshaw, 2011) and the cultural (stylistic) references (Ekman & Taylor, 2016). It is important to note, however, that when talking about graphics, for instance, the final idea of what is considered “good” varies once again from person to person, as people perceive game aesthetics (from here on the “beauty” of things, not aesthetics in a MDA framework, unless specified otherwise) in different ways – asking their subjects, what qualifies as good-looking graphics, Ermi & Mäyrä (2005) received numerous contradicting answers from, for instance, a very cartoonish style to hyperrealism.

From Bastos et al.’s (2017) research on different types of game immersion and looking at factors that could contribute to a more stronger immersion (I will only be looking at the engrossment stage and in relation to world building and the player’s actions / world’s reactions) I can bring out some more important points (4/7):

Audio-visual synchronization - the world and the sound react and compliment each other creating sensory immersion.

Impressive graphics - unusual art style, 3D, special effects, etc. to inspire curiosity and wonder.
*Feeling of danger and threat* - a challenge to overcome, a sense of something that might be dangerous.

*Implicit story and symbology* – the idea that players should come to their own conclusions about what’s happening – inspires curiosity. Can cause imaginative immersion.

### 2.5 Player types

Until this day, one of the most used player-type matrixes is created by Bartle (1996), in which he divided the players of MUD’s (Multi-user dungeon) into four basic categories: *Explorers, Achievers, Killers* and *Socialisers* (figure 4).

![Bartle's Interest Graph](image)

**Figure 4.** Bartle’s (1996) interest graph. The axes of the graph show the player’s interests when playing a MUD.

However, while Bartle’s categorization is still widely quoted, it is often considered over-simplified and not taking into consideration the large variety of different games. That is why, for this project, I had decided to explore some of the other matrixes, all of them mostly built on Bartle’s original idea.

As the user groups for this project varied and my main goal was not to build a functioning game (meaning I didn’t have to focus on the gameplay in too much detail) I decided to follow Gamification User Types Hexad (Tondello, Wehbe, Diamond, Busch, Marczewski & Nacke, 2016) (figure 5), as it is generally better suited for a larger variety of different digital interactive experiences and games.
Figure 5. Gamification User Types Hexad (2016). The outer layer holds the types of players, while the inner layer shows the motivations that drive the different user types.

In short, the hexad’s user types are as follows:

Socialisers – Just as in Bartle’s matrix, the Socializers are driven by the socialization with others. Most motivated by the social connections’ aspects of relatedness.

Free-spirits – Free-spirits have two subtypes: Explorers and Creators. The Explorers want to explore the system (or break the system) and the game world, while the Creators like to build new things. Motivated by autonomy and self-expression.

Achievers – Achievers are looking for challenges and want to become better at what they do. Motivated by mastery.

Philanthropists – Philanthropists want to enrich the lives of others and be part of something bigger. They are the kind of users that spend hours helping out other players. Motivated by purpose.

Players – In general, motivated by rewards. The Player type has four sub-types which are Self-seeker (just like Philanthropists help others and share knowledge, but for a cost), Consumer (will go far to receive awards, but if they could obtain them by doing what they were already doing, even better), Networker (always looking for useful social contacts that could lead them to rewards, unlike Socialisers who communicate for the joy of socialization) and Exploiter (these people will look for ways to exploit the system for their own gain and find new ways that could get them rewards).

Disruptors – The Disruptors aim to, as the name entails, disrupt the system somehow, both by acting on the game or the other players. Just like the Player type there are four sub-types: Griefer (this is the equivalent to Bartle’s Killer – they only wish to negatively affect the other users just because they can), Destroyer (this users aims to break the system, either by finding loopholes or hacking), Influencer (this type tries to change the way the system works by exerting influence over other players) and finally Improver (Improvers will also try to hack or find loopholes but their intentions are to make the system better not affect other players negatively).
I believe it is important to keep these user types in mind as we continue with the critique of existing designs in the next chapter and later with the speculative workshop, where different user groups were present and engaged with creative world-building. In order to determine the participants user types, I mostly had a discussion about people’s gaming habits and used a questionnaire\(^1\) created for the original study about Gamification User Types (Tondello et al., 2016).

### 3.0 Research approach & methodology

This project will be approached in a very user-centric manner, meaning a lot of focus is put on the actual players interacting with the digital worlds. That is done mostly by play sessions with games fitting this research criteria and built prototype but also through a speculative design workshop, aimed to shift focus from the ludic interactivity of games to more into world-building and the emotional factors of an Ended World. The play sessions and workshops are also looked through a lens of existing research on player types in the hopes of finding certain patterns that could guide the design process in further stages. Therefore, can the subjects of this research vary from experience to user type.

The second part of the project is very much build-play-refine, as I have at that point narrowed down some of the attributes important to designers working in this setting. Those findings will be play tested through a series of versions of a prototype built as part of an existing game.

### 3.1 Project plan

The project tends to roughly follow the design process model Double Diamond (figure 6), where in the first diamond a lot of focus is put on player types and their interaction style with existing games. In addition to that, simultaneously, some design critique is done by the author to look at the examples from a designer’s point of view. The first diamond is also the time period when the speculative design workshop happens, which tries to be as open and imagination-based as possible.

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\(^1\) [https://www.gamified.uk/UserTypeTest2016/user-type-test.php?fbclid=IwAR3XkXoBOSC5ylGp_AQCF5T8C9uoOaTCj81EE6McwwO9jXa_Vr3Y91gk_QE#XKs9d-gzZPa](https://www.gamified.uk/UserTypeTest2016/user-type-test.php?fbclid=IwAR3XkXoBOSC5ylGp_AQCF5T8C9uoOaTCj81EE6McwwO9jXa_Vr3Y91gk_QE#XKs9d-gzZPa) Accessed on 08.04.2019
The second diamond is mostly the development of the prototype and the play sessions that came along with it. This is where the results from the initial research were tested out in form of a modification for an existing game.

### 3.2 Existing examples & play sessions

To begin with, I had chosen two existing games to take as examples, both playing with the idea of two parallel worlds colliding in the same environment, one where the player themselves control the switch, one where it happens automatically. Different player types where then asked to play the games and interact with it as they pleased, while their gameplay was recorded. Afterwards, the participants were asked a series of questions about both the worlds and the switch, including what evoked the strongest emotions, how much in control they felt, etc.

While the users were playing the games, a design critique by the author was also conducted by using Bertelson’s (2004) 8-part framework, hoping to see similarities in both the users’ feedback and the designer’s point of view.

### 3.3 Speculative design workshop

While one thing to focus on were obviously existing games, the workshop conducted in the early stage of the project helped shred light into participants’ creative side, as the whole theme tends to run on imagination and cultural clues.
For this workshop I was heavily influenced by a paper on design fiction by Markussen & Knutz (2013) from Kolding School of Design, where they put emphases on strong coupling between literary and design practise. For my workshop I took inspiration from their experiments and chose a very open and creative path for my designed tasks. The participants were handed three cases of an Ended World, from which they had to choose one. What followed was a short freewriting (Elbow, 1998) and drawing exercise describing the world in which they were in, provided it had to exist in the same environment where the workshop took place (in this case an office).

In the end, the workshop produced some artefacts that could be analysed for world-building purposes in this current setting or paired with user types and the participants’ game sessions.

### 3.4 Prototyping

*Prototype* - artefact used in research that can realize the (inter)action that is studied (Stappers P., Giaccardi E., 2013).

In order for me to realize some of the studied findings I had chosen to create a modification for an existing game. The four versions of that prototype were based on the work done previously and were built up on the foundation of feedback from the players. Each version played on different attributes claimed in this paper and varied in complexity or the level of which these attributes were implemented. The development of the prototype helped me to study the relevance, context and importance of my findings and the players’ reactions to them.

### 3.5 Ethical considerations

As this project involved other people, while set in a theme that by its nature can cause certain strong emotions, I made sure to approach my research carefully and keeping in mind that people’s well-being will always come first.

It is worth noting that from the start I didn’t intend to work with children or teenagers – mostly because of the types of games explored are meant for mature audiences, but also because of certain ethical concerns that might rise due to the theme.

As for the game sessions and the workshop, I always set the participants consent and privacy in high regards. Everything uploaded anywhere required an approval from the person, whether it be a quote, photo or video.

