# Aalborg University Copenhagen

**Semester: 10th**

**Title: Multiplayer interactive narrative system: An experimental testing approach towards constructing a design framework**

**Project Period: 1st February 2021 – 2nd August 2021**

Aalborg University Copenhagen

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**Semester Theme:**

Master Thesis

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The paper presents an experimental approach for the design of a multiplayer interactive narrative system. Our goal was to identify and emphasise system and narrative preferences to evoke a positive attitude to the stimuli by the player. To do so, we identified three features that relate to the behavioural, cognitive, and emotional response - Decision making, Narrative intelligibility and Suspension of disbelief. Relying on the existing theoretical background, we created a new multiplayer IN system that facilitates our assumptions and testing methodology. The three pre-authored narratives were tested upon six groups (N=15) of two and three players. Results suggest the social component increased a more moderate or conservative strategical approach that the players took. We concluded the paper with future steps that should be taken in future experimentation and system development to encourage a more playful, and hopefully positive, attitude by the players when playing in such a system.

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Medialogy Master's - Semester $10^{th}$
Aalborg University
Copenhagen, Denmark
02.08.21

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Program: Msc Medialogy
Semester: $10^{th}$
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# Chapter 1

# Introduction

## 1.1 Motivation

Many different interactive narrative games have been released in the past ten years, where the player chooses how the story plays out. However, we have been looking for multiplayer interactive narrative games where we could play together with friends and have not been able to find anything which can be considered established.

Our general love and interest in video games and finding games to play together motivated us to understand how collaborative, interactive narrative games could be designed and maybe to see if there is any specific reason for no collaborative, interactive narrative games on the market.

We wanted to see how people would choose their answers when they voted completely democratic and were interested in finding out if anyone in the group was influenced by someone else. Creating a collaborative, interactive experience could make the overall process more political than a regular single-player interactive experience since they have to deal with digital democracy.

We then thought about how the general behaviour of the collective democratic voting systems within a collaborative narrative environment would be, and if there would be any friction between the players or if the players would behave passively, or something in between. Thus, there is an opportunity to learn a lot about collaborative narrative systems and how the players interact with them and how the suspension of disbelief theory, narrative intelligibility, and collective decision-making could be examined within the system and through the system experience.

## 1.2 Multiplayer games

Multiplayer functionality has been a vital part of video games since the time of "Pong" (Kent, 2010). At that time, multiplayer was limited to the physical presence of the players in what is known today as Local multiplayer. The internet revolution has only increased the popularity of the functionality and emerged new genres of multiplayer games (Chen et al., 2008) such as Massive Multiplayer Online games and battle royals. Multiplayer modes in games have drawn the attention of both players of different kinds and researchers (Sourmelis et al., 2017, Yee, 2006). The ability to communicate with other like-minded players has allowed users social and competitive needs to be satisfied.

The popularity of the multiplayer modes has encouraged both professionals and independent game creators to design the ability to connect with other real-life players in different games, even those which were not initially designed to contain such functionality. One of the most famous independent examples is "Twitch plays Pokemon" (TPP). TPP is a social experiment made by an anonymous Australian developer, offering a chat-based commend bot that allowed multiple players to collaborate in a Nintendo Pokemon game. The players were asked to finish the game as fast as possible through chat inputs. By the time they managed to finish the Pokemon game, the interactive stream has attracted over 1 million active and 9 million inactive players (Ramirez et al., 2014).

Together with other successful examples, the social experiment sparked a conversation around new ways in which the multiplayer functionality within games can be utilized and improved. For example, an interesting attempt was made by Scavengers Studio in their game Darwin Project (2020), which took the already existing concept of battle royal and added Participatory elements for the audience who is watching the battle royal. The design included three types of players - participants, host and audience and created social dynamics between each of the types so that their relationship with the others highly influences their own success. For example, the host who is obliged to provide a high level of entertainment to the audience can adjust the game's rules, such as limiting the playable area, to increase the in-game intensity level of the participants.

There are two main types of multiplayer modes used the most within online games - competitive and collaborative. Chan and Vorderer (2006) suggests that collaborative modes, such as clans (Chen et al., 2008) are widely popular, and although being developed by the game creators, multiplayer game modes which contain Person vs Person (PVP) elements are far less prevalent. On the other hand, since the publication of those insights, there has been a massive increase in a battle royal type of games, and if it was to be tested nowadays, results might differ.

The importance of multiplayer functionality within games, whether online or offline, which motivated players to play, is well established at this stage. One of the first referrals to the social components in video games and its importance can be found in Bartle (1996) analysis of players types within the Multi-User Dungeon system, which is a text-based multiplayer game. According to his analysis, one of the four identified types, which are now known as "Bartle player's types", is the socializer type. The socializers are looking for active interaction within the game environment with other players (Bartle, 1996). Following Bartles categorization of players and in an attempt to understand players motivation, Yee (2006) measured ten different components concluding that the social elements within a multiplayer game are the main components in the prediction model of motivation to play. This means that it is not only an element that is being passively satisfied but also motivates to play actively.

A similar result was found in Ryan et al. (2006) research, where he applies and correlates the Self-determination theory with yee's results. The self-determination theory (SDT), by Ryan and Deci (2000), discuss factors that affect our motivation to participate in a particular activity with separation of intrinsic and extrinsic motivation. The theory implies that intrinsic motivation is the main component of activities such as "play", where people have to participate proactively. Ryan et al. (2006) found a strong correlation between the SDT theory and Yee (2006) results, comparing Yee's definition of the social aspect to the satisfaction of the need for relatedness as part of the SDT model. Both experiments used data taken from players of Massive multiplayer online (MMOs) games, which by default has a social component embedded in the game itself. Tamborini et al. (2010), later, elaborates on the two by experimenting with other genres and different social conditions. In addition to previous findings, his findings indicate that co-playing increased the feeling of relatedness among the players.

## 1.3 Interactive narratives

Although being defined as a game genre for itself, Interactive Narratives contains multiple genres within it. In fact, as Ryan (2009) suggests, Interactive narratives hold within it as many genres as there are in narratives in general. In other words, every narrative can become interactive once it is designed to be one. Ryan (2009) explains that interactive narratives as games are a spectrum between paidia type of games and ludos type. On the paidia end, there are emergent narratives with very little predetermined structure and are highly influenced by users input. At the other side of the spectrum, there is the ludos type of interactive narratives, which contain predetermined rules and structure, and the users' input is used to navigate within the story,

which was written beforehand. Hypertext fiction experiences, such as our system, belongs to this side of the continuum. Unlike the paidia type, in which the narrative is used to lure us into the game world, in the ludos type of games, there is no defined win or lose states, and the player's primary goal is narrative observation and appreciation (Ryan, 2009).

A similar spectrum was presented by Bruni and Baceviciute (2013) where the narrative can be positioned within a spectrum that runs from abstract to the didascalic narrative. As we will explain in a later stage, Bruni and Baceviciute (2013) suggests that the level of abstractness will have a direct effect on players experience and their abilities to interpret the presented content as intended by the author.

One of the most established issues and acknowledged by the researchers of interactive narratives is the narrative paradox. The paradox revolves around the constant conflict between the pre-authored narrative structure and the freedom of users to explore the interactivity (Louchart and Aylett, 2003). The described paradox affects interactive narratives on both ends of the paidia-ludos spectrum, where paidia or abstract type of stories will have no predetermined (by the author) generated meaning and the ludos or didascalic type of experiences will have a direct negative effect on a player's experience and immersion due to lack of sense of agency.

While keeping in mind the existence of the paradox, interactive narratives are still an increasingly popular media form (Green and Jenkins, 2020). Modern adaptations of interactive narratives varied in genres, types, structures and goals. For example, there is the critically acclaimed entertainment interactive narratives such as The Walking Dead Telltale Games (2013) or the Netflix adaptation of interactivity in the special episode of the black mirror series (Ivars-Nicolas and Julian Martinez-Cano, 2020) and purposefully developed interactive educational narratives in academic and educational institutions (Foster et al., 2010, Green and Jenkins, 2020).

## 1.4 Multiplayer narratives

Following the increasing popularity of interactive narratives and multiplayer games, one would expect the combination of both would increase both in terms of development and research, yet that is not the case. There is very little research done about multiplayer collaborative, interactive narratives (Riedl et al., 2011, Spawforth et al., 2018) and even less clear commercially successful examples.

With that being said, there are a few notable attempts to understand further and assess the possibilities such a merger would open for the authors and the audiences. However, such works are essential for the evolution of multiplayer interactive narrative development, which are still lacking

in frameworks or defined approaches (Spawforth and Millard, 2017).

Two noticeable works are The Multiplayer Storytelling Engine (MuSE) by Riedl et al. (2011) and StoryMINE by Spawforth et al. (2018). Both of them focused their efforts around creating Multiplayer differentiability within their system in such a way that every player experiences the narrative differently while maintaining a cohesive narrative structure (Spawforth et al., 2018). Such systems have a drastic effect on the narrative paradox as the possible actions and conditions exponentially grow for every player added to the game. As a result, each of the players is likely to act unpredictably and, therefore, likely to push the whole narrative further away from the original author intentions (Riedl et al., 2011). To tackle this paradox, two commonly used tools are being implemented in those systems:

**Drama Manager -** Also known as Game Master, it is a role which originally was adapted from Alternative Reality Games (ARGs) such as Dungeon and Dragons (DND) (Riedl et al., 2011). The concept assigns the story management over to one authority which is responsible for maintaining a cohesive and immersive narrative that develops through players input (Louchart and Aylett, 2003). The modern common drama manager is an artificially developed algorithm, fully or semi-automated (Peinado and Gervás, 2004), which takes into account different parameters and aligns the story based on pre-determined rules. The involvement or direction of the drama manager will eventually determine the system position within the authorability and robustness spectrum. Riedl et al. (2011) work on that matter, ended within the theoretical realm and did not present a complete design (Spawforth et al., 2018). An innovative approach of the usage of game master for collaborative, interactive narratives was designed by Bernstein (2001). In the developed system, each player gets to play the role of a game master at their turn, doing so through the usage of pre-authored narrative blocks, and so the story is being constructed through a collaborative effort by all players.

**jigsaw-based problem-solving -** An additional solution that was tested in such works is jigsaw-based problem-solving. The idea is that each of the players within the game receives pre-designed roles, qualities or goals, and it is the player's responsibility to become an expert within his niche. The social interaction is evoked through the different information each of the players holds based on his role (Mott et al., 2019). The method has been proven to be very successful for educational purposes and is both practical and effective in the organization of the narrative design (Mott et al., 2019). It is worth mentioning that such a solution limits the narrative as it would require a certain amount of characters involved in the narrative and characters which can

be replaced by a non-playable character or even removed if there are fewer players than planned.

Spawforth et al. (2018) analysis suggests that the jigsaw method can help reduce the complexity created by the multiple inputs of the different players. If each player has a specified role, the designer can limit the parameters within the narrative that the player's actions can affect. For example, if one of the users is assigned a non-combative role, he will not be able to harm or kill other players or NPCs. The segregation by roles might help in a defined domain for players to act, yet it might limit their agency even if it's not clearly stated. It will affect players motivation to act in a certain way and the way other players perceive the character. Manninen et al. (2006) uses this approach in a deterministic matter, leaving the plot to emerge from the natural conflicts between the players based on their assigned roles and motivations, offering little to no place for authorial intent (Spawforth et al., 2018).

In their work, Spawforth et al. (2018) suggests that a multiplayer collaborative, interactive narrative, in addition to Multiplayer differentiability, should include inter-player agency within the system, which means that the player's actions should directly affect other players experiences in such a way which is noticeable by the players.

While we do agree with the approach and the possible contribution of such elements to the whole collaborative experience, we believe that the work of Spawforth and Millard (2017) and other similar works ignore how the narratological experience can be transmitted or elaborated through other communication mediums which the players throughout those experiences are using. A verbal debate about the presented content, for example, can evoke immersion and give meaningfulness through the satisfaction of the need for social interaction or relatedness. In addition, such communication is arguably more accessible than in-game communication, which is limited to the interaction design. We suggest that the current complexity of the mentioned systems is beyond the current understanding of the individual experience within a multiplayer interactive experience. Such an understanding is needed to establish design principles for a collaborative, interactive narrative.

A more similar development methodology and principles were found in the work of Wodarczyk and Von Mammen (2020) which developed a novel video game concept called Emergent Multiplayer Games. In their work, they have given great importance to the streamability of the developed program and the usability of the introduced voting mechanism. The findings suggest an overall pleasant game experience by the players and a seemingly natural adaptation of the introduced collaborative features by the audience. On the other hand, players feedback indicate a lack of clear feedback about the game state and lack of competitive elements. To our knowledge, there are no

other examples of research that uses similar systems, such as voting mechanisms and examine the cognitive, behavioural and emotional engagement of users in such systems as we are aiming to do.

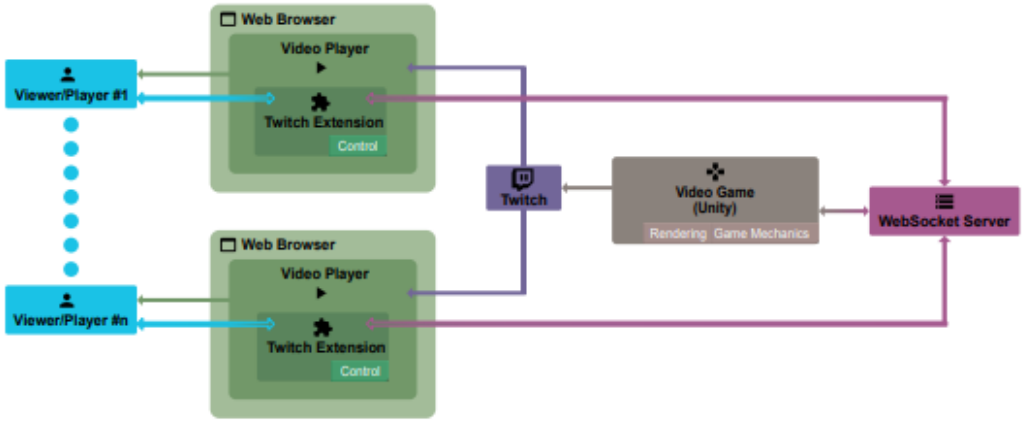


Figure 1.1: Wodarczyk and Von Mammen (2020) prototyped model of streamable multiplability system for interactive narrative game

## 1.5 Initial problem statement

Following our assessment and analysis of previously existing work, we can conclude that most of the researched examples, if not all, focus on the development of AI, which moderates the presented narrative based on multiplayer actions. As we mentioned before, such work has significant value to the development of a multiplayer collaborative, interactive narrative experience. Therefore, we would like to add an additional valuable conclusion that will help design such systems, both in terms of the design of the intractable system and the narrative itself. Such conclusions should be from a comprehensive analysis of users experience during and after the playing session.

As with any game, our goal is to evoke a generally positive attitude towards the interactive system and the presented narrative within it. As we will explain in the following chapter, in order to understand better ones personal experience when playing a multiplayer interactive narrative, there is a need for a deep analysis of their attitude towards it. A profound analysis of the attitude will help us answer our initial research question of what elements within interactive narrative experience are crucial for multiplayability design and how they should be designed to evoke a positive attitude towards the interactive experience and the presented narrative.

# Chapter 2

# Analysis

## 2.1 Feature Selection

Although there are various manners in which attitude is conceptualized, the general agreement is that it is used to describe the individual's disposition towards a discriminable aspect of the individual's world. In addition, it is commonly agreed that one's attitude can be located on an evaluative continuum which ranges from positive to negative end (Ajzen, 1989). As attitude is a theoretical concept, it is immeasurable through direct observation. Instead, there is a need to use a bottom-up approach and conceptualize attitude measurements through subcategories and concepts. A popularly used model, known as the ABC model, relies on the three response categories: Cognition, Affect and behaviour (Ajzen, 1989). Further analysis, made by Rosenberg et al. (1960), suggests that analysis of the three categories can rely both on verbal and non-verbal responses (as can be seen in table 2.1).

Although the ABC model helps us in the direction toward a definition of practical measurement tools, As Ryan (2009) points out, the research of cognitive narratology is problematic by nature. The current understanding of cognitive science and the offered measurement tools for such research is not yet in a stage that would allow us to incorporate it with other research fields such as narratology fully. In addition, the accessibility of such measurement tools is limited and would

| Response | Cognition | Affect | Behavior |
|---|---|---|---|
| Verbal | Expressions of beliefs about attitude object | Expressions of feelings toward attitude object | Expressions of behavioral intentions |
| Non-Verbal | Perceptual reactions to attitude object | Physiological reactions to attitude object | Overt behaviors with respect to attitude object |

Table 2.1: Responses used to infer attitude - taken from Rosenberg et al. (1960)

require a great effort in development, testing and analysis. Considering the possible conclusions that can be generated by the usage of such tools suggesting that other directions of experiments should be taken into account. Even if we can reach some conclusions from hard cognitive measurements tools, Ryan (2010) concludes that any attempt to apply top-down cognitive concept application on those conclusions will be wrong, to begin with, and will end up concluding commonsensical ideas. An alternative solution, similar to the process which we have done before with attitude and as suggests by Bruni et al. (2014), would be to work in two stages. First, we will identify interesting features from within the interactive narrative experience, in our case, multiplayer interactive experience. Second, we will analyze the cognitive applications and domain to which the extracted features belong. Following the steps, our next step would be choosing the extracted features which we are interested in. While doing so, it is vital that we choose clear and defined concepts with clear implications for the players to experience, specifically in multiplayer interactive narrative experience.

Our immediate thought at the beginning of the feature extraction process was to use the concept of immersion. Immersion is commonly used when it comes to games, narrative analysis, and reviews (Jennett et al., 2008). Even though the concept of immersion as the feeling of being caught up in the world of the game's story in both diegetic and non-diegetic levels (McMahan, 2013) might seem clear, the similarity to other popular concepts such as presence and the lack of precise measurements for immersion has resulted in an ambiguous and overly used term in the research world of games (Jennett et al., 2008, McMahan, 2013, Nilsson et al., 2016). Instead, we decided to use the platform to introduce other, less commonly used, concepts that together can help us understand users' attitudes towards the multiplayer collaborative, interactive narrative experience.

Suspension of disbelief and narrative intelligibility are both mentioned by Bruni et al. (2014) as possible features to further analyze in interactive narrative experiences. Both include components of emotional and cognitive response and can help us better understand the attitude towards the experience before, during and after playing the game. Although covering both is already an ambitious task, we wanted to increase our range of analysis by clear behavioural practical measurements. Unlike abstract games in which the players are free to behave as they wish, branching narratives limit players actions to specific choices which were pre-designed. Data analysis of players' choices, in compression with both individual previous behavioural patterns and with other players behavioural patterns, can help us understand the player's behavioural response to the stimuli, hence getting further knowledge about his general attitude towards the experience. Further learning of the three chosen components is needed to understand better the definition of the

measurements, their relation to general attitude and, suitability for our research needs.

## 2.2 Narrative Intelligibility

Narrative intelligibility is a meaning generation process done by the audience and in which the generated meaning is as close as possible to the author original intentions when designing (Bruni and Baceviciute, 2013). The topic has been widely discussed as part of the ongoing academic discussion of the "Narrative Paradox", which conceptualize the clash between offering freedom to the users and generation of a meaningful and interpretable narrative, One which follows plot structure and maintains a dramatic arc to its users (Aylett, 2000, Bruni and Baceviciute, 2013, Louchart and Aylett, 2003).

