Fourth Wall Manipulation in Digital Games and its Impact on the Gameplay Experience

Av: Alex Bräysy & Axel Arkö

Handledare: Henrik Warpefelt
Södertörns högskola | Institutionen för naturvetenskap, miljö och teknik
Kandidatsuppsats 30 hp
Medieteknik | HT2016/VT2017
Spelprogrammet
Manipulationen av den Fjärde Väggen
i Digitala Spel och dess Påverkan på
Spelupplevelsen
Abstract

This thesis explores how manipulation of the fourth wall can affect players’ Gameplay Experience in digital games, due to the lack of any significant research regarding the matter. In preparation of the study, multiple commercially released digital games with instances of fourth wall manipulation were analysed. This led to the creation of four distinct game design patterns. These patterns were implemented into a game artefact specifically created for the study, which was played by eight participants. After playing, the participants were interviewed about how they experienced the game artefact. The results show that the majority of the patterns had a positive effect on both the participants’ immersion and engagement, which both form part of the Gameplay Experience model.

Keywords: Fourth Wall, Gameplay Experience, Immersion, Engagement, Digital Games, Development-led Research, Qualitative Study.

Sammanfattning / Swedish Abstract

Denna uppsats undersöker hur manipulering av den fjärde väggen kan påverka spelupplevelsen i digitala spel, då det saknas allmän betydelsefull forskning gällande ämnet. Under förstadiet av denna studie analyserades flertalet kommersiellt lanserade digitala spel som innehöll instanser av fjärde väggen manipuleringar. Detta ledde till skapandet av fyra olika designmönster. Dessa mönster implementerades i en spelartefakt specifikt skapad för studien, vilken spelades av åtta deltagare. Efter att ha spelat blev deltagarna intervjuade om hur de upplevde spelet. Resultaten påvisar att majoriteten av designmönstren hade en positiv inverkan både på deltagarnas immersion och engagemang, vilka båda formar delar av spelupplevelsemodellen.

Nyckelord: Fjärde Väggen, Spelupplevelse, Immersion, Engagemang, Digitala Spel, Utvecklingsled Forskning, Kvalitativ Studie.
# Table of Contents

Abstract ........................................................................................................................................... 3  

Sammanfattning / Swedish Abstract ................................................................................................. 3  

Table of Contents .............................................................................................................................. 4  

1 Introduction .................................................................................................................................. 7  
  1.1 Aim of the Study ...................................................................................................................... 8  
  1.2 Method Overview .................................................................................................................... 9  
  1.3 Thesis Structure ..................................................................................................................... 9  

2 Background .................................................................................................................................. 10  
  2.1 Related Research .................................................................................................................... 11  
  2.2 The Gameplay Experience Model ............................................................................................ 12  
    2.2.1 Immersion ......................................................................................................................... 12  
      2.2.1.1 Sensory Immersion ..................................................................................................... 13  
      2.2.1.2 Challenge-Based Immersion ..................................................................................... 14  
      2.2.1.3 Imaginative Immersion .......................................................................................... 14  
    2.2.2 Engagement ...................................................................................................................... 14  
    2.2.3 Presence ........................................................................................................................... 15  
  2.3 Gameplay Experience Relations to the Fourth Wall ................................................................. 16  
  2.4 Game Design Relations and Similarities to the Fourth Wall ............................................... 18  
    2.4.1 Fourth Wall as Disruptive Game Design ........................................................................ 18  
    2.4.2 Fourth Wall as Non-Diegetic and/or Diegetic Element ................................................. 19  
    2.4.3 Fourth Wall Breaking or Expanding? ............................................................................ 19  
    2.4.4 Fourth Wall Interplay with the Magic Circle ................................................................. 20  
  2.5 Summary of Background ......................................................................................................... 21
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Pilot Study – Design Patterns Collection</td>
<td>23</td>
</tr>
<tr>
<td>3.1</td>
<td>Method</td>
<td>23</td>
</tr>
<tr>
<td>3.2</td>
<td>Results of the Design Pattern Collection</td>
<td>25</td>
</tr>
<tr>
<td>3.2.1</td>
<td>Medium Awareness</td>
<td>25</td>
</tr>
<tr>
<td>3.2.2</td>
<td>Medium Manipulation</td>
<td>28</td>
</tr>
<tr>
<td>3.2.3</td>
<td>Outside Medium Play</td>
<td>32</td>
</tr>
<tr>
<td>3.2.4</td>
<td>Prominent Player Involvement</td>
<td>35</td>
</tr>
<tr>
<td>3.3</td>
<td>Discussion of Design Pattern Collection</td>
<td>37</td>
</tr>
<tr>
<td>3.4</td>
<td>Conclusion of Design Pattern Collection</td>
<td>38</td>
</tr>
<tr>
<td>4</td>
<td>Creation of the Artefact – Development Hell</td>
<td>39</td>
</tr>
<tr>
<td>4.1</td>
<td>Context of the Game</td>
<td>40</td>
</tr>
<tr>
<td>4.2</td>
<td>Implementation of the Design Patterns to the Artefact</td>
<td>40</td>
</tr>
<tr>
<td>4.2.1</td>
<td>Implementation of Medium Awareness</td>
<td>40</td>
</tr>
<tr>
<td>4.2.2</td>
<td>Implementation of Medium Manipulation</td>
<td>41</td>
</tr>
<tr>
<td>4.2.3</td>
<td>Implementation of Outside Medium Play</td>
<td>42</td>
</tr>
<tr>
<td>4.2.4</td>
<td>Implementation of Prominent Player Involvement</td>
<td>43</td>
</tr>
<tr>
<td>4.3</td>
<td>Further Design Implications</td>
<td>44</td>
</tr>
<tr>
<td>4.4</td>
<td>Discussion of the Artefact</td>
<td>46</td>
</tr>
<tr>
<td>5</td>
<td>Main Study – Fourth Wall Impact on Players</td>
<td>48</td>
</tr>
<tr>
<td>5.1</td>
<td>Method</td>
<td>48</td>
</tr>
<tr>
<td>5.1.1</td>
<td>Data Collection</td>
<td>48</td>
</tr>
<tr>
<td>5.1.2</td>
<td>Selection of Participants</td>
<td>50</td>
</tr>
<tr>
<td>5.1.3</td>
<td>Method Analysis</td>
<td>50</td>
</tr>
<tr>
<td>5.1.4</td>
<td>Ethical Consideration</td>
<td>51</td>
</tr>
<tr>
<td>5.2</td>
<td>Results and Analysis of the Fourth Wall Impact on Players</td>
<td>53</td>
</tr>
<tr>
<td>5.2.1</td>
<td>Description of Themes</td>
<td>54</td>
</tr>
<tr>
<td>5.2.2</td>
<td>Reception of Medium Awareness</td>
<td>54</td>
</tr>
<tr>
<td>5.2.3</td>
<td>Reception of Medium Manipulation</td>
<td>56</td>
</tr>
<tr>
<td>5.2.4</td>
<td>Reception of Outside Medium Play</td>
<td>59</td>
</tr>
<tr>
<td>5.2.5</td>
<td>Reception of Prominent Player Involvement</td>
<td>62</td>
</tr>
<tr>
<td>5.2.6</td>
<td>Additional Remarks</td>
<td>63</td>
</tr>
</tbody>
</table>
6 Discussions and Limitations ................................................................. 68

6.1 General Methodological Aspects .......................................................... 68

6.2 Meaning of the Patterns on the Gameplay Experience .............................. 69

6.3 Future Research ................................................................................. 72

7 Conclusions .......................................................................................... 74

Acknowledgements .................................................................................. 76

References ................................................................................................. 77

Appendix .................................................................................................... 82
1 Introduction

Whenever one reads a book, watches television or a play, one might feel immersed within the experience the fiction is providing. But what if the fictions started to become self-aware? If a superhero character starts to jump between illustration panels in a graphic novel? If actors on stage start to have an exchange with the audience, talking directly to them, or if characters interact with the lighting, the camera, sound equipment or refer to the script in a motion picture? What if the medium broke the 

*fourth wall*? How does this ultimately affect one’s experience?

The fourth wall has been used as a narrative and dramaturgic concept for a long time. Both theatre and movies have found ways to explore how a narrative experience can be changed by using the fourth wall as a narrative element. Digital games, while a relatively young phenomenon, have already found unique ways of manipulating the fourth wall into their own narratives by virtue of having the player acting as both observer and participant. Unlike other media where the audience usually is passive throughout the narrative, the player acts as an active participant within the game while simultaneously taking part of the game’s narrative from the outside.

According to Dansky (2007), immersion is the highest achievement a game can reach. Many games today strive to immerse and engage the player in the mediated world, however, game design as a proficiency currently has little to contribute when it comes to ways of handling fourth wall breaches. It is possible that because the idea of fourth wall breaking risks harming immersion. However, we hypothesize that fourth wall breaches within digital games strengthen immersion more often than harming it, as proven in both literature and movies. In addition, the ways digital games are able to manipulate the fourth wall tends to vary from game to game as they have different technical capabilities, which allows for more creative freedom.

Movies have for many years incorporated fourth wall breaking in across multiple film genres for a variety of theatrical effects. Motion pictures like *Deadpool* (2016), *Fight Club* (1999) and many of Mel Brooks’ movies all break the fourth wall in different ways. Audiences and critics alike applauded these movies for what they were trying to achieve with their innovative comedy and drama.
We stand firm that digital games are able to use fourth wall breaking in more imaginative ways than any other medium as of today. Thus, there is no reason why larger grossing games cannot and should not take advantage of this phenomenon. One example of this is the critically acclaimed game *Undertale* (Toby Fox, 2015) which relies on fourth wall breaches to deconstruct the general concept of digital games as a medium.

With this in mind, we see two major issues with the lack of exploration of the fourth wall within digital games, both for game design and further research purposes. While digital games continue to evolve and become more refined technologically, larger areas where fourth wall manipulation can be utilized still remain unexplored, which may be seen as a limiting factor to game design. Additionally, due to the lack of games with prominent use of the fourth wall, the term itself remains very loose in its definition. More specifically, we think that a medium can break the fourth wall in vastly different ways, rather than just implying that every instance is just a fourth wall breach in a generalizing way.

### 1.1 Aim of the Study

The goal of this study is to clarify in what ways breaking or influencing the fourth wall in digital games affects the player and their Gameplay Experience. To better understand how digital games can incorporate ways to use the fourth wall as an experience enhancing element, this study aims to analyse the implementation of said breaches by categorizing them into game design patterns. We expect that this overview will help in answering the question: how do fourth wall breaches affect the Gameplay Experience and how can connections between game design patterns and fourth wall breaches be established?
1.2 Method Overview

This thesis is a three-part study. The first part is a pilot study which is a qualitative analysis of 15 games with major instances of fourth wall manipulation. These instances are categorized and analysed, forming design patterns defined by us.

In the second part of the study, we present a digital game artefact specifically made to display the previously created design patterns within a shorter gameplay period. The designed experience is tailored to manipulate the fourth wall in order to highlight each respective design pattern in order to provide a clear overview for analysis.

The third and main part is a qualitative study, where recruited participants play the game artefact. We hold semi-structured interviews regarding the artefact’s themes with the main focus being how the fourth wall manipulation affects the participants’ Gameplay Experience. This model is based on the immersion and engagement factors.

1.3 Thesis Structure

In preparation for the multiple parts of this study, a Background and Related Research presents history on the concept of the fourth wall, immersion and engagement. Subsequently, this study is split into three parts. First is a pre-study consisting of a formal analysis which will be used in order to construct our own Design Patterns. The second part is a general description of the Artefact and on how we applied the design patterns to it. Lastly follows the third and main study, which after allowing participants to play the game artefact, analyses how they experienced the game’s implemented design patterns through semi-structured interviews. The aim is to explore in what ways fourth wall manipulation in digital games affect the player's Gameplay Experience. In the Discussions and Limitations, we will bring up potential issues in any prior chapter regarding their eventual shortcomings and if necessary, a note regarding potential future research. Lastly, every major aspect will be brought up in the Conclusion, where the study’s results will be summarized, discussed and our final views will be given.
2 Background

The fourth wall is as defined in *A Dictionary of Literary Terms and Literary Theory* (Cuddon and Habib, 2013, p. 288) as the concept of an invisible wall dividing the audience from a performance, a solid but transparent boundary which segregates the communication between the audience and the performing characters (See Figure 1). The concept was originated in theatre, as the namesake adapts the structure of a proscenium – a three-walled box where the invisible fourth wall is the window to the performance, giving the audience possibility to observe the stage. Breaking the fourth wall however is when the performance continues outside of that fictional world and into the reality. The performance addresses, acknowledges even directly engages with the audience, hence breaking the wall. Jullien (1890 cited in Jacobsen, et al., 2006) is the person to create the first literal description of the fourth wall –

If the actor must always follow the impressions of the room of the end of the ear, it must not let anything appear, play as if he were at home, without worrying about the emotion it arouses, bravos or chutes; it is necessary that the location of the curtain is a fourth wall transparent to the public, opaque to the actor.