In accordance with The General Data Protection Regulation (GDPR 2018), data that has been collected containing personal information has been handled to the best of my abilities according to the guidelines. Further, the Swedish Research Council Guidelines for ethical conduct (2017) have been consulted.

### 4.0 Design process

In this chapter I will be describing the design process of the project. I start out with taking a look into the more creative and imagination-driven side of the potential users through play sessions with existing games and a speculative workshop. After that, the project narrows down to analyse the gathered data and is then followed by the building and play testing of the prototype.
4.1 Existing examples – two games: Bioshock 2 and Dishonored 2

Even though the idea of switching between parallel worlds in a digital environment is not overly used in games, there exist still some products that have explored the notion at hand. For this project, perhaps, the two examples chosen could provide some useful insight, first by design criticism (Bertelsen & Pold, 2004) by the author of this paper and later by the feedback of different users.

In order to paint a better picture for the reader, I begin with a short introduction of the chosen games and the missions/world(s):

5.1.1 Bioshock 2 and playing as a Little Sister

(Genre: First-person shooter with horror elements)

The first example is a game mission from the game Bioshock 2 (2010)\(^2\) where the player takes the role of a Little Sister (figure 7) – a non-default character, whose purpose, for the most of the game, is to be interacted with not played as. In the game world the Little Sisters are genetically altered girls who are meant to gather chemical substance ADAM from the dead bodies around the digital world called Rapture.

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\(^2\) http://www.bioshock2game.com/ Accessed on 17.05.2019
As it turns out when the player takes control of one of the Little Sisters, the world they see tends to be very different from what is “real” in the game universe and where the majority of the game takes place (figure 8). As the player advances through the short mission, the game jumps back and forth between the two worlds, allowing the user to experience both of them in the same environment.

Figure 8. An example of the two worlds colliding in Bioshock 2 (2010). The man on screen is the same person in both pictures, before and after the switch happens.

The mission is generally straightforward and doesn’t require too much input from the player, as the controls include only movement keys and one extra key for interacting with objects. There is no combat, which makes it a good example to try for people who perhaps don’t play a lot of first-person shooters.

4.1.2 Dishonored 2 - Aramis Stilton's manor

(Genre: Action-adventure game, stealth game)

The second example comes from a 2016 game Dishonored 2[^3], where in this case we will be looking at one specific area called Aramis Stilton’s manor. In this particular part of the game the protagonist enters a run-down manor and receives a timepiece which allows her to switch between past and present and peek into the “other” version as seen on figure 9.

Figure 9. The two worlds in the same environment in Dishonored 2 (2016). On the right we see how the player can peek into the parallel world.

[^3]: [https://dishonored.bethesda.net/](https://dishonored.bethesda.net/) Accessed on 17.05.2019
Compared to the Bioshock example the player can actually engage more with the world and its inhabitants – that includes combat, if one chooses so. The player is also in charge of the switch between worlds, can use the timepiece to peek into the “other” and develop certain strategies – sneak behind a guard in one world, for example, then switch and kill them in a stealthy manner.

### 4.1.3 Bertelson’s 8-part framework

In order to evaluate the two examples from a designer’s point of view, I decided to use Bertelson’s (2004) 8-part framework for design criticism. The purpose of the critique including: 1.) how aspects of the critiqued work function together to achieve certain effects 2.) evaluation 3.) accounting for its significance and/or meanings 4.) revealing hidden aspects of the work 5.) analysing key themes that span many works (historical style or movement, for example) (Bardzell & Bardzell, 2015).

In order to make the result as simple as possible (especially for a reader not familiar with the chosen games), I have created a table with descriptions of various aspects that can be read in Appendix 1. The overall outcome will hopefully serve as not only a peek into the game worlds but also the cultural, genre-specific and interactive elements they possess.

![Figure 10. Gathering ADAM in Bioshock 2 (2010).](image)

We can say that one of the main aspects of world building in the two examples is the player’s relatedness to the worlds’ details in a wider generic and theoretical context (Ekman & Taylor, 2016). That is mostly expressed through various aesthetic choices, perhaps not surprising for a visual medium, and being especially prominent when it comes to the layout and the design of the two worlds the player will interact with. Both examples make heavy use of cultural references, taking inspiration from other forms of media – art, TV, etc. – and implementing the cultural background of various elements to build the worlds at hand. Good example for this would be the use of symbolism throughout the experience: childish naivety and safety vs. a destroyed aggressive world or the use of colours (dark, depressive vs. bright and happy) in both examples.

Taking a look at the actual switch between the worlds, cultural references come once again into play. In Dishonored the player uses a timepiece to transfer between the two worlds – a common theme in science fiction where a device is used to “jump through a wormhole”. The transaction itself has a short delay with blurriness effect that emphasises on the “jump” factor. The Bioshock mission, again, decides to play with the idea of human doubt of sanity – what is the real world and what is just a hallucination?

The switch between the worlds also has a heavy influence on how the player interacts with the digital interface. In Dishonored the switching between is required to process further to the level and offers new tactics of moving about and taking down the enemy. In Bioshock, the player is tempted by curiosity and visual clues to interact with objects and therefore be (momentarily) transported into
a parallel world (objects glowing to get the player to click on them, butterflies over a dead body to catch attention, etc).

Overall we can say that the worlds offer the user components of typical fiction which, in relation to our existing understanding of the world, cultural and (also) gaming experiences turn into possible stories, capable of transferring certain emotions and ideals chosen by their designer (Garin & Pérez, 2009).

4.1.4 Given examples and different players

Coming now back to the beforementioned user types and the chosen examples above, I have put together a quick analysis of different types of players interacting with the games – their behaviour, their feedback and with what / how they interacted with. The subjects for those playthroughs varied in gender, player personality types and previous experiences, from one who had never played any computer games to someone who plays with passion every day, including many different games. The rest of the subjects were positioned somewhere in between with little to quite a lot of experience with various games.

Below is a shortened list of each player’s playstyle (full descriptions can be found in Appendix 2):

Player A (BioShock 2):

- Player type unknown.
  - Least experienced player
  - Struggled with basic mechanics (looking around, moving)
  - Reported the “destroyed world” terrifying and got startled when the switch happened

Player B (BioShock 2):

Strongest player type: Socialiser. Followed by Philanthropist, Achiever & Free spirit.

- Interested in listening to the vocal background story that unravelled when exploring the world, often stopped just to listen
- Tried to interact with the world more than actually possible
- Exclaimed that the place looked like it had a lot of secrets in it and that they got curious and excited to see what the world had to offer

Player C (Dishonored 2):

Strongest player type: Achiever / Free Spirit. Followed by Philanthropist & Player.

- Made use of the controlled switch extensively
- Chose to “exist” in both of the worlds at the same time by keeping the timepiece open, dividing the screen into two, not caring that this made it sometimes harder to look around in the “present” world (the one in which the character was physically in)
- Chose to hunt the enemies of the game by escaping to the “other” when spotted
- Snuck behind enemies in one world, switched and killed them, developing strategies to play the game
- The sounds and music helped to reinforce the idea of two different worlds
- Said they felt “too much in control” and became “unstoppable”
Player D (Dishonored 2):

*Strongest player type: Free Spirit. Followed by Socialiser.*

- Chose to stay in one world at a time
- Tried not to engage so much in combat but liked to interact with the world itself by clicking on little objects around the digital mansion (figure 11)
- Used timepiece to strategically get around obstacles
- Preferred the undestroyed world and was drawn to the other characters there
- Felt stress and discomfort when the other NPCs (non-playable characters) discovered the player and started screaming
- Wanted to interact with the other “people” but was drawn back because of their hostility

![Figure 11. Dishonored 2 (2016). Objects like this are scattered all around the game world, replenishing health, etc. or providing distraction for enemies to develop different strategies.](image)

Player E (Dishonored 2):

*Strongest player type: Free Spirit / Philanthropist. Followed by Disruptor.*

- Chose also to focus on one world, this case the destroyed version (mostly to avoid too much combat)
- Didn’t see much value in switching
- Very engaged with the aesthetic and sensory aspects of the worlds
- Got startled by whispers and horror elements in the destroyed world (noticed a mysterious dark shadow that none of the other players did)
- All this made the player move around in a more cautious manner, sense of threat was strong
- Felt spooked but still wanted to explore because they enjoyed the aesthetics of the world

Player F (Bioshock 2 & Dishonored 2):

*Strongest player type: Philanthropist. Followed by Achiever, Free spirit & Socialiser.*

- Most experienced with computer games, had previous knowledge of the lore of Bioshock
- Found a lot of interest in the Little Sister’s world since most of the game(s) takes place in the destroyed version and they had experienced that before
- Directed their attention to more symbolic details (“That looks like a bottle for babies”, when gathering ADAM with a syringe & “Now I keep wondering what these toys actually are”)
- Didn’t bother to listen to the backstory, explored more the visual world
- In Dishonored acted more as task-oriented, trying to follow the quest marker
- Tried to find a key to get through a locked door but had very little patience to search for it
- The switch was a good tool to get by obstacles
4.1.5 Conclusion

Overall, it was interesting to observe how the different users interacted with the same environment, not only by how they chose to act, but also what emotions were evoked during the gameplay.