Under Bruni and Baceviciute (2013) framework of narrative intelligibility and closure, there is an essential separation between the goal of the embedded narrative and the goal of the system. As the design of each goal will determine the offered narrative intelligibility, it is crucial to identify and define each one. Bruni and Baceviciute (2013) describes three possible outcomes concerning the narrative intelligibility and the two levels of goals. The first case is when the goal of the system and the goal of the narrative conflate into each other. The second scenario happens when the embedded narrative is one of many resources for achieving the system goals. Lastly, the third case describes a situation where the embedded narrative is nonessential to achieving the system's goal.

An essential function of the intelligibility, in both levels, is the level of abstractness of the narrative or as defined within the framework of Bruni and Baceviciute (2013) - Author-Audience Distance (AAD). AAD is the interpretation gap between the author intentions and the precision of the audience. The more the narrative has abstract preferences, the bigger the gap between the audience and the author grows and vice-versa.

The system which we will design is by purpose fitted for any narrative to be embedded within. As there are no restrictions, other than basic interactivity for the audience, it can be assumed that in most cases, the third described scenario will be the most accurate description of the communication between the audience and the author. In such a case, there is complete freedom for the author to determine the level of abstraction and intelligibility within the narrative itself. On the other hand, a purposefully designed narrative to encourage a group discussion through the described events and the way the narrative is being transmitted to the audience can support the initial system goal as presented in the second case.

## 2.3 Suspension of Disbelief

The willingness to suspend your disbelief and rid your mind of logic and critical thinking is sometimes essential to get immersed in a great book, movie, or game. This is a term coined by Samuel Taylor Coleridge in 1817 (Brown and others, 2012). The essence of the theoretical statement is that you need to be willing to get rid of your disbelief to immerse yourself in any written or illustrated narrative fully. This will boost the enjoyment of these works and bring out the true narrative and showcase the work in its proper form. The Oxford Reference (Oxfordreference.com, 2021) website describes the suspension of disbelief as being able to react as if the characters and events are happening in real-time and in real life.

Willingness to suspend disbelief in interactive mediums is a particularly tricky one since any friction in game-play or mechanics can bring the audience straight out of the moment to deal with the reality of the interactive system (Bizzocchi and Woodbury, 2003, Brown and others, 2012). Moreover, because of the volatility of the skills of each player, it is impossible to design the perfect interactive narrative for everyone since every player has different needs.

Although it is hard to keep a user immersed and have them suspend their disbelief during a play session, Manninen (2003) suggests that players that are used to playing video games have a stronger willingness to react authentically to video games and are not as affected by hard gameplay as non-gamers. This could be due to muscle memory, dexterity, industry-standard user experience (UX) design, and user interface (UI), and even increased cognitive functions such as reaction time (Green and Bavelier, 2006).

According to Muckler (2017), suspension of disbelief does include an emotional component, called an emotional buy-in. When you connect emotionally with the events or characters in the story, you are more engaged to the system as whole. So whether or not we really are affected by the narrative, or we just behave like we are supposed to behave in this situation, like we would have done in real-life (Schaper, 1978), there is something that connects us emotionally with the medium when we suspend our disbelief. The emotional factor is very prominent when we want to suspend our disbelief, but the cognitive aspect has some weight as well. We know that immersion within the medium does not happen if we are unwilling to entirely suspend our disbelief and let go of reality a bit. However, the medium can help people with this by engaging them emotionally.

When looking at a similar theory called transportation theory (Green et al., 2004) which tries to describe how a narrative could transport a person into the story, research shows that in the proper context and when certain personal conditions have been met, it is easier to get to the narrative transportation. However, these can sometimes be highly personal conditions and thus

becomes very subjective, making it sometimes difficult to achieve. For example, some people have an easier time achieving transportation when reading texts instead of watching films because a higher level of cognition is required, making the person more willing to transport (Green et al., 2004).

As transportation theory suggests, we could have an easier time transporting players who are more willing to read texts rather than to focus on the typical player types (Bartle, 1996).

There are many narrative-driven multiplayer experiences, which need people to surrender their real-life logic to the narrative. As mentioned, suspension of disbelief in interactive mediums is challenging to achieve. Therefore it somewhat multiplies that difficulty to a multiplayer setting as well. For example, playing a game like Call of Duty: Warzone, which is set in either the cold war era or in modern times (Activision, 2020), there is definitely a narrative that Activision is trying to push, but due to the intense action in the game the story is forgotten, and the killer player types (Bartle, 1996) are focus on winning the game, not because they want to further the narrative, but for their personal benefit and achievements. This lets them progress in the game and upgrade their arsenal. The same map is played over and over until mastered by the players or changed by the developer. This means that the narrative is entirely irrelevant for the game and gameplay if it was not for the era and region-specific weaponry.

Another example is World of Warcraft (Blizzard, 2004). This is a game commonly referred to as a massively multiplayer online roleplaying game (MMORPG) which suggests that the game wants its players to suspend their disbelief to get the whole roleplaying experience of the game. However, the game is most often played by trying to be as efficient in your character's role as possible. Therefore, the player often focuses more on utilizing (and sometimes exploiting) the systems within the game to get maximum output as either a damage dealer, healer or tank. This means that the players are more often focusing on the gameplay and systems within the game rather than the narrative (Brown and others, 2012).

While World of Warcraft has very intriguing and extensive lore within the game, the people playing the game for its story outnumber the people playing for the systems and skills significantly.

These games are great experiences either way, but there is never an active, interactive narrative experience within them. While looking for a mainstream option in this realm, it quickly became very apparent that it is tough to find.

Some events are happening in some of the bigger MMORPGs that have in-game world events, which require everyone to work together to reach a particular goal in order to further the story in the game world. However, the story's outcome has already been decided by the developers, and the players are never in any real position to change an outcome of a story.

As mentioned, suspension of disbelief is a very personal thing and is very hard to achieve for some people. In order to help with achieving this, we can look at narrative engagement, which has a variety of different constructs such as transportation, identification, presence, and flows (Busselle and Bilandzic, 2009).

The systemic requirements for achieving suspension of disbelief are something that we can focus on since it could help us make sure that there are no disruptions for the players, pulling them back to reality.

Ensuring that the user experience design and the flow of the story and system are satisfactory could help the players have an easier time engaging with the narrative and have an easier time transporting themselves into the narrative world.

## 2.4 Decision making in interactive narrative

Decision making is a part of the interactive experience by nature, and it is the user's decisions that drive the experience forward and lead to the presented results. Many academics found interest in players motivations in the decision process of making those choices. relaying on analysis of players behaviour and self report measurements there have been several attempts to identify and categorize the choices based on their quality and effect on the players. The quality of choices is being assessed based on its effect on users' behaviour either within the simulated world or in real life, the players' precision of the presented choice and their sense of agency in the experience.

Choices that stand in one or more of the mentioned quality measurements are framed in the academic research world as "Meaningful Choices". Such choices will require the users to think and evaluate the presented options, engage the player with the presented narrative and increase their enjoyment from the experience. Although many players can identify the Meaningful choices within the experience, there is an ongoing debate on what elements such choices need to consist of to be considered meaningful.

In an attempt to identify and define such choices within games, Iten et al. (2018) research results suggest that a meaningful choice can be described as one when containing one or more of three themes - Consequential, Social and Moral. However, more commonly identified as a meaningful choice by the users includes all three mentioned themes.

### Consequential

The idea that all actions within a game should have clear and feasible consequences has become a foundation principle in modern game design (Nay and Zagal, 2017). In fact, not only designers will

look after a consequential design, in their research, Iten et al. (2018) found that the majority of the test participants had referred to the consequences of their action as crucial for the meaningfulness of their decision.

A consequential choices design, which is perceivable by the users, will have a direct effect on the player agency. Immediate feedback over the players' actions is how they will eventually learn to play the game and, in a later stage, will shape the experience to be suitable for their liking (Nay and Zagal, 2017). However, it is not only the instant consequences of the actions, the players also finds interest in how their decision shapes the long term form of it (Iten et al., 2018). Thus, this suspension can be an excellent tool for game designers to increase the player interest and immersion in the interactive experience.

Although the idea seems to be a well-established consensus, Nay and Zagal (2017) suggests that consequentially is not a vital part for meaningfulness in decision making within interactive narratives. Based on their review of some of the most popular and liked interactive narrative games, they suggest that the true meaningfulness of the decisions rely on the ethical aspect of the choices. Moreover, the given importance to the practical consequences prevents the players from creating a severe theoretical ethical debate within themselves over the player and character inner motivations. The predetermined consequences, in many cases, can lead the player to focus on the game designer's ethical perspective and how they can maximize their "success" in the game, completely ignoring their views or wishes on that matter. Nay and Zagal (2017) uses the example of The Walking Dead: Season Two 2013, where the player encounters a dying dog and need to decide either to kill the dog and end his suffering or to leave him to be and die by himself. Both options will end up with the dog dying and will have no consequences on the future storyline, yet the decision itself seems to be meaningful for the ethical and moral discussion that stands behind it.

While the theoretical hypothesis of Nay and Zagal (2017) relay on solid examples, they do not correlate with the current exiting findings from users feedback about the importance of consequential choices for their perceived experience and the quality of it (Fendt et al., 2012, Iten et al., 2018). The conflict of findings can be explained through a deeper understanding of the sense of agency, its importance to interactive narrative and the components that manipulate and affect it in the users.

The agency subject has been discussed and covered by many pieces of research, and while the definition in each of the examples differs from the other, all agree it lies within the domain of the player's sense of control over the game (Fendt et al., 2012) and relays to some extent on the original sense of agency definition in relation to video games as made by J. Murray - "the satisfying power

to take meaningful action and see the results of our decisions and choices" (Murray, 2017). An essential distinction in that matter is between the theoretical sense of agency and the perceived sense of agency, as suggested by Thue et al. (2010). The theoretical agency is an objective ability of the player to change the course of events, while the perceived agency is his perception of his ability to do so (Day and Zhu, 2017). Each of the parameters is open for modification by the system designer and, in contrast to the general assumption, there is no linear correlation between them (Day and Zhu, 2017, Thue et al., 2010).

The distinction between the two helps us better understand how users interpret consequences in their decision-making and therefore feels as if their decisions were more meaningful or less. Going back to The Walking Dead: Season Two 2013, where the player encounters the decision of the dying dog, Day and Zhu (2017) suggests that through manipulation of the perceived agency, and although there is almost no theoretical agency behind it, the players give the choice a deeper meaning. As explained in their paper, the manipulation is being done through visual tricks and pathos, which does not rely on the real impact of the choice over the storyline. It, therefore, can be understood that you can maintain player perceived agency levels or even increase with little or no effect at all of the actual theoretical agency in the game.

## Moral

Although Morality and video games have been quite a popular research field, most of the existing research discusses the moral outcome of video games. Questions such as the effect of playing video games on the real-life moral behaviour of the players are widely popular in terms of research and analysis. On the other hand, little is known or researched in terms of moral decision making and reasoning within the game world (Krcmar and Cingel, 2016).

When it comes to in-game decision making, Krcmar and Cingel (2016) suggests that moral reasoning might encounter opposition by the strategic reasoning and, therefore, in their research, examine which of the two takes a more significant part in in-game decision making. Their findings indicate that both moral and strategic reasoning has a part in the decision making where more experienced players will likely take more into account the moral factor in their decision making procedure.

To elaborate on the matter, Krcmar and Cingel (2016) breakdown the moral reasoning into different identified themes, following the framework of the Moral foundation theory. The Moral foundation theory attempts to map out the universal moral foundations which are being taken into account in people's moral reasoning (Graham et al., 2013). According to the theory, five founda-

tions were first identified - Care/Harm, Fairness/cheating, Loyalty/betrayal, Authority/subversion and Sanctity/degradation.

**Care/Harm -** The care reasoning relies on our general sense to protect the weak, such as children and an objection to physically hurt others (Krcmar and Cingel, 2016). It will be trigger by a visual or auditory stimulus which indicates a situation of suffering or distress (Graham et al., 2013). In their research, Krcmar and Cingel (2016) findings suggest this is one of the strongest themes repeating in players moral reasoning for their actions.

**Fairness/Cheating -** Fairness reasoning relates to human moral behaviour under the ownership and property trade rules based on the general global concepts such as a fair payment for goods or services (Krcmar and Cingel, 2016). However, such a relationship does not have to occur between two humans and can be human versus machine or even a third unrelated party which triggers the unfairness (Graham et al., 2013).

**Loyalty/Betrayal -** The third common reasoning relies on one's in-group loyalty. Fandom and brand loyalty can be considered good examples of such moral foundations (Graham et al., 2013, Krcmar and Cingel, 2016).

**Authority/subversion -** The authority moral foundation refers to any violation of an authority figure which based on position, class or any other hierarchical structure which demand a certain level of respect (Graham et al., 2013, Krcmar and Cingel, 2016).

**Purity/Sanctity -** Lastly, Purity refers to the judgment of anything considered "dirty" or impure. Although essential, Krcmar and Cingel (2016) finding suggest that the purity foundation directly resonated only a small percentage of the moral decisions in-game.

Further development of the theory has been suggested by several scholars, offering other global moral foundations such as liberty/Oppression (Krcmar and Cingel, 2016), but still, to remain in the pre-defined project scope and avoid a dive into the philosophical debates over morality, we will remain with the five foundations as they were described originally.

## Social

Iten et al. (2018) findings suggest that many of the decisions which are being made in games are considered to be valuable or meaningful when others are, even as little as, present when the

decision is being made. Such perception over what is meaningful is expressed in the old well-known philosophical thought about the falling tree in an empty forest. Many researchers from various fields found interest in the effect of the social aspects on the decision-making process. One of the most famous examples within the research world is the Solomon Asch Conformity Experiment which measured people likelihood to ignore their cognitive abilities or common logic and base their decisions on social conformity (Larsen, 2010). In games specifically, it is suggested based on the self-determination theory as elaborated before that the social behavior within the game is used by the players to satisfy the need for relatedness. Oliver et al. (2016) suggests, based on his analysis of needs satisfaction as part of the SDT framework in games, that a pro-social gaming experience is more likely to be associated with meaningful gameplay, hence effect players decision making within games through increasement of their perceived value.

An important aspect to add, is the fact that in most examined cases, the players referred to in-game NPCs (non-player characters) as the social presence which affected their decisions (Iten et al., 2018). This aligns with latest research results which shows that players tends to perceive NPC as humanized entities (Wehbe et al., 2017). On the other hand, it contradicts the results originally generated from the Tamborini et al. (2010) experiment as their condition for experimentation with social situations was cooperative playing with a real player or NPC.

As our interactive system offers a real-life social aspect by default, it will be interesting to see whether the presence of an NPC within the stories will affect the players' decision-making processes and the meaningfulness feeling among the players.

## 2.5 Final problem statement

Following our research, we believe that through analysis of all three components - Narrative intelligibility, Suspension of disbelief and Decision making we will be able to have a better understanding of the cognitive, emotional and behavioural response to the stimuli, thus have a better understanding of the attitude of interactive narrative players towards the designed multiplayer system, the collaborative aspects of it and the presented narrative. We suggest, therefore, as our final problem statement, to ask the following questions:

> How should the system and the embedded narrative of a collaborative multiplayer interactive narrative experience be designed to evoke a positive attitude towards the experience by the players?

More specifically, we would focus on each of the extracted features and measure them based on the different design patterns to construct a meaningful and positive cognitive, emotional and behavioural response from the players. For example, we suggest, before the testing phase, that a system that encourages users to have higher levels of suspense of disbelief, in which the embedded narrative has a clear and stable author audience distance and in which the presented choices are being conceptualized by the players as consequential, moral and social will lead to a more positive attitude, or response, from the players. Each of the mentioned components will be measured by a separated agreed measurement, and we will try to isolate each of them to ensure meaningful and accurate conclusions in the results analysis stage. Once we conclude and cross-examine the generated results of each of the features, we will be able to better understand the components that construct the answer to our final problem statement, following a bottom-up analysis approach as we suggested beforehand.

# Chapter 3

# Design

## 3.1 Narrative Design

### 3.1.1 Design principles

To answer our raised questions and test our hypothesis, we have designed a system that will functionally allow users to reach a collective democratic decision in an interactive narrative. As a result of our analysis, we understood that such a test would require multiple well designed and defined narratives. Each of the narratives must present the users with different dilemmas and situations, which later will allow us, based on our definitions, to identify and single out design principles for a collaborative, interactive experience.

The system, which was designed for the experiment, includes three stories, each with different preferences and themes. Although each of the stories is unique, they rely upon simple narrative principles to ensure a proper transmission to the audience. The following principles were taken into account when we created the narratives:

**Familiar structure -** The system which we designed offers a new mechanism, which will require users to learn and master. To avoid confusion and, as a result, frustration among the users, other elements within the system must be a reference or use anchor points that users can quickly identify and understand. As such, the design of the narratives should rely on pre-existing narrative concepts which users can feel familiar with. The three narratives that were designed for the experimentation are following, to some extent, the classic three-act structure. The three-act structure goes back in definition to the days of Aristotle *Poetics* in which he defines the structure as a beginning, middle and ending (Horton, 2015). The concept was further developed

by Field (2005) giving a defined purpose for each of the acts as he describes them - Set up or exposition, Confrontation which would include the development of the obstacles which prevents the protagonist from reaching his goals. Lastly is the resolution act, which would include the climax of the narrative and eventually the catharsis. Since Field (2005) presentation of the defined three-act structure, it was popularly used and adopted by modern media and even if only subconsciously, most people are familiar and feel comfortable with being presented with such structure.

**Diversity in types of choices -** For testing and learning purposes, it was necessary from the narrative designing stage to identify the features of each of the possible choices made by the users who play the narrative. In addition, it was crucial to diverse those features existence in the different choices. For example, in one story, users should encounter both consequential and non-consequential choices. Furthermore, some of them should include an apparent and identified moral dilemma behind them. At the same time, other choices should be more abstracted in terms of the moral application of the presented choices.

**Players autonomy -** As our stories are relatively short, it might be that the players do not have enough time to develop an emotional connection with the presented stories and the characters within them. It is, therefore, necessary, as we emphasised in earlier chapters, to establish a high perceived sense of agency and autonomy to answer players personal needs and evoke some emotional connection. The presented dilemmas and possible choices should align with players wishes and create a sense of autonomy among them rather than limit them to unpopular ways of actions which would feel as if they are constrained to certain possible actions and reactions.

### 3.1.2 Story 1 - Emma

The story, being told from the protagonist's perspective, is about a young adult, Emma, who orphaned her parents at a young age and has since struggled to get her life together. In addition to dealing with her own problems, Emma has to take care of her brother, who, since the death of her parents, has been obsessively trying to find sense and justice. The story gets to its dramatic peak point when Rick, Emma's brother, reveals he found one of the people responsible for their parent's death. Although not stated in the text, the presented content suggests Emma is missing some sense of closure. Based on her need for closure and the newly presented information, she then needs to decide whether she is seeking some kind of revenge, and if so, in which way. The branching story is designed in such a way that, in specific paths, Emma will meet and bond with the murderer before meeting her brother and receiving the new information.