Figure 1: Visualised depiction of the fourth wall.
The use of the fourth wall is not limited to theatre however. Fourth wall manipulation occurs in the majority of multimedia today, from graphic novels to movies. Fourth wall manipulation has even been applied outside of the entertainment scene, as educational theatre to practice communication skills (Jacobsen, et al., 2006). In TV-shows and movies, the wall is no longer the screen where the performance projects on, but rather, the surrounding of the set. Acknowledging the audience members is still a prominent and popular use of the fourth wall breaking. The character Francis Underwood in the show *House of Cards* (2013) directly talks to the audience at times, explaining his thoughts and plans without any other characters reacting to his monologue in the fictional world.

Another example in the popular culture of the 21st century is the fictional character Deadpool, appearing in comic books, movies and games alike. Deadpool has a unique awareness of whatever medium he is in and takes advantage of that fact. Other fourth wall breaches include characters acknowledging them being in a fictional world, or interacting with off-set elements such as the script, boom mics or cameras. In digital games it is much more difficult to draw such a distinct line between the game as a medium and the player in contrast to other media, as the player is directly involved within the narrative through playing. Since the concept itself currently is relatively generalized, we propose to observe the remediation of the fourth wall from older media to digital games. Remediation being to translate from one medium to another, on both level and content, as described by Bolter & Grusin (1999 cited in Manovich, 2001, p. 89).

### 2.1 Related Research

Very limited research has been done on the concept of the fourth wall relating to the subjects of digital games, with only a few exceptions. In many articles, the fourth wall is only a small aspect that is mentioned while not being a central point. For this reason, the theoretical foundation of this study is based on finding similarities and correlations to the ways of breaking the fourth wall. Therefore, many concepts and theories presented in this study explore not only digital games, but also the psychology of immersion and mediated experiences overall.
2.2 The Gameplay Experience Model

Ermi & Mäyrä (2005) presented their model of the Gameplay Experience, which they describe as – “[...] a heuristic model meant to guide attention to the complex dynamics that are involved in the interaction between the player and the game”. This model revolves around the player being an active participant of the medium while being immersed in the experience. As they further describe, immersion is only one part of the whole Gameplay Experience. While they mainly focused on the state of immersion, they also described engagement and presence, two additional components we can also see as a part of the Gameplay Experience. They state that both Gameplay Experience and immersion are multidimensional and complex phenomena, where every aspect needs to be analysed further. There are likely an uncountable number of variables which have an effect on the Gameplay Experience as a whole. In addition to this, we will be exploring the similar terms – engagement and presence within mediated worlds – as we expect that they are important contributing factors, in order to provide a more thorough picture of the Gameplay Experience theory.

2.2.1 Immersion

As previously stated, immersion is a rather controversial topic and is usually used in an unspecified and vague way. One of the first and more popular definitions was created by Murray (1997 cited in McMahan, 2003) who describes immersion as – “the sense of literally immerse oneself in a pool of water, surrounded by a new reality”. McMahan (2003) has criticized immersion, claiming that it is very loosely defined and interchangeable with other concepts. She defines immersion as – “the player is caught up in the world of the game's story, but also refers to the love of the game and the strategy that goes into it”. McMahan’s definition of immersion is split in two parts. The first part of the citation refers to the aesthetics on top of the game that provide context and meaning, such as the story, graphics and sounds. Even if these elements are only superficial, their importance cannot be understated. The second part revolves around the actual gameplay part of the experience. McMahan argues that engagement is a more fitting term for describing the player’s appreciation of the designed challenges. Engagement will be discussed later in this chapter.
Ermi & Mäyrä describe immersion as the player becoming physically or virtually part of the experience itself and that immersion by definition is – “a many-faceted phenomenon that can be emphasized differently depending on the game and individual”. For this reason, Ermi & Mäyrä introduced the Gameplay Experience model SCI: Sensory, Challenge-based & Imaginative. These parts separate immersion into three dimensions.

2.2.1.1 Sensory Immersion

The first dimension of the SCI model is Sensory Immersion, which is based on the style and audio-visual quality of the game. Ermi & Mäyrä describe that information from large screens and powerful sounds from the game will block out disturbances from the real world. This is further expanded upon by Nunez (2004) who explains that what keeps a world immersive are sensory modules that add information to the experience, such as the display, audio quality or detail in the geometry. It is not uncommon for games to manipulate these modules and according to Nunez, when these modules are compromised, the simulation is negatively affected. This impact is heavily dependent on whether the world is meant to be hyper-realistic, as realism is meant to be a consistent experience in itself.

McMahan explains that it is agreed between scholars and scientists alike that digital worlds do not need to be photo or audio realistic to achieve immersion. The only aspects a game has to maintain is the user’s expectations of the world's conventions. These expectations need to be consistent throughout the experience. Sensory Immersion can be directly compared to McMahan's own definition of immersion, as they both are directly related to the technical fidelity of the game, creating a context to the experience.
2.2.1.2 Challenge-Based Immersion

Sensory Immersion can be applied outside of games. Movies can immerse the viewers with their audio-visual qualities. Games which are an experience fundamentally based on interaction can challenge the player’s motoric and mental skills. According to Ermi & Mäyrä, Challenge-Based Immersion plays an integral part into the Gameplay Experience. Because the player is an active participant, both mental and physical challenges are required in order to motivate their participation. The end result of Challenge-Based Immersion is the powerful feeling of achieving a satisfying balance between challenges and abilities such as strategic thinking and problem solving. The definition of Challenge-Based Immersion has similarities to McMahan's gameplay part of immersion, being the love of the strategic thoughts that goes into the game. Once again, we can see similarities between these two states in the Gameplay Experience model.

2.2.1.3 Imaginative Immersion

Ermi & Mäyrä’s final dimension of the Gameplay Experience is the Imaginative Immersion, when the player uses their imagination to become absorbed into the experience. Imaginative Immersion is the ability to either identify themselves with characters, primarily connected to the world and storytelling or by simply enjoying the fantasy presented by the game world. The descriptions are very similar to some of McMahan's explanations of immersion, as both definitions are related to the context of game worlds.

2.2.2 Engagement

The second part of McMahan's frame is engagement which, while not directly tied to the narrative parts of games, is still a key component to the experience as a whole. She defines engagement as the appreciation of game systems and the design behind them. Engagement can include the player getting deeply involved through the simplicity of design or mastering the gameplay. This is supported by Howell (2011), who states throughout his whole study that engagement is directly affected by gameplay.
He continues that a high level of engagement is achieved when the player’s expectations are challenged and when the game demands a higher level of cognitive thinking. However, if the player becomes bored, all levels of engagement are essentially killed off. In order to prevent that, the game must continue to keep the player interested, by for example continually introducing new elements and challenges.

Maintaining an achieved level of engagement can be tied to the concept of a flow state by Csíkszentmihályi (1990) during which the player’s skill and the challenges presented are perfectly matched. Too difficult challenges and insufficient skill to overcome them leads to anxiety, while the opposite leads to killing engagement through boredom. Once again, we can see correlations between Ermi & Mäyrä’s Challenge-Based Immersion, McMahan's as well as Howell’s definition of engagement, supported by Csikszentmihalyi on how challenging aspects increase engagement and Challenge-Based Immersion. The reason that engagement and Challenge-Based Immersion are exclusive senses to digital games is because they are fundamentally based on player interaction.

### 2.2.3 Presence

McMahan explains that immersion within mediated worlds is meant to contribute to the presence by blocking signals from the real world that can interfere with the experience. As described by Lombard & Ditton (1997 cited in Ermi & Mäyrä, 2005), presence is the sense that the user has lost the thought of using a computer, rather actually being consciously in the mediated world. The stronger the immersion, the more emphasized presence within the medium becomes. Wirth, et al. (2007) gives a similar definition to the spatial presence as –

[...] a binary experience, during which perceived self-location and, in most cases, perceived action possibilities are connected to a mediated spatial environment, and mental capacities are bound by the mediated environment instead of reality.
Like immersion, presence is heavily dependent upon consistency within the mediated world. Inconsistencies in the game’s spatial plane pose a risk of disconnecting the player’s presence within games, as they are no longer made believable. The player can however experience themselves separated from the mediated world and characters, yet empathize and identify with characters within it. Ermi & Mäyrä however criticize the term and directly relate presence to immersion, due to both concepts rely on the metaphor of transportation within digital games. For the simplicity of this study and since we aim to follow Ermi & Mäyrä’s model as accurately as possible, we will therefore acknowledge presence as part of immersion.

2.3 Gameplay Experience Relations to the Fourth Wall

The Gameplay Experience, being a wide definition partially composed of everything from different stages of immersion, engagement and presence, can become a complicated matter to summarise. Rather than bringing up all the different states from all the authors during future arguments, discussions and analyses, we will simply use the terms immersion and engagement from now on. Immersion referring to the audio-visual style of the experience, the presentation and the context it provides to the world together with the narrative. This is based on McMahan’s definition of immersion as well as the Sensory and Imaginative immersion by Ermi & Mäyrä. Engagement focuses on the gameplay aspect of the experience, primarily the challenges provided by the game. We base engagement on McMahan’s and Howell’s engagement together with Challenge-Based Immersion by Ermi & Mäyrä.

It might be a bold statement to claim that all or some of the discussed aspects are a part of immersion or engagement. We do however see similarities in the theories between many of the states of immersion brought up by McMahan, Howell and Ermi & Mäyrä, as presented in respective part of this chapter. We can therefore define our view of immersion and engagement in good faith. Our definitions of immersion and engagement are only some of the potential contributing factors to the Gameplay Experience model (See Figure 2).
Direct research about the fourth wall has been limited at the time this study is written. The few examples presented are not directly based around digital games. However, the results presented can be related to aspects of the Gameplay Experience. Auter & Davis (1991) conducted a study where focus groups watched TV-shows with fourth wall breaking, as well as shows where that would not occur. The majority of the groups were very positive towards having the conventional fourth wall broken. Furthermore, due to the shows including the audience in the context of the mediated world, they felt more involved, pointing towards a more immersive experience. A pattern that did emerge in the cases however was that the positive reception from the audience gradually declined if fourth wall breaking occurred too frequently.

The results from a study by Jacobsen, et al. (2006) point towards that engagement and immersion can mutually reinforce each other. The study utilized fourth wall manipulation through a multi-stage fictional medical scenario. On stage was an actor playing a patient and a volunteer from the audience of doctors in addition to a moderator. The volunteer had to discuss a serious matter regarding the patient's health. The moderator moved the fourth wall, creating situations where the volunteer and the patient only existed within the narrative.
Following that, only the volunteer and the audience existed, where those two parties could discuss the matter privately, with the patient unable to hear or interact with them. Lastly, the fourth wall was moved to encompass all three parties so that they were able to interact simultaneously. The results pointed towards that the fiction based communication in an experimental environment had a positive effect on communication training, which made it easier for the participating audience to interacting with real patients regarding more sensitive matters. Connections between engagement and immersion can therefore be established as the participants had to take an active role within the narrative. Through actively participating, the immersion in addition to the learning process were enhanced.

2.4 Game Design Relations and Similarities to the Fourth Wall

Fourth wall breaking as a pure gameplay mechanic does not have a prominent occurrence in digital games. However, it being compared to unusual or non-conventional elements to a game can be applied to Howell’s (2011) disruptive game design framework. Howell points out that when more cognitive effort is put forward from the player, the higher the resulting level of engagement and gratification will be, which in turn will further immerse the player into the experience. This coincides with Auter & Davis’ conclusion that media which break the fourth wall creates an experience more cognitively involving and engaging.

2.4.1 Fourth Wall as Disruptive Game Design

Howell’s framework on Schematically Disruptive Game Design explores how players’ engagement can be positive, regardless of earlier expectations towards gaming conventions. Howell explains that when playing a game, the player either consciously or unconsciously creates expectations of how a game is supposed to be played from previous knowledge and experiences from similar games. This theory is supported by both McMahan as well as Ermi & Mäyrä who also state that expectation and enjoyment are shaped by the players when experiencing different games. Therefore, the convention of a game should match the player’s expectations for them to be properly immersed.
Creating a game that has disruptive game design is not meant to be abusive towards the player, but to break the player’s current expectations and encourage them to relearn and work harder for satisfaction through gameplay. We can see the similarities that fourth wall manipulation can be interpreted as a disruptive game mechanic, as it is a concept not often utilized. We therefore expect that having the fourth wall present new or unexpected challenges for the player will make the experience more engaging.