First of all, it is important to accept that in order to research this even further, the participants should have at least some form of knowledge on how to move around in a digital world, as the unfamiliarity of the basic mechanics makes it hard to observe a bit more complicated gameplay and this project’s focus on immersion in engrossment rather than in engagement. Secondly, different types of players prefer different genres of games and platforms to play them on and the author of this project acknowledges that. However, I believe that even when some types of users didn’t feel enjoyable playing games that involved a lot of violence (player D, for example), there were still little nuances that managed to create some forms of immersion, whether it be sensory or imaginative.

Looking at the personality traits and the way the players chose to interact with the digital world(s), the Achievers matched the User Types Hexad most with all them being quite goal-oriented, whether it be hunting and killing enemies in different ways or trying to progress further into the storyline. These types of players were more focused on the interaction part and often didn’t pay too much attention to the aesthetics or symbolic references in the world they were engaging with, when more exciting action was taking place. They also didn’t care much about exploring, only if to find new pathways towards the goal or new strategies to take down enemies. However, this was only true when the players were given a chance to do so – when the game level included no combat and chance to develop strategies, these types of players directed their attention back to the world. When it comes to Achievers it might be interesting to explore the way the actual switch works – would the speed, amount of control or time limitations in one world make them engage with the world differently? However, this might move too much into the game mechanics section.

Perhaps not surprisingly the Socialisers and Free spirits were quite interested in the world itself – the characters and what they had to say, little objects to interact with and the overall aesthetics of the world(s), often considering the symbolism present. This might also work together with the type Philanthropist, prone to altruism and helping others (maybe not only other players, but also other characters?), and dealing with moral choices and empathy. Connecting that with the Explorer part of the Free spirits, one could put more focus on the design of the world(s) itself and their symbolism, connection with each other and backstory.

Looking back to the design critique done earlier, the users definitely acted upon the points brought up. The mechanics played a big role when the player was more in charge – moving through obstacles and developing strategies. The strong comparison between the worlds was also important with certain design choices (or the other characters’ reactions) making the player feel uncomfortable, scared, but also curious. The more sudden and unexpected the switch was, the stronger response it evoked from the player.

4.2 Speculative design workshop using roleplaying

This workshop moves away from actual games and more into the worlds themselves – their existence, space awareness from the user, functionality of objects and stories told through them. For
this workshop inspiration was taken from the literary world with a mixture of design fiction, since in this case the final goal was not to pursue creative writing but rather explore the minds of the users interacting with a parallel world in the same environment they were currently in – their role in it, functionality of objects around them and their connection to the participant, the history and stories behind the changes described and of course areas of interest in those imaginary worlds.

As mentioned in the methodology section, this workshop took a lot of inspiration from Markussen’s and Knutz’s (2013) paper, where literary practises were mixed with design to explore the role of utopias and fictions compared to reality as “possible worlds”. Continuing the idea of mixing literary and design practises, this workshop played around with the idea of creating “story-worlds” – a term introduced by David Herman (2004), transferring basically into mental model answering questions like who, why, etc. in a fictional world of a story. Based on that, Ekman and Taylor (2016) talk about “elements” – building blocks of a story (geography, social groups and norms, flora, fauna and basically everything a world could contain) and ask a few main questions like: What does a particular element do? How does it do it? What is the effect of it? Putting this in the context of this particular workshop means that the participants had to actively look around their physical environment and the “elements” in it, while imagining their role and purpose in this parallel world they were currently “in”.

Even though a lot of inspiration was taken from science fiction and creative writing, the overall goal was still to operate in the world of design fiction and not write a creative story - “design fiction creates worlds, not stories” (Sterling in Bosch, 2012). The purpose was to see how different minds, while presented with an “alternative parallel world” set in a particular setting started making sense of their surroundings, described the world and found their roles and purposes of the elements around them. Below is a description of how the workshop was conducted, which parts of the world were explored and how those picks of imagination could be used also in a digital world setting.

4.2.1 The creation of the parallel world(s)

As this paper plays around with the idea of An Ended World, the workshop followed the theme by exposing the participants to three versions of our world set in a parallel universe, each of them “ended” in a certain way. The three worlds were created by the designer and taken inspiration from various ways of “ending”. Below are short descriptions of the cases:

**World no. 928.001: Bryopsida Virus** – A classical apocalyptic scenario through a disease, in this case a plant-based virus, that has killed off most of humanity.

**World no. 105.4637.056: Candy-tripper** – A new psychedelic drug from Russia has spread all over the world, leaving 2/3 of the population addicted.

**World no. 5: New Europe** – Lack of resources has led to hard borders and wars, resulting in a new authoritarian way of living.

(The full descriptions of the worlds can be found in appendix 3).
The workshop participants were then asked to take the role of a wormhole-jumping scientist from an international corporation Hawk. Inc., specialized in mapping out parallel worlds and describing them to the imaginary archives. The roleplay helped the participants to better answer the questions like why? – instead of just describing the imaginary environment they were supposedly in, the participants were also forced to think why something would be the way they see it.

The workshop took place on a Sunday afternoon in an office setting and unfortunately, due to it being a weekend, the only people there were the conductor and the participants themselves (other people’s presence would have definitely evoked some interesting discussion about their role in this parallel world). When the four participants had chosen one world out of the three what they found...
most interesting (Candy-tripper), they were asked to look around the environment assigned to this case (the office), interact with the objects in it and write a short, free-form description of the world, the positioning, look, feel and function of the objects in it, why were things the way they were, etc. In order to guide the mind in the direction wanted, some helpful questions were provided by the conductor about the look, feel and purpose of the “elements” around them, which included the space itself, the objects and subjects in it and overall atmosphere (from light and smell to emotional feelings).

After 20 minutes the participants were asked to come sit around the table, present their versions of the world they had chosen and draw their creations on an office map, which led to four completely different ideas, even though they had all been operating in the same setting. At first, there was a very classical description of the office space that took inspiration from post-apocalyptic style with graffiti on the walls, broken furniture due to junkies getting high and not caring about their environment, etc. but with a touch of symbolism – the only things properly “alive” in this setting were the few plants around the office. When asked how this element would survive while not the rest, the author responded with that she didn’t really care about that, she saw the plants staying green as more of a symbol of hope, while everything else was in ruins. Another cases saw the Ended World as more of an opportunity for something new to rise – one participant imagined the world to be in ruins but could see how the class divide of our current society would come into play and create “oasis” for people unaffected by the drug. Her office space was filled with re-enforced doors and glass meeting rooms turned into containment cells (where, funnily, the drug-addict locked away was still wearing a proper suit) (figure 14). The other “opportunist” rather embraced the drug and made use of the office setting by actually distributing the pills to the workers forcefully, then containing them behind their desks to force them to work until the effects run off. Her world was populated by characters not present in the “real”, but the world as an environment was still very much intact, just sterile and purpose-based.

Figure 14. The glass meeting rooms in our “current world”.

The fourth case was perhaps the most interesting, as the participant took a deeper look at her own role in this parallel world by imagining herself as one of the addicts. This Ended World lacked the
usual – abandonment, broken things, etc., but instead was filled with colours, rosebushes inside the office, meeting tables turning into carousels and chocolate spraying out of the fire sprinklers. She focused a lot on what she as a person would do and how she would interact with the others (dancing around a bonfire in the middle of the office, for instance).