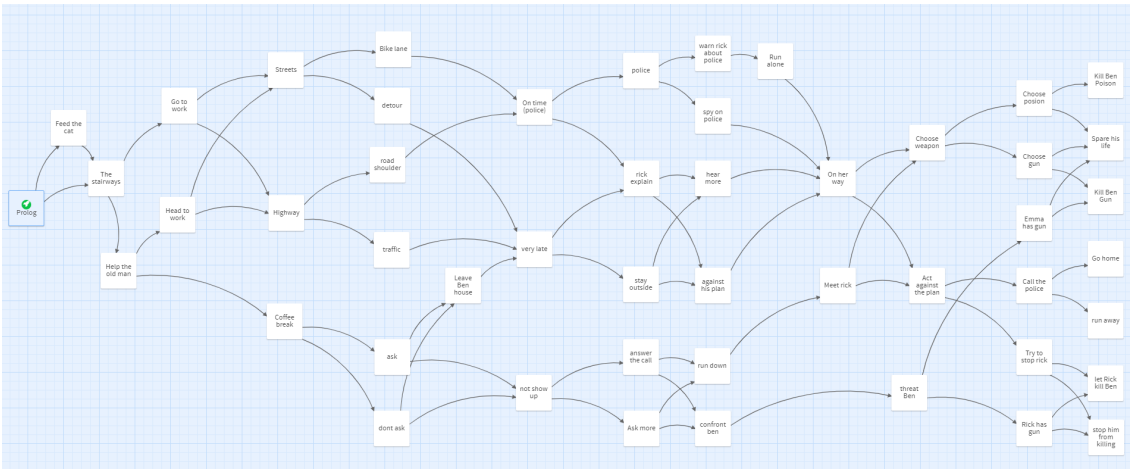


Figure 3.1: The Narrative structure of story 1, screenshot taken from Twine

As can be seen in figure 3.1, the story contains 49 possible nodes for the players to visit, which is the longest story within our system. The length of the story will allow us to understand better the difference in the players' experience based on length. As we currently do not indicate the effect of the length over the individuals and group experience, it is essential to diversify in possible options and see how much length affects it. Each node differs from the others in actions, dialogues and personal attitude towards the presented information. There are four main storylines - Positive interaction with Rick (Her brother), Negative interaction with Rick, Positive interaction with Ben (The murder) and negative interaction with Ben. The story was designed to allow players to move between those storylines based on their developing perspective over the situation. A coherent narrative is guaranteed through a systematical approach to the shared knowledge about and within the story so that a player cannot visit a node unless they were exposed beforehand to the pre-mentioned pieces of information. There are seven different ways in which the story ends, and each ending offers a unique conclusion or message for the players with a focus on Emma's emotional state at the end of the occurred events.

The story contains 12 non-consequential decisions, and the pre-authored structure ensures that the players will face at least 3 of such choices during their play session. Non-consequential choices were codded as such if either the presented question and the suggested choices imply they do not directly affect the story, such as the first choice between feeding the cat or leaving the house. The second type of non-consequential codded choices are choices that are still reversible through one choice only. In most cases, it would be a semantical only difference between the two options. For example, when Emma arrives at Rick's house, the users are asked either they want to go in or stay outside. Both of the options offer the same next question and available choices, and therefore it does not have clear consequences over the storyline as it unfolds.

### 3.1.3 Story 2 - Earl's Disappearance

The second story mimics an 80's murder mystery, where we follow a guy named Murray. The story is told from Murray's perspective. We do not get to know a lot about him other than the fact that he might be an alcoholic. Murray knows many people in the town and seems to be liked by pretty much everyone.


Figure 3.2: The Narrative structure of story 2, screenshot taken from Figma

The story starts with Murray waking up and finding out that the paper and pretty much everyone in town thinks that his good friend, Earl, is dead. He knows that it is not true but does not remember what happened and tries to figure it out by visiting different places.

Although not as long and complicated as the first story, there are choices that alter the story and give you a different ending. The story has two different endings, where the cops could be involved or not. The first choice can be seen as the most consequential one since it makes you either talk to the cops or not. This is, however, impossible for the player to foresee and therefore makes the choice a completely arbitrary option, making it non-consequential for the player even

though it has the most significant impact on the narrative structure.

The goal of the narrative is to be a bit vague, mysterious, and sometimes surprising. The story does not give away hints or tries to push players into a specific direction, making the game a bit harder to figure out in terms of your choices. Instead, the story is built around two main storylines, ultimately deciding which narrative ending the players will get to.

The narrative structure follows a standard three-act story arc. The first act is where we are introduced to Murray, the small town, and his predicament. The second act gives us a bit more action, suspense, and conflict on the outskirts of town. Finally, the third act wraps everything up neatly and gives the story a resolution.

There is a branched structure to the story (shown in figure 3.2). However, it is, as stated before, a bit simple. Whatever way the player wants to go, they will always get four choices within the story. There are 12 different story nodes within the structure and culminates into two different endings.

The choices were all non-consequential since the questions were stated so that they could be interpreted differently and a bit vaguely. No hint or indication would lead the players to a conclusion just based on a choice.

### 3.1.4 Story 3 - The Council

The council is an experimentally designed narrative, presenting the story of a politically empowered council in a medieval times type of country. The players are being presented with the narrative through the council perspective, and they take the role in search of truth or at least logical explanations to the presented case. The case is a murder case of a beloved public figure within the realm and the hunger of the locals for justice, a principle that seems to lead their whole agenda. Unlike the first two stories, "The Council" is written specifically for groups. The questions are phrased plurally, leaving players room to imagine their individualistic thoughts within the group. The descriptions avoid any characterization of the council to ensure that players interpretation of the presented narrative and their roles as part of the council is not limited by graphical description.

The story presents the players with several possible branches yet allows them in certain checkpoints to review their decisions and, in case of need, to retrieve certain steps and return to the default branch. In case players remain on the default branch, the story will unfold as an ongoing trial of one specific character, which is being presented as the main suspect and will reach a peak point of the sentence where players need to decide whether to punish him for his alleged crimes or let him go for different reasons. There are 26 text blocks that can be reached by the players,

depending on the choices they have made beforehand. In addition, the story contains five non-consequential choices, where the structure guarantee that the players will encounter three of them during the experience.

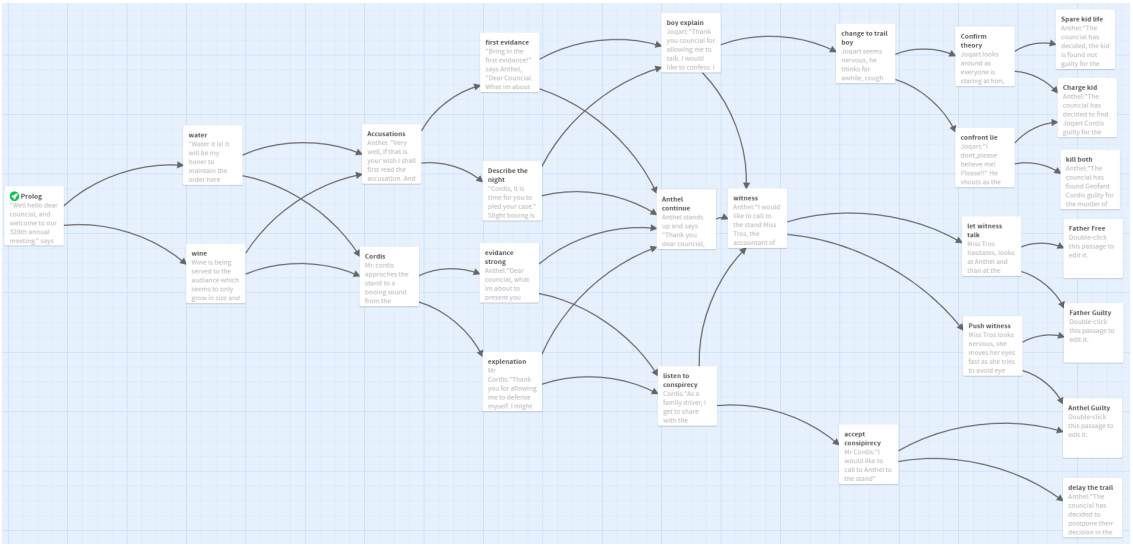


Figure 3.3: The Narrative structure of story 3, screenshot taken from Twine

Similar to the first two stories, some of those choices are more obvious non consequentially, such as serving wine or water to the audience and some which are more hidden and require a full-scale mapping of the story to understand their implications, such as choosing between two different possible questions for the suspect to answer. There are seven ways the narrative ends, all of which depend on the players' previous decisions. To avoid a specific and clear message, the endings do not focus on the moral or professional judgment of the council decision but rather focuses on the effect it has on the relationship between the council and other presented characters or the in-game audience as a whole. The audience will not like certain decisions, and the relationship between the council and the people will be affected by it.

## 3.2 Graphical Design

As part of our research, we analyzed and compare exiting examples of hypertext types of interactive narratives. The virtual environment representation in each of the researched examples, some of which focused on a 3D VE, yet, in most examined experimentally designed interactive narrative experiences, has used a 2D flat representation of the general scene. Considering our intentions, testing, time and resources, we have narrowed it down to three main options. Each of the options were prototyped and tested in an early stage of the product.

1. 2D scene graphics - Inspired by modern mobile interactive narrative games, such as Choices (Pixelberry, 2016), which uses a generic background to set the place, time and atmosphere of the scene and 2D Characters which communicate among themselves and to the audience through facial expressions and dialogue balloons.

2. Simple visual illustrations - Inspired by children books that present the text at the most popular area of the page and adds an additional simple illustration at the page's peripheral area to help those lacking visual imagination and the general sense of flow. The illustrations do not capture the whole scene or the communication transmitted by the character but rather focus on capturing a specific moment within the scene that aligns with its overall purpose.

3. Text-based - Lastly, the minimalistic option was a text-based only interface, which emphasizes the importance of the text itself as part of the whole experience as it makes the whole experience rely on it. Of course, such a solution will require some cognitive abilities and practice from the users as it does not offer many other elements to convey the story but as it is suitable for the target audience which we had in mind to begin with, and considering the benefits of investing our resources and time in other more relevant issues it was highly considered.


Figure 3.4: The three types of graphical illustration which were initially tested

Although the testers' opinions were mixed, we have decided to focus on Text-based graphics due to time and resources. When comparing the cost and the benefit of such graphical effort and considering our graphical abilities and experience, it was clear that investing our efforts in ensuring a more cohesive and pleasing narrative was the right choice. On the other hand, we do not expect such graphics to be ignored by the users and believe that they can add to the experience as a whole. It would be interesting to see the exact effect in future testing.

With that being said, our Graphical User Interface (GUI) development process was extensive. The program is developed in such a manner that can fit any pre-authored interactive narrative. We therefor denied any possible graphical design which might seem related to a certain popular

narrative theme. On the other hand, to encourage behavioural and emotional engagement by the players, we wanted the GUI to indicate a possibility of conflict. When choosing the right colour palette, following general principles of colour theory, we aimed to evoke an ideological debate upon the presented possible choices the players will need to make during the game. The choice of Red and Blue as our two primary colours was made purposefully with the intention to create inter-textuality between the program and worldwide political divisions.


Figure 3.5: The opening screen

Western countries tend to divide their political parties in a clear division between the blue parties and red parties (with the exception of green parties for that matter). Maybe the most famous usage of the two colours in a political context is done in the US where the colours red and blue has become an agreed symbol of the political parties themselves (Seyle and Newman, 2006). The two colours contrast each other and are on both ends of the hot-cold colour spectrum. This contrast makes the two colours complement each other, and therefore they are likely to be seen as aesthetically pleasing (Whelan, 1994). Other graphical elements within the program were developed under the same guidelines and were marked blue and red based on their association to specific choices and marked purple, the combination of the two colours, in cases where their purpose was not linked to a specific choice. As an example, in Figure 3.5 the play button is marked with a purple layer within it.

## 3.3 Product Design

### 3.3.1 Game Design

The developed experience would fall into the category of a playable story under Ryan (2009) framework. However, unlike narrative games, which uses a narrative to enhance the gameplay, the player is not presented with a clear objective or win and lose states in playable stories. The lack of a specified and clear win state has raised an ongoing debate within the game design research world (Flanagan, 2009). Although debatable, it was important for us to design, develop, and assess our program as a game as part of our approach. Following the MDA (Mechanics, Dynamics, and Aesthetics) framework as described by Hunicke et al. (2004) we wanted to ensure a playful experience. The MDA framework breaks down games into three main components, and each offers a different view or perspective towards the presented content. Aesthetics, loosely defined as the "fun" component of the framework, are the elements that construct the player's experience. In our case, one can argue that a playable story, such as our experience, provides the Fantasy, Narrative, Discovery and Expression aesthetical experience to the player. Dynamics refers to the variables which change in their values evoke the aesthetical experience. For example, dynamic time limits would create a sense of urgency and, as a result, would help the player in feeling as if the game provides a challenge as an aesthetical experience. The embedded narrative and how it unfolds to the player are responsible for evoking the wished aesthetical experience in our system. Therefore, by design, they should include narratological elements that will help the player construct meaningfulness in the presented content and a higher sense of immersion. The Mechanics component refers to the elements which control the interaction between the player and the game. Those of which will create the changes in the described dynamics (Hunicke et al., 2004). In our case, the main mechanic is the voting mechanism. The choices the players make through the mechanics will decide how the story unfolds to them. Their decisions will determine how the presented characters will act and react. Wodarczyk and Von Mammen (2020) suggests three possible voting mechanism designs, and each offers a different challenge to the players: Majority vote, Coordinated voting and Strategical voting.

- Majority vote – Each player is allowed to cast one vote each time and the option with most votes is chosen.
- Coordinated voting – Each player is allowed to vote as many times as they wish, yet the price of each additional vote grows to allow players to evaluate their votes and have a strategical mind set while voting.

- Strategical voting – Each player has a predefined number of votes and they are allowed to distribute them freely between the presented questions and choices.

It is important to mention at this stage that Wodarczyk and Von Mammen (2020) used an in-game currency that was influenced by votes. The introduction of a new currency raises the complexity level of the system and requires a more practised type of player to assess the situation and behave strategically. To ensure our designed experience fits all types of players, we decided to avoid the additional currency practice and stick to non-valued votes. This decision eventually led us to choose the first type of votes based solely on the majority within the group. We believe, and following the flow theory, that raising the complexity level of the system through new mechanisms such as currency would harm the general flow of the game and would result in some level of anxiety for inexperienced players (Csikszentmihalyi, 2000) or meta-type of strategical thinking rather than an actual focus on the narrative. The complexity within the presented narrative should carry the flow and level of difficulty rather than any other game mechanics.

The complexity of game definition or framework is not unique for playable stories. It can be seen in other interactive experiences such as gamification in educational or general non-game environments. Therefore, it was important to learn from how researchers defined gamification as game frameworks and compare them to our current exiting features. Nicholson (2015) recipe for gamification and the mentioned components in it can help us in reaching a better understanding and analysis of the exciting product we have developed. Nicholson (2015) definition of meaningful gamification includes the following components:

- Play – facilitating the freedom to explore and fail within boundaries
- Exposition – creating stories for participants that are integrated with the real-world setting and allowing them to create their own
- Choice – developing systems that put the power in the hands of the participants
- Information – using game design and game display concepts to allow participants to learn more about the real-world context
- Engagement – encouraging participants to discover and learn from others interested in the real-world setting
- Reflection – assisting participants in finding other interests and past experiences that can deepen engagement and learning

We believe that the presented narrative, the voting mechanism as described above, and the facilitation of multiplayer functionality answers all of the mentioned components in such a way that will allow the players to experience the game in a meaningful way. Of course, such an assumption is highly dependent on how the players collaborate and communicate. In some cases, it might be that players would not feel high levels of engagement or reflection due to a lack of internal communication within the group. However, we offer different solutions to reduce the dependency, such as a vote summary screen that reveal the distribution of the votes to all the players. With such tools, we create non-direct communication between the different players and ensure some level of engagement, reflection and transfer of information between them.

### 3.3.2 UX & UI

In terms of the user interface, we wanted to create a simple yet effective layout that would convey our choice mechanic positively. Therefore, we used a relatively simple colour palette dominated by red and blue to separate the choices and a middle ground purple which is a blend of the two colours to showcase the passage of time with a countdown timer.

We wanted to create a clutter-free experience during the play session, meaning that we wanted only relevant elements to be present during any given session. This was achieved by having only centred text showing for each chapter and a small countdown timeline either at the top or bottom of the screen, depending on the choices and outcomes of the game.

There are several different reasons for why a user interface and user experience is successful, but following a few guidelines for a simple and often minimalistic design approach, with a nice contrast between elements and colours, will have an excellent effect on user experience (Kang and Kim, 2007, Pausch et al., 1992).

However, following user interface guidelines is not the only reason why products achieve success in user experience. Since we are creating an interactive narrative experience, we need to convey our intentions and mechanics to the player without needing to explain in full how the system works (Hodent, 2017, Salen and Zimmerman, 2004). Therefore, designing clear and concise buttons for the user interface will guide the players throughout the experience with minimal effort. This creates the seamless experience that we are looking for.

During gameplay, the player is not being rushed while reading and gets plenty of time to decide whether to choose option A or option B. Since this is in no way a rushed experience and requires little to no gaming experience, it is also accessible for a broader range of players.

To support our understanding of the user experience in the product, we conducted a small

usability test to see whether or not the game design and mechanics were translated correctly to the user. The test was conducted with four people that we can categorize as gamers (regular video game players).

The participants joined a Discord channel that we hosted, and the server-side of the project was streamed to the participants. The participants were then asked to download the client-side through Google Drive.

All participants were able to communicate with each other and were asked not to interact too much with the host and were encouraged to figure out the system by themselves and think aloud.

The feedback was good, and there were mostly just minor corrections that were suggested:

- A few grammatical errors in the text
- The look and feel should not be changed since the players found it aesthetically pleasing.
- A full-screen window for the client was not ideal when you needed to watch a stream as well, since it meant the user needed to switch between the stream and client too often.
- The delivery of the client-side had to be optimized and clarified since the users had a bit of trouble downloading the files from Google drive
- The consent form needed to be finalized

Overall we found that the simple UI setup was translated into a nice UX, and the users did figure out the mechanics on their own since it was conveyed through the design. Of course, one could argue that since the design and gameplay are relatively simple, it would not be hard to create a good UX but conducting usability tests did reveal some minor errors that were overlooked in development which tells us that it is well worth the effort to put together a simple usability test.

## 3.4 Technical Design

### 3.4.1 Twine

Twine is an open-source program that allows users to build interactive non-linear narratives. The program includes different tools such as variables configurations, conditions, tagging and attachment of visual elements to certain nodes. In addition, the program generates an HTML based engine that runs the written narrative and allows users to test the narrative before the implementation in the program. The program was used for the prototyping, writing and testing processes of the narratives we used in this paper. The different nodes were tagged according to

our identification of their features in relation to the tested subjects. Before implementation in the program, the written text from twine was re-processed and edited to fix language mistakes and suitability for the program limitations.