2.4.2 Fourth Wall as Non-Diegetic and/or Diegetic Element

As Howell’s study is only based around gameplay, the game's mediated world needs to be examined as well. Everything included within a mediated world is classed as a diegetic element, which are most often the targets of fourth wall manipulation. A general definition of a diegetic element as Stilwell (2007) describes, is if music in a film actually exists in the mediated world, in example from a radio source. Had the music instead been added in post-production to enhance the viewing experience, said music would be non-diegetic and a character within the medium reacting to the music would mean breaking the fourth wall. Non-diegetic elements in games can be methods of conveying information to the player, while characters in the games are not aware of this information existing. User Interfaces are possibly the most common way of displaying how much of the player character’s health remains, a mini-map for easier navigation or a list of current game objectives. Non-diegetic elements within games do not need to be confined within the software, as game controllers are also examples of non-diegetic elements. Fourth wall manipulation therefore has different implications depending on whether it affects a diegetic or non-diegetic element. Non-diegetic fourth wall breaches are therefore typically aimed at the player, with diegetic breaches primarily intended to affect the game world.
2.4.3 Fourth Wall Breaking or Expanding?

When it comes to breaking the fourth wall in movies, comic books and theatre, the characters at most times only acknowledge themselves as part of a performance where the reaction of the audience has no impact on the narrative itself. An exception might be improvisational theatre where suggestions from the audience might impact the performance. This is not the case in digital games. Conway (2010) explains that the player takes the part as both an active participant as well as member of the audience. He argues that when instances of fourth wall breach occurs in digital games, the wall itself is not broken, but rather expanded to include the player deeper into the experience, incorporating them into the narrative, instead of explicitly separating the two. Weise (2008) has a very similar view of the fourth wall, referring to it as an elastic membrane, implying that the fourth wall is not broken, but instead able to encompass more or less elements upon manipulation.

Conway continues that games do not attempt to negatively influence the player's immersion or distance the player from the mediated experience, but rather include them as a part of the game, expanding the game itself and gameplay outside of the medium. He concludes that breaking the fourth wall is normally used to break the suspension of disbelief and to remind the audience that the mediated world is just a performance in a film or theatre. Digital games instead expand the fourth wall, utilizing different techniques to immerse the player further into them, adding real world elements to the world of the game. Such a view on the fourth wall within digital games, in contrast to his standard view on the wall outside of games, can however be criticized. Auter & Davis’ as well as Jacobsen et al.’s studies did show that manipulating the fourth wall in TV and theatre made the experience more positive and improved communication possibilities respectively. Outside of digital game-related studies, this proves that the fourth wall is a very flexible concept, regardless of which medium it is utilized in.
2.4.4 Fourth Wall Interplay with the Magic Circle

Conway's theory regarding the fourth wall's function has similarities to the Magic Circle (Huizinga, 1955 cited in Salen and Zimmerman, 2003, pp. 93-99), which is the concept that revolves around how and when someone plays games, the player enters a boundary that is created where the game takes place. Breaking that circle occurs when rules are broken from the outside world, such as a player leaving a session mid-game. Salen and Zimmerman base parts of their study on the psychologist Apter’s definition of the imaginary frame that connects real life and the artificial game world (1991 cited in Salen and Zimmerman, 2003, p. 94). Apter’s frame is very similar to the theatrical definition of the fourth wall, at least to the point that similarities can be found and compared with, as quoted –

In the play-state you experience a proactive frame which stands between you and the “real” world and its problems, creating an enchanted zone in which, in the end, you are confident that no harm can come, although this frame is psychological, interestingly it often has a physical representation: the proscenium arch of theatre…

In short, the fourth wall can in certain aspects become interchangeable with the magic circle’s boundaries. As the experience becomes immersive enough to include normally non-diegetic elements, both the fourth wall and the magic circle’s boundaries expand, rather than break.

2.5 Summary of Background

For the simplicity of the study, we present our own definitions of the terms immersion and engagement, as they have had varied definitions in the past. The two concepts are a part of what creates the Gameplay Experience. In earlier research, immersion is hard to judge whether it is negatively affected by fourth wall manipulation. McMahan and Nunez mention that immersion is maintained as long as a world remains consistent. We reckon that a game should remain immersive as long as the fourth wall manipulations will not disrupt the contextual tone of the game. This is supported by Conway's and Weise’s theory that the fourth wall expands beyond the game to include the player and possibly other physical elements and should not inherently be experience hampering.
We assume that engagement is the least likely state to be harmfully affected by manipulating the fourth wall. Engagement is primarily tied to the player’s appreciation of a game’s system, such as gameplay and challenges. By simply shifting the focus from the software to the real world and keeping to the context of the challenge, there should not be any negative impact on engagement. Although, much like immersion, inconsistencies within challenges or simply the lack of them will negatively affect engagement, as shown by Csíkszentmihályi.

If used sparingly, fourth wall manipulation in games is likely to provide a positive experience for the player. Howell, Stilwell and Auter & Davis however underline how too frequent or extreme use of disruptive game design, shifting between diegetic/non-diegetic elements and breaking the fourth wall respectively can negatively affect the participant’s experience. Howell’s framework on disruptive game design proved to be successful in player engagement as it requires more cognitive thinking and challenges expectations. Deviating too much from established conventions however has a chance of alienating the player and make them lose engagement. Stilwell’s concern with the barrier of diegetic and nondiegetic is that when the line between them is crossed too often, it blurs and does not carry the same impact anymore. Lastly, Auter & Davis remark that fourth wall manipulation was perceived as more entertaining and involving for the audience compared to regular TV shows. However, Auter & Davis observed that positive attitudes did decrease with repeated breaking of the fourth wall.
3 Pilot Study – Design Patterns Collection

In order to explore on the fourth wall and its impacts on the Gameplay Experience, the concept needs to be streamlined. In the way that Ermi & Mäyrä divided immersion into the SCI model, the fourth wall requires a similar treatment. We propose to create a set of patterns where different types of fourth wall manipulation can be categorized within, to be used as blueprints for future game development and research.

3.1 Method

For this part of the study, a formal analysis of the qualitative method is used in order to construct our own design patterns. The research is based on numerous publically released games with notable uses of manipulating the fourth wall. Recurring themes and patterns are noted for the final categorizations.

The structure of presenting the design patterns are based on the work by Lankoski & Björk (2015) who created frameworks for this type of research. Weise (2008) has a similar categorization for the fourth wall, although on a smaller scale and only presented as examples rather than displaying patterns. Each design pattern will be based on our observations, structured and presented as such:

- **Name** – Name of the created design pattern.

- **Description of the Pattern** – A detailed summary of the design pattern and its effect on gameplay.

- **Primary Examples** – A detailed listing of games that have prominent use of the design pattern and a description on how the examples use it. These are the results from our formal analysis.
Fifteen different games are chosen from a variety of consoles, genres and eras for analysis. These examples in our view have the clearest presentation of fourth wall manipulations represented and/or have multiple instances of them.

- *Another Code: R – A Journey into Lost Memories* (Cing, 2009).
- *Batman Arkham Asylum* (Rocksteady Studios, 2009).
- *Boktai: The Sun is in Your Hand* (Konami Computer Entertainment Japan, 2004).
- *Eternal Darkness: Sanity's Requiem* (Silicon Knights, 2002).
- *Marvel vs. Capcom 3: Fate of Two Worlds* (Capcom and Eighting, 2011).
- *NieR* (Cavia, 2010).
- *Skylanders Imaginators* (Toys for Bob, 2016).
- *Undertale* (Toby Fox, 2015).
3.2 Results of the Design Pattern Collection

3.2.1 Medium Awareness

Description of the Pattern

Medium Awareness relates to when the game in question explicitly acknowledges being a digital game. Usually used for comedic effects, acknowledging that the world and the characters who live in it are a part of a digital game, a form of medium and genre awareness. This design pattern can be used to further immerse the player or provide non-diegetic information without disrupting gameplay. Occasionally, characters within the game might be unaware of the fact they are in a game, yet still break the fourth wall. These cases are typically used for tutorial purposes where a character directly mentions the controller, breaking the game-reality without explicitly being self-referential. According to Boon (2007, p. 65) this mostly stems from bad writing. We however, do not completely agree with that notion, as we view it dependent on the context on how the tutorial is presented.

Primary Examples

*The Stanley Parable* is a first-person game where the player controls a character named Stanley. The game features a narrator telling a story on what Stanley is supposed to do next. The more the player decides to disobey the narrative provided, the more derailed from the story the narrator becomes as well, even resorting to speaking directly to the player character. On one instance, the player arrives in a room which would be considered an unfinished part of the game. The narrator acknowledges the lack of detail in the room –

I haven’t even finished building this section of the map, because you were never supposed to be here in the first place. Broken rooms, exposed developer textures… Is this what you had wanted? Was it worth ruining the entire story I had written out specifically for you?

The *Metal Gear Solid* series has referred to non-diegetic elements with characters clearly being aware of the game’s medium. In the first instalment, *Metal Gear Solid*, there is a scene when the protagonist – Solid Snake, gets subjected to torture for interrogation. One of the game’s antagonists – Revolver Ocelot, tells Snake that –
We are going to play a little game [...] Press the Action button [repeatedly] to regain your strength. When you’ve had enough, press the Select button to submit [to give up]. When your life reaches zero, the game is over. There are no continues, my friend. And don’t even think about using auto-fire or I’ll know.

Auto-fire meaning a controller able to repeatedly trigger a button by holding it down, dissuading the player from attempting to cheat. Along with this warning, if the player has played for a longer period without saving, Revolver Ocelot will intimidate the player in an attempt to make them to submit before even initiating the torture sequence –

Snake, it’s been a long time since you saved your game. If your body can’t survive the torture, it’ll be game over. You really wanna travel down that long road again [start from the last save point]? C’mon I won’t tell. Why don’t you just give up?

This type of awareness has been a frequently recurring feature up to the latest release, Metal Gear Solid V: The Phantom Pain. During the tutorial segment when first obtaining a gun, the player character’s partner says – “Know how to shoot a gun? Hold down the Aim Button to aim, then press the Action Button to fire.” These incidents show that characters are aware of the fact that a controller is used to control the player’s avatar and subsequently that they are within a digital game. They however never refer to the player directly.

Undertale’s primary antagonist Flowey is one of the only characters to remember the player’s previous saves and restarts throughout the game. Should the player kill a major character and later reload a previous save file to instead spare them, Flowey will still remember their previous actions and calls them out for it. Flowey’s fourth wall breaches are not limited to the player, but stretch as far as to any potential audience viewing the game’s darkest events through recordings posted online, videos so-called Let’s Plays. Flowey claims the viewers are all cowards or too weak to do it themselves in their own games.
The *Paper Mario* series overall has broken the fourth wall though each instalment, even referring to their own existence within the same game. One example is in *Paper Mario: The Thousand Year Door*, where one character claims to have played the very same game it is in (See Figure 3). While the character in question seems to be unaware of that fact, the writing in the game is conscious of the medium, as it is able to refer to the title. Though this in itself probably is not enough to establish the game as being Medium Aware, another example occurs when a character explicitly acknowledges that their world is displayed on a TV-screen (See Figure 10).

![Figure 3: A character claims to have played the very same game it is in, unconsciously breaking the fourth wall.](image-url)
3.2.2 Medium Manipulation

Description of the Pattern

Medium Manipulation is when a game uses the medium’s technical features to enhance the experience in an unexpected way. Some games can for example feign system or interface errors, commonly called glitches, or other phenomena which the player may recognize as errors or unintended behaviour. Others games may incorporate normally non-diegetic elements such as the User Interface into the game world, elements which are originally only meant for the player to see.

Primary Examples

In *The Stanley Parable*, if the player continues to deviate from the narrative presented, the narrator will complain on how the player doesn't play the game as intended. In frustration, the narrator questions the player’s taste in games and for that reason starts up replication programs of different games like *Portal* (Valve Corporation, 2007) and *Minecraft* (Mojang, 2011). The narrator continues to insult the player’s lack of understanding the supposed complexity of *The Stanley Parable*, thinking that those other games might be better suited for them.

The boss character Psycho Mantis in *Metal Gear Solid* is depicted to use psychokinetic powers and claims to be able to read the player character's mind. Prior to the battle, the game checks the PlayStation system’s memory card for other Konami published games, such as *Castlevania: Symphony of the Night* (Konami Computer Entertainment Tokyo, 1997). This provokes responses by Psycho Mantis, commenting the player’s gaming habits such as – “You like Castlevania, don’t you?” He even remarks if the player has not saved often, calling them reckless (See Figure 4). Furthermore, the boss uses the controller’s built-in rumble function to further break the fourth wall. Psycho Mantis tells the player to put down the controller on the floor. Shortly after, the controller starts vibrating, causing it to move around, explained to be caused by Psycho Mantis’ psychokinetic powers. This is not the only instance where the game uses its hardware to break the fourth wall. One of the player character’s companions Naomi offers a massage to the player character Snake. The player is asked to put the Dualshock controller on their arm, where the controller’s vibrations function should simulate a Shiatsu massage.
Undertale presents its world of being static and of only one instance in the player's computer. If the player kills a prominent character during a playthrough and then proceeds to reset in order to keep them alive, some characters will point out that they still remember the player killing the character. Going so far as to kill each and every enemy will permanently lock the player out of the game’s best ending. This will hold true even after uninstalling the game, which means the game data has to be deleted from the computer in unconventional ways.