4.2.2 Conclusion

As this workshop happened outside any digital or game world, it didn’t pay any focus on the actual physical switch that was possible to observe during play sessions, but it did explore the touchpoints of mental and emotional kind. Later, when I will be moving back to a more digital world, the results could be used to strengthen the imaginative immersion in games.

As all the subjects of the workshop also participated in the play sessions, one can perhaps also observe their answers in comparison to the player types. The most interesting comparison could maybe be between, let’s call them player B and E, as we did above, and their take on the world. Player B was obviously drawn to the emotional side of the world-building with imagining it through an addict’s eyes. It was also very much a world focusing on her interacting with others in this madness setting, but in a very positive way, compared to other versions. Player E (oasis for sober, unaffected people), however, was the opposite by focusing on the realism part of the imaginary world – she claimed that there would be no way she could be immersed or believe in the world at hand if the elements in it were not rooted in some form of logic – why are things the way they are? For that she took the “real” world as a comparison – if that’s the way things happen in our world, it makes sense they do so also in this world. Funnily, the participants falling more into the Socialiser type in games (B & D) were also the ones who put more emphases on the people’s roles in the parallel world, even though the office was empty in the “real”. Player E, however, mixture of Free-spirit (explorer?) / Philanthropist (driven by purpose) with a drop of Disruptor, set the idea of the flow or structure of the world as most important with the characters in it fitting into places where it would be logical.

Of course, it would be pre-mature to make any kind of solid conclusions based on one workshop and four people, but those differences could bridge the gap between different people’s interests and what they find enjoyable and interesting (or not) in games. What could be concluded, though, was that the physical objects and living beings (even if imaginary) acted as mental touchpoints between the worlds. The physical properties of, for instance glass meeting rooms, revealed their potential use in a different universe and helped develop the sense-making of the new world.

4.3 The mental threads between worlds

Based on previous theory, game sessions and the workshop, I could now put together a clearer picture of what exactly make the so-called “touchpoints” between the parallel worlds and what are their attributes that define their type. Below I display the play between the worlds in a more structured way and see how it all fits into the idea of parallels in games, good immersion and hopefully connect this with the possibility of gaining insight from different player types.

In the start of the paper I introduced a very basic graph of the touchpoints between the parallel worlds (figure 1). However, it became clear during my research that this model is too simplified, especially when looking at the more mental connections between the worlds and the different emotions it could evoke in players. Therefore, I propose that the model should look more something like figure 15 below with the solid boxes representing the literal scripted switch between the two 3D
cells and the dots with lines showing the mental “strings” between the worlds. It has also become clear that using the word “touchpoints” might over-simplify it, so in order to separate the two domains, I will be using the terms literal (scripted) switch when talking about technical change between the worlds, and the term strings / threads when operating in the mental world.

![Digital environment:](image)

**Figure 15.** An updated version of the old “touchpoints” model. The black boxes with arrows represent the technical switches between the worlds (a scripted event) while the threads allow for more mental, imaginative and emotional connections.

I believe that using the term mental threads in this case fits well since a thread, by its nature, can be tightened, loosened and broken, while the scripted switch, however, is decided by the designer and lies in the technical aspects of a game (of course it would be interesting in the future to explore how the design attributes of the scripted switch affect the player’s behaviour).

Based on the above model, we can also look at the worlds in more detail:
Figure 16. On the left we can see the structured “physical” world with objects, character models, etc. On the right the same world exists but through a more mental perspective. Even though the focus of this project is on the latter, the two domains are highly intertwined – the mental strings cannot form without the physical.

As seen from the figure 16, the mental strings can potentially form in different ways – sometimes tight, sometimes loose, sometimes starting in one and never reaching the other.

Based on the work by Bastos et al. (2017), Ermi & Mäyrä (2005) and other researchers mentioned in the immersion section and the process of this project, it is important to expand on the attributes that have the potential to create those threads in the user’s mind, especially when looking at the interaction through the lens of “good” immersion and different forms of experience. It is also good to remember that this research revolves around the idea of An Ended World, that has its own influence on the threads formed – focus on background, story and the feelings of “end”. Lastly, there is also the question of player types and different motivations when navigating in those fictional worlds.
“Physical” 3D rendered world attributes:

The look, design and purpose of audio-visual objects (3D-/character models, lights, sounds) – in relation to Bastos et al.’s (2017) categories of impressive graphics and audio-visual synchronization. However, in order to function, need to be positioned in a certain context and can only that way create threads of atmospheric or narrative connections. Creates both sensory and imaginative immersion.

Character behaviour and AI – both the design of the playable character and the others. Sensory and imaginative immersion.

Mental, narrative world attributes:

Atmosphere of the environment – in this case the type of feeling(s) the game environment is trying to make the player experience, is mostly achieved through the design of the world and its objects. In certain contexts fits with the idea of feeling of danger and threat. Sensory and imaginative immersion.

The narrative – Also includes the background, lore, stories within. This is what the designer decides is the story. Fits with implicit story and symbology. Imaginative immersion.

Belief of the world – The world has to be grounded in something, very connected with the narrative and the cultural experiences / type of personality of the player. Imaginative immersion.

Cultural background – The player’s connection with the “real” world and their experiences in it. The cultural differences and symbolism play a role here. Imaginative immersion.

Strong comparison – In order to pull a strong thread, the comparison between the two worlds/objects has to be explicit. Imaginative and sensory immersion.

Other factors that can influence the experience in this case:

Previous experience – Existing knowledge of video game mechanics and digital worlds in a game setting can create stronger threads and act as a guide to the user.

Interactivity of objects – In this case I mean that the choice of points for interaction can also act as a guide to creating mental threads. The objects chosen as “activators” (interacting with them results in some form of response from the game) have the possibility to make the player navigate in a certain way.
In order to illustrate this better, I have created a model that shows the abovementioned points’ influence on the player:

![Diagram of immersion factors](image)

**Figure 17.** The abovementioned attributes influence on creating different forms of immersion that have the capacity to create threads and result in various types of experiences when interacting with the game. Note: even though the left side states “physical”, they need to have some connection to the “mental” in order to create the threads (figure 16).

Looking at Figure 17 one can see that the overall image ends with experience in five forms: narrative, curiosity, discovery, fantasy and empathy. This is in correlation with Figure 2 (MDA framework) in the start of the paper where I pinpoint my interests in this project, and in addition fits with the focus on sensory and imaginative immersion. However, the terms I use can be quite open, therefore, it might be important to explain them briefly:

**Narrative** - the interactive experience aimed at discovering or reconstructing an underlying fictional world (Garin & Pérez, 2009). One can say that narrative is the foundation for all the other terms below – it is the basics of the story wanting to be heard. Can be expressed through literal storytelling, characters, world design, etc. **This is the story received by the user.**
Curiosity – The initial drive to start exploring the game world. Evoked by world design and narrative. The three types of experience below would be hard to reach without curiosity.

Discovery – The emotions evoked (joy, sadness, etc.) by discovering something new or being finally able to make sense of the game world/situation, mostly part of the overall narrative.

Fantasy – The core of creating imaginative immersion. What makes fantasy different from Narrative is that it plays with the parts of the world that are not necessarily told by the designer/artist/writer – what else is out there? How it came to happen? Is often evoked by curiosity and in return can create more curiosity, if paired with discovery in a good setting (gameplay, player’s background, etc.).

Empathy – The side product of well-working narrative. Connection to other people and their stories, even if fictional. Our relatedness to other human beings.

These findings and terms of this chapter will be explored though prototypes and be described more conclusively in the main results chapter.

4.3.1 Why are the player types relevant?

After now having established the different terms and their relations to each other, I can take a step back and look at the theory on player types in the start of this project. Since the focus was never on gameplay but rather on emotions, exploration of a 3D environment and world-building, the motivations of certain player types were more relevant to this project – in this case mostly the Free-spirits (explorers) but also Socializers with their drive to seek human connections (motivations for two groups: autonomy, relatedness, exploration).