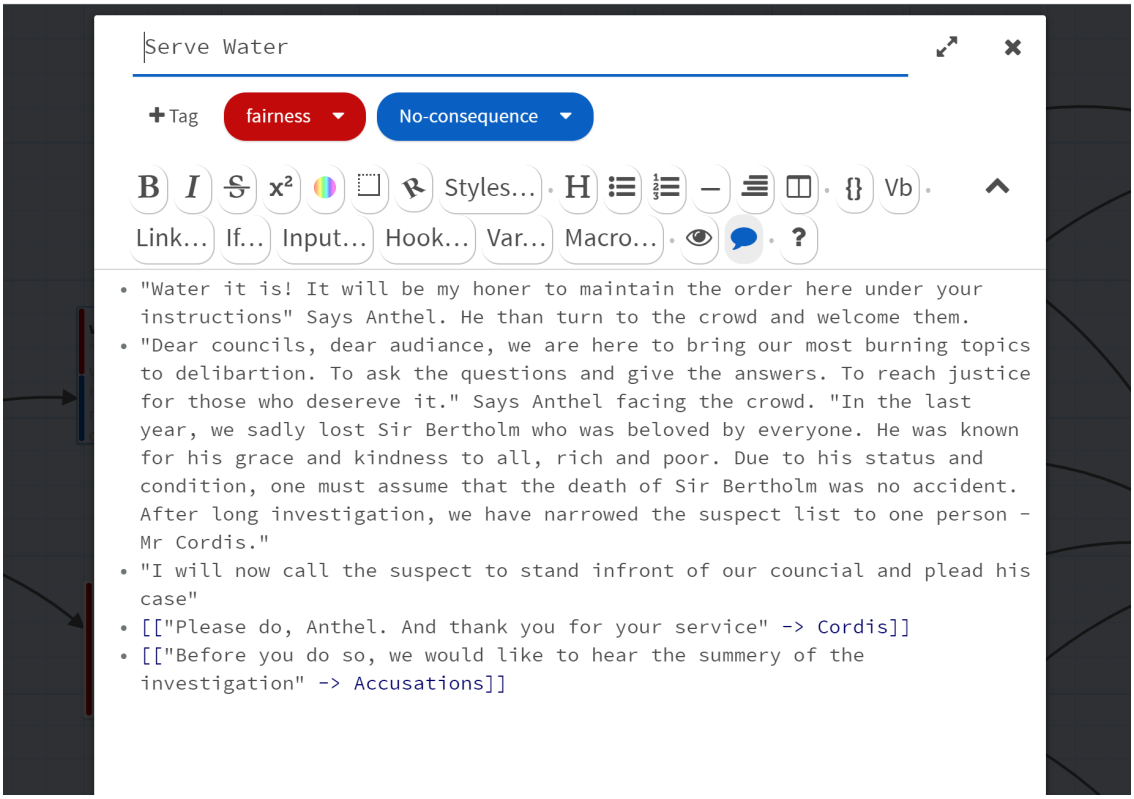


Figure 3.6: An example of a chapter as it was prototype in twine

### 3.4.2 Unity

The system was developed in Unity Engine v2020.2.7f1, which was the latest stable version of the program when we started the development phase. The choice to use the Unity engine for the development of the product was made for two main reasons - first, the provided tools in the program by default were the most suitable for our initial needs and design. Second, we both have experience with the program and working with the provided interface in it. To avoid technical issues and to ensure a proper development process and version control, the project was shared through a GitHub repository which allowed access to the latest developments from both ends in real-time. The scripts which operate the system were written in visual studio and written using C sharp coding language.

### 3.4.3 Networking

The multiplayability required us to create an ongoing working network communication between the players and the narrative system. To do so, we used Unity MLAPI v0.1.0 as part of our program. MLAPI is the latest released solution of Unity for networking and development of multiplayer games, defined as an open-source mid-level networking solution. MLAPI was first released in March 2021, requiring us to follow and take part in the system's initial modification and development process. At early stages, the MLAPI system caused many challenges due to instability and lack of online material. On the other hand, to ensure the system's adoption among users, Unity provided with discord channel and example projects that answered our needs.

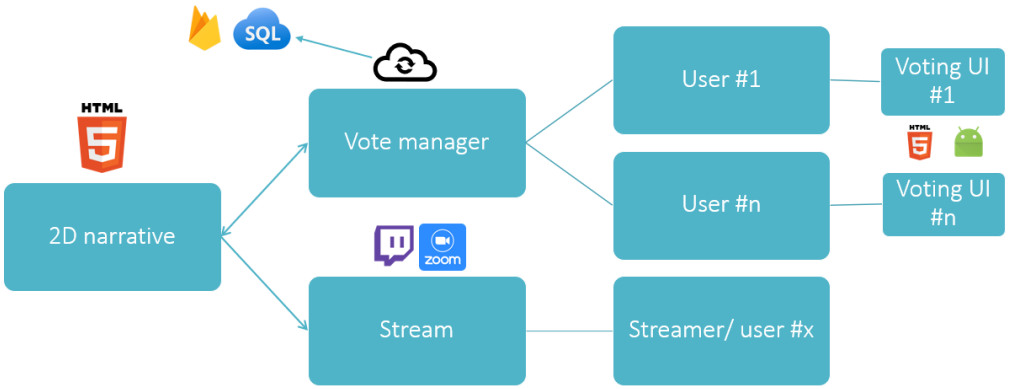


Figure 3.7: The prototype of the networking structure and tools

The current MLAPI transport, which is being offered with the system, lacked capabilities. Therefore, we used a user-made extension that uses Photon relay transport and server to ensure all communication between the clients and the server.

The system operates the same scene on both the client and server sides, where each variable has a local value. To ensure synchronization of each variable state, we used RPC calls from both client-side to the server and vice versa. RPC request calls for execution of the defined method on the defined side where the server can both release RPC calls for all clients or a specific client based on a client ID. An additional communication method that we used during the development is Networked variables. Networked variables are pre-defined variables that synchronize the value of the specificity variable throughout all operating scenes, both on the client and server-side. As networked variables use a higher degree of communication between the operating scenes, we used it as a solution only for the votes values of each of the clients.

The connectivity is based on randomly generated room codes to ensure safe and private usage

for all users and the ability to run multiple games simultaneously without interference.

```
1
2   public class VoteManager : NetworkBehaviour
3
4   {
5       public void CloseVote()
6       {
7           openVotes = false;
8           ChangeVoteStatusClientRpc(false);
9           StartCoroutine(SumResults());
10
11      }
12
13
14      [ClientRpc]
15      void ChangeVoteStatusClientRpc(bool status)
16      {
17          openVotes = status;
18      }
19  }
```

Listing 3.1: Example of Client RPC as part of the Vote manager for closing the vote on all operating systems

### 3.4.4 Software architecture

To ensure efficient and stable progress of the program during development, we separated each of the functionalities into separated manager classes. Furthermore, the classes were divided into Server and Client sides based on their responsibilities and the desired functionalities.

Server side managers:

- Network Manager - Inherited from Unity MLAPI, the network manager is responsible for all data transferring between the server and all clients. The network manager approves connections based on a randomly generated code and Instantiate the client's prefab. The network manager uses a transport that connects between the server and the client to a cloud-based server.

- UI Manager - Responsible for all UI elements and buttons functionality within the scene. Works both on the client and server-side, the UI manager communicate players interactions

to the other operating systems. In case of disconnection, expected or unexpected, the UI manager loads the relevant interface for both the server and the client.

- Vote Manager - Operates on the server side during the voting phase of the program. It is responsible for collecting the votes from the client instances actively. It then summarizes the vote and communicates to the story manager the selected choice. In addition, the vote manager is responsible for communicating to all relevant systems at the beginning and the end of the voting phase.

- Story Manager - Operates on the server side during the story phase. The story manager holds all the possible stories within it. At the beginning of the game, it randomly chooses one of the stories and loads the chapters of each of them. It then rotates the presented text taken from the chapters and sends the relevant question and choices to the vote manager at the end of each chapter. Finally, in the last chapter, the story manager is responsible for sending the relevant information to the SQL tracker and the rest of the systems.

- Background Animation Manager - The last system within the server side is responsible for all animations and transitions in the program. It is part of the high fidelity prototype which we develop to test our hypothesis. At each stage, it receives movement and animations commends from other systems and ensures they are being executed before the next phase starts.

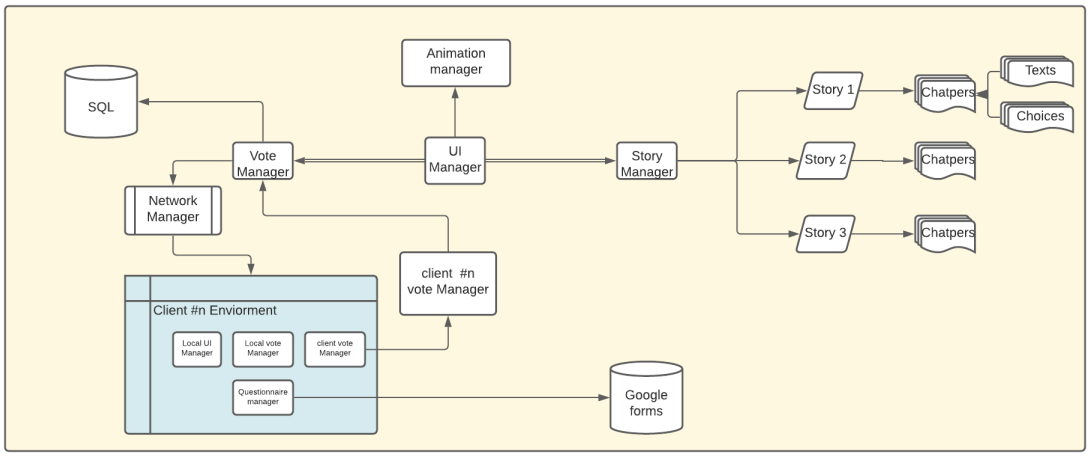


Figure 3.8: The structure of the scene from the server side

Client side managers:

- Client Vote Manager - The client vote manager operates on the client-side. To ensure program safety and avoid overload of client requests, the client vote manager is relatively

static. It receives an open vote call from the server and allows users to vote based on the relevant, presented choices. The configured vote value then becomes available for the server vote manager to read.

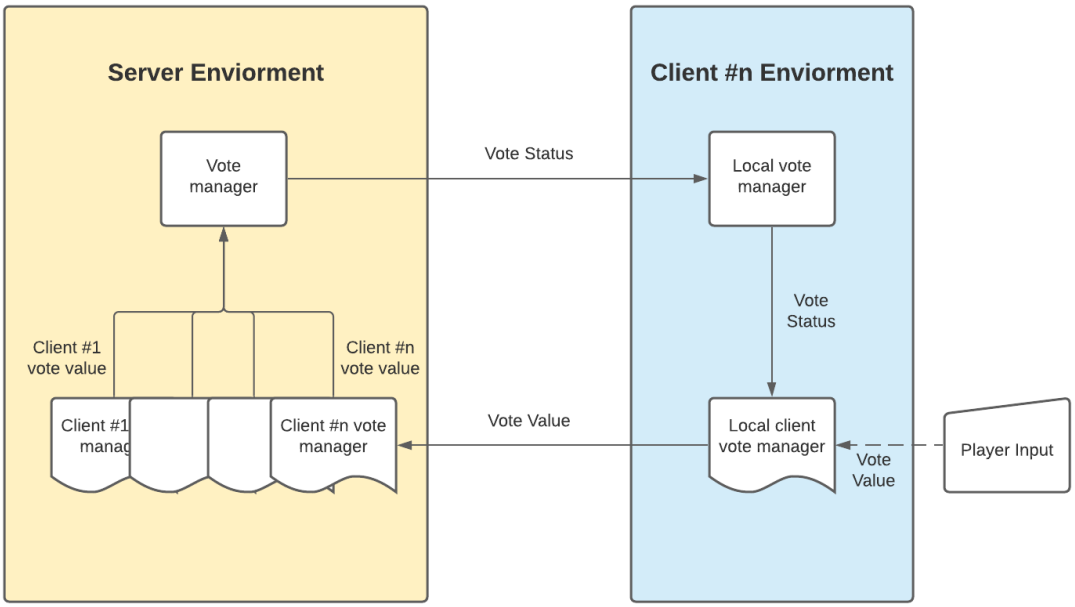


Figure 3.9: Vote Manager and Client Vote Manager flow diagram

- Questionnaires Manager - For testing purposes, each client's questions' answers are being collected and sent, as we will explain further in a later section. In addition, the manager is completely separated from other systems to ensure that its removal is possible in future development iterations.

### 3.4.5 Telemetry

Telemetry (or sometimes just called software metrics) has been around for a while (Fenton and Neil, 2000) and has generally been accepted and regarded as a viable way of measuring the reliability and quality of software and hardware (Rosenberg et al., 1998). Telemetry is there to ensure that developers and designers understand not only what is happening with a piece of software when it is running but also how users are interacting with the software (Li and Cheung, 1987, Zhang et al., 2016).

The metrics that are gathered from the system are analyzed and used to improve the systems or products.

We wanted to use telemetry to look at how the users play the game and analyze the data to see if any patterns are emerging. These metrics could potentially help us save much time if there

needs to be implemented some changes or if we want to update the system. It will also help us better understand the general user behaviour, which could help us understand why our product or hypotheses are successful or unsuccessful.

Telemetry is generally thought of as just numbers and figures, but we also use another method to gather data and information about our players, simply through built-in questionnaires, using Google forms.

We are using an SQL database to store the metrics but wanted to utilize Google forms' accessibility and simplicity to gather the questionnaire data.

### Google forms

We have two questionnaires that need to be integrated into the game and to do ao, we were required to add a sort of connection string to the questionnaire script and use Unity's built-in web requests to get access to the form itself. After connecting, we connected the input fields in the game with the input fields on the online form. Google has made this easy by adding a simple and readable attribute to the fields called entry attributes followed by a string of numbers.

As mentioned, we used Google forms because of its simplicity and accessibility. An additional useful feature that is pre-existed in google forms is the ability to quickly export all recorded data to excel format. Furthermore, it can be accessed from anywhere since it is a web app.

We split the questionnaires up into two parts, where the pre-questionnaire (which includes demographics and player preferences) is done on the client side before being logged to the game. The post-questionnaire (containing questions about our actual research topic) gets logged as soon as the player has answered the last question about intelligibility. In order to connect the two questionnaires, each client is given a unique identifier which makes it easy to see which two questionnaires are from what game session and client.

Creating an IEnumerator with all the fields gives us the list structure and access needed to submit the data to Google Forms.

```
1 public IEnumerator initPreQ(string userID, string consent, string age, string
      country, ...)
2     {
3         WWWForm uForm = new WWWForm();
4         uForm.AddField("entry.1986215326", userID);
5         uForm.AddField("entry.784783903", consent);
6         uForm.AddField("entry.1100403364", age);
7         uForm.AddField("entry.827429912", country);
8         ...
```

```
        using (UnityWebRequest www = UnityWebRequest.Post(URL, uForm))
        {
            yield return www.SendWebRequest();

            if (www.result != UnityWebRequest.Result.Success)
            {
                Debug.Log(www.error);
            }
            else
            {
                Debug.Log("Decision making questionnaire form upload complete!");
            }
        }
    }
```

When we have gathered all the answers and data into a list, we can then pass these list items as arguments or parameters for the IEnumerator function and send it by starting a co-routine within Unity whenever the user clicks the submit button.

```
Public void sendPreQData()
{
    StartCoroutine(initPreQ(userID, consent, age, country, ...));
}
```

### SQL

To track users' activity within the program, the servers use an external SQL database to store players' behaviour. Every time the server collects a new vote value by one of the users, the server uses the built-in UnityWebRequest system to activate a web-based PHP script which takes the data, assess it and stores it within the SQL database that is hosted on the same server as the script. The data being sent at each vote is Game Id, Player Id, Choice number (within the narrative structure), Choice value and time, which passed from the moment the choice was revealed to the players to the moment in which the vote was cast in the server. To avoid overload of requests and eventually a crash, only the game server can activate the internal method that sends the request while the clients have no access to the method or the database itself. In addition, at the end of each game, a similar system within the program triggers a different PHP script for the insertion of data into the SQL database. The data is being stored in a different table, and each entry within it contains Game id, Story number, Date, Starting timestamp and End timestamp.

For validation of data accuracy and as a security measurement, the data is being hashed and

compared in both the game server and the SQL server. In addition, the data can only be inserted with the usage of a specific secret keyword which is hard codded within both the game server and the PHP web-based script. Other, more robust security measurements need to be implemented in case of a commercial or open-source type of release. However, for the purpose of testing within a close cycle of users, the taken measurements should guarantee a safe usage of the program and data protection.

# Chapter 4

# Testing

## 4.1 Methodology

To further understand and reach an answer to our research questions, we aimed to test our developed interactive narrative system with different types of groups and different types of narratives. Therefore, we designed the system so that it will allow any number of players between 2 to 10 who can play together simultaneously. As we suggest in our analysis, in order to reach for a better understanding of the general attitude towards the game, there is a need to analyze and compare each of the extracted interactive narrative features for itself. As each of the extracted features - Suspension of disbelief, Story intelligibility and decision making requires a different approach, the experiment design and result analysis should be done in a mixed-methods manner using both qualitative and quantitative collected data extracted from testers self report and behaviour during and after the game session.

### 4.1.1 Narrative Intelligibility

As we have explained before, narrative intelligibility refers to the individual perception and conception of the presented narrative in relation to the original author intentions. There are no agreed or defined measurements for the variable due to its cognitive nature. To measure narrative intelligibility, we will use the story retelling method as presented in Pinto et al. (2018). In this method, the players are asked to retell the narrative they experienced during the experiment. The way the testers will retell the story will help us gather a higher understanding of their experience in terms of intelligibility and compare the different stories and groups accordingly. The recorded summaries will be analyzed and scored based on structure. The retold narratives structure will

require players to include in their summaries defined story elements, the inclusion score will be analyzed as suggested by Pinto et al. (2018):

1. No Narrative - simple description or list of events, objects, or facts.
2. sketch narrative - opening, setting, character(s), conclusion or opening, sketch of the problem, and resolution.
3. incomplete narrative - opening, character(s), problem, and resolution.
4. essential narrative - opening, character(s), problem, central event, and resolution; only setting is missing among the fundamental story elements.
5. complete narrative - opening, character(s), setting, problem, central event, resolution, and narrative closing

In addition to structure, Pinto et al. (2018) measures as well story coherence as part of the general scale for narrative competence. While it might be relevant, the methodology in which the coherence was measured is less suitable for our needs. An additional interest in the way users will retell the narrative is the chosen perspective to tell the stories. An analysis of the semantics in which the events are being described can help us understand whether the players see themselves as the ones carrying and controlling the narrative or see themselves as static to the presented events. In addition, the choice to describe the choices in plural or singular manner will help us construct a better understanding of the individual experience within a multiplayer interactive narrative.

### 4.1.2 Suspension of Disbelief

To measure the suspense of disbelief, we decided to use a self-report Likert scale. The lack of hard cognitive measurement tools and the online-based testing methodology prevented us from using any other tools. However, we believe that if we are using the proper questionnaires, we will be able to examine the user's experience and their willingness to suspend disbelief during the experience. We used to separated suspension of disbelief related questionnaires to allow us not only to understand better the general suspension of disbelief response by the users but in case of low or high results to understand the main concern which caused it, the system or the presented narrative. The first was adopted from Vorderer et al. (2004) MEC Spatial Presence Questionnaire, which is constructed from many sub-components, one of which is the suspense of disbelief. The offered Likert scale contained in total eight Likert items and was tested in three different variations - one which contains three Likert items, one which contains six and lastly one which contains all

eight items. Since testings suggest the middle version, which contains six items, has the highest score of Cronbach's Alpha (0.86 α) (Ivars-Nicolas and Julian Martinez-Cano, 2020), a measurement of items correlations. We decided to choose that version of the scale and implement it within our research design. All of the items within the selected scale refer to the individual experience with the system and how it was transmitted to them.