Another example in Undertale is the diegetic manipulation of certain User Interface elements directly affecting the player. The player is able to resolve combat in a non-violent way through the Mercy command, potentially ending a battle without killing their enemy. The game encourages the player to do so, as sparing major characters has a large impact upon the game’s story. One of the game’s bosses, Asgore, destroys the Mercy button prior to the battle, removing it from the player’s menu (See Figure 5). This serves both as to switch up the game’s combat mechanics in an unexpected way and to add tension to a climactic battle.

Figure 4: Psycho Mantis commenting on the player's gaming habits by reading the PlayStation memory.

Figure 5: Asgore destroys the Mercy button on the User Interface, disabling the command for the player.
In *Eternal Darkness: Sanity’s Requiem*, one of the core gameplay resources to manage is the player character’s sanity meter, a game mechanic based on the role-playing game *Call of Cthulhu* (Sandy Petersen, 1981). When being detected by enemies, the meter decreases, eventually leading the player character to become more and more insane. This is presented as for example by hallucinations, change of music and voices or sounds playing where they normally should not be. Some of these sanity effects are directly targeting the player. These effects range from disabling the game’s controller input following an error message that the GameCube controller is not connected to the console. Another effect can occur during saving, where the game asks if the player wants to delete all the save files. Regardless of the player input, the message – “Deleting all saved data” is subsequently displayed on the screen. Shortly after, everything flashes back to normal. While having no in-game consequences, unprepared players can still experience shock or surprise when these events occur, due to their disruptive nature.

In *Batman Arkham Asylum*, one of the antagonists – the Scarecrow, uses a gaseous fear toxin. Throughout the game, the Scarecrow manages to intoxicate Batman with the fear gas, which leads to gameplay segments containing hallucinating or surrealistic events, which narratively is Batman’s mental reaction, as the toxin brings out his own fear into the world. One instance of the influence however is a segment when walking down a corridor, the game abruptly causes graphical glitches, the audio starts to crack and shriek before the screen goes black and the game crashes. When Batman eventually succumbs to the intoxication, the gameplay hint on the Game Over screen to – “Use the middle stick to avoid the incoming bullets”, a stick which does not exist on the PlayStation 3 controller. While being depicted as Batman’s hallucinations, the effects are directly aimed towards the player, as Batman’s character within the game narrative is completely oblivious to the fourth wall breaches.
In *Marvel vs. Capcom 3: Fate of Two Worlds*, the character Deadpool is one of the many playable fighters. To keep his character state of always being aware of whatever medium he is in, one of his so called Hyper Combos revolves around Deadpool ripping out both his own Health Bar and Level Bar from the User Interface and attacking his opponent, using those as weapons (See Figure 6).

Figure 6: Deadpool is about to hit Spider-Man with his own level bar, a User Interface element which should not normally be known to the characters in the game world.

In *NieR*’s fourth and final ending, the player is given the choice to make a sacrifice. In order to save another character’s life, they have to give up their own existence. Should the player agree to this, a sequence will play where all the player’s items, data and accomplishments will vanish. After the ending, all save data linked to the save file which triggered the ending will be erased. Diegetically, no one remembers the protagonist’s existence after that happens.
3.2.3 Outside Medium Play

Description of the Pattern

Outside Medium Play is when the game incorporates real-world objects into the gameplay. By taking real-life actions, the player can affect the game in certain ways. This does not include taking actions outside of the game involving control through input devices. This is due to controlling a game being the bare minimum action outside the software required in order to play it, granted that the game implements any form of input at all. Typically, fourth wall breaking occurring in digital games directly take place within the medium and never literally physically break the wall into the real world per se. Some games do however venture to involve the player and the real world through Outside Medium Play.

Primary Examples

*Metal Gear Solid* has multiple instances of the game interacting directly outside of the medium. Friendly Non-Player Characters are contacted through radio frequencies within the game. Unable to find a certain frequency in-game, the main character’s commanding officer tells him to look at the back of the game’s CD-case, which has a screenshot depicting the frequency the player needs in order to progress. Another notable example is with the aforementioned boss battle against Psycho Mantis. Being unable to deal any meaningful damage to the boss, the player character Solid Snake is told to change the PlayStation controller from controller-port one to controller-port two. This will prevent Psycho Mantis from reading Snake’s mind – the player’s input on a diegetic level – and therefore unable to evade the player’s attacks (See Figure 7).

![Image of a CD-case and a PlayStation controller with instructions](image.png)

Figure 7: Instructions given on how to defeat Psycho Mantis, by re-inserting the controller to controller-port 2 on the PlayStation.
In *Boktai: The Sun Is in Your Hand*, the character's in-game weapon is charged by real world solar power, which is converted by the photometric light-sensor built into the game’s cartridge. The consequences of not having the cartridge occasionally exposed to sunlight forces the player to avoid enemies, rather than allowing direct combat. Without sunlight, the in-game weapon does not have any power.

*Another Code: R – A Journey into Lost Memories* is a heavily narrative game with occasional puzzle sequences to progress the story, which mostly consists of deciphering codes. With the game already subtly breaking the fourth wall with the main character having a controller very similar to the Nintendo Wii controller, one of the puzzles requires the player to pause the game and enter the Nintendo Wii Home Menu, the operating system’s hub for controller settings and restarting the console/game. This menu is very a similar feature to the options screen seen in any television system. The user interface banners at that time block certain parts of the screen, revealing a code to progress in the game (See Figure 8).

![Figure 8](image)

**Figure 8:** The Wii Home Menu blocks the screen, revealing the code 1102.

Some of the earliest examples of fourth wall breaking categorized as Outside Medium Play are *Startropics* and *X-Men*. In order to receive crucial narrative details in *Startropics*, the player had to submerge the physical game manual in water to unveil a hidden message. This was supposedly made to prevent players who had pirated copies of the game to progress. In *X-Men*, at a certain point of the game, a brief message is displayed on the screen stating – “*Reset the computer now!*” While the in-game context is very ambiguous, the player has to physically restart their Sega Mega Drive console, to simulate the act of restarting a computer in the actual game.
A more recent trend in gaming is the so-called Toy-to-Life games, one example being *Skylanders Imaginators*. In the game world, the player is directly referred to as a *Portal Master* by the game's characters and lore. The player has the ability to summon characters imprisoned in the real world into the game world which provides an in-game explanation to why there exists figurines of the characters in our world. In order to have the player character appearing on screen, a compatible figurine has to be placed on a Near-Field-Communication (NFC) device connected to the console, resulting in said character appearing in the game world (See Figure 9). At one critical point in the series, the main antagonist disables the NFC device, to demonstrate his power and to disempower the player, which is relatable to Medium Manipulation.

![Figure 9: The figurine *Golden Queen* is transported from the NFC-device to the game world.](image)
3.2.4 Prominent Player Involvement

Description of the Pattern

When using Prominent Player Involvement, the game has the player in question made part of the core narrative, being explicitly referred to as an agent within the story. This can be done in several ways. The player’s avatar may be a direct reference to the player, or the player controlling the avatar can be addressed as an agent. The player is directly mentioned in the narrative and an active part of the world, ultimately being made a diegetic part of the game, sometimes with more extreme cases than others.

Primary Examples

In the beginning of *The Stanley Parable*, the narrator will talk about Stanley and his actions in third person from an omniscient view. Once the player starts to derail from the narrative, the narrator gradually shifts his focus from the character Stanley to the player who is controlling Stanley.

*Paper Mario: The Thousand Year Door* has simple yet multiple instances of characters directly referring to the player as an outsider to the world in dialogue, becoming Medium Aware at the same time. This is mostly done for comedic effects. Some characters however are oblivious of the fact and become confused regarding the references (See Figure 10).

![Figure 10: A character talks directly to the player behind the TV, while another is confused of the instance.](image-url)
Metal Gear Solid V: The Phantom Pain has a very long build-up to reveal a plot twist with a fourth wall manipulation. In the end of the game, it turns out the player has not been playing as a series veteran character – Big Boss, at all, but a character the player had to create and name after themselves in the beginning of the game. The real Big Boss later says in the ending that the player has been acting as his body double the whole time, saying – “I am you and you are me. Carry that with you wherever you go”. He is even seen in the end looking at a passport with the name the player typed in to switch their identities. In an interview with one of the voice actresses in the game, the director Hideo Kojima confirms that this was supposed to mean that everyone playing the game is Big Boss in their own interpreted way (YongYea, 2015).

Tearaway has one of the most extreme uses of Prominent Player Involvement. The narrative follows the main character – the messenger, who is on a quest to deliver a message to the player. The player is referred as The You, living in the sun which is displayed by the front view camera on the PlayStation Vita system (See Figure 11). This makes the player one of the main characters in the narrative. In addition, the player must utilize the PlayStation Vita’s different functionalities, such as the back touch pad or back view camera to alter the terrain or take a picture of their hand to have it appear in the game world.

Figure 11: The player - The You, looking into the game's world through the PlayStation Vita camera.
3.3 Discussion of Design Pattern Collection

Based on our findings, Medium Awareness and Prominent Player Involvement should both affect the immersion level of the player. Medium Aware games can through this pattern alter their narrative context, world building and provide diegetic explanations for game mechanics and elements which would otherwise be problematic to present without harming the game’s overall consistency.

We noted that while Prominent Player Involvement expands the fourth wall to include the player within the narrative, Medium Awareness seems to have the opposite effect, emphasizing the line between player and medium. These two patterns can for that reason be seen as each other's counterpart for the purpose of how they manipulate the fourth wall.

The pattern which has the strongest connection to gameplay is Outside Medium Play. Even if the player is required a minimal level of effort to perform an action outside of the software, we view that action is valid to reflect the pattern, although they should not be performed through the game’s standard means of input.

Medium Manipulation can arguably be related to gameplay as well, though not on the same level as Outside Medium Play. Occurrences of Medium Manipulation affecting gameplay are relatively uncommon, with the only example in our pattern collection being how a User Interface element gets destroyed in Undertale, removing the related functionality and forcing the player to change strategies. Naturally, Medium Manipulation instances changing the player’s views of the game’s system do have connections to gameplay due to being behaviour altering.

One of the main points of discussion is when a character in a game is able to break the fourth wall, does said game overall have Medium Awareness on some level? It can be debated what knowing if the software is a game really means. Flowey from Undertale and Deadpool are fully aware of the respective medium they are in, therefore consciously know when they break their worlds’ conventional rules. Skylanders Imaginators and Tearaway all break the fourth wall, including the player within the narrative, however in the context of the world, they never acknowledge themselves as being digital games.
It should rather be a question if the designers of those games intended that their games are seen as such or a world where the characters within perceive it as real. If Flowey and Deadpool are aware of the medium in their respective game and taking conscious advantage of this, the question is if only those characters are exclusively aware of the medium, or if this results in the game as a whole becoming automatically aware of that. The same issue can be debated in the case of *Paper Mario: The Thousand Year Door*, where a character claims to play a game of the same name. Said character seems to unconsciously break the fourth wall and it is rather the writers of the game that perform this action. It is for that reason difficult, if not impossible to assert whether or not an entire game can be classed as Medium Aware without knowing the game designers’ intention.

The findings in this chapter may be insufficient or flawed in their definitions. However, these patterns are intended to streamline the fourth wall to a model with different elements, rather than just a generalized concept as it was before, particularly within the context of digital games. These patterns are by no means intended to be static or inflexible and we see a possibility to expand or improve the definitions should future research require it.

### 3.4 Conclusion of Design Pattern Collection

After examining 15 games with concrete examples of fourth wall manipulation, we have constructed four distinct design patterns which can be used for game development and research purposes. Each pattern is flexible to incorporate many different fourth wall manipulations within the spectrum of the pattern. These patterns serve as a more thorough framework for both game development and research rather than to generalize the concept of fourth wall breaking as only one phenomenon.
4 Creation of the Artefact – Development Hell

Howell (2011) brought up a problem related to using commercially released games as artefacts for research purposes. While the researchers may have extensive knowledge of the games they picked for the study, all observations, from both researchers and participants cannot strictly be tied to the original design intent. Unless an aspect of a game can be explained by the development team, there is no way of understanding the intended impact of the game’s design and mechanics. For this reason, Howell finds a noticeable void between game theory and game practice, proposing development-led research, meaning that the researcher is a part of the game development process.

When designing games ourselves, we have always been interested in how games can take advantage of being interactive software on different levels. We want to further explore the fourth wall, integrating it into a digital game as a strong, prominent mechanic and a way of strengthening the experience. Since our design patterns were split across multiple games and systems and some may experience one of the design patterns stronger than others, having our analysis based upon people playing at least one in every category might prove overbearing. Our artefact aims to condense all of the patterns in one single game. In this way, we are able to freely control our variables to be measured and tailored for the study. Furthermore, we expect that by implementing the patterns ourselves, we might come to better understanding how they work, as well as the means of implementing them.