The focus on motivation is important because even though there are different types of players, most people would never fall strictly into one category, as were also the results from Tondello et al. (2016) questionnaire. An Achiever might not care much of their environment’s narrative or backstory when given a possibility to develop complicated strategies but could be suddenly into the explorative side of the game world once that possibility is taken from them. Switching the focus from the player types to their motivation could also help us move from “what kind of games do different types of players want to play” (Example: Achievers prefer shooters, Creators SimCity) to a more “what motivates the player to interact with the game world(s) in this certain level (of a game)?”. Due to the nature of this project and based on the play sessions and workshop, I can therefore say that the players who tend to be driven by the three motivations mentioned before produce more relevant knowledge in this case.

Anyone familiar with the theory on player types might not agree with including Socializers in this case – the type is mostly meant as someone who highly values the communication with other human players. However, I believe that looking at their motivation – relatedness – is something that could be observed throughout the play sessions and the workshop: players leaning towards this type were looking for human connections even if there were no other real people around. The idea of relatedness could also perhaps create empathetic connections with imaginative characters in the game.

4.4 Building a prototype using G.E.C.K.

Due to the very short time scale of this project it would’ve been hard to build a working digital environment from scratch, which is why it made sense to take a glance at already existing games and
the resources they could provide. In order to test out my theories of series of attributes mentioned in the last chapter, I decided to build a digital environment for the game Fallout 4 (post-apocalyptic RPG that takes place after a nuclear war) by using Bethesda’s modification kit called G.E.C.K. That allowed me to not spend too much time on 3D modelling or scripting from beginning so I could focus more on the setup and narrative, with the exception of a few custom textures, etc. when I felt that the assets provided by the game were not enough.

The design of the prototype was based on building – playtesting – gathering feedback and looping the same process for the next version.

What is G.E.C.K.?

G.E.C.K. (Garden of Eden Creation Kit) is a free software tool provided by the game company Bethesda to help independent creators produce modifications for their Fallout series games. It allows the user to make use of every existing asset (models, textures, characters, scripts) and include people’s own creations to the game.

4.4.1 World v.1 – The basics

The first version of the prototype focused on building up the foundation of the desired world, meaning that a lot of work was done on the 3D digital environment: the cells itself (environment where the interaction happens), the models, the textures and the overall what that will be displayed to the player on screen. Before starting to build anything, I received a lot of inspiration from Tom Meigs (2003) and his guidelines to creating game worlds, especially environment design. Even before developing any kind of backstory of the world I was creating, I had to pin down where the story I wanted to tell was settled, what was the mood in the environment and so on. Of course I had already chosen a topic beforehand – An Ended World, but that could be played out in numerous ways. The other “restriction” was also the fact that I operated within an existing game and used their 3D models, for instance, which already carry a certain feel.

Figure 18. The topographic sketch of the first cell (left) and the 3D realization of it (right). The parallels are created as two opposite rooms mirroring each other, divided by a long hallway.

In the end I decided to go with a domestic setting: the two rooms (figure 18) were set up as one being very bright and new, while the other looking destroyed and dangerous. All the furniture and objects were placed in the same spot, just mirroring each other, so it was clear that it was, indeed, the same environment. The corridor between the two acted as a “descendance” – the more towards

4 https://fallout.bethesda.net/en/games/fallout-4 Accessed on 17.05.2019
the Ended World the character walked, the “darker” the atmosphere turned. For instance: the lighting became colder, cheery music from the “Light world” (from here on the “light” refers to the intact world, while “dark” to the ended world, just for better understanding) faded away and there were skeletons on the ground (figure 19).

Figure 19. The player is standing in the middle of the hallway, looking towards the “light” (left) and facing the “dark” (right).

When it comes to characters, the “light” held a generic male NPC with no real interaction (clicking on him just made him speak some short random phrases) while the “dark” was populated with a single ghoul (basically a zombie), supposed to represent the “other” version of the NPC.

Overall, there weren’t too many possibilities to interact with the world, rather just observe. From feedback the players understood that the two rooms were opposites of each other but since the “switch” happened gradually (walking down the hallway) the correlation between the worlds became distant. The players could see that one world mirrored the other, but the strings that formed were loose and didn’t offer much tension. A more memorable moment was when the ghoul attacked the player (a moment of threat) but since the user knew that the male NPC was still alive and walking around in the other end of the hallway, the correlation between the two was not very believable.

4.4.2 World v.2 – The immediate switch

The second version started with the re-evaluation of the built world. First, the parallel worlds were divided into two different cells that were connected by “doors” – the scripted switch in between. The environment itself was also expanded, complete with re-positioning of the objects and navigation meshes (the walkable area in 3D environment (Golodetz, 2013) to ensure a smooth transitioning between the two cells and to build up a “set” for more complicated interaction (Adams, 2003).
Figure 20. An overview of the “light” cell: living room, bedroom and a bathroom. The yellow boxes with a little “beak” are teleportation markers into this cell.

As the idea was to make the whole environment highly interactive (meaning that the player could click around objects and be greeted with some sort of response from the game) the switches were hidden into everyday objects around the apartment in order to evoke the element of surprise. The doors varied in the cells, so a teleporting flowerpot in one would not behave the same way in the other world and so on. A cell held three switches, one in each room.

Work was also done on the Strong Comparison, especially the audio-visual part with improvements to the overall atmosphere of the worlds – lights, special effects, etc.
In this phase also the narrative started to emerge: I had defined before that the worlds are built in a domestic setting so the backstory had to fit that. Hence, also the “name” of the character in figure 21 – my hubby, as a nickname for someone you love, in this case most likely the main character’s husband.

Without moving too much into the narrative, this version was more to try out the player’s movement in the digital environment and switching between the worlds. Overall, the switch between worlds was received positively, as it happened quite fast and produced no loading screens, allowing the player to quickly run from one world to another and back again, creating a tighter coupling between the two parallels.

### 4.4.3 World v.3 – The mental, narrative world

It is worth noting that I didn’t want to create a story set too much in stone in order to see people’s own reactions and mental narratives that could emerge from the setting, but in order for that to happen, some story in the prototype had to still be created by me. Overall the setting was perceived through a female character in a domestic atmosphere with her husband, baby and a housecat. Through small clues in the world the player could discover that not everything was as nice as it looked at first with small hints to a drained marriage and domestic abuse. When the player entered the “dark” world they could also find hints of maybe something even more sinister with a computer that wasn’t on the table before and a skeleton lying before it in clothing of the main character (figure 22).
In order to tell that narrative, I made use of not only the atmosphere, look of objects and other things considered in the previous versions but also by adding the possibility of interaction with the world. Many times the objects that could be clicked on acted differently in the two worlds, playing on the idea of comparison (figure 23). Inside those interactions were also references to some cultural clues that could steer the way of making sense of the worlds (basically: what is happening?) (figure 24).
Figure 24. The TV with a programme of slightly changed names of popular (post-) apocalyptic movies.

It is worth noting that at this stage, even though built in a game, the area had no goal or ending, not even a way out. The player was just asked to walk around and interact with the objects around them until they felt they were done. This turned out to be quite immersion-breaking, as the players started to feel bored at some point and even irritated that there was no real ending. A few of them started to look for a key to one of the inactive doors in the game and one exclaimed that they felt as a prisoner. The search for a real objective became so prominent that one player ate the cat to “cure them from radiation sickness”. Overall, the general feedback was that they quickly lost interest in exploring the area when they felt like there was no purpose for it.

Important thing to mention is that I never really explained what the relationship between the two parallel worlds is, hoping to rather hear the theories of the players. Throughout the playtesting people started forming their own ideas based on the clues found in the world: the oven produced some smoke in the “dark” – perhaps there was an explosion? Getting hit by the ghoul gave the player some radiation damage (Fallout mechanic): a nuclear catastrophe? All of that wasn’t, however, relevant to the players who had previous experience with Fallout series, who immediately took the area as a part of the original lore – one world was just before the bombs fell, the other after.
Talking about the mental threads, the players had no trouble understanding and navigating the two worlds. However, just as predicted, certain objects had the capability to produce tighter threads, while others had to be weaved in a longer period of playing through the narrative. The tighter threads were especially prominent in strong comparisons like the shape and behaviour of the baby (figure 25). When clicked on, it produced the sound of a baby crying, doing so to the giant cockroach in the “dark” would play the same sound. The overall atmosphere achieved by the look of objects, sounds and lighting also played a big role.