Since we wanted to learn more about the suspension of disbelief at the narrative level, we added an additional Likert scale. The second scale is taken from Roth (2015) designed explicitly for measurement suspense of disbelief in interactive storytelling. The scale initially included ten items and was later reduced to 4 items based on their correlation score in past experiments.

We will calculate individual scores separately for each of the scales, allowing us to reach quantitative scores for each participant. In addition, we will attempt to combine the two scales into a complete suspension of disbelief measurement. Finally, once the scores are quantified, we will analyze both in the individual level, group level, and chosen narrative level to further understand the elements that influence the general willingness to suspense the disbelief in a multiplayer interactive narrative experience.

### 4.1.3 Decision Making

As we have mentioned in our analysis, to better understand the decision-making process of the players during the game, we first need to quantify and compare their perceived sense of agency during it. A numerical result will help us reach better conclusions of how the players compared the different choices and eventually reached their decisions. To measure the perceived sense of agency, we used the effectance measurement from Roth (2015). The scale was initially adopted from Klimmt et al. (2007), and contains six Likert items where some of the items refer to the perceived sense of agency, in terms of the system and some in terms of the narrative (Roth, 2015).

To measure and analyse the players' decision-making and behavioural response, we will use self-report questionnaires and data generated from users' behaviour within the program. For the self-report, we adopted the behavioural engagement dimension scale from the social presence in games questionnaire as designed by De Kort et al. (2007). The scale is constructed from eight Likert items focusing on the individual game experience in relation to the rest of the players within a multiplayer environment. The scale has high reliability (0.84 α), and we believe it will fit our needs in terms of measuring the relevant aspects of in-group decision making. The scale was constructed through a adaptation of questions from different scales and base on our needs and general approach we decided to deconstruct it and remove the last two items. The decision

to remove the two items was made due to their incompatibility with our research intentions and the general presented stimuli. Unlike strategical games, in playable stories players are not aware of their intentions and act based on the presented questions and possible choices, therefor there was no need for us to calculate the intentions as part of the social behavioral measurement. The behavioural response will be measured by categorising each of the choices made by the individual players. The preferences that will be analysed for each choice are choice value, choice preferences, change of response time, and compression to the rest of the players. The choices were coded before the experiment as consequential or non-consequential, NPC presence, and the relevant moral themes which are embedded within the choice. In addition, we will calculate the average response time of each player, monitor and analyse the changes in response time for each of the choices. We will later summarise and interpret the different behavioural patterns in the individual, group, choice, choice preferences and narrative levels. Cross examinations of the Likert scale and the choices will help us reach theoretical and practical conclusions for choices design which encourages a positive attitude in the future development of multiplayer interactive narratives.

### 4.1.4 Experiment design

Designing the experience, we aimed to create a collaborative multiplayer game that will offer entertainment and value to small groups. Whether it is friends or family, the general target was groups who feel comfortable with each other and can do the game either locally or through the network. It is, therefore, why we wanted to experiment and reach conclusions by analysis of similar experiences to our target. We used a branching methodology to collect those groups where we approached a single person and asked them to reach out to others. The methodology saved us time and effort in arranging the groups. On the other hand, it did limit our group sizes to that person social capabilities. In rare cases where the person could not reach others, we asked them to join a different, already scheduled, group creating new possible group formations to ensure a diverse and meaningful testing process.

Once a group was formed, we scheduled a designated time for testing. Prior to the test, we sent the group a video call invitation. In the call, we first shortly explained our research and the stages of the experiment. We then shared a download link, with the group, to the client voting application. The link included downloadable versions for PC, MAC and Android systems for testers convenience. All of the downloadable versions were tested on their target devices to ensure a pleasant technological experience. Our initial prototype included an HTML5 web-based application. However, technical difficulties in the compatibility of the used MLAPI system and

HTML5 type of builds have forced us to change to the described solution. The client voting application first included a standard terms and conditions, and short demographic questionnaire for analysis purposes. We asked users for their age, nationality, gender, education, experience with video games and willingness to read texts in games. Once they filled the pre-questionnaire, the screen in the client app would change to the log in menu in which they connect to the designated experiment room. At the same time, we opened the server application and shared the screen with the rest of the group. When all participants connected to the server, we would start the narrative and mute our devices to ensure no interference. The selected story was chosen by the program randomly yet modified by the last groups to ensure equal distribution and ability to analyze and compare the different narratives and their value towards the general attitude for the experience. The players would then play the narrative as a group. Once the narrative is finished, the players will be asked to fill in the post questionnaire, covering all the mentioned scales and measurements. We aimed to reach six testing groups throughout the experiment phase, each with at least two players or preferably more.

### 4.1.5 Qualitative analysis

Although all of our measured components are quantified and tested as a scale, we decided that our presence during the experiment, would be crucial for how the results will be interpreted. The developed tool help us in tracking and analyzing players behaviour, However, since the between players communication will be done through a third-party app or even directly, we cannot track verbal communication, which, as established by Rosenberg et al. (1960) is key in terms of responsiveness to certain stimuli. In other words, we will not be able to track the testers attitude towards the game without capturing the full way in which they response to it.

As decided, for each of the test sessions, one of us is required to participate. During the experiment, the assigned tester is required to wear many hats as he is both there to guide the participants, serve as technical support in case of need and inspect the participants emotional, cognitive and behavioural responses expression. We agreed to stick as much as possible to the "fly on the wall" methodology where the testers observe the participants and intervene in their dynamics as little as possible. At the end of each experiment, we wrote down our main insights from inspecting the game session with a general focus on players dynamics, verbal expressions of emotions and direct feedback received during or after the play session. We will then identify the main repetitive themes from different sessions and offer possible conclusions accordingly.

## 4.2 Data analysis

We first combined all extracted data - pre-questionnaire, post-questionnaire and behavioural SQL data in one excel file- to measure our collected data. We then organized the data into three different tables. Each included different parameters and levels of analysis: Individual player data, Narrative type (Singular and Plural) and choices level. For measurement and usage of the self-reported scales, we conducted a Cronbach's Alpha test for the reliability coefficient of each scale. The test measures the inter-correlation between the different Likert items and suggests a feasible and interpretable score for each Likert scale's reliability. The Cronbach's Alpha test was performed on the following scales: System suspension of disbelief, Narrative suspension of disbelief, Behavior in group and effectance (perceived sense of agency). System suspension of disbelief is constructed from six Likert items; items one, three, four and five were all reverse coded for ensuring a cohesive direction, positive in our case, of measurements for all the items within the scale. Cronbach's Alpha test results ($\alpha$= 0.75) are relatively high and following general methodology are acceptable in terms of usage as a whole scale of measurement. The narrative suspension of disbelief scale, which included four items within it, reached a negative Alpha score ($\alpha$= -0.58), suggesting the proposed scale is not reliable for testing. In the analysis of the scale results, we did find that the exclusion of the third item: "Some moments were rather suspenseful", would improve the scale reliability score to $\alpha$= 0.395, which, although positive it is still under the lower acceptable bar for scale reliability coefficient.

On the other hand, in an attempt to create a new combined total suspension of measurable disbelief scale, we conducted a Cronbach's Alpha test to the items from both described scales together. The new scale included ten items, six from the original system suspension of disbelief scale and four items from the narrative suspension of disbelief scale. The reliability coefficient score ($\alpha$= 0.664) suggests a moderate correlation between all of the examined items. Based on the results and as can be seen in Fig. 4.1, the exclusion of the second item from the narrative suspension of disbelief - "Sometimes I was worried how the story would develop", would improve the reliability score to an acceptable level for analysis ($\alpha$= 0.703). We, therefore, excluded the item from the general scale score for all future analyses of the scale.

For effectance or perceived sense of agency as we have defined it, the six items correlation was measured. Cronbach's Alpha results suggest a sufficient reliability ($\alpha$= 0.71). The behavioural effect of multiplayability measurement, which similarly included six items within it, reached a higher result suggesting a strong correlation between all the items ($\alpha$= 0.84). Lastly, the Narrative intelligibility scale was extracted from the qualitative data of players summaries of the presented

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| SOD2Q1 | 30.4667 | 35.124 | .185 | .561 | .663 |
| SOD2Q2 | 31.1333 | 35.981 | -.043 | .776 | .703 |
| SOD2Q3 | 30.6000 | 34.543 | .032 | .881 | .698 |
| SOD2Q4 | 30.8667 | 32.695 | .182 | .726 | .668 |
| SOD1Q1 | 31.2667 | 28.781 | .511 | .723 | .603 |
| SOD1Q2 | 31.4667 | 24.552 | .681 | .730 | .549 |
| SOD1Q3 | 32.1333 | 33.552 | .124 | .754 | .678 |
| SOD1Q4 | 31.6667 | 29.381 | .367 | .551 | .631 |
| SOD1Q5 | 31.4667 | 26.981 | .656 | .831 | .571 |
| SOD1Q6 | 30.9333 | 26.495 | .611 | .658 | .574 |

Figure 4.1: Cronbach's Alpha if items is deleted for the Total suspension of disbelief scale

narrative. Each answer was analysed based on the categorisation we have mentioned in the methodology section, resulting in an individual score of one to five for each of the participants. In addition, we added a perspective variable in which the test was examined for the chosen perspective by the players to present the occurred events as they were told. Our initial intentions included three possible options: First individual perspective such as I choose, I did, etc. First, plural perspective for using terminology that described the events as collective choices and lastly, third-person perspective in which the players does not refer to the influence of their or the group inputs.

Once all scales reliability coefficients were established, with consideration of the general commonly used bars and levels for Cronbach's Alpha measurement (Taber, 2017). We calculated the average score of each of the users in the following scales - System suspension of disbelief (SODS), Total suspensions of disbelief (SODT), Effectance and Behavioral effect of multiplayability. All of the scales were coded positively so that a higher score indicates higher levels of responsiveness by the player in the relevant component (Behavioral, Cognitive and Emotional).

In addition to the generated scores, we had calculated based on the extracted data three new variables - Average of response time, the standard deviation of response time and majority rate. The first two are calculated from the recorded response time of each of the votes made by the players. They will help us analyse the general experience of each of the players and the behavioural response for each of the presented choices. The majority rate is calculated through a division of all the choices in which the player was sided with the selected choice by all the choices presented to

him during the playing session. This variable will help better understand the hierarchical structure within the groups and the influence it had over the individual experience playing a multiplayer interactive narrative game.

For analysis purposes, all measured variables were processed through a Shapiro-Wilk normality test for normal distribution. SODS, SODT, Effectance, Behavioral effect, Average response time and SD (Standard deviation) response time distributions tests results were found non-significant, suggesting that the examined data can be assumed as normally distributed. On the other hand, the custom majority rate scale we calculated from our data reached significant reliability in the Shapiro-Wilk test ($p < 0.05$), suggesting that the data across the different users is not normally distributed and therefore will be considered as such in future tests. In addition, narrative intelligibility measurement will be considered as not normally distributed for its ordinal natural preference.

### 4.2.1 Player level

A total of 15 participants took part in the experiment. We created a table for each of the players to analyse the extracted data, including the following variables: Game preferences - Story type, Story number, Amount of players and session number. Demographics and general preferences - Age, Nationality, Gender, Educational background, Device used, English level, Gaming experience and willingness to read. Scales - System suspension of disbelief, Total suspension of disbelief, Effectance, Social Behavior, Majority rate, Average response time, SD response time, Narrative intelligibility and Perspective.

The demographic distribution in our testing was covering a wide range of target audiences. The average age of the participants was 28.7, where the youngest was 20 years old while the oldest was 58 years old. The ages were later accumulated to three different age groups for testing purposes - 20-25 (N=6), 26-30 (N=7) and 30+ (N=2). In terms of gender, seven of the participants has identified themselves as male, an equal number as female and one participant identified as Non-binary. In terms of educational background, six of the participants finished high school; four have graduated with a bachelor degree and five graduated master degree or higher level of education. Almost all participants (N=11) have self-identified as having an advanced level of English, and most of them play less than two hours of games per day (N=10). In terms of willingness to read, which can indicate their motivation to play, 13 of the players answered between somewhat willing and somewhat unwilling to read text in games.

To examine the influencing factors over players responses, we conducted several statistical

tests. We conducted One-Way Manova tests to determine the differences between the different age groups, gender, different educational backgrounds, and playing game experiences for the player's scales that were found normally distributed. For non-parametric variables, Narrative intelligibility scale and Majority rate, we conducted a Mann Whitney U test for gender differences and Kruskal Wallis test for mean ranks difference between the other categorical and ordinal independent variables. In addition, we will conduct a Chi-square test to measure the correlation between the demographic and personal features and the tendency to refer to the plural perspective in the story retelling section. Lastly, we will conduct a Pearson correlation test between the different quantitative scales for the purpose of result analysis, which we have measured and calculated throughout the experiment.

### 4.2.2 Narrative and System type level

Similar to the player level and using the same database as mentioned above, we will cross-examine the different narratological and systematical features with the extracted scales. We will use as independent variables the game preferences - Story type (Plural or Singular player/protagonist), Story number, Amount of players in session and Session number. Like the player level, as dependent variables, we will test all extracted scales. System suspension of disbelief, Total suspension of disbelief, Effectance, Social Behavior, Majority rate, Average response time and SD response time will all be examined and compared based on means between the different groups of the independent variables by a One-Way Manova test. The narrative intelligibility scale and Majority rate will be measured by comparing ranked means as done in the Kruskal Wallis test. As described in the player section, the chosen perspective for story retelling will be cross-examined with the narrative and system preferences by a Chi-square test.

### 4.2.3 Choice level

For conclusions generation of behavioural response changes, we will analyze the player's in-game votes in correlation to the specific choice which was presented to them. For testing and analysis of the choices and their effect on the players, we created a new database that contains each vote made by the players during the game sessions. Each entry contains the Story type, Story number, Player ID, Chapter, Selected option, Time difference from the player average, Time difference from the group average, Majority vote (yes/no) and choice preferences: Consequential/non-consequential, moral theme, secondary moral theme and presence of an NPC character. Out of all the votes which were recorded, 4 were tagged as non consequential, non social and no recognized moral

theme, 14 of the votes were for choices which included at least one of the there elements, 24 were assigned to choices that included 2 of the mentioned elements and 66 of the votes were casted to choices that included consequently, social presence of an NPC and at least one moral theme.

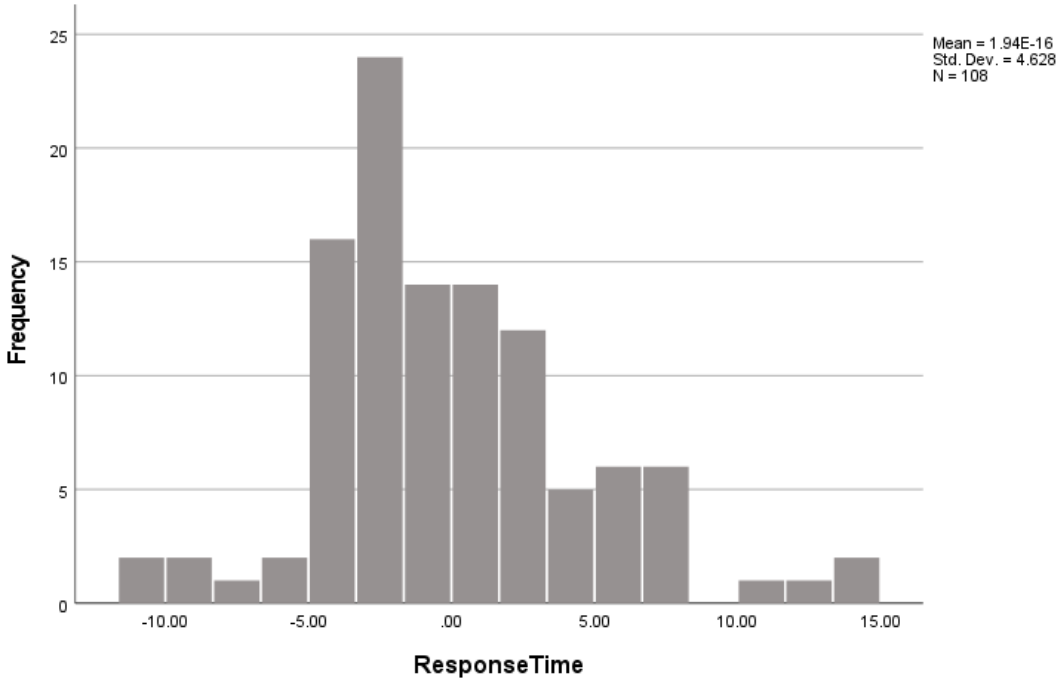


Figure 4.2: Response time changes from players average frequencies

Once all data has been inputted and checked, we will conduct statistical experimentation to measure the differences in response time for each independent variable. It is important to mention that the time differences from the player average distribution were found to be not normally distributed according to the Shapiro-Wilk test ($p < 0.01$), and therefore, the effect will be measured with the relevant statistical tests. We will conduct a Kruskal Wallis test for testing the mean ranks differences in response time changes for choices that present different moral themes. The tests will be conducted for a primary moral theme and a secondary moral theme separately. The rest of the parameters - consequentially, the presence of NPC and Majority vote all include only two separated groups and therefore, for measuring the different mean ranks among them, we will conduct a Whitney Mann U test between the two groups in each of the categories.

## 4.3 Results

### 4.3.1 Player level

To measure the differences in the test participants' cognitive, behavioural and emotional responses, we conducted a series of statistical tests. For measuring the difference in response measurements among the three group ages, we conducted a One-Way Manova test. According to the results, no statistical significance difference in any of the behavioral, emotional or cognitive responses to the stimuli was found between the different age groups,F (10, 16) = 0.662, $p > .05$; Wilk's $\Lambda = 0.5$, partial $\eta 2 = .29$.

A Kruskal-Wallis test was conducted to examine the differences in Narrative intelligibility according to the different examined age groups. No significant differences ($x^2 = 5.79$, $p = .055$, df = 2) were found among the three age groups. An identical process was then done for examining the difference in majority rate between the different group ages. No significant different was found, $x^2 = 1.48$, $p > 0.05$, df = 2. The last test conducted to analyse the age group differences is a Chi-square ($x^2$) test to include the first-person plural description perspective in the retelling story section of the examination. The test showed that there was no significant association between age group and chosen perspective, $x^2$ (2, N = 15) = 2.94, $p = .29$.