The reason we decided to produce our own prototype is to make the study as user-friendly as we can. While it is possible to analyse the games individually, this would not be without issues. The observed design patterns from the game examples are usually only a minor part of them and almost never occur throughout the whole games. Playing up to the point where the design patterns could be properly observed would take several hours for each game. We could have reduced each play session by only letting the participant play the sections of the games where the fourth wall is broken. This would however take that moment out of context and not represent the manipulation in a proper way. In addition, they will probably not experience the whole game in the way the developers intended, which risks having negative implications on their gameplay experience as well.
4.1 Context of the Game

*Development Hell* is a single-player game made in the Unity Engine (Unity Technologies, 2005) featuring both horror and puzzle elements. The player takes control of a game designer who wakes up in their game development studio at late hours. Within the studio where the player character is working roams a digitally created monster. This creature exists both within the computers in the game world and in the game studio, meaning it is initially able to traverse the mediated fourth wall in the game and later moving on to breaking the fourth wall between player and game.

The goal of the game is to get out of the studio where the player character is located in. The gameplay has two game-modes of playing. The main part is the exploration of the game studio which is done in first-person view, where the player can only walk and interact with nearby objects. Interacting with any of the active workstation computers will present a mini-game, simulating an activity of developing games: programming, 3D modelling and sound mixing respectively. The player must get to each workstation in the studio and complete all unfinished tasks left behind by the development team. Attempting to leave the studio early will result in a jumpscare by the monster, followed by a game over. With each successful workstation mini-game completed, the game world becomes more corrupted and starts acting in odd ways, like a malfunctioning program, which is made possible by the game manipulating the fourth wall.

4.2 Implementation of the Design Patterns to the Artefact

4.2.1 Implementation of Medium Awareness

In order to on the most basic level acknowledge a sense Medium Awareness, the game needs only to somewhat refer to it being a game. The artefact has an instance where a simulated Skype (Skype Technologies, 2003) call is made, where answering it plays a recorded message asking – “*Do you think this is just a GAME*?” fulfilling the necessary requirements. However, even if the requirements are basic, implementing Medium Awareness naturally in a game is possibly the hardest pattern to execute.
In the context of our game, finding a way to have the game implicitly refer to it being a game is complicated, as the pattern is most often seen in comedy or light hearted games and typically not used within horror narratives. Our implementation can be compared to how *Paper Mario: The Thousand Year Door* (Intelligence Systems, 2004) refers to itself as being a digital game on an implicit level.

### 4.2.2 Implementation of Medium Manipulation

The main method of the game’s antagonist attacking the player is by manipulating the software on a non-diegetic level. Examples being a fabricated error message notifying the player that the game cannot find a controller input (See Figure 12), the operative system crashing with a Blue Screen of Death (BSoD) and lastly that the game ends abruptly, displaying the ending and credits sequence in the middle of the play session. Each instance of these Medium Manipulation attacks are highlighted with the text – “Press any key to continue”. Diegetically, glitches and odd behaviour should be confined to the workstations, so when these events start to occur outside them, we expect the player to react differently to them. Following said instructions and pressing a key during these events initiates the monster’s jumpscare – a sudden scene where they attack the player, leading to a game over and the game subsequently crashing, which also is a case of Medium Manipulation in itself. Restarting the game brings the player to the last automated save point. These instances of jump scares can be prevented by simply ignoring and waiting out each error message, as the player is told to follow no instructions in the office outside those provided in the game’s ReadMe file. This implementation is similar to how *Eternal Darkness: Sanity’s Requiem* (Silicon Knights, 2002) feigns system errors as well as abruptly pretending to end the game early, claiming the story to be continued in a supposed sequel.
After completing the game, the monster within the game world confronts the player and renders the game unplayable on that PC unless the game’s save file is deleted. This is meant to have more of a narrative impact rather than affecting gameplay, as it is specifically tailored towards the study. Under normal circumstances, causing a game with a designated ending to become unwinnable or even going so far to render it unplayable is according to our views a poor design choice. Making the game unable to function after a key point is based on a similar ending in *Undertale* (Toby Fox, 2015). Although *Undertale* does not go to the extreme point where the game is completely rendered unplayable.

### 4.2.3 Implementation of Outside Medium Play

In the same folder as the game is stored are multiple .txt files marked as ReadMe. Diegetically and narrative wise, these messages are from the player character’s colleagues and describe how the player should confront each task on their respective workstation. When starting the section of the programming workstation, the mini-game is represented by a debugging system. In the context of the mini-game, the debugger cannot locate certain files, asking the player to find them.
The explorer on the PC is automatically brought up, where the player is required to navigate numerous .txt files the game has planted in various folders (See Figure 13). Both of these instances requires the player to tab out of the game to look up necessary information, navigating outside of the game software in order to compete the task. In our pattern collection, we currently have no games having a similar presentation of Outside Medium Play, though we do not exclude the possibility that a similar implementation has been done before.

![Figure 13: The PC explorer becomes a gameplay field for the player to manage files in order to progress.](image)

### 4.2.4 Implementation of Prominent Player Involvement

The player will be directly mentioned two times during the game. Both instances follow the same structure, as the player name is explicitly typed out on the screen. One is during the programming mini-game where the debugger personally tells the player to watch out for any upcoming dangers. The second instance is right at the end of the game. When the player has successfully completed all workstations, the monster is accidentally freed from the software within the game world, being able to roam the same realm the player character is in. Once the player leaves the office and completes the game, they are then confronted by the monster, who refers to the actual player by their name in its monologue (See Figure 14).
Figure 14: The game displays the name of the player, with this example referring to You, the reader.

In order to successfully display this design pattern for this particular study, we have to rig the game before each play session by typing the participant's name in a file which the game reads from. While it is a common feature for games to let the player type in a name for something to be referred to, we feel that surprising the participants would have a better impact and effect. The reason being that narratively, the player does not provide their name to the game, but rather the monster finds it out by searching through files in the computer. None of our examples in the pattern collection extract the player’s name on their own, possibly for ethical reasons. We however see our implementation comparable to Tearaway (Media Molecule, 2013) and Skylanders Imaginators (Toys for Bob, 2016), which both refer to the player personally.

4.3 Further Design Implications

The game is set in first-person view, meaning to give the player the ability to see from the visual perspective of the player avatar’s point of view. According to McMahan (2003) and Ermi & Mäyrä (2005), a first-person view in games raises the level of immersion for the player. This is also to make the screen more focused around the player, rather than the potential details on the characters.
For the artefact, we have designed elements using fourth wall breaches in an attempt to enhance both the narrative and ludological experiences. As Howell (2011) adapted disruptive game design on the horror genre, we acclimated the fourth wall on horror with the same principals. Howell describes that horror games brings up a variety of expectations of not only the game as an interactive software, but the entire culture of horror which the game's context is based on. As with disruptive game design, the fourth wall manipulations are meant to subvert the expectations of the player for a more demanding and engaging experience.

While not only continuing on the template by Howell, our motivation for choosing the horror genre is partially because this element can contain ambiguity in situations where the players do not know whether they are safe or not. We expect this will result in effectively increasing their immersion within the game world. Additionally, the cognitive effort needed for puzzle solving can in itself increase player motivation and engagement, which we expect will further contribute towards enhancing an eventual horror element or fourth wall breach within the game.

Horror games today are usually only confined within their software, where at most the player needs to turn on the lights to be reminded of their spatial separation from the medium, effectively lowering immersion. We want to explore ways to further break the distinction between narrative and reality and have the player actually never really feeling safe, even as the game closes. This serves to enhance the notion of the bleed effect (Montola, 2011), as in the emotions – in this case being fear, lingering even after the game has ended. The game is designed to utilize the fourth wall to cause ambiguity between what is non-diegetic and diegetic, which might present the experience as uncanny (Kirkland 2009). As the game and the real world will interconnect at times, blurring the line of what is real and what is not, the uncanny atmosphere might further be enhanced. We expect this will also serve to strengthen the player’s immersion.
As McMahan, Nunez (2004) and Howell stated, with any game and genre comes expectations from the player, either conscious or unconscious. Worlds that are depicted as being realistic are more vulnerable to lose the sense of immersion if a sensory module is compromised. While not hyper-realistic, our artefact is designed with a realistic look in mind. The fourth wall breaches affecting the audio-visual elements should technically not break immersion since within the context of the narrative and setting, they are recurring and consistent elements. Having these expectations broken probably will force the player to approach problems differently, making the game more of a positive experience through the increase of engagement.

4.4 Discussion of the Artefact

Out of all design patterns implemented in the artefact, Medium Awareness as well as Prominent Player Involvement are the patterns that got the least amount of focus. The only instances of Prominent Player Involvement are the player’s name being called out. As for Medium Awareness, the fake call message implying the game is – just a game – is the strongest Medium Awareness point. It is possible to improve the Prominent Player Involvement pattern by designing the game with the player’s own computer in mind. For example, by including the player’s possessions, in this case their computer, the game can further connect to the player on a personal level.

Medium Awareness can be complicated to implement on a non-comedic or ironic level, as a too explicit Medium Awareness risks lowering the player’s immersion by releasing too much tension from the narrative itself. By emphasizing the threat the antagonist poses outside of the game’s software, there might be a possibility to implement a stronger Medium Awareness, as one of the game’s themes is the game extending outside of the actual software.

Our game is not designed with a User Interface element in mind, therefore neglecting much potential use of Medium Manipulation as usually seen in games, such as further using the interface diegetically or using it as a stepping stone for further fourth wall breaking. In addition, some affordances are not as clear as we had hoped to make them for this study. By implementing a User Interface it is possible to improve upon the game’s readability and ambiguity through applying our design patterns on it.
The artefact has a very limited amount of narrative exposition. As most of it was through environmental storytelling, it cannot give elaborate explanations regarding its functions and fourth wall impacts. Because of this, it can be problematic to convey an immersive narrative based on the elements currently implemented. Unlike other games, our artefact has limited means of breaking the fourth wall through text or verbal exposition. This mostly applies to Medium Awareness and Medium Manipulation, as the other patterns highlight gameplay, rather than the context of the world.

The artefact is not only used for this study, but the office scene was used for a separate study. That study is a narrative analysis involving environmental storytelling through graphical assets, which might have affected the overall cohesiveness of the product. Furthermore, the artefact’s original design was to be a more gameplay oriented experience, requiring more input and strategic skills from the player to overcome challenges. However, throughout the development, the game was more tailored towards this study, focusing more to highlight fourth wall manipulation and crafting a more sombre and streamlined experience. Additionally, the production had limited design space due to time constraints. This game in its current state is primarily built to present fourth wall manipulations and is not designed being a game merely implementing them. Furthermore, the artefact presents a condensed experience with frequent fourth wall manipulations. Because of this, there is a risk the player may experience a diminished impact with each instance of fourth wall breaking, as stated by Auter & Davis (1991).
5 Main Study – Fourth Wall Impact on Players

With the pattern collection of fourth wall manipulation and the game artefact established, the final part of this study is to explore how different participants are affected by fourth wall manipulations when playing digital games.

5.1 Method

Our data collection is made through semi-structured interviews, which we base on Cote & Raz’s (2015) methods of game research. To collect our data, we recruit eight participants for individual sessions, as we estimate eight participants will be an adequate amount for this study and time frame. During each session, the participants first play our artefact game, followed by a semi-structured interview regarding the artefact and themes presented within, as well as how the fourth wall manipulations affects each participant’s Gameplay Experience. The interviews are recorded and then transcribed.

5.1.1 Data Collection

We use a qualitative method to collect our data in the form of semi-structured interviews. The reason for a qualitative format is that we deemed it to be the most suitable choice for providing the most thorough data of how our participants experience the game. As we collect data of how players are immersed and engaged when playing the game, we expect that allowing our participants to reflect upon their experience will be more beneficial for the study.

Quantitative methods for data gathering usually only result in one way communication, whereas with semi-structured interviews, the following questions can adapt and even change depending on the answers given. This maintains an open dialogue between the two parties while also providing opportunities for different angles of analysis. Unexpected results from conversations might prove invaluable for our study, which can prove difficult to get in surveys or even structured interviews.
We mainly recruit our participants through Convenience Sampling, meaning that they are chosen based on the relative ease of access to us. We filter potential participants through Purposive Sampling, more specifically though Ad hoc quotas, meaning that we choose the participants we think are appropriate for the study. This also serves to help keeping the individuals varied (see Selection of Participants).

As we recruit our participants on site, we deem it to be easier to schedule the interview sessions directly. We assume this procedure will grant us more reliable and faster results in addition to making contact between us and our participants easier to uphold. We would rather avoid the process of finding people online, sending them our game, expecting them to play it, to later schedule an interview through an online voice communication program. Primarily as it risks causing complications along the way. Such a process would in our view be more suited for quantitative studies and studies not requiring this level of participation from the people involved.