Another memorable thread was the behaviour of and the players’ interaction with the husband character. The immediate attack against the main character in the “dark” world was very different to the indifferent, distant behaviour in the “light” (every player tried to actively interact with the other “living human” in the game) and caught players off-guard. The most interesting feedback arose, however, through a bug in the game where the player entered the “dark”, died and reloaded an old save in the “light” where they killed the friendly husband character. Going back to the “dark”, ready to fight, the ghoul had disappeared, making the player realize “Oh yea, I killed him, that’s why he isn’t here!” Even though this was never intended by the designer, the players perceived the worlds to also interact with each other not just the player. If one did something in one world, they expected it to influence the other.

The longer, narrative threads, however, fell to the victim of no real direction. Many times the players couldn’t find the clues since nothing was directing them towards them. It didn’t help that the general game mechanics work in a way that when a note, for instance, is picked up from a container it appears in the players (fairly complicated) inventory, instead of popping up on the screen as they would do when picked up directly from the world.

There was also some further feedback to the switches where at least two players started wondering about the symbolism of them. One of the “doors” was placed in a form of a fireplace, that evoked the response from players that “this makes sense”, as their cultural background had the possibility to view fireplaces as a connection between worlds. The other (once again – chosen by the designer as completely random) was the bathroom mirror, once again holding cultural significance in travelling between worlds.

4.4.4 World v.4 – Adding a quest

Even though the atmosphere and the strong comparisons worked well in thread-weaving, a large potential was missed just because there was nothing indicating what the player had to do or what
their goal was, resulting in aimless wondering and often just spending 90% in one world, looking for a way out. In order to counter that I needed a way for the game to slightly nudge the player in the right direction: make them jump between worlds and find clues necessary to build a narrative in their head. The quest would end with the player escaping through the “dark” into a destroyed outside world.

In order to do that I created a small quest that varied from being quite straightforward (quest marker on top of an object I wanted people to interact with) to more open so the player would have the chance to explore and look around on their own.

**Figure 26.** A very direct order from the game has a little marker on the top to bring attention to it (left). A more open order just tries to set a direction – “Find a way out” (right).

Other changes included adding some dialogue to the husband so he wouldn’t act as just an idle background character and would actually add some input to the backstory (figure 27). The connection between him and the ghoul was also tightened as killing one in one world would disable the character in other.

Notes were also made to pop up when finding them in a container which led to the players actually reading all of them and eliminating the need to interact with the game’s inventory system.

**Figure 27.** The dialogue option raised the importance of the husband character and help build the backstory (half-hidden aggressiveness and coldness towards the main character).

Going back to playtesting, it turned out that the quest method worked really well, as it guided the players to the right direction, gave them purpose and made sure that they wouldn’t idle too long in one world, resulting in better noticing the differences of the worlds and understanding the narrative. A quest actually made the players explore more as it gave them a purpose, an ending to thrive towards.
5.0 Main results & final output

After the prototyping phase it is wise to circle back to the attributes defined in chapter 5.3 and see if the play sessions supported these claims.

Overall, the attributes had the capacity to build mental strings between worlds but worked so more in correlation to each other than previously thought, especially when taking the game mechanics into account (where the player is directed, etc.). I also managed to define two new attributes that could influence the gameplay, the players’ interaction with the worlds and the mental image being formed in their head.

The main result of this research will be guidelines in the form of list of attributes, hopefully providing useful knowledge to both game and interaction designers. I believe that these claims could prove useful for both actual game design but also when looking at the setting more general – the switch between two parallel worlds or the threads that can form in our mind exist as interesting notions to research further, not necessarily in the setting of digital games.

Below are the attributes expanded further based on the play sessions done in the prototyping phase:

### The Weavers of Mental Threads:

#### “Physical” 3D rendered world attributes:

The look, design and purpose of audio-visual objects (3D-/character models, lights, sounds) – As mentioned before, this is basically in relation to Bastos et al.’s (2017) categories of impressive graphics and audio-visual synchronization. However, the effect the physical objects can provide will only work when channelled through the mental attributes. Even though the mental attributes are the hardest to control by the designer (dependant on the user’s background, mood, experience, etc.) and emotions evoked by the design of the surrounding world can produce conflicting responses (based on the prototype, some players viewed the “light” as a calm, positive world, while others described it as creepy 50’s environment or something out of Twin Peaks), this is still the easiest way for the designer to build a world based on the existing norms in our culture. These norms meaning some agreed values that would most likely produce a desired effect (closely tied to the Cultural background attribute).

Character behaviour and AI – Even in a digital environment people still tend to be drawn to other human (or just alive) characters. The differences between worlds were more memorable when they were present in the living beings (husband, baby, cat). I can claim that we can reflect this to empathy and the motivation of relatedness, in this case, indeed, of fictional characters not other players.

Frequency of the switch – The importance of the frequency of the switch became evident through the play sessions in relation to the game nudging the player to explore both worlds. If the game mechanics (for instance the set up of a quest) or its level design didn’t support the switch to happen in certain periods of time, the player could end up spending too long in one world. It was also noted that the strings formed were much looser when the player spent too much time in one rather than in both worlds equally. The small differences between the worlds often became unnoticed as the player interacted with the (same) objects over a longer break.

Worlds’ connection to each other – When changing something in one world the player almost expects it to have an effect in the other, no matter the worlds’ actual relation to each other. If that doesn’t happen, it can easily lower the Belief of the world and result in breaking imaginative immersion.
Interactivity of objects – In this case I mean that the choice of points for interaction can also act as a guide to creating mental threads. What can be clicked on, what can be moved? This could also work as a quest – setting a list of objectives the player must interact with, that in turn will guide them through the area. In this case also being important because of the Frequency of the switch.

Mental, narrative world attributes:

Atmosphere of the environment – The type of feeling(s) the game environment is trying to make the player experience. The change in atmosphere was the first thing players noted when first entering the “dark” world. Atmosphere, however, can be perceived differently by different players, as mentioned above.

The narrative – Also includes the background, lore, stories within. This is what the designer decides is the story. Fits with Implicit story and symbology (Bastos et al., 2017).

Belief of the world – The world has to be grounded in something, very connected with the narrative and the cultural experiences / type of personality of the player. Important factor to the player’s interaction with the worlds – when the user does something, they expect it to have an impact, often also in the world they were not currently present in. Actions need to have meaning.

Cultural background – The player’s connection with the “real” world and their experiences in it. The cultural differences and symbolism play a role here. This is a hard attribute to pin down as it can be very subjective. Example: the doors to the other world were disguised as forms of pathways from folklore (fireplaces, mirrors) (MacDonald, Cove, Laughlin & McManus, 1989).

Strong comparison – In order to pull a strong thread, the comparison between the two worlds/objects must be explicit. The stronger the comparison, the tighter the thread. Could also be used as a form of guidance. Example: in the final version of the prototype the doors between worlds were in the form of displacement: a destroyed piece of furniture in the “light” was a way to the “dark” and vice versa.
Figure 29. Above is the modified version of Figure 16, placed in the context of the built prototype. Of course the mental strings formed varied from person to person – above are just some of the more (or less) mentioned design choices in the world(s) built.

Overall, we can say that based on the design choices made in the worlds, certain mental strings are formed in the players’ heads, their tightness or overall qualities dependant on the combinations of the abovementioned attributes. In this, the “physical” and the mental world melt together and are highly dependent on each other. The strings consistency and tightness can, for instance, be influenced by factors like weird, scary, etc. comparison between the worlds, the surprise element of the switch between and the time spent in one or another: the more the player spends in one world, the more the other seems irrelevant at the time.

The design of the actual touchpoints of course influenced the strings being formed. Unfortunately, I didn’t spend too much time researching the actual scripted switch, which would be a topic for another paper, but it was clear that the faster and smoother the transition happened, the less of a threat for breaking the immersion there was. Talking about the more mental touchpoints (looking at the attributes above) – the look and behaviour of objects, for instance – the more grotesque the
differences in this case were, the stronger were the strings formed, even when the design choices might have looked bizarre: a giant cockroach of a baby, for example.

This research also took into consideration the different player types from Tondello et al. (2016) user type hexad. Based on that and the various play sessions one could conclude that the most interesting in this certain case were the motivations of types Free-spirits and Socializers (latter maybe not in the most traditional sense) who expressed better willingness to explore the worlds and were perhaps more receptive to experience their environment through Curiosity and Discovery.