A similar process was done for each of the demographic attributes which were collected. To measure the differences in the behavioural, cognitive and emotional responses between the different groups of each of the demographical features, a One-Way Manova test was separately conducted for each of the independent variables. Since none of the Manova tests was found significant, indicating there is no apparent difference in any of the tested dependent variables, we concluded the test results in table 4.1 for visibility purposes.

| | F | H. df | E. df | Sig. ($p$) | Willik's $\Lambda$ | $\eta^2$ |
|---|---|---|---|---|---|---|
| 1. Age group | 0.66 | 10 | 16 | 0.74 | 0.5 | 0.29 |
| 2. Gender | 0.34 | 10 | 16 | 0.96 | 0.68 | 0.17 |
| 3. Education | 0.93 | 10 | 16 | 0.52 | 0.39 | 0.37 |
| 4. English level | 1.65 | 15 | 19.7 | 0.17 | 0.1 | 0.52 |
| 5. Gaming experience | 0.57 | 10 | 16 | 0.8 | 0.54 | 0.26 |

Table 4.1: Summery of results of all the One-Way Manova tests which were conducted to compare behavioral, cognitive and emotional response between the different groups

To measure the difference in the Narrative intelligibility scale and the Majority rate scale, both of which were found to be not normally distributed, we used the Kruskal-Wallis test for ranked mean compression. The test was conducted for each of the demographic groups, and similarly to

the Manova test, most of which were found to be non-significant, as can be seen in table 4.2. On the other hand, the tests' results indicate a significant difference in the Narrative intelligibility, hence the cognitive response, between the different tested genders, $x^2 = 6.16$, $p < 0.05$, df = 2.

| | Narrative Inteligibility | | | Majority Rate | | |
|---|---|---|---|---|---|---|
| | $x^2$ | DF | Sig. $(p)$ | $x^2$ | DF | Sig. $(p)$ |
| 1. Age group | 5.78 | 2 | 0.55 | 1.48 | 2 | 0.47 |
| 2. Gender | 6.16 | 2 | 0.04 | 0.24 | 2 | 0.88 |
| 3. Education | 1.92 | 2 | 0.38 | 0.26 | 2 | 0.87 |
| 4. English level | 1.69 | 3 | 0.64 | 1.70 | 3 | 0.63 |
| 5. Gaming experience | 2.15 | 2 | 0.34 | 3.86 | 2 | 0.14 |

Table 4.2: Kruskal Wallis test results for non parametric dependent variables, mean rank compression of the different demographic features groups

Lastly, for measurement of the likelihood of retelling the narrative from a first-person plural perspective, we conducted a Chi-Square test for correlation between the chosen perspective to each of the independent demographic variables, as can be seen in the table 4.3.

| | $x^2$ | DF | Sig. $(p)$ |
|---|---|---|---|
| 1. Age group | 2.94 | 2 | 0.23 |
| 2. Gender | 3.31 | 2 | 0.19 |
| 3. Education | 0.25 | 2 | 0.88 |
| 4. English level | 1.98 | 3 | 0.57 |
| 5. Gaming experience | 0.42 | 2 | 0.80 |

Table 4.3: Chi Square test results for correlation between the chosen perspective and the different demographic groups

As the results point out, the Chi-square test did not find a significant correlation between the chosen perspective and Age, Gender, Education, English levels or Gaming experience.

### 4.3.2 Narrative type level

For the narrative and system measurements, three Independent variables were tested - Type of Story (Plural or Singular playable characters), Story Name (Three different stories) and amount of players in session (2 players or three players). To measure the differences in emotional, cognitive and behavioural responses between the two types of stories and the two tested amount of players per session, each of the dependent variables, which was found to be normally distributed, will

be tested in a separate independent T-test for compression of means. As table 4.4 presents, all conducted, T-tests were found to be non-significant. With that being said, the standard deviation of the response time of players in the different story types was close to being significantly different as $p$ was found to be only slightly above the required benchmark for significance.

| | Levente's test | | Independent t-test | | |
|---|---|---|---|---|---|
| | F | Sig. ($p$) | t | df | Sig. ($p$) |
| Story Type (Singluar/Plural) | | | | | |
| 1. SODS | .00 | .95 | .13 | 13 | .89 |
| 2. SODT | .16 | .69 | .49 | 13 | .62 |
| 3. Effectance | 2.48 | .14 | -1.04 | 13 | .31 |
| 4. Social Behavior | .00 | .95 | .57 | 13 | .57 |
| 5. SD response time | 10.9 | .00 | 2.11 | 10.1 | .06 |
| Amount of players (2/3) | | | | | |
| 1. SODS | .83 | .37 | -.95 | 13 | .36 |
| 2. SODT | 1.27 | .28 | -.76 | 13 | .46 |
| 3. Effectance | 2.79 | .12 | .14 | 14 | .89 |
| 4. Social Behavior | .35 | .56 | .59 | 13 | .56 |
| 5. SD response time | 9.61 | .00 | 1.6 | 5.8 | .16 |

Table 4.4: t-test results for comparison of the different features means based on the story and game preferences

For measuring the difference in means within the dependent variables (SODS, SODT, Effectance, Social Behavior and SD response time) for each of the different stories, we conducted a One-Way Manova test. According to the results, no statistical significance difference in behavioral, emotional or cognitive response to the stimuli was found between the three different stories,F (10, 16) = 1.11, $p > .05$; Wilk's $\Lambda = 0.35$, partial $\eta 2 = 0.41$.

For the dependent variables, which were found to be non normally distributed (Majority rate and Narrative intelligibility), we used the Mann-Whitney test for differences between the two story types and amount of players and the Kruskal-Wallis test for differences between the three tested stories. According to our results, we found no significant difference in Majority rate both when comparing the different story types (U=20, Z=-.84, $p = .39$) nor when comparing the different amounts of players (U=20, Z=-.84, $p = .39$). Similarly, we did not find significant difference in Narrative intelligibility between the different story types (U=25.5, Z= -.18, $p = .85$) or the amount of players (U=16.5, Z=-1.28, $p = .19$). In the Kruskal-Wallis test for measurement of significant difference in the ranked means of Narrative intelligibility scale and Majority rate score among the different tested stories, we found a significant difference in the narrative intelligibility score ($x^2 = 8.64$, $p < 0.05$, df = 2). On the contrary, the Kruskal-Wallis did not find a significant difference

in the Majority rate between the different played stories groups ($x^2$ = 1.53, $p$ = .46, df = .01). To further analyze the results, we arranged different stories based on their length and tested the correlation between the length of the story and the Narrative intelligibility score. A Spearman rho correlation test found a strong significant positive correlation coefficient between Story length and the Narrative intelligibility score, $r_s(15)$= .775, $p < .01$.

In order to examine the chosen perspective when retelling the narrative and the difference among the different groups within the independent variables we conducted Chi Square tests. We did not find a significant correlation between the probability to chose first person plural perspective and the story type ($x^2$ = 2.78, $p$ = .09, df = 1), Amount of players ($x^2$ = 0.51, $p$ = .47, df = 1) nor between the different stories ($x^2$ = 3.23, $p$ = .19, df = 2).

### 4.3.3 Choice level

To measure the changes in behavioural responses, we conducted a Mann-Whitney test to measure if there is a significant difference in changes in response time based on the binary preferences of each of the choices. Tests results indicates that we did not find a significant difference in changes in response time between consequential and non consequential choices (U=701, Z= -1.41, $p$ = .15) or between presence of NPC in the scene and no presence (U=1072, Z= -.82, $p$ = .40). However, we did find a significant difference in changes in response time between votes which were part of the majority voting and votes which were not, U=380, Z= -2.42, $p$ = .02.

In terms of moral themes, both primary moral and secondary moral themes were tested for having a significant difference in changes of response time. To do so, we conducted a Kruskal-Wallis test for each of the defined moral preferences of votes. Results points that there was no significant difference in changes of response time for both the primary moral theme ($x^2$ = 1.48, $p$ = .83, df = 4) and secondary moral theme ($x^2$ = 9.82, $p$ = .08, df = 5).

### 4.3.4 Qualitative data

As we previously described in the methodology section, as part of the experiment, we decided it will be valuable to take a qualitative approach and inspect the experiment with specific attention towards the in-group communication and verbal response, which we would be unable to retrieve through examination of the technologically extracted data. Therefore, based on our analysis of the different interactions and inspected cognitive, emotional and behavioural responses, we suggest the following themes:

**Conservatism -** One of the most repeated inspected behaviours was players conservatism within the narratives. Whether it was a strategical or social decision, most players showed high favouritism towards the conservative and safe choices. For example, in both played sessions of the council, the players indicated they prefer to finish the narrative in peace with everyone and not harm even those who are considered to be at fault within the narrative. A similar approach was inspected as well in Emma's, where the players indicated they would prefer to avoid deterministic or radical choices and branches of the narrative and were leaning towards choices that aim to calm the situation. Finally, in Earls disappearance, most players were careful not to get the main character in trouble with the thugs and therefore chose to be a bit more passive in their approach.

**Individual thinking time -** Even though all of the players have acknowledged that they are playing in collaboration with the rest of the players, in most choices and play sessions, the players allowed each other to have private time for thinking. Only in cases where the choice was taking a long time or after the choices are being revealed players allowed themselves to interact with the rest of the group and compare the different choices that were made.

**Odd one out -** In cases where there were more than two players and one of the players choose oddly than the rest of the group, the group would comment and mark the player as being outside of the group. In both playing sessions of the council story, one of the three chose to serve water and not wine to the audience, unlike the rest of the groups which decided to serve wine. The other players responded in a cynical manner, suggesting that the person who made that choice is unsynchronized with the rest of the group. Similarly, in the Emma narrative, the players are asked whether they want to perform an act of traffic rules violation. The person who chose in favour of performing the violation was singled out by the rest of the group suggesting a low moral decision. In all cases, the other players, who were familiar with the odd player, compared the described decision to that specific player real-life behaviour suggesting a realistic or even honest choices approach by the players.

**Strategical thinking -** Something that was common for all three narratives was that the players would carefully approach the votes as if there was a "correct" choice. The players would play the game as if there was a way to win or do better at the game. When looking at how the players were taking time to think individually for each vote, it would seem that strategical planning was implemented in the decision making as if it would benefit the players later in the game. In one of the examples, while playing the Emma story, one of the player vocally expressed his strategical analysis of the situation and suggested a specific choice for a safer way towards what he described

as a win state. The influence of strategical thinking aligns with Nay and Zagal (2017) criticism over consequential choices and the way they distract the players from making a moral or ethical analysis of the different options.

## 4.4 Limitations

Although we reached some meaningful conclusions from our analysis, there were several limitation which has effected both our results and the generated conclusions. The number of test participants was on the low end, and we would have preferred to have a more significant number to get a better representation of the results for each story. In addition, if we got more test participants, each story would have been played more often; this could give us a much better view of how the stories were received and how the players conducted themselves throughout the experience.

The main problem was that we could not physically get together with test participants because of the Covid-19 pandemic, which meant that each player would have a different machine to play on, requiring both ourselves and the participants some technological effort for installing the game and making sure that everything was running correctly. If we could have provided all of these things, it could have made it a bit easier for users to participate in the testing, and therefore, we might have gotten more testers. An additional issue in that manner, was the difficulty to gather many groups of people for testing sessions. Since the testing was done during the summer, it proved to be a big challenge to get two or more people available at the same time to find time for participating in testing the product. We tried to utilize our social networks and different forums on Reddit to see if we could find willing participants. We set up a Discord channel with information about the testing and how to participate and put the invitation link together with our post on Reddit. Our efforts did not meet our expectations as we reached no responses. On top of this, as mentioned, we wanted to make the game accessible to as many people as possible using Unity HTML5 export which would allow people to play it through a browser. This would mean that the game could have been played through smartphones by accessing the client through their phone browsers. However, due to the technical requirements and structure of browsers, there are many different security measures put in place since websites are relatively easy to access. This is not something that Unity handles very well, and considering how immature the MLAPI is, it would require a lot of rework in the program just to get it up and running on a browser because of how web requests are handled within the client. In addition, due to the complexity of browser security, it was not possible to port the client as-is from a PC version to an HTML5 WebGL version. This resulted in accessibility issues for the players and requirement to download an unauthorized

software. All of the mentioned above has results in a small scale of participants both in compare to our intentions and the required minimum for generating meaningful results.

An additional limitation which has effected our results is the fact that we had no indication if the created stories or the system are good on their own. The system and narratives were both designed by us and were highly dependant on each other, and had to be tested together. It is possible that the quality of one had an impact over the way in which the participants has perceived the other. For example, a visual bug which was not related to the narrative might have effected the general perception of not only the system but the narrative as well. If the users do not like the system, then the narrative almost by default can get skewed results and vice versa. A small usability test was conducted to see if the system was satisfactory in terms of user experience, which the testers deemed adequate. However, the system had to be tested with some narrative experience since it is built to convey a narrative experience. This means that even though the usability test concluded that the user experience design was satisfactory and only some minor changes should be implemented, the test was still done with one of our written stories and not an already established narrative.

Writing a story or narrative requires a specific skill set that we do not possess or experienced with. Evoking willingness for suspension of disbelief or high level of intelligibility are variables which are highly dependent in the quality of the narrative. It would have taken big effort to make specific tests for both system and narratives, which is why we needed to test them together. As we suggest before, this might effected not only the narrative itself but the whole system perceived quality. Similarly, It is possible, that the current lack of visual and auditory stimulus has affected the outcome of the testing. Although it is immeasurable, we believe that to some degree it had direct effect over players experience when playing the game. This elements, which are part of the designed system has possible direct correlation to the perceived quality of the narratives.

## 4.5 Discussion

The generated mentioned results did not prove our assumptions both in terms of System (or Experience) design, Narrative design and Choices design. We aimed to create a framework for future designs of multiplayer collaborative narratives, and the current possibly extracted conclusions from the achieved results do not allow us to do so. On the other hand, there are both significant and non-significant results that can help us understand a direction toward such a framework.

Although slightly above the significance bar, we do see an indication that the type of playable character, singular or a group of people, affected the individual variance in response time. Players

who played stories in which the playable character was one had a higher (non-significant difference) variance of response time than players who played the council story in which the playable characters are being refereed in a plural manner. This indication can be interpreted in many ways, yet we suggest that those results point out a calculated and somewhat monotonic approach by the players when being referred to as a group. The plural semantics might remind the players of the required consideration that need to be taken in respect to the rest of the group.

An important finding is the significant difference between the different tested stories and the assigned Narrative intelligibility score based on the users retelling narrative answers. The Spearman rank-order correlation test explains a strong correlation between the length of the stories and the Narrative intelligibility score, where the longer the story was, the higher the NI score. These findings are not surprising, yet they indicate a more detailed narrative will help players reconstruct the story afterwards. It might be that unlike the longest story (Emma), the first two stories were not sufficiently long for evoking a strong cognitive response. Finding the right story length is difficult, considering the differences in players' attention span and general willingness to participate in an interactive game for a specific amount of time. Thus, there is a need for finding a sweet spot of length that will allow experimental narrative designers to test other variables and ensure positive support by the length preference to the general attitude of the players.

Another finding that is potentially relevant for design is the changes of response time between votes that were part of the majority choice and votes outside the majority. The majority votes were done significantly faster than the user average compared to non-majority votes, which on average took 2.7 more seconds than the average time of the choice of that same user. Two factors need to be considered when analyzing these results. First, it might be that majority votes took a shorter time than non-majority votes due to a clear strategical or logical difference between the two possible choices. Such a situation would make the internal debate of the players easy to handle and create a clear consensus bias toward the clear preferable choice between the two.

On the other hand, it can indicate, to some extent, the slower time of non-majority votes might suggest a behavioural pattern in which players used a longer thinking time when taking a decision which might be seen as controversial by other players. Such conclusions from these results align with the conservative approach which we described in our qualitative data analysis; the players were afraid to take risks while playing with other players. An interesting possible test would be to compare risk-taking in choices within interactive narrative between single and multiplayer games.

The analysis of the identified moral themes suggests as well an interesting outcome. Although it was not found to be significant, the difference in correlation between the primary moral theme and changes in response time and correlation between secondary moral theme and changes in response

time is quite clear, where the secondary moral theme was found to have an almost significant difference in time changes between the different identified themes. Re-coding of the moral theme and further testing might help in establishing the results. However, the initial indication for difference suggests players look beyond the primary and clear moral theme, which was embedded in the choice in an attempt to find a deeper, more hidden moral meaning to take into account in their decision making.

Lastly, we did found two additional insights which can be found interesting in terms of narrative and system design. The first is a clear correlation between the willingness to read the text in games and the effectance scale. The correlation was found to be positive and moderate, suggesting a significant type of player which can be identified - the enthusiastic player. Such a player, who is enthusiastic about reading texts in games, is more likely to translate the perceived choices to a high perceived sense of agency. Such a player will be optimal for playing playable stories, and it will be interesting to analyze player preferences further and understand his intrinsic motivation further. The second insight is the strategical thinking methodology which we described in our qualitative analysis. The inspected theme correlates with Wodarczyk and Von Mammen (2020) findings of players wishes for competitive elements within interactive narratives and the constant search for reaching a win state. It can be enlightening to analyze further the effect of lack of competitive elements over the player's experience. Both of the mentioned findings align with the application of the Self-determination theory and needs satisfaction in games, as we described in our analysis.

# Chapter 5

# Conclusion

We started the thesis with a clear goal of establishing fundamental principles for the design of multiplayer collaborative, interactive narratives, with an emphasis on both the system and the narrative itself. The lack of existing successful examples both academically and commercially has encouraged us to cross comprehensive methodology analysis to reach an understanding of interactive narrative components, which are crucial for players positive attitude towards the presented stimuli. Following our analysis, we fragmentized attitude into three components - Behavioral, Cognitive and Emotional response to the stimuli. Each component was then analyzed and theoretically assigned with a relevant, interactive narrative feature - Narrative intelligibility, Suspension of disbelief and decision making in games. Finally, we intended to analyze, test and conclude each of the mentioned components as an indication of the general attitude toward the experience.

Although our assumptions were tested on a limited amount of participants and future testing should include a larger group of participants, we believe that the significant, non-significant and qualitative analyzed results are pointing towards a positive direction in the designing process of such systems. In our results, we suggest that most players tend to take a conservative approach when making decisions in a game during a collaborative game experience. It might be that the social element of such experience is denying the players from the non-real-life consequentially nature of games and therefore prevents them from taking a more experimental risk-taking approach. Interestingly, in all stories, the tested groups choose a very similar path within the narrative branches, leaving the more risky or experimental branches unread. This conclusion is based on both qualitative themes, which we found while inspecting the game sessions, and on the statistical findings of vote preferences and response time variance. It is worth mentioning that all of the stories, although fictional, remained within the known cultural and scientific realms, and usage

of science fiction elements or abstract concepts might distant the players from the application of in-game choices over their own real-life characteristic features and allow them to adopt a more exploratory and experimental decision-making process.

An additional finding that can affect how multiplayer collaborative narratives are being written is the strong correlation between the length of the narrative and the ability to retell the story, or as we considered it - the narrative intelligibility. The positive measured correlation suggest that the longer the story is, the higher the narrative intelligibility score is. We believe that the current experiment does not reveal the full picture and that the distribution is not linear but rather some kind of reversed U shaped distribution. Too long of a story would risk evoking an overload of information or boredom among the players. It is, therefore, necessary to find a sweet spot in which the effect of length of the narrative over the narrative intelligibility is positively maximized. The current results do not provide us with such conclusions, but knowing that the story of Emma contains an average of 10 choices for each of the branches, it can be a good starting point for future testing.

In the presented research, we took an exploratory approach. We aimed to cover as many as possible topics and factors that are being affected by the presentation of a multiplayer interactive narrative game. We stand by the decision to focus on elementary elements. Even though we did not reach a significant conclusion in each of them, we believe that their inclusion in this research will inspire ourselves and others interested in the topic in future experimentation. The system we built is designed with an open-source approach in mind, and it can easily facilitate other stories that need to be tested in such settings. As we described in the relevant chapter, the chosen design is established upon a comprehensive theoretical background in most aspects and, with additional improvements, can be utilized for both academic and commercial content presentation.

## 5.1 Future steps

### 5.1.1 Product

For the product, there are a few improvements that we wanted to have included in the game from the start but were not prioritized as high as other features and were therefore moved into the category of future work.

As mentioned, a more considerable emphasis on auditory and visual feedback and features will be the next big thing for us. For example, we want to make auditory feedback for the countdown timer in terms of audio, where the audio is ticking faster and faster as the timer gets closer to

zero. We also want simple background music to make the game feel a bit more finished and not so hollow and empty. Having complete silence during gameplay could potentially make the game feel a bit clinical and not as fun. In addition to these regular game sounds, we want to increase the accessibility of the game a bit by adding a narrator to the different stories. This would mean that people who are visually impaired could be able to join in the fun. Along with a narrator, it will also be essential to create sounds for when the player hovers over the options so that you will be able to tell them apart with sound as well. Overall different sounds and visual cues are something that would add to not only the overall user experience but would also increase accessibility.