To present each session in detail, the time and place are chosen to fit both parties’ schedules. Before starting, we thoroughly inform the participant about the details of the session. We then hold a small pre-interview, which is intended for warm-up purposes, expected to require no more than five minutes. Following the pre-interview is the play session, where the participant plays the game with the expected time to complete being between 10 and 15 minutes.

At the play session’s start, the participant is instructed to thoroughly read a .txt file in the artefact’s folder before opening the game file. The participant is told to double-check said .txt file before consulting us should they have gameplay issues or get stuck. We do not wish to interfere with their play unless absolutely necessary. The ReadMe file contains information regarding the game’s controls and main goal. The session is not considered over until the participant completes the game or chooses to end the session prematurely.

Lastly, we conduct the main interview regarding the participant’s experience of the game. The main interview is expected to take about 15 minutes, making the estimated total time between 30 and 45 minutes. The participant is notified in the beginning that the interview is to be recorded for transcription purposes. The interview protocol can be found in the Appendix of this thesis.
5.1.2 Selection of Participants

Our requirements for eligible participants for this study are people over the age of 18 and the reasons for the age restriction will be discussed in the Ethical Considerations of this chapter. We ask each potential participant during recruitment how they judge their level of experience when it comes to digital games, as we aim to have an equal split of individuals who play games regularly and people having basic familiarity with games overall. We intend to have both genders represent the higher and lower level of experience. This distribution serves to provide an overview for how people experienced with digital games may react differently to irregular behaviours and fourth wall breaches in comparison to people with less experience.

We want to avoid recruiting people completely unfamiliar with digital games, primarily to prevent misunderstandings and to avoid errors in communication. Additionally, we find it imperative that the participants are able to manoeuvre through the game without frequent interruptions grounded by unfamiliarity of the medium.

5.1.3 Method Analysis

When analysing the collected data, we first transcribe the recorded interview sessions to later perform a Theoretical Thematic Analysis (Braun and Clarke, 2006), as we only aim to have a detailed analysis of key aspects from the data. When breaking down our data, we summarize it into a coding scheme to explore if the quotes relate to the subject of a certain pattern and how it affects immersion and/or engagement. We assert whether certain patterns within the artefact causes stronger reactions than others and whether those reactions lean towards positive or negative effects on the Gameplay Experience. Naturally, any flaws or limits in the artefact has to be taken into consideration, as the game’s software is also a major contributing factor to how the experience is delivered.
5.1.4 Ethical Consideration

The reasons to limit eligible participants over the age of 18 to participate in the study is primarily for not letting kids or adolescents play a game containing horror elements. This is to bypass the unnecessary and time consuming steps of getting a parental guardian's approval for letting their children participate. Of course this leads to the loss of valuable data, as their reaction to the fourth wall can have potential weight in the results. Each participant takes part in the study by their own volition and although they are not compensated in any way, we reckon having people volunteering serves to reduce the risk of skewing their interviews in case a compensation would affect the results.

Prior to each interview session, we inform the participants that the interviews will be recorded on audio devices. We inform them that these recordings are to be used for transcribing purposes only. The participants are also informed that they will remain anonymous and will only be referred to as pseudonyms in the thesis as a reference point in order to protect their identities. We alert the participants that the game contains sudden jumpscares and unsettling atmosphere. The participants are also free to cancel and interrupt the session for any reason, in addition to leave the study entirely, up until the publication of the thesis. We provide our contact info to the participants should they desire to opt out.

The only detail of the session we do not mention is the aspect of rigging the game to display the participant's name in the ending of the game. This serves to more effectively highlight the design pattern Prominent Player Involvement and also add a final twist to the game’s narrative. In the narrative context of the game, the monster leaves the software, escaping to the computer, therefore knowing more about the player’s personal information. This is meant to invoke the feel of horror beyond the game’s own boundaries, almost giving the sense of the monster invading the participant’s privacy. Due to the nature of the game’s atmosphere, we will also let the participants themselves decide the lighting in the room where their sessions are held.
We originally planned to have the participants bring their own laptops to enhance the feeling of having the user’s own system manipulated in unexpected ways. However due to ethical issues of the game creating files and folders outside of the medium, we have decided against this. Instead we let all participants play on a predetermined PC on which we are certain the game will work properly. This also prevents any technical uncertainties as for example if the game will run properly on any system without issues.
5.2 Results and Analysis of the Fourth Wall Impact on Players

Presented in this part of the chapter is a collection of the empiric data provided by each interview, structured to highlight each comment regarding the design patterns and any consequences they had on the Gameplay Experience – more specifically, our definitions of immersion and engagement. A total of eight participants were recruited. Five people experienced with digital games and three with only basic understanding regarding the matter. Both genders were represented by people of a higher and a lower level of experience. Each participant will be referred to as P*(number of participant). The data will be presented as the citations from our transcribed interviews, translated from Swedish. For a more detailed overview, see Table 1.

Table 1: Overview of the collection of participants.

<table>
<thead>
<tr>
<th>Participant Pseudonym</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>P5</th>
<th>P6</th>
<th>P7</th>
<th>P8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Man</td>
<td>Woman</td>
<td>Woman</td>
<td>Man</td>
<td>Man</td>
<td>Man</td>
<td>Man</td>
<td>Woman</td>
</tr>
<tr>
<td>Level of Experience</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

In order to not have any prior knowledge affecting the answers, we never mentioned to the participants that the study was primarily about the fourth wall. We still found it surprising that none of the participants ever mentioned the term or anything similar, even though majority of them seemed to be familiar with its definition and purpose. We understand that the fourth wall as a term most likely is rarely or even never used outside the field of dramaturgy, which can make the phrase unrecognizable for most people. Although, as presented in the results, every participant picked up on the majority or all patterns and discussed them in-depth during the interviews.
5.2.1 Description of Themes

As we have created our own design patterns: Medium Awareness, Medium Manipulation, Outside Medium Play and Prominent Player Involvement, we aim to use those as our themes for the theoretical thematic analysis. When finding that a certain theme is brought up in the data, we examine if the participant’s reaction to the pattern affects immersion and engagement in a positive or negative way.

Our themes are presented as such:

- Medium Awareness.
- Medium Manipulation.
- Outside Medium Play.
- Prominent Player Involvement.

The focus point on each theme:

- Themes’ effects on immersion and engagement.
- The interplay between immersion and engagement.
- The results of overusing a design pattern.
- Correlations between player’s expectations and reactions.

5.2.2 Reception of Medium Awareness

Medium Awareness through the fake Skype call was generally met with mixed reactions. Though the initial reactions were overall positive, the actual message – “Do you think this is a GAME?” played by the game when answered apparently mostly had a negative impact on the participants. The initial positive reactions were possibly due to the fact the computer the participants played on had Skype installed, which can have made the effect more believable.

It [The Skype message itself] felt a bit cliché. That said, even clichés can be a good addition if done right. – P1

I understood that the message was supposed to be unsettling and for that reason it became less unsettling. – P3

It [The Skype call] was a little bit frightening, as it creates the feeling that there is something going on which the player is not seeing, that something else knows more than they do. – P8
Both P1 and P3 acknowledged what the message was meant to represent, but it did not positively affect their immersion. P8 appreciated the novelty in the meaning while P1 and P3 found it to negatively affect their experience. As Nunez (2004) described how consistency in a mediated world is what maintains immersion, explicitly stating that the simulation is a game might have deviated too much from the established conventions and negatively compromised the experience. As seen in the pattern collection and further brought up by Auter & Davis (1991), all Medium Awareness instances had comedic tones, rather than a threatening one as depicted in our artefact. Such ways of manipulating the fourth wall might in that case only be acceptable in comedies. As our game artefact additionally was depicted as more realistic in style, it makes the created world more susceptible to being negatively affected, since the more realistic a mediated world becomes, the more glaring inconsistencies become.

With this in mind, P8 was the only participant reacting to Medium Awareness as the design intended and subsequently became both more immersed and fearful. What is to note is that out of all participants, P8 was the one with the least amount of experience in digital games. The expectations of P8 might have been different from the others due to their general inexperience. The overall uncanny (Kirkland, 2009) and unconventional design (Howell, 2011) of the game might have enhanced its ambiguity, therefore made the Medium Awareness part more effective. While it is a possibility that inexperience with digital games changes the player’s perception of the fourth wall, there is currently little to no research or data supporting this theory.

While P8’s reactions point towards Medium Awareness strengthening immersion by finding the message frightening, P1’s and P3’s reactions point towards Medium Awareness in this context making them feel less immersed within the game and lowered any sense of dread. Our implementation of this pattern is a very direct way of acknowledging that the world depicted is a game while being just that. This high level of Medium Awareness coupled with only occurring once and without being properly established as a game-related element, unlike the listed games in the pattern collection might be the cause of the pattern both strengthening and lowering immersion. Though evidently leaning more towards a negative impact.
5.2.3 Reception of Medium Manipulation

The overall large amount of data gathered is not surprising, as Medium Manipulation had the most instances in the game, resulting in more potential reflection from the participants. The majority of participants found Medium Manipulation positively affecting their experience.

The confusion in itself was a bit scary. One did not really know what one was supposed to do when [the game] had these things [fourth wall breaches] and one felt a bit lost. – P2

It was like, just pressure? [When the participant played the workstation sections] That I did not want to do anything wrong in case it would like crash all the time, forcing me to start over. – P3

I think it was a bit scary and strange because I did not really realize that I still was in a game. I thought I was doing something in the real world. [...] I thought I was safe and because of that I got even more startled. So it was good that you got this sort of confusion, I realize now. – P7

The game tried to mind-f**k me by telling me not to follow instructions, but you have to follow them [to complete it]. – P8

The ambiguous elements in particular were the ones that got the most reactions. Many participants felt confused or uneasy because of the disturbances presented during the session, but soon realised what the objective of the game was. This can reflect Howell’s claim that the increased cognitive thinking required from the participants could have enhanced the engagement factor further.

Out of all the Medium Manipulation instances, the fake ending scene in particular stood out from the rest. Each one of the participants thought the game to be over at the time the fake ending appeared on screen, even though instructions were given that the game would end at a later point. Participants generally expressed engagement and curiosity when realizing the game was not really over.
I experienced it as one was supposed to die on the spot [where the player is located when the fake credits play] since there was a jumpscare there at the end. He [the monster] has like exited the program and then he had come to get one right there. So yes, I interpreted it as if it was over already there. But it was me and my bad short-term memory that had started up there. I had forgotten that that with the door [that the game was not over till the player had exited through it]. – P1

It [the ending of the game] was a bit confusing I have to say. I do not know exactly when it ended, but I enjoy games where you cannot really tell whether it really is over or not. I also find it fun that one gets to start up the game and try again, press continue and discover that 'now something more actually happens!' [...] [Participant] felt a bit cheated on my victory, but at the same time I thought it was fun that it continued. – P2

At first [when the participant first saw it the fake ending] I was confused and thought it was over. I like that when the game closes itself down and then you start up it and it is in an entirely different state. I think that was very fun. – P4

[Participant found it memorable] That you went back [to the game] and that it was not I who shut the game off, but it shut down itself. Then you had to start it up again and so on. And then you were where you started the game. But the game had not completely shut off even if there was an illusion that it had. Which made it feel like it was [the game involved] the whole computer and not just the game. – P8

But when it closed down entirely, not just when it changed to the other file, but when it shut itself down and one started it up again, that also gives the illusion that there is something else having control over the computer and not me. And that it also remembers where you were before even though one thought the game had shut itself off entirely. – P8
What is important to note is that credits sequences generally are to be expected, as they are a very common feature in digital games. For that reason, the majority of the participants possibly expected the fake credits to be part of the game’s authentic ending, in spite of them being implemented in a glitchy way to reflect the same type of Medium Manipulation disturbances occurring throughout the game.

Medium Manipulation disturbances other than the fake ending were the two fake errors of the game, the missing controller error and the fake BSoD (Blue Screen of Death). These are supposed to represent real errors unlike the fake ending sequence. Surprisingly, only P2 made remarks about the fake BSoD presented in the game.

They [the sections with the workstations] almost became uncomfortably close. One could not tell whether it was real or not. Especially that with 'Windows needs to reboot' part. I wondered 'did some error occur here?' – P2

While P2 stated that the experience became uncomfortably close to real life, bridging the gap between the diegetic layers and maybe strengthening immersion, we are uncertain whether the fake errors either compromised or enhanced the experience for the participants overall. In addition, these elements are not meant to imitate real features in digital games, as they are supposed to appear like system errors.