Looking at the types of immersion interesting to this project: sensory and imaginative, the atmosphere, cultural clues and strong comparisons helped to make sense of the worlds and make the player believe that they really were inside this environment that was a world on it’s own, not just a digital interface. Since this particular setting was set in An Ended World the emotions evoked through these types of immersion were mostly fear, discomfort, sense of threat, even when existing in the “light” but also curiosity to find out what actually happened in the “dark” (different theories by the players) or find the link between the two.

6.0 Conclusion & future work

This project started out as a personal interest in how parallel worlds are portrayed in media, especially digital games, and how the idea of An Ended World is usually displayed in its various forms. Even though the project was viewed through the lens of computer games, the interest lied mostly in the users’ interactions and how the touchpoints could produce mental strings between the worlds.

The theory in this project was very much built on the motivations of different player types and forms of immersion in digital games, but also merged in research from other fields, up to literary practises and world-building. I analysed two existing games, both from my own viewpoint and from the users, and conducted a workshop to have a better understanding of world-building through someone else’s mind.

The project ended with a creation of four versions of a prototype that was play tested intensively to shed light on the attributes formed. The actual interaction with the prototype was also able to identify two more factors that were not considered before.

Since this project was only a part of my personal interest in the topic, the work will continue mostly in the form of a Unity\(^5\) prototype what would allow me more freedom when it comes to the actual world-building, as I wouldn’t have to operate in an already fixed environment. The Unity prototype would also allow me to look at the more mechanical aspects of the switch, something that was almost neglected in this project.

\(^5\) [https://unity.com/](https://unity.com/) Accessed on 23.05.2019
Figure 30. Screenshots from the Unity prototype under development. The setting is the designer’s old apartment.

Due to the very small timeframe of this project I also see the potential of continuing the work on the attributes, especially when combining and tweaking some of them or placing them in a different setting. The idea of An Ended World could also be studied further, as it was, in this case of a prototype, just one possible way of portraying it.

7.0 Evaluation of the completed work
In the end I can be both satisfied and critical with the project’s design process. One big influencer was of course the very short timeframe that forced me to make some strict decisions – creating a prototype for an existing game, that faced me with certain limitations. Since the game chosen already had their own design, look (and lore), the feedback was most likely influenced by that and would’ve been different in a game with different art style, for instance.

The possibilities of engaging different user types would have also proven to be an interesting angle. For the purpose of my research focus I narrowed it down to basically 1-2 (even though the other player types were not necessary excluded from play sessions), but taking a closer look at each of the types’ motivation in this parallel world setting would have no doubt produced new outcomes.

As the research was conducted with the focus on games and different types of immersion, positioning the “third type” – challenge-based immersion - into this setting would have also probably changed the outcome or added new attributes.

However, I believe that since the timeframe was short was this project, those limitations had to be made, as it would’ve otherwise turned out to be too overwhelming in the end. I hope that the future work done on this project could spread light into the concerns above and in the end produce a more finished result.
References


Valdes G. (2014). This is the end: Why millions of gamers love to play in the apocalypse. Retrieved May 22, 2019 from https://venturebeat.com/2014/05/07/apocalypse-in-gaming/

### Appendix

#### Appendix 1 – Design criticism of the given examples:

<table>
<thead>
<tr>
<th>Critique</th>
<th>Bioshock 2 (<em>Through the eyes of a Little Sister</em>)</th>
<th>Dishonored 2 (<em>Aramis Stilton’s manor</em>)</th>
</tr>
</thead>
</table>
| **Stylistic References**          | - 50s aesthetic style: social rules, society as something rigid.  
- Child-like world (toys, pillows, etc.) to emphasise that you are seeing the world through a child’s eye.  
- **When switching**: the world turns into more industrialized – run-down, as a direct comparison to children’s naivety. Example: Wind-up shark toys become dead fish.  
- The use of bright colours/lights compared to dark setting in the “other world”  
- Plays on strong comparison | - The timepiece designed as something between technology and fiction (steampunk?).  
**Run-down world:**  
- Overgrowth of plants-nature has taken over.  
- Dark shadows and whispers: something is dangerous; plays on the human fears of loneliness, abandonment and unknown.  
**“Past” world:**  
- Bright colours and lights  
- Show of wealth – the homeowner is obviously rich and important  
- Plays on strong comparison |
| **Standards + conformance to tradition** | Regular game controls for movement + one extra for interaction with objects. | A bit more complicated system overall but the interaction between worlds is mostly done by two keys: *switch between* and *peek into*. |
| **Materiality and Remediation (+movement & interaction mechanics)** | - 3D world through the eyes of the protagonist  
- Movement is slow, not changeable, designed to rather experience the world not rush through it.  
- The switch between worlds triggers automatically, the player has no control: the game itself chooses what it wants to show.  
- Occasionally the player has the option to interact with an object (gathering ADAM from the “angels”, for instance (figure 10)) that triggers the switch. | - 3D world through the eyes of the protagonist  
- The interaction with the world is more complex: different game mechanics for combat, movement and progressing through the world (listening tapes, “levelling up”, etc.)  
- The switch happens when the player wants so: takes a second for the “jump” to go through – visual clues like blurriness when they transition.  
- The possibility of switching enables the player to move around in a different way: a pathway blocked by |
| Genre | First-person shooter with horror elements (Note: this mission includes no combat):  
- The switch happens suddenly with a possibility to startle the player who is not expecting that.  
- Grotesque differences between the two worlds. | Action-adventure game, stealth game:  
- The switch between worlds enables new strategies for both direct combat and stealth. |
| --- | --- | --- |
| Functional versus Cultural Dimensions of an Interface | The player is directed through a path that is not the most direct way to the objective(s), but instead is guided in a way that allows them to see the maze of the world at hand.  
- Little clues of “temptation”: a path of rose pedals leads to an interactive object that is not part of the main objective but overall contributes to the experience. | Level is designed in a manner that forces the player to switch between worlds, otherwise it is just not possible to navigate.  
- Looking through the timepiece, the “other” world appears blurry as if one was seeing something underwater: an aura of “otherworldliness”. |
| Representational Techniques | **Little Sister’s world:**  
- Child-like innocence represented by toys, atmosphere and other aesthetic choices. Creates an aura of trust, safety and wellbeing.  
- The NPCs (non-playable characters) are dressed in formalwear, designed as clean, rich and friendly, called angels.  
- The “clues” in which the game invites the player to | **Run-down world:**  
- The colour scheme: grey and dark, objects have lost their colour – aesthetic choice to show depression, abandonment and despair.  
- The overgrowth of plants shows the nature taking over – nothing humans build lasts forever. |
move somewhere or interact with something follow the same style: a (dead) body to interact with is marked with butterflies, for instance.

**“Real” world:**
- The world feels industrialized, filled with steel and pipes. On fire, in dismay. On contrary to the Little Sisters it has an aura of despair, abandonment and sadness.
- The NPCs are designed as grotesque, aggressive and insane.
- When the player interacts with the dead body the game shows us how it really looks - playing with the idea “what is actually real?”

- Distant movement in the shadows – whatever it is it is not shown directly, adds to the unknown danger feel.

**“Past” world:**
- Bright colours and atmosphere, full of life.
- The “enemies” are out in the open and can be interacted with directly: they are busy, patrolling, working etc. as a part of everyday, full-of-life world.
- The NPCs move around, interact with different objects in the house (the servants make food, for example) as a part of “normal”.

<table>
<thead>
<tr>
<th>Challenges to user Expectations</th>
<th>The switch between is a surprise, something that the player hasn’t had to experience before in the game</th>
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<tbody>
<tr>
<td></td>
<td>The “clues” mentioned above act as something new and play on the user’s curiosity.</td>
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<tr>
<td>Capacity for unanticipated use</td>
<td>New mechanics compared to the rest of the game – the player is not capable of using the timepiece in other levels.</td>
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<td></td>
<td>Generally differentiates from rest of the game.</td>
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<tr>
<td></td>
<td>Plays on the user’s curiosity.</td>
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<td></td>
<td>Generally differentiates from rest of the game.</td>
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<td></td>
<td>Possibilities to develop new tactics.</td>
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Appendix 2 – Descriptions of gameplay sessions:

**Player A (BioShock 2):**

*Player type unknown.*

Being the least experienced player, it was clear that A struggled with the basic mechanics of the game, even with them being simple movement keys. Unfortunately, due to the constant struggle with the mechanics, A had trouble to completely experience the digital world, often missing clues and alternative pathways / triggers. As they also had trouble with the mouse mechanic, meant to look around, the game character was mostly just facing towards the arrow the game interface used to guide the user. That means that they also missed a few “switches between” the game tried to press upon the player. However, even though the player was visibly confused of the way the game works and expressed that also themselves, the sounds of the world seemed to be unaffected by that, as A got visibly startled by them when the switch to the “Ended World” happened (different (threatening) ambience, sudden noise) and later reported the “other, destroyed, world” being quite terrifying.