As mentioned, a web-based version, in the form of HTML5, of the client was an essential part of our vision. This would greatly increase the number of targeted devices and allow almost everyone to participate in a game. In early prototypes, we envisioned to be able to stream the game on a big screen and have up to ten people in the same place playing along on their phones. This could, of course, be achieved by building different versions for iOS and Android smartphones. However, between different operating system versions and other hardware-specific requirements (screen sizes, etc.), we want to create a streamlined and straightforward web-based application that can be downloaded to all kinds of devices, including tablets and hybrid computers, or simply be run in a web browser.

The need for a human game master to control the flow of the game is a restriction that we also want to deal with. Having an AI game master that can control the flow of the game by itself and be able to create emergent narratives based on the players' choices will make a much more dynamic experience. But, of course, an emergent narrative would also make the stories themselves a bit more dynamic and would take some of the pressure from us to write stories. Instead, the players could shape their own stories. Having an AI game master will be the best course for future work, and due to the complexity of emergent narratives in a multiplayer setting (Wodarczyk and von Mammen, 2020) and machine learning, this was unfortunately out of the scope of this thesis but is something that we would like to revisit since it will take the entire experience to an entirely different level, and open the game for more possibilities in terms of gameplay.

As a final addition to the game, we want to add a statistical analytical system to the game to showcase the outcome at the end of each story, which branches or nodes were reached, and which ones were missed. This could be a fun little feature that can give each player some small labels, such as "The creative" for the person who voted for the most creative solutions, "The Safe" for the person who votes for the most passive and safe choices, etc. We could also showcase directly to the players how long they took to vote, who was fastest, who missed most votes, and more. We think that this kind of addition would add a topic of conversation for the post-game.

### 5.1.2 Research

As the presented methodology in this paper contains multiple variables and approaches, there are many ways in which future experimentation can be done. With that being said, there are few directions in which research would be able to use the fundamentals which we covered in this paper, elaborate our understanding of the player experience within such a system and reach a meaningful conclusion for the design of such a system. The first, considering our limitation, there is a need for experimentation under a similar structure with different group sizes. The current experimentation offers an analysis of groups of 2 and 3 people. A bigger group size would reduce the probability of ending in the odd side of numbers by yourself, which can dramatically affect the mentioned conservative approach, which most of the players in our experiment took. In addition, such an experimental structure would offer a higher level of social interaction and therefore might be more likely to generate a more clear cognitive, emotional and behavioural response or, in other words, a more positive attitude. Although we did not find a correlation between the number of players in other measured variables, we think that an experiment with higher diversity and a broader spectrum of the number of players would manage to do so.

A second direction in which the experimental results can be elaborated is the choice of the measured narratological features. As we emphasised in our analysis, suspension of disbelief, Narrative intelligibility and Decision making were all chosen for their dynamics with interactive narrative research. Similarly, other, not less important features could have been chosen to be examined. Using the system, we created for testing other IN features that can help in reaching new conclusions for the design approach for multiplayer interactive narrative systems and the narratives themselves.

As we discussed and based on our results, we believe the analysis of the right narrative length can greatly impact the design of interactive narratives and narrative intelligibility as an examined feature of it. Such conclusions would not only affect multiplayer modes but the whole interactive narrative design research world. Further analysis can even support our claims of the necessity for a clear design framework for multiplayer interactive narratives as it will be able to distinguish the social effect over players tolerance towards the tested lengths of interactive narratives.

Lastly, in this paper, we followed Ryan (2010) advice and choose to measure our scales through other methodologies than hard cognitive measurements devices. The choice was made with respect to our limitations and theoretical direction. Other researchers will look for a cognitive response in such experiences like the one we design, use technological and cognitive response measurement devices, and have a different perspective over the results. It might be even more interesting to

compare the cognitive measurement devices to extracted cognitive features such as suspension of disbelief in our research.

As we mentioned before, those are just possible ways in which the system and the experiment can be developed and elaborated. The need for established and clear design principles for multi-player interactive narrative systems still stands, and while we believe our paper establishes some ground research in that matter, there is still more work that needs to be done before reaching the wished results. In addition, we call for higher attention levels to such systems by both the academic world and commercial games developers. All games and interactive narrative games, to be specific, are rising in popularity and usage. One cannot ignore the possible effect and the need for established social elements within them. We hope to see a rising number of examples and tests on the topic in future researches.

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# Appendix A

# Code examples

The following code listings is presented as it was used during the testing. For future commercial usage, refactoring might be needed.

```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;
using TMPro;

public class StoryManager : MonoBehaviour
{

    [SerializeField] private GameObject[] chapters,stories;
    [SerializeField] private GameObject voteManager;
    [SerializeField] private BackgroundAnimation background;
    [SerializeField] private TextMeshProUGUI textObject, titleObject, authorObject;
    [SerializeField] private Transform tma,tmb;
    [SerializeField] private Tracker t;
    private Transform timerMask;
    private string[] texts;
    private string starttime;
    [SerializeField] private float timePerText;
    private GameObject choosenStory;
    [SerializeField] private float timeleft,timestep;
    private int currentText,storynum;
    public int currentChapter = 0;
    private bool isVoting = true;
    private AudioClip backgroundMusic;

    // Start is called before the first frame update
```

```
27      void Start()
28      {
29          timeleft = timePerText;
30          timestep = 1.65f / timePerText;
31          timerMask = tma;
32      }
33
34      // Update is called once per frame
35      void Update()
36      {
37          if (isVoting == false)
38          {
39              if (timeleft < 0)
40              {
41
42              ChangeToVote();
43              timeleft = timePerText;
44
45              }
46              else
47              {
48
49              timeleft -= Time.deltaTime;
50              ScreenTimer();
51
52
53              }
54
55          }
56
57
58      }
59
60
61      public void NewGame()
62      {
63          starttime = System.DateTime.Now.ToString();
64          storynum = Random.Range(0, 3);
65          if (storynum==3)
66          {
67              storynum = 2;
68          }
```

```
69          choosenStory = stories[storynum];
70          chapters = choosenStory.GetComponent<Story>().chapters;
71          backgroundMusic = choosenStory.GetComponent<Story>().backgroundMusic;
72          SetTitle();
73          StartCoroutine(ShowTitle());
74
75      }
76
77
78      void SetTitle()
79      {
80          titleObject.text = choosenStory.GetComponent<Story>().title;
81          authorObject.text = choosenStory.GetComponent<Story>().author;
82      }
83
84      void SetMusic()
85      {
86
87      }
88
89      void ScreenTimer()
90      {
91          float newScale = timerMask.localScale.x + (timestep * Time.deltaTime);
92          timerMask.localScale = new Vector3(newScale, timerMask.localScale.y,
    timerMask.localScale.z);
93      }
94
95      void NewChapter()
96      {
97          texts = chapters[currentChapter].GetComponent<Chapter>().texts;
98          currentText = 0;
99          Switchtext(texts[currentText]);
100     }
101
102     void ChangeToVote()
103     {
104         timerMask.localScale = new Vector3(0.0f, timerMask.localScale.y);
105         if ((currentText+1)!=texts.Length)
106         {
107             currentText += 1;
108             Switchtext(texts[currentText]);
109         }
```

```
110         else
111         {
112             if (chapters[currentChapter].GetComponent<Chapter>().ending)
113             {
114                 EndStory();
115             }
116             else
117             {
118                 OpenForVote();
119             }
120 
121         }
122     }
123 
124     void Switchtext(string text)
125     {
126 
127         StartCoroutine(TextFadeOut(textObject));
128         textObject.text = text;
129         StartCoroutine(TextFadeIn(textObject));
130     }
131 
132     void OpenForVote()
133     {
134         background.SetNewVerMovement(0);
135         isVoting = true;
136         string a = chapters[currentChapter].GetComponent<Chapter>().choiceA;
137         string b = chapters[currentChapter].GetComponent<Chapter>().choiceB;
138         string c = chapters[currentChapter].GetComponent<Chapter>().question;
139         voteManager.GetComponent<VoteManager>().OpenVote(a, b, c);
140         textObject.text = "";
141     }
142 
143     public void EndVote(int result)
144     {
145 
146         Debug.Log("endedvote");
147         background.SetNextScreen(3);
148         background.SetNewRotation(0.0f);
149         int a;
150         if (result < 1 || result>2)
151         {
```

```
            result = Random.Range(1, 2);
        }
        if (result == 1)
        {
            a = chapters[currentChapter].GetComponent<Chapter>().nextChapterA;
            timerMask = tmb;
        }
        else
        {
            a = chapters[currentChapter].GetComponent<Chapter>().nextChapterB;
            timerMask = tma;
        }

        currentChapter = a;
        if (result == 2)
        {
            background.SetNewVerMovement(550);
        }
        else
        {
            background.SetNewVerMovement(-550);
        }

        NewChapter();
        timeleft += 10f;
        isVoting = false;
    }


    void EndStory()
    {
        string id = voteManager.GetComponent<VoteManager>().gameid;
        t.SendGame(id, storynum.ToString(), starttime);
        isVoting = true;
        StartCoroutine(BackToMenu());
    }

    IEnumerator TextFadeIn(TextMeshProUGUI t)
    {
        for (float ft = 0f; ft <= 1; ft += Time.deltaTime)
        {
            Color c = t.color;
```

```
            c.a = ft;
            t.color = c;
            yield return null;
        }
    }

    IEnumerator TextFadeOut(TextMeshProUGUI x)
    {
        for (float ft = 1f; ft > 0f; ft -= Time.deltaTime)
        {
            Color c = x.color;
            c.a = ft;
            x.color = c;
            yield return null;
        }
    }

    IEnumerator ShowTitle()
    {
        yield return new WaitForSeconds(9.0f);
        background.SetNewRotation(360);
        background.SetNewVerMovement(550);
        yield return new WaitForSeconds(3.0f);

        NewChapter();
        isVoting = false;
    }

    IEnumerator BackToMenu()
    {
        background.SetNextScreen(6);
        background.SetNewVerMovement(0);
        yield return new WaitForSeconds(5.0f);
        voteManager.GetComponent<UIManager>().FinishGame();

    }
}
```

```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;
using UnityEngine.UI;
using MLAPI;
```

```
using MLAPI.Messaging;
using MLAPI.NetworkVariable;
using TMPro;

public class VoteManager : NetworkBehaviour
{
    public bool openVotes = false;
    private bool checkForMovement = false, sentToClients = false;
    public int winner;
    public string gameid;
    private int votesA, votesB;
    [SerializeField] private float timePerVote;
    private float timer, timerStep;
    [SerializeField] private GameObject storyManager, background;
    [SerializeField] private GameObject[] red, blue;
    [SerializeField] private Transform timerMask;
    [SerializeField] private TextMeshProUGUI question, texta, textb, resultA,
    resultB, question2, texta2, textb2;
    [SerializeField] private Tracker track;
    List<ulong> yetToVote;


    // Start is called before the first frame update
    void Start()
    {
        timerStep = 1.65f / timePerVote;

    }

    // Update is called once per frame
    void Update()
    {

        if (IsServer)
        {
            if (gameid == "")
            {
                generateGameID();
            }

            if (checkForMovement)
            {
```

```
47                 if (background.GetComponent<BackgroundAnimation>().inMotion ==
    false)
48                 {
49                     openVotes = true;
50                     ChangeVoteStatusClientRpc(true);
51                     checkForMovement = false;
52                 }
53             }
54 
55             if (openVotes)
56             {
57                 CheckVotes();
58                 CheckResults();
59                 ShowScore();
60                 TimeChange();
61                 if (timer < 0 || yetToVote.Count == 0)
62                 {
63                     CloseVote();
64                 }
65             }
66         }
67 
68     }
69 
70 
71     void CheckVotes()
72     {
73         int chapterNum = storyManager.GetComponent<StoryManager>().currentChapter;
74         foreach (ulong c in yetToVote.ToArray())
75         {
76             ClientVoteMan v = NetworkManager.ConnectedClients[c].PlayerObject.
    GetComponent<ClientVoteMan>();
77             int vote = v.vote.Value;
78             string cID = v.clientManualId;
79             if (vote != 0)
80             {
81                 if (vote == 1)
82                 {
83                     votesA += 1;
84                 }
85                 else if (vote == 2)
86                 {
```

```
                    votesB += 1;
                }
                track.SendVote(gameid, cID, chapterNum, vote, (timePerVote - timer)
    );
                yetToVote.Remove(c);
            }
        }

    }

    void CheckResults()
    {
        int currentWinner;
        if (votesA > votesB)
        {
            currentWinner = 1;
        }
        else if (votesA < votesB)
        {
            currentWinner = 2;
        }
        else
        {
            currentWinner = 0;
        }

        if (winner != currentWinner)
        {
            winner = currentWinner;
            SendWinnerClientRpc(currentWinner);
        }

    }

    void ShowScore()
    {
        resultA.text = votesA.ToString();
        resultB.text = votesB.ToString();
    }

    void ShowVotes()
    {
```

```
128         for (int i = 0; i<10; i++)
129         {
130             red[i].GetComponent<TextMeshProUGUI>().text = "";
131             blue[i].GetComponent<TextMeshProUGUI>().text = "";
132             red[i].GetComponentInChildren<SpriteRenderer>().color = new Color(0f, 0
    f, 0f, 0f);
133             blue[i].GetComponentInChildren<SpriteRenderer>().color = new Color(0f,
    0f, 0f, 0f);
134 
135         }
136 
137         int b = 0;
138         int r = 0;
139         foreach (ulong client in this.GetComponent<UIManager>().clientsNames.Keys)
140         {
141             ClientVoteMan v = NetworkManager.ConnectedClients[client].PlayerObject.
    GetComponent<ClientVoteMan>();
142             int vote = v.vote.Value;
143             if (vote == 1)
144             {
145                 red[r].GetComponent<TextMeshProUGUI>().text = this.GetComponent<
    UIManager>().clientsNames[client];
146                 red[r].GetComponentInChildren<SpriteRenderer>().color = new Color(1
    f, 1f, 1f, 1f);
147                 r += 1;
148             }
149             else if (vote == 2)
150             {
151                 blue[b].GetComponent<TextMeshProUGUI>().text = this.GetComponent<
    UIManager>().clientsNames[client];
152                 blue[b].GetComponentInChildren<SpriteRenderer>().color = new Color
    (1f, 1f, 1f, 1f);
153                 b += 1;
154             }
155         }
156     }
157 
158     public void OpenVote(string a, string b, string x)
159     {
160 
161         texta.text = a;
162         texta2.text = a;
```

```
163         textb.text = b;
164         textb2.text = b;
165         question.text = x;
166         question2.text = x;
167         NewVote();
168         checkForMovement = true;
169 
170     }
171 
172     void NewVote()
173     {
174         timer = timePerVote;
175         votesA = 0;
176         votesB = 0;
177         yetToVote = new List<ulong>(NetworkManager.ConnectedClients.Keys);
178         if (sentToClients == false)
179         {
180             SendGameIDClientRpc(gameid);
181             sentToClients = true;
182         }
183     }
184 
185     public void CloseVote()
186     {
187         openVotes = false;
188         ChangeVoteStatusClientRpc(false);
189         StartCoroutine(SumResults());
190 
191     }
192 
193     void generateGameID()
194     {
195         for (int i = 0; i < 7; i++)
196         {
197             gameid += Random.Range(0, 9);
198         }
199     }
200 
201     void TimeChange()
202     {
203         timer -= Time.deltaTime;
204         float newScale = timerMask.localScale.x + (timerStep * Time.deltaTime);
```

```
205         timerMask.localScale = new Vector3(newScale, timerMask.localScale.y,
    timerMask.localScale.z);
206     }
207 
208     [ClientRpc]
209 
210     void ChangeVoteStatusClientRpc(bool status)
211     {
212         openVotes = status;
213     }
214 
215     [ClientRpc]
216 
217     void SendWinnerClientRpc(int newWinner)
218     {
219         winner = newWinner;
220     }
221 
222     [ClientRpc]
223     void SendGameIDClientRpc(string gid)
224     {
225         gameid = gid;
226     }
227 
228     IEnumerator SumResults()
229     {
230 
231         ShowScore();
232         ShowVotes();
233         timerMask.localScale = new Vector3(0.0f, timerMask.localScale.y);
234         background.GetComponent<BackgroundAnimation>().SetNewRotation(90);
235         yield return new WaitForSeconds(10.0f);
236         storyManager.GetComponent<StoryManager>().EndVote(winner);
237     }
238 
239 }
```

```
1 using System.Collections;
2 using System.Collections.Generic;
3 using UnityEngine;
4 using TMPro;
5 
6 public class StoryManager : MonoBehaviour
```

```
{

    [SerializeField] private GameObject[] chapters,stories;
    [SerializeField] private GameObject voteManager;
    [SerializeField] private BackgroundAnimation background;
    [SerializeField] private TextMeshProUGUI textObject, titleObject, authorObject;
    [SerializeField] private Transform tma,tmb;
    [SerializeField] private Tracker t;
    private Transform timerMask;
    private string[] texts;
    private string starttime;
    [SerializeField] private float timePerText;
    private GameObject choosenStory;
    [SerializeField] private float timeleft,timestep;
    private int currentText,storynum;
    public int currentChapter = 0;
    private bool isVoting = true;
    private AudioClip backgroundMusic;

    // Start is called before the first frame update
    void Start()
    {
        timeleft = timePerText;
        timestep = 1.65f / timePerText;
        timerMask = tma;
    }

    // Update is called once per frame
    void Update()
    {
        if (isVoting == false)
        {
            if (timeleft < 0)
            {

            ChangeToVote();
            timeleft = timePerText;

            }
            else
            {