Medium Manipulation seemed to have the greatest positive effects on engagement when presented in the fake ending and credits. This particular pattern also served to raise the engagement of P2, P4 and P8 once they realized the ending was fake, implying that there was more for them to discover within the game. This goes in line with the theory of disruptive game design, as the fake ending broke the players’ expectations of established conventions of games. The fake errors presented through this design pattern were not met with the same level of increase in immersion or engagement as the fake ending. Although we implemented two different instances of errors, both of them had an overall similar level of effect on the players’ immersion. P2 did however make a remark of the instance with the fake BSoD momentarily making them uncertain whether or not a real system error had occurred, pointing towards Medium Manipulation having positive correlations to immersion as well.
5.2.4 Reception of Outside Medium Play

Having to take actions outside the game was the pattern the participants reacted most to. Almost every participant had thoughts on playing outside the game and none had any directly negative remarks. In the majority of cases, Outside Medium Play was a strong experience enhancing factor and possibly the strongest overall in the artefact.

It [working outside of the game] was unusual I guess. It was not specifically a bad feeling, I must say. It was interesting. I did not know what to expect of what would come once I went back into the game. And I was quite curious of what would happen next. – P1

It [the experience] became more real in some way. During the events with the text files and everything, I thought [it] was very personal. – P2

It really felt like one went out of the game and did something different then [during the Outside Medium Play parts]. So it was like more that you did not just play games but it was like you interacted with what lies beyond [the game] too. – P3

I thought it was Unity that had popped itself down [when the game tabbed down]. I understood that I had been moved out to Windows, but I think it is very cool that you can use texts and files which are outside of the game to affect the game while it is currently running. – P4

That the instructions are on a different sheet [document], that creates more of an illusion that it is for real, more than it is a game I think. That it is actually not just the building of the game that you play and work in, but the computer for real, which creates the illusion that this is actually what is happening for real and not just a game. It felt like one was there and programmed the whole thing, which was pretty cool. – P8
No participant implicitly stated that taking actions outside the game had negative effects on the experience. The sensory modules which Nunez talks about seem to be untouched as even when outside the software, the participants perceived the game and world to be real. In addition, the same level of engagement was maintained, possibly even enhanced, as P8 states that it made them feel like a real programmer. This points towards Outside Medium Play having a positive effect on the participants’ sense of flow (Csíkszentmihályi, 1990).

The theory of disruptive game design is most highlighted in this pattern. The majority of the responses tell how playing outside the software was unusual, interesting, felt more real, more personal and even cool. As the participants reflect, it became clear that playing outside the game in relation to the context of the game, the actions required more thinking outside the box which served to increase engagement.

The interplay of playing both inside and outside of the game and the general thought process of what aspects belong to the game can be applied to diegetic and non-diegetic (Stilwell, 2007) elements within a medium. While the theory mostly applies to music or user interface elements to characters in games, it does technically reflect the files created outside the game, as they balance the edge of what actually belongs to the game world and what is outside of it. While the majority perceived it to be difficult to see a clear line between the real world and the game, P6 primarily perceived the experience strictly as a game. Even though P6 understood the implications of the game tabbing out, their level of engagement and immersion were not lowered by that understanding, as they reportedly found the Outside Medium Play interesting and entertaining.

It feels like you... The game continues outside of the program, which is fun. That you are supposed to do certain... I opened certain files and found some code and went back, that is fun, in a way. It feels like a novelty instead of just being something which happens inside a program. [...] It does not strictly feel as if I am outside [of the game] and can check my Facebook and all that. I mean, it [the Outside Medium Play] is still part of what you are doing [in the game]. – P6
Some participants recognized the unusual aspect of playing outside of the software and where the line was between the game and the real world, which highlights Conway's (2010) theory that the fourth wall in a game does not break, but expand to include the player, immersing them within the experience.

It [the monster] just walked out of the workstation program. I thought 'now it [the monster] has escaped [the workstation world] and is where I currently am in the game.' – P2

That [the files located outside of the game's software] is still a definite part of the game, as the elements are incorporated in the game, but not in the actual game file itself, if one puts it like that.[...] It is really unusual if you can say so. At least that the game interacts with one outside the program itself. [...] I thought mostly that it [the experience] was exciting, something that nobody dares to do. If one was some large developer, like a Triple-A studio, I think this [utilizing the game's medium like the artefact did] would be a brave choice. – P5

It was hard to know for sure whether one was in the game or in a computer environment. – P7

Based on our findings, Outside Medium Play had overwhelmingly positive effects on immersion and engagement. Nearly all the participants expressed that playing outside the game was unusual and became more real of an experience, pointing towards the pattern increasing the participants’ immersion, with P8 in particular stating that they felt like a programmer. P6 however, was the only to not feel more immersed by this pattern, but neither were they less immersed by this.

Each of the participants appreciated the novelty of the Outside Medium Play and reportedly experienced an increase in engagement, most likely due to the unusual implementation of gameplay through working in files not being present within the game. We can argue that this is also a form of disruptive game design, being the primary reason for its positive effects upon the participants’ engagement, with the added ambiguity of not knowing what to expect from the pattern’s implications.
5.2.5 Reception of Prominent Player Involvement

Both instances of Prominent Player Involvement were set up to work in the same way. The game referenced the player directly with their name, talking directly to them. The pattern was initially met with surprise. However, the participants quickly deduced that since they themselves did not enter their names, someone else must have done it in their stead. Additionally, not all participants felt more involved and immersed simply by being called by name.

It is much easier to envision oneself in a situation when you see something in a first person view [...] From the player’s point of view, it was nice. [...] It was a good addition, that with one's own name [participant's name inserted in the game]. Makes everything much more personal. – P1

When I saw it [participant's name on the screen] for the first time, I thought it was really fun. At first I was mesmerized how it had happened. And it becomes a bit spooky, uncomfortable. Then it popped up more times, but [participant was] not surprised again. – P4

I suppose it becomes a closeness in it [that the player character is named after the player], but not more than in games where one is able to name their character after themselves instead of like Mario. – P6

The game got interactive in a different way. I switched off partially that I was here. I took the role as the game's character. – P7

It said my name [in the game]. One gets paranoid right from the start, since I was not the one who wrote it [so the game should not know the participant's name]. But that also makes you more cautious of what you have actually done [in the game]. – P8
P1’s remarks regarding the first-person viewpoints directly to McMahan’s (2003) and Ermi & Mäyrä’s (2005) theories that a first-person perspective for the player becomes a more immersive experience. That in addition to that the participant’s name being mentioned enhanced that sense of immersion even more. It is however unclear whether the surprise factor played the major part in the participant’s reaction and not the design pattern itself, partially due to that the strongest reactions were the ones during the first time the pattern occurred.

Prominent Player Involvement was generally met with mixed receptions, although primarily leaning towards positive ones. While the initial reaction pointed towards an increase of immersion, there is a strong possibility that the surprise caused by the pattern was the strongest contributing factor to this. We can however not exclude the possibility that the pattern had some positive effect on immersion, as P1, P7 and P8 did show some form of increase in their connection to the mediated world and player character. Due to the limited implementation of the pattern, we find it difficult to find any correlations between Prominent Player Involvement and engagement.

5.2.6 Additional Remarks

P6 responded overall negatively to the lack of punishment the player received upon losing the game. The participant originally expected the experience to be closer to a standard horror game, where losing means you start over from the beginning or at the most recent checkpoint. P3 responded negatively to the lack of consequences after making mistakes in the workstations. Inconsistencies in the audio feedback also caused P1 to feel less immersed during the Outside Medium Play parts. It is possible that these participants’ flow were disrupted by these factors. P6 in particular experienced a lowered immersion once their engagement dropped, as they felt they were not being adequately challenged by the game.

It rubbed me the wrong way when the music stopped. Like, the ambient sound disappeared when it was tabbed down. So I guess that is the only thing [which made participant feel disconnected to the game]. Other than that, had the music like kept playing it would have felt as if I had remained in the game. – P1
Well, yeah, it was mostly because one does not want to do anything wrong, but it felt like nothing really happened when one actually did something wrong. – P3

If one is sent back [to the beginning, when the player loses the game] and feels the game punishes them for losing, I think one would be motivated to play the game more. [...] the first time [participant lost the game they expected having to start over due to losing progression in the game]. But it [the player’s progression] was not [lost], I discovered. – P6

P1’s remark regarding the lack of sound must have been an unintended glitch, as the sound is never supposed to turn off during the game. That however confirms that leaving the game when playing outside without any sound made the player completely disconnect from the game world, as both audio and visual elements were neglected. As long as there is some active sensory module connecting the player to the game during Outside Medium Play, we expect that the experience should not be broken.

The participants’ initial expectations did not have any obvious effects on engagement. The participants’ previous game experience did not seem to have any obvious effect on engagement either, as both experienced and moderately inexperienced players had similar initial reactions.

Yes, well it [the game] was a little predictable I think. But it was an interesting idea, behind it all, I think. – P3

I expected that it [something unusual to games] would show up when... partially due to the name of the game [...] I had expected a game more akin to Amnesia, like crawling through different things and a bit less interactive when I just read the [artefact game’s] name. But as soon as the game tabbed down and opened a file [outside of the game] I realized this was a different type of puzzle [and game] it was all about. – P5
Then, it was only to try to figure out which way one would act not to get into conflict with the monster which just walked away [from the workstation world]. [...] [Participant felt threatened] Because it [the monster] walked out of the screen. And, that is usually a sign one is going to be chased. – P5

It was exciting that... Although I did not understand everything right away. [...] I may have been a bit prepared in beforehand that there would be something anguished that also was a bit cosy, which I thought was a bit fun since I didn't know what would happen. – P7

As Howell states, games and genres alike come with certain expectations. P5 expected our artefact to be similar to *Amnesia: The Dark Descent* (Frictional Game, 2010), a survival-horror game which has received a lot of praise for its design and contains many gameplay elements which inspire the survival-horror genre to this day. These expectations were almost immediately broken when the first instance of fourth wall manipulation occurred. Nevertheless, P5 still found the experience to be interesting throughout, even though their initial expectations were subverted. Despite this, they still expected the artefact to implement fairly typical survival-horror elements further into their play session.

As Stillwell, Howell and Auter & Davis stated, if an element is used too frequently, it can gradually affect the experience negatively. One could consider that this holds true for our artefact as well, since some participants – P4 and P6 specifically – had equally negative thoughts on a repeated use of the same type of fourth wall manipulation, being Prominent Player Involvement.

At first I was mesmerized how it had happened [that the game knew the participant’s name]. And it becomes a bit spooky, uncomfortable. Then it popped up more times, but [participant was] not surprised again. – P4

They [The fourth wall breaches after the workstations] did not feel very threatening. It feels like when you have done it for the third time, it feels like 'Oh, this is only a part of the game'. I do not really see the point [in them]. – P6
P6 in particular experienced the strongest negative impact from overuse of the same type of fourth wall manipulation. This resulted in them losing their flow and subsequently became less immersed into the experience, which as a result possibly lessened the impact of the other design patterns. This can be seen as expanding on Auter & Davis’s conclusion that too frequent repeated use of the fourth wall negatively affects the experience, not only in television programs, but in digital games as well.

One of our aims was to create a bleed effect (Montola, 2011), meaning that when the game is finished, the experience would linger with the participants long after the game concluded, not knowing what happened to the monster within the game. This can of course be a variable not affected due to the participants not playing on their own computers, which might have lessened the intended experience. While none of the participants seemed to bring up any concrete evidence to this feeling, P2 and P8 however stated:

- It almost felt like you would have someone in a costume walk in [where the interview session was held] and I was completely prepared for that due to it. – P2
- [When participant freed the monster] It felt like I was not in control of the computer, but the monster within was now free, but I do not know if it is free in a physical sense, or free to roam loose inside other electronic components. – P8

What P2 implies goes further beyond the fourth wall than we originally intended, having a dietetic element leave the software and computer on a literal level. Parallels can be drawn to the movie *Ringu* (1998), where the monster literally breaks the fourth wall and leaves the fictional world from a television screen to terrorize its victims. P2 brought up that thought a couple of times during the session, meaning that the combination of all patterns must have had a lasting impact on the participant in question. Their sense of immersion and engagement expanded beyond the game, which is very similar to the bleed effect.
As we currently have not found digital games that through fourth wall breaking cause a lasting bleed effect on their players, there is a possibility a design pattern for this needs to be established for it to be further explored. No games from the *Design Pattern Collection* chapter had any indication of this pattern, nor have any other games on the market to our knowledge. We suggest using the term – Transmedia Bleeding – to describe this phenomenon, where a game causes its player to perceive the mediated world invading upon their own reality or another medium not connected to the game software. Transmedia is based on Jenkins (2010) definition – “*that elements of a fiction get dispersed systematically across multiple delivery channels for the purpose of creating a unified and coordinated entertainment experience.*” Bleed is as described by Montola in this thesis, which was the reaction P2 experienced from this. We mean by Transmedia Bleeding that the Gameplay Experience lingers from the game as it bleeds into the real world, being perceived as still ongoing outside of the game’s medium.
6 Discussions and Limitations

6.1 General Methodological Aspects

The overall process of conducting these studies was unexpectedly long, especially for the intended complexity level required and time frame for this study. Nevertheless, the model used in the study proved to be overall successful. Our estimations on the session length were accurate and we had little to no difficulty in collecting data. The establishing of the design patterns came from our own experience and close examinations of each instance.