**Player B (BioShock 2):**

*Strongest player type: Socialiser. Followed by Philanthropist, Achiever & Free spirit.*

Unlike the first player, B was familiar with the basic game mechanics and had no trouble following classical game clues – something is glowing, it can probably be interacted with, etc. B was also quite interested in listening to the vocal background story that unravelled during processing through the world, despite not being familiar with the general lore of the game. Often stopped moving to just listen to the character talk to them.

The switch between the worlds also gave a stronger impression this playthrough, as B interacted with some of the objects that were not mandatory to complete the mission (gathering ADAM, for instance).

Player B also tried to interact with the world more than what was actually possible, clicking on various posters around the world or even tried to pick up a toy gun. In their feedback B exclaimed that the place looked like it had a lot of secrets inside it and they were curious and excited to see what the world had to offer.

**Player C (Dishonored 2):**

*Strongest player type: Achiever / Free Spirit. Followed by Philanthropist & Player.*

As compared to BioShock, in this game the player is in charge of the switch between worlds, and C made use of it extensively. It took player C a bit of time at first to understand how both the switch and the peeking into the other world works, but once that was clear, C started taking advantage of it. Compared to other players in this play session, C chose to “exist” in both of the worlds at the same time by keeping the timepiece open at all times, dividing the screen into two, not caring when it proved harder to look around in the “present” world (the one in which the character was physically in).

Player C was also quite indifferent about their surroundings unless they proved some kind of opportunity to attack the enemies in the game. They didn’t interact with any of the small objects scattered around the world but rather chose to hunt down the guards of the undestroyed world by escaping to the “other”, when spotted and sneaking behind enemies in one world, then switching,
killing them and escaping the crime scene, in that way developing strategies for their way of playing the game.

Even though it seemed at first that player C didn’t care much about their surrounding unless it served them in any way, from the feedback and gameplay it was still clear that the sounds and music of the environments helped reinforce the idea of two very different worlds. C also claimed that the possibility to peek into and switch very fast between the worlds made them feel maybe even “too much” in control, as they became “unstoppable”.

**Player D (Dishonored 2):**

*Strongest player type: Free Spirit. Followed by Socialiser.*

Unlike player C, the interaction with the worlds differed greatly when it came to player D, who chose rather to stay in one world at a time, not engage in combat, if possible, and interact a lot with the world itself by trying to click on little objects all around the digital mansion. They did, however, use the timepiece strategically to get around obstacles in one world that were in the way.

It was clear that player D preferred the undestroyed world to the other, later also claiming that they were drawn to the other characters there but felt stress and discomfort when they discovered the player and started screaming, forcing D to escape to the other world. It was also apparent that the non-hostile NPCs (servants, etc.) being scared of the character and pleading “Don’t hurt me” made the player uncomfortable and they chose to leave.

Overall, player D didn’t seem to put too much value in peeking into the other world and expressed their opinion that they don’t like killing people in games, for which, even though they were drawn to other characters to interact with them, the player was forced to retreat to another world to escape confrontation.

**Player E (Dishonored 2):**

*Strongest player type: Free Spirit / Philanthropist. Followed by Disruptor.*

Player E, even though occasionally peeking into another, also chose to rather focus on one, in this case the destroyed world to avoid (even though occasionally still engaging) combat. E didn’t see much value in strategically switching between the worlds for either combat (as C) or to get through obstacles (D). At some point it seemed that the player even forgot (or was confused with) how the two worlds were built as they tried to attack a guard they saw through a timepiece while still being in the other world. On the other hand, player E was much more engaged with the aesthetic and sensory aspects of the world(s) by getting startled by whispers and small horror elements in the destroyed world, a mysterious moving shadow, for instance (what none of the other players noticed). That made the player also to move around in a more cautious manner, thinking twice before entering a room or looking around before proceeding, as if something could attack them from the unknown. In that way E perceived the digital space in a different way than other players.

What makes player E stand out from others is the constant feel of threat from the world rather than the characters inside it (guards). For the NPC threat, they chose to observe from the distance rather than engage. From their feedback they also admitted that they felt very tense in a spooky way, but still wanted to explore because they enjoyed the aesthetics of the world(s).

**Player F (Bioshock 2 & Dishonored 2):**

*Strongest player type: Philanthropist. Followed by Achiever, Free spirit & Socialiser.*
Even though player F was the most experienced of the bunch, they had never actually played the given games. However, they had heard some of the backstory and knew a bit about the lore of the worlds. That served them especially in Bioshock, which first instalment they had experienced, where they found the Little Sister’s world to be very interesting, much more than the destroyed world, as they had been there before (most of the game(s) take place there). Therefore, was F able to direct their attention to more symbolic details (“That looks like a bottle for babies”, when gathering ADAM with a syringe & “Now I keep wondering what these toys actually are”). Not bothering to listen the spoken commentary from the game, F instead explored the more visual world, trying to find new pathways and doors they could enter.

In Dishonored, F acted more as task-oriented, trying to actually follow the quest marker and progress further into the story (most likely also because of large amounts of earlier gaming experience) but basically getting stuck in one area (manor’s kitchen) as the game required them to find a key to a locked door. This is also when F tried to switch to another world, hoping they could find the missing key there, however, not having any luck, they also had no patience to explore further. Overall, F understood the different strategies the switch provided them with but saw it rather as a way to get by obstacles and progress further, that is also when they used timepiece to peek into the other.

F didn’t care much about the environmental factors of the world (whispers, shadows, aesthetics), as they were just something there in the background, not relevant when trying to follow the quest marker.
Appendix 3 – the three Ended World scenarios for the speculative design workshop:

**World no. 928.001: Bryopsida Virus**

In this world the nature decided to fight back. It started out small – a tiny percentage of the population began to show symptoms of lung disease, joint disorders and skin deterioration. What was initially considered a new type of flu, however, spread rapidly all over the planet, sped up by globalised transportation.

As the symptoms became worse, the first deaths came in and the autopsies showed the human population something unbelievable. The insides of the corpses had deteriorated and filled with spores. As the death count grew higher, we could really see what was happening to their bodies as the plants slowly took over, rotting their flesh from within.

There is only few of us left now and the nature has already started to take back our cities and other human-built structures. We are not sure what is out there, but something is walking around at night.

**World no. 105.4637.056: Candy-tripper**

In this world a new highly addictive drug called Candy-tripper became widely available in 2014. Originating from the scientists in St. Petersburg, originally meant to cure depression, it quickly made its way to Europe, soon replacing other common party drugs.

These little pea-sized pills could transfer a person into an euphoric state full of colours and music, far away from everyday boring life – a new world where everything seemed possible: one could fly from the rooftops, stay awake for a week or even become Picasso himself.

It didn’t take long before 2/3 of the naturally depressed people of Europe had become addicted. Candy-tripper, a drug first used by artists to expand their creativity, now controls the majority of population and society as we know it has started to break down: shopping malls have become drug dens and our morning coffee’s now include a little dissolving pill before we can face the reality.

**World no. 5: New Europe**

In this world we have managed to overuse Earth’s resources in a manner that has rendered most of the planet inhabitable, resulting in massive losses in both wildlife and human population and natural diversity. The lack of resources led to hard borders and segregation with the result of numerous wars in the early 2000s. European countries closed their borders from each other and the rest of the world and political and social tensions have led to wars all over the continent.

In result of this the people started to look for a new kind of leadership in contrast to the liberal worldview the Western world was moving towards in the end of 20th century. As more authoritative forces came to power, even Denmark, once a flagship of liberal values, succumbed to a new form of government where individuality is suppressed, human rights don’t matter and the only person worth anything is someone contributing 24/7 to the dying society.