The development time for the artefact was particularly time consuming during the span of two months, in conjunction with the writing of this thesis, although in our view necessary to properly establish our design patterns. However, designing a game strictly for research purposes may have resulted in a skewed Gameplay Experience. The fact that our artefact was primarily made to implement our design patterns of choice, rather than developing a rich and interesting game experience can have had some effect on the validity of the product as a digital game. Naturally, insufficiencies in the final artefact can be attributed to our possible incomplete skills in game development as well.

As the design process was iterated until the end if the development in order to adjust the artefact to best fit this study, the artefact suffers from some design issues and might be seen as an incomplete product. The artefact itself also lacks a level of polish that finished games are expected to have and the graphical implementations could have been improved upon to further strengthen the overall experience, possibly also affecting how the design patterns were perceived as well.

The implementation of our design patterns can be seen as insufficient for a thorough analysis on the field as a whole, since this study was limited to four sets of patterns within just one genre of digital games. To further explore the field, more genres of games require an analysis in order to fully grasp how fourth wall manipulation affects the Gameplay Experience. Studies featuring a larger numbers of participants may also be necessary to completely get a thorough overview of how these patterns are experienced.
Finally, the decision to develop our own game artefact was to avoid having the participants playing fully released games in addition to make the play session as user friendly as possible. Furthermore, as no game from the examples featured all four patterns, at least two games had to be played through by the participants in order to get the full context of each fourth wall manipulation, should we have chosen not to use our own game artefact.

6.2 Meaning of the Patterns on the Gameplay Experience

We have found no strong correlations between the participants’ level of experience with digital games and their gender on how those factors affected their perception of fourth wall manipulation, though this was neither the intention of the study. We also find our sample size of eight participants to be too small to make such claims. The main reason for aiming towards a somewhat equal split in gender and level of experience was to avoid having a one-sided group of participants. This served to prevent any further generalization of a specific demographic. Although there were stronger reactions from P2 and P8, we find that these comments are attributed to them as individuals.

Our established themes – the design patterns – were during this study not changed, nor did we find them in need of modifications. A possibility for this is because they were sufficiently adaptable to our game artefact and that their implementation did not require altering to fit the game. Another possibility is that they were not all properly implemented as we desired them to be, as seen in the examples of Medium Awareness and Prominent Player Involvement. For future studies however, it may be required to modify the patterns to thoroughly analyse them on different genres and software platforms.
As seen in the amount of data extracted, Medium Awareness was the least received pattern of the collection. Arguably this was because the pattern itself broke the established conventions of the artefact. Explicitly acknowledging the game as such had negative effects on the participants’ immersion within an environment presented in a serious and unsettling way. One participant perceived the pattern, which was the fake Skype call, to imply that the game possessed more knowledge of the game’s conventions than the player did, possibly attributed to them having strong enough flow to perceive the pattern in a different context. As pointed out by Auter & Davis (1991), this type of Medium Awareness should be experience enhancing. Their study was however limited to the genre of comedy in television series and the games in the pattern collection chapter were also all of comedic nature. This can have caused some difficulties when it comes to the transferability of the pattern to the context of digital games with darker tones. Having a more serious game explicitly referencing itself as a specific medium seemed to harm immersion overall, even if some participants found some novelty to the event.

Medium Manipulation had the most prominent presence within the artefact, as it was the easiest to implement in a variety of ways. This includes the limitation of not having any User Interface elements which many of the examples utilized. In the artefact were four variations of Medium Manipulation implemented, which were all met with various reception. Two of the instances were to simulate system errors and neither got much attention, with the exception of the fake BSoD error, which one participant found to be uncomfortably close to real life. There was a surprising amount of reactions to the fake credits, where many found it confusing and expected them to be authentic.

Participants were however more engaged as the game continued beyond that, even when the game forcefully closed the application as a punishment. Experiencing system errors is an element players might not expect from a game unlike a credits sequence. One participant also felt more immersed within the world when the game forcefully quit, continuing to the real world as the game remembered previous progress. Everyone wanted to continue the game, our guesses being out of curiosity of what the real ending would be once they realized they had been fooled. Thus, motivating the participants to keep playing and subsequently led into an increase of engagement.
Outside Medium Play was the pattern to receive most comments from the participants overall, the overwhelming majority of them being positive. Taking actions outside a digital game is an uncommon and unconventional method of breaking the fourth wall. The game extending outside of its own medium does not simply move the fourth wall, but possibly moves the very scene as well, as the game experience takes place outside its medium. Outside Medium Play might have been a completely new experience for many or all the participants and therefore made the pattern more engaging and met with more sense of novelty overall. The ambiguity of what actually is a game and what the game encompasses may have further caused this pattern to enhance the Gameplay Experience. The context of actually taking the role as a character working to fix malfunctioning software made the participants feel further immersed. One specifically stated that they felt like they were present and was the programmer, implying they had a high sense of immersion.

Prominent Player Involvement, while being the design pattern with the smallest scale of implementation, was generally well received by the participants, initially having a more positive effect on the players’ immersion. However, further exposure to this pattern was not met with any positive reactions whatsoever, which can be connected to Stillwell’s (2007), Howell’s (2011) and Auter & Davis’ theories of overusing an element. This does not necessarily mean that the pattern was overused, but it could imply that the first time the participants encountered the pattern, through being explicitly mentioned within the narrative, the surprise itself was the largest contributing factor to the increase of immersion.

Disruptive game design was a major factor in the implementation of the patterns and overall, the experience was described as being interesting and perceived as more real, based on the comments of the patterns’ execution. The general non-conventional way of having fourth wall breaking as a gameplay element seemed to strengthen both immersion and engagement which in turn strengthened the Gameplay Experience, although there were minor instances of negative impacts as well. One reaction not anticipated by us was a participant’s suspicion that the session was a build up for an elaborate prank to have someone dressed as the game’s antagonist enter the room during the interview.
This type of bleed effect (Montola, 2011) was beyond the type of fourth wall manipulation we expected to observe, as it goes beyond any diegetic (Stilwell, 2007) level possible within the context of the game. That type of cognitive thinking for such anticipation must have had a great impact on that participant's level of immersion and engagement, as it continued after the session had ended, something we originally wanted to achieve, though not to such a large extent. This led to the discovery of the Transmedia Bleeding design pattern, which was unexpected but a very valuable finding from the study.

6.3 Future Research

Fourth wall manipulation in digital games still remains fairly unexplored. There are still several genres and platforms left to investigate when it comes to understanding how the fourth wall expresses itself. The design patterns in this study may present themselves differently or prove insufficient when exploring games outside the first-person horror genre.

With the previous lack of established groundwork regarding the fourth wall, this study may help provide additional insight in what role the fourth wall plays in digital games and how it differs from other media, in addition to how it can be manipulated for experience enhancing purposes. This study serves to help making the fourth wall as a term less generalized and to better grasp its implications.

As this study only applies the design patterns on a small-scale game with some horror elements, further research is needed to fully understand how fourth wall manipulation can affect the Gameplay Experience in digital games. Additional or different design patterns may be explored or expanded upon depending on the genre of the game in question. Strictly applying our model to all sorts of games is therefore in our view insufficient and further insight is needed to fully understand fourth wall manipulation as an experience enhancing element. This would not only include future research, but game development as well. It is important to note that the amount of fourth wall breaches may have an effect on how they are perceived. If used too frequently, the impact risks to diminish, so when exploring fourth wall breaches in the future, we therefore see it imperative to use these elements wisely.
Generally, all of the design patterns seem to increase players’ engagement and immersion if the context of the situation matches with the pattern presented. Although we find that our study did not provide sufficient data for Medium Awareness and Prominent Player Involvement in the context of first-person horror games. In our view, Medium Awareness in particular needs to be more carefully used when explored further, as having a game referencing its medium can disrupt the experience if the game is depicted as more serious. There are also limitations within the implementation of the patterns themselves, as there is evidently not one single way to implement any of the patterns.

Designing games with the intent of having the experience continue in the real world, rather than just for example giving a lingering sense of fear and dread after playing, is something we find an interesting point to analyse further. We see large potential in designing games implementing Transmedia Bleeding in some way, as it can possibly have great implications to how mediated realities and digital games are perceived in the future. Using this type of fourth wall manipulation, it may be possible to further bridge the gap between digital games and the real world, leading to a completely new type of Gameplay Experience.
7 Conclusions

The aim of the this study was to elaborate on: how do fourth wall breaches affect the Gameplay Experience and how can connections between game design patterns and fourth wall breaches be established? The first part of the study made it possible to construct design patterns to prevent a generalization of the fourth wall. The patterns themselves made it easier to identify and express the breaches for the purpose of our study. We were also able to get a deeper look into how each pattern affected the Gameplay Experience when implemented in our artefact.

We found that the pattern Outside Medium Play had the largest positive response among our study’s participants. All of the participants experienced an increase in engagement and the vast majority found Outside Medium Play to strengthen their immersion. Medium Manipulation was mostly experience enhancing when the implementation used elements normally expected to appear within a digital game. A fake ending scene was much more positively received than fake glitches feigning system errors.

Prominent Player Involvement was met with mixed reactions, though pointing to an increase of immersion for the majority of the participants. The pattern only expressed itself as a reference to the participant’s name in question and the limited scope might have proven insufficient to properly evaluate the pattern. Additionally, too frequent and/or repeated use of fourth wall manipulation did negatively affect the general Gameplay Experience, specifically towards the players’ immersion. This was supported by participants showing little to no reaction or surprise as their names were displayed more than once, pointing towards a closer relation to surprise than to the implementation of the pattern itself.

Medium Awareness was generally met with negative reactions, though this might be caused by the pattern’s implementation. Medium Awareness might have clashed with the overall atmosphere the game presented, as the pattern has mostly been met with success within the comedy genre. This in turn is possibly the cause of the overall negative reception. However, data and previous research point out that Medium Awareness can be a positive way of manipulating the fourth wall, when used in the correct context.
This leads to our conclusion. We managed to establish four distinct design patterns which were tested in our artefact and proved to be successful in highlighting fourth wall manipulations. The data showed that using our established design patterns to manipulate the fourth wall in digital games did enhance both the participants’ immersion and engagement, which are a part of the Gameplay Experience model. In addition, a fifth pattern – Transmedia Bleeding, was discovered. While untested, it shows potential in the fields of both game design and fourth wall research. Each pattern had different levels of impact, but generally, with only one exception, made the experience intriguing, scary and perceived as more real for the players, blurring the line of what belongs to the game and what belongs to the real world.
Acknowledgements

We would like to thank Patricia Möllerström, Petronella Olanders and Alexander Gast for their contribution in creating and developing Development Hell, the game artefact used for the study. In addition, Dr. Henrik Warpefelt for the invaluable mentoring, supervising and discussions, Dr. Petri Lankoski for the extra help and guidance and Dr. Peter Konrad for the additional feedback for this thesis. We also want to thank all participants who took part in the study.
References


doi/abs/10.1191/1478088706qp063oa.


http://dx.doi.org/10.1386/jgvw.2.2.145_1.


Appendix

Interview Protocol

Greetings. This is a study for our bachelor thesis that we are currently writing. Before we start, we want to inform you regarding a couple of aspects.

- The interview sessions will be recorded on multiple audio devices for transcription purposes.
- You will remain anonymous for this thesis. For your reference, we will use a pseudonym.
- You are free to cancel this session whenever you want for any reason. We will give our contact info if you wish to no longer want to partake in our study, at least until the study has been published.

Do you have any further questions? Do you agree to aforementioned points? If yes, then the warm-up interview will start:

- Tell us a little bit about yourself.
- What do you do currently, as in work or study?
- What are some of your favorite games? Is there a reason or specific memory for that?

This will conclude the pre interview session. You will now play our artefact. You are free to play anywhere in the room for your comfort. You can regulate the lights as you see fit. Your session begins once you open the game folder. Remember to read the ReadMe file.

Post-Session interview questions:

- Tell us about your game experience.

We let our participants express how they experienced the game and what they thought about it. Potential follow-up questions include the atmosphere and how they felt playing it.
- **What is your take on the ending of the game?**

Since the interview begins right after the game’s ending, asking about how the participants felt after completing the game, might spawn valuable initial thoughts about the experience as a whole. This is also a valuable part to examine whether players remained immersed towards the end, or had lost interest by that time.

- **Tell us about what challenges you faced.**

Particularly aimed at the minor problem-solving and orientation in the game’s Studio area, as well as encompassing all the workstations. Possible follow-ups can include how they experienced each workstation in particular. This is the part we primarily wish to examine the participants’ engagement.

- **Any last remarks or comments you would like to share that you perhaps didn't bring up or were asked about?**

A last chance is given to the participants to bring up or further develop on any points they felt they didn't have the chance to speak about. Possibly catching any undiscussed elements.

This would conclude our session. Thank you for your participation. We will contact you if we have any follow-up questions.