```

```
            timeleft -= Time.deltaTime;
            ScreenTimer();


            }

        }


    }


    public void NewGame()
    {
        starttime = System.DateTime.Now.ToString();
        storynum = Random.Range(0, 3);
        if (storynum==3)
        {
            storynum = 2;
        }
        choosenStory = stories[storynum];
        chapters = choosenStory.GetComponent<Story>().chapters;
        backgroundMusic = choosenStory.GetComponent<Story>().backgroundMusic;
        SetTitle();
        StartCoroutine(ShowTitle());

    }


    void SetTitle()
    {
        titleObject.text = choosenStory.GetComponent<Story>().title;
        authorObject.text = choosenStory.GetComponent<Story>().author;
    }

    void SetMusic()
    {

    }

    void ScreenTimer()
    {
```

```
91          float newScale = timerMask.localScale.x + (timestep * Time.deltaTime);
92          timerMask.localScale = new Vector3(newScale, timerMask.localScale.y,
    timerMask.localScale.z);
93      }
94
95      void NewChapter()
96      {
97          texts = chapters[currentChapter].GetComponent<Chapter>().texts;
98          currentText = 0;
99          Switchtext(texts[currentText]);
100     }
101
102     void ChangeToVote()
103     {
104         timerMask.localScale = new Vector3(0.0f, timerMask.localScale.y);
105         if ((currentText+1)!=texts.Length)
106         {
107             currentText += 1;
108             Switchtext(texts[currentText]);
109         }
110         else
111         {
112             if (chapters[currentChapter].GetComponent<Chapter>().ending)
113             {
114                 EndStory();
115             }
116             else
117             {
118                 OpenForVote();
119             }
120
121         }
122     }
123
124     void Switchtext(string text)
125     {
126
127         StartCoroutine(TextFadeOut(textObject));
128         textObject.text = text;
129         StartCoroutine(TextFadeIn(textObject));
130     }
131
```

```
132     void OpenForVote()
133     {
134         background.SetNewVerMovement(0);
135         isVoting = true;
136         string a = chapters[currentChapter].GetComponent<Chapter>().choiceA;
137         string b = chapters[currentChapter].GetComponent<Chapter>().choiceB;
138         string c = chapters[currentChapter].GetComponent<Chapter>().question;
139         voteManager.GetComponent<VoteManager>().OpenVote(a, b, c);
140         textObject.text = "";
141     }
142 
143     public void EndVote(int result)
144     {
145 
146         Debug.Log("endedvote");
147         background.SetNextScreen(3);
148         background.SetNewRotation(0.0f);
149         int a;
150         if (result < 1 || result>2)
151         {
152             result = Random.Range(1, 2);
153         }
154         if (result == 1)
155         {
156             a = chapters[currentChapter].GetComponent<Chapter>().nextChapterA;
157             timerMask = tmb;
158         }
159         else
160         {
161             a = chapters[currentChapter].GetComponent<Chapter>().nextChapterB;
162             timerMask = tma;
163         }
164 
165         currentChapter = a;
166         if (result == 2)
167         {
168             background.SetNewVerMovement(550);
169         }
170         else
171         {
172             background.SetNewVerMovement(-550);
173         }
```

```
174
175         NewChapter();
176         timeleft += 10f;
177         isVoting = false;
178     }
179
180
181     void EndStory()
182     {
183         string id = voteManager.GetComponent<VoteManager>().gameid;
184         t.SendGame(id, storynum.ToString(), starttime);
185         isVoting = true;
186         StartCoroutine(BackToMenu());
187     }
188
189     IEnumerator TextFadeIn(TextMeshProUGUI t)
190     {
191         for (float ft = 0f; ft <= 1; ft += Time.deltaTime)
192         {
193             Color c = t.color;
194             c.a = ft;
195             t.color = c;
196             yield return null;
197         }
198     }
199
200     IEnumerator TextFadeOut(TextMeshProUGUI x)
201     {
202         for (float ft = 1f; ft > 0f; ft -= Time.deltaTime)
203         {
204             Color c = x.color;
205             c.a = ft;
206             x.color = c;
207             yield return null;
208         }
209     }
210
211     IEnumerator ShowTitle()
212     {
213         yield return new WaitForSeconds(9.0f);
214         background.SetNewRotation(360);
215         background.SetNewVerMovement(550);
```

```
        yield return new WaitForSeconds(3.0f);

        NewChapter();
        isVoting = false;
    }

    IEnumerator BackToMenu()
    {
        background.SetNextScreen(6);
        background.SetNewVerMovement(0);
        yield return new WaitForSeconds(5.0f);
        voteManager.GetComponent<UIManager>().FinishGame();

    }
}
```

```
using System;
using System.Collections;
using System.Security.Cryptography;
using System.Text.RegularExpressions;
using UnityEngine;
using UnityEngine.Networking;
using UnityEngine.UI;

public class Tracker : MonoBehaviour
{
    private string secretKey = "a]K2a2R>JT93m4ru";
    [SerializeField] private string addScoreURL, addGameURL;

    // Start is called before the first frame update
    void Start()
    {

    }

    // Update is called once per frame
    void Update()
    {

    }

    public void SendVote(string gameid, string userid, int choicenum, int
    choicevalue, float time)
```

```
27      {
28          string t = time.ToString();
29          StartCoroutine(PostScores(gameid,userid,choicenum,choicevalue,t));
30      }
31
32      public void SendGame(string gameid, string StoryNum, string S)
33      {
34          string end = System.DateTime.Now.ToString();
35          string date = System.DateTime.Today.ToString();
36          StartCoroutine(PostGame(gameid, StoryNum, S, end, date));
37      }
38
39      IEnumerator PostScores(string gameid, string userid, int choicenum, int
        choicevalue, string time)
40      {
41
42          string hash = HashInput(gameid + userid + choicenum.ToString() +
        choicevalue.ToString() + time.ToString() + secretKey);
43          Debug.Log(hash);
44          string post_url = addScoreURL + "game_id=" + gameid + "&player_id=" +
        userid + "&choice_num=" + choicenum + "&choice_value=" + choicevalue + "&time="
         +
45                  UnityWebRequest.EscapeURL(time) + "&hash=" + hash;
46          Debug.Log(post_url);
47          UnityWebRequest hs_post = UnityWebRequest.Post(post_url, hash);
48          yield return hs_post.SendWebRequest();
49          if (hs_post.error != null)
50              Debug.Log("There was an error posting the high score: "
51                      + hs_post.error);
52      }
53
54      IEnumerator PostGame(string gameid, string Story_Num, string Start, string End,
         string date)
55      {
56
57          string hash = HashInput(gameid + Story_Num + Start + End + date + secretKey
        );
58          Debug.Log(hash);
59          string post_url = addGameURL + "game_id=" + UnityWebRequest.EscapeURL(
        gameid) + "&Story_num=" + UnityWebRequest.EscapeURL(Story_Num) + "&Start=" +
        UnityWebRequest.EscapeURL(Start) + "&End=" + UnityWebRequest.EscapeURL(End) + "
        &Date=" +
```

```
                UnityWebRequest.EscapeURL(date) + "&hash=" + hash;
        Debug.Log(post_url);
        UnityWebRequest hs_post = UnityWebRequest.Post(post_url, hash);
        yield return hs_post.SendWebRequest();
        if (hs_post.error != null)
            Debug.Log("There was an error posting the game: "
                    + hs_post.error);
    }

    public string HashInput(string input)
    {
        SHA256Managed hm = new SHA256Managed();
        byte[] hashValue =
                hm.ComputeHash(System.Text.Encoding.ASCII.GetBytes(input));
        string hash_convert =
                  BitConverter.ToString(hashValue).Replace("-", "").ToLower();
        return hash_convert;
    }

}
```

```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;
using UnityEngine.Networking;

public class PreQuestForm : MonoBehaviour
{
    private string URL = "https://docs.google.com/forms/u/0/d/e/1FAIpQLSceM24UERv-1
    UZw-kJFYNw_nO9n5-VDFo636JKfBRzM0NRafg/formResponse";
    [SerializeField] private List<string> answers = new List<string>();
    int a;
    public string userId;
    private string randomId;
    private string idChars = "0123456789
    ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz";
    // Start is called before the first frame update
    void Start()
    {
        userId = randomID();
    }

    // Update is called once per frame
```

```
21      void Update()
22      {
23
24      }
25
26      public IEnumerator initPreQ(string userID, string consent, string age, string
        country, string gender, string education, string stream, string device, string
        english, string hours, string reading)
27      {
28          WWWForm uForm = new WWWForm();
29          uForm.AddField("entry.1986215326", userID);
30          uForm.AddField("entry.784783903", consent);
31          uForm.AddField("entry.1100403364", age);
32          uForm.AddField("entry.827429912", country);
33          uForm.AddField("entry.1852045127", gender);
34          uForm.AddField("entry.941870915", education);
35          uForm.AddField("entry.215569113", stream);
36          uForm.AddField("entry.1672957243", device);
37          uForm.AddField("entry.1129281400", english);
38          uForm.AddField("entry.462508293", hours);
39          uForm.AddField("entry.2015750955", reading);
40          using (UnityWebRequest www = UnityWebRequest.Post(URL, uForm))
41          {
42              yield return www.SendWebRequest();
43
44              if (www.result != UnityWebRequest.Result.Success)
45              {
46                  Debug.Log(www.error);
47              }
48              else
49              {
50                  Debug.Log("Decision making questionnaire form upload complete!");
51              }
52          }
53      }
54
55      public void sendPreQData()
56      {
57          a = answers.Count;
58          Debug.Log(a);
59          StartCoroutine(initPreQ(userId, answers[a-10], answers[a - 9], answers[a -
        8], answers[a - 7], answers[a - 6], answers[a - 5],
```

```
                                answers[a - 4], answers[a - 3], answers[a - 2],
    answers[a - 1]));
        Debug.Log("sending preq data");
    }

    public void getPreAnswers(string[] s)
    {
        foreach (string a in s)
        {
            answers.Add(a);
        }

    }

    private string randomID()
    {
        int hyphens = 0;
        for (int i = 0; i < 3; i++)
        {
            for (int j = 0; j < 4; j++)
            {
                randomId += idChars[Random.Range(0, idChars.Length)];
            }
            if (hyphens <= 1)
            {
                randomId += "-";
            }
            hyphens++;

        }
        return randomId;
    }
}
```

```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;
using TMPro;
using MLAPI;
using MLAPI.NetworkVariable;
using MLAPI.Messaging;
using UnityEngine.UI;

```

```
10 public class ClientVoteMan : NetworkBehaviour
11 {
12
13     public NetworkVariable<int> vote = new NetworkVariable<int>(new
       NetworkVariableSettings { WritePermission = NetworkVariablePermission.OwnerOnly
        }, 0);
14     public bool voteIsOpen = false;
15     public string clientManualId;
16     [SerializeField] private TextMeshProUGUI text;
17     [SerializeField] private GameObject playerUI;
18     [SerializeField] private GameObject voteButtons, tele;
19     GameObject voteManager;
20
21
22     void Start()
23     {
24         if (IsLocalPlayer)
25         {
26             playerUI.SetActive(true);
27             voteManager = GameObject.Find("UIManager");
28             tele = GameObject.Find("Telemetry");
29             clientManualId = tele.GetComponent<PreQuestForm>().userId;
30             SetVoteManagerServerRpc(clientManualId);
31
32
33         }
34     }
35
36     void Update()
37     {
38         if (IsLocalPlayer)
39         {
40             checkForVote();
41         }
42     }
43
44     public void SetVote(int a)
45     {
46         vote.Value = a;
47         voteButtons.SetActive(false);
48         if (a == 1)
49         {
```

```
            text.text = "You Voted:A";
        }
        else
        {
            text.text = "You Voted:B";
        }

    }

    void checkForVote()
    {
        bool current = voteManager.GetComponent<VoteManager>().openVotes;
        if (current != voteIsOpen)
        {
            voteIsOpen = current;
            changeVoteStatus();

        }
        if (voteIsOpen == false && vote.Value != 0)
        {
            vote.Value = 0;
        }
    }

    void changeVoteStatus()
    {
        voteButtons.SetActive(voteIsOpen);
        ChangeText();
    }

    void ChangeText()
    {
        if (voteIsOpen)
        {
            text.text = "Vote Is Open Now!";
        }
        else
        {
            int win = voteManager.GetComponent<VoteManager>().winner;
            text.text = "";


```

```
92          }
93      }
94
95      [ServerRpc]
96      void SetVoteManagerServerRpc(string c)
97      {
98          clientManualId = c;
99          voteManager = GameObject.Find("UIManager");
100         tele = GameObject.Find("Telemetry");
101     }
102
103
104 }
```

# Appendix B

# Questionnaires

**Pre-Questionnaire**

Demographics

- Age
- Nationality
- Gender
  - Male
  - Female
  - Non-binary
- Education
  - High school
  - Bachelor
  - Master
  - Phd or other

Player preferences

- How did you watch the stream
  - Local screen
  - Stream
  - Video Call

  - Other

- Which device are you playing on
  - Computer
  - Tablet
  - Smartphone
  - Other
- What is you English level
  - Basic
  - Intermediate
  - Advanced
  - Native
- How many hours do you play video games per week
  - 0 - 2 hours
  - 3 - 5 hours
  - 6 - 8 hours
  - 9 hours or more
- How willing are you to read text in a game

**Post-questionnaire**

Systematic suspension of disbelief questions from Vorderer et al. (2004)

- I concentrated on whether there were any inconsistencies in the story(medium)
- I didn't really pay attention to the existence of errors or inconsistencies in the story(medium)
- I directed my attention to possible errors or contradictions in the story(medium)
- I took a critical viewpoint of the story/mediums presentation
- It was important for me to check whether inconsistencies were present in the story/medium
- It was not important for me to check whether the story/medium contained errors or contradictions

Narrative suspension of disbelief Roth (2015)

- At some moments I was anxious to find out what would happen next
- Sometimes I was worried about how the story would develop
- Some moments were rather suspenseful
- I found myself wishing for a particular story outcome

Behavioural engagement dimension scale from the social presence in games De Kort et al. (2007)

- My actions depended on the other's actions
- The other's actions were dependent on my actions
- What the others did affected what I did
- What I did affected what the others did
- The others paid close attention to me
- I paid close attention to the others

Effectence Ruth (2016) (Full scale, adopted from Klimmt, Hartmann, & Frey 2007)

- My inputs had considerable impact on the events of the story
- I had the feeling that I could directly affect something on the screen
- The consequences of my inputs were clearly visible
- I could recognize which events in the story I have caused with my inputs
- My decisions clearly influenced how the story went on
- I discovered how my earlier actions influenced what happened later in the story

Narrative analysis Pinto et al. (2018)

- In short, describe the story

# Appendix C

# Stories Scripts

The following presented scripts are not the final version of the narrative as it was presented to the players during the experiment. During the development process, and specifically in the story implementation stage, the stories were refactored and checked for any issues of continuity or language mistakes.

## C.1 Emma

**Emma**

**Prolog**

Emma slowly opens her eyes, trying to reach for her phone. She taps her hand over the counter but can't seem to find it.

She heavily turns her body to look under dire and, after few attempts, manage to grab it. She then looks at the screen, but everything seems to be a blur.

She blinks few times and sees a few missed calls and messages from her brother, Rick. "What he wants this time?" she asks herself. Rick has long ago got quite obsessive with the death of their parents and the people responsible for it.

It's not like Emma never asked herself questions about it. It is just that she prefers to focus on her life than analysing the past. She still misses her parents.

Emma quickly prepares herself, putting on her outfit and leave the house. Just after leaving, she remembers she forgot to give her cat food.

[[Go to your brother place->The stairways]]

[[Go back and feed the cat->Feed the cat]]

---

**The stairways**

Emma locks the door and heads away.

While going down the stairways, she encounters her neighbour. She yet caught his name since he moved there only a month or so, though he seemed like a friendly old guy. She sees he is struggling to take all his groceries to his apartment.

He gives her a look in the eyes, a look which is hard to avoid. She thinks she should help him, but another message notification from Rick is interpreting that thought from her thoughts.

[[Help the old man->Help the old man]]

[[Go to your brother->Go to work]]

---

**Feed the cat**

She quickly turns back and fills her cat bowl, takes her jacket and leaves.

[[Leave to work->The stairways]]

---

**Help the old man**

Emma put her helmet down and starts helping the old man getting all the groceries into his house.

"I'm sorry, but I have to ask, what's your name?" asks Emma, "It's Ben, thank you for asking, and you young dear?"

"I'm Emma. Nice to meet you. Does this also goes to the table?" she asks while pointing at some frozen meat packages. "Oh yes, I will handle them after," says Ben.

Once they finished bringing in all the bags, Ben seems tired and sits down on his sofa chair.

"I'm sorry, as you can see, I'm not exactly in shape as I used to be. Can I offer you some coffee?"

[[Stay for coffee->Coffee break]]

[[Head to work->Head to work]]

---

**Go to work**

"I'm sorry, but I'm late. My brother is waiting for me," says Emma with half a smile.

"Of course", says the old man, "don't worry, I will handle it. we don't want to cause any issue."

Emma leaves the house with a bitter feeling. If it was any typical day, she would have done it, but this is not normal, and her brother seems to be very passionate about it.

She heads to her motorcycle, put on the helmet and get ready to leave. The GPS app is not working, so she needs to decide if to go through the highway or the streets.

[[Take the Highway->Highway]]

[[Go through the streets->Streets]]

---

**Highway**

After small deliberation, Emma understands there is no way driving through the streets will be shorter than going through the highway.

She ignites the engine, puts on the helmet and heads away.

One second after going on the highway, she understands her mistake. The road is completely packed with cars. No way she can make it in time.

Looking ahead, she sees an opening through the road shoulder, and it does not seem like the police are anywhere around. It's not conventional, and most certainly not legal, But desperate times call for desperate measures, do they?

[[Go through the road shoulder->road shoulder]]
[[Wait in traffic->traffic]]

---

**Streets**

Emma decides to go through the streets. The highway is always packed with cars at this time of the day, no way it will be faster than going through the streets.
She starts driving and accelerate to get as fast as possible to work. With all those messages from her brother, she really is in a rush to see what the hell is happening.
She turns to the third avenue to find out the whole area is blocked by a film set. Emma gets pissed. She is, in general, a big fan of movies, but it's impossible to live in a city like that.
Turning now would mean she will be late to work and considering everything that does not seems optimal. She notices the bike lane is still open, but that would mean to risk a fine, and god knows she does not have the money to pay it right now.
[[Turn around->detour]]
[[take the bike lane->Bike lane]]

---

**detour**

Emma is telling herself that it doesn't matter how pushy her boss is this morning. It is not worth risking a fine of some sort.
She takes a U-turn and heads to the next available street. She always has been a fast driver, and there is no reason to change it now, especially not when she is already late. She presses the gas and makes her way.
She arrives at her brother's place, everything seems to be quiet.
She knows her brother will be angry for the time it took her, but it's not worth taking a risk.

[[[Arrive and park->very late]]]

---

**Bike lane**

She takes a quick turn, goes into the bike lane and presses the gas to pass as fast as possible.
One of the producers from the film set sees her attempt and runs after her to stop her but

long before he manages, she passes the street.
Before going back to the road, she almost hit a bike rider who seems unhappy about her decisions.
Emma continues heading towards the office. If she drives fast enough, she can make it in time, or at least not too late.
Two patrol police officers notice her driving and start to chase. Emma didn't see the tailing and continue on her way.
[[[Arrive and park->On time (police)]]]

---

**road shoulder**

"Hell with that! I'm going in", says Emma before closing her helmet and pressing the gas.
She drives as fast as possible through the road shoulder, passing by all the cars that stand in traffic.
Emma can't deny the adrenaline she gets from this kind of stuff. She is not much of a lawbreaker, but she had her fair share of incidents in the past.
She is near her exit, and it seems like, besides few angry car drivers, she managed to stay low key.
A police car appears to be behind her as she exits the highway.
[[Arrive and park->On time (police)]]

---

**traffic**
Emma understands that it doesn't matter how much her boss is pressuring. There is no way it's worth risking her driving license, or worse.
She decided to drive slowly through the traffic. Sure, it's annoying and slow, but she just wants to get it over with and return home. She is tired of going that extra mile for her brother and his crazy stories.
Cars are using their horns to take out frustration, and Emma joins an act of solidarity.
After a very long time, she finally reaches her exit. She quickly manoeuvres her motorcycle and heads out.
[[Arrive and park->very late]]

---

**very late**

Emma approaches the door and rings the buzzer. Her brother, Rick, answers but instead of opening, he starts asking questions through the intercom.
"Finally! Have you been followed?" he asks nervously, "what?" she answers while being surprised by the question. "why would anyone follow me?" she continues.
"Just answer, have you been followed?" "no, I wasn't followed! now can you let me in?" she answers. Emma tries to understand what all the stress is about, but she is just confused at this point.

[[Go in Let Rick explain -> rick explain]]
[[Tell him to come outside -> stay outside]]

---

**On time (police)**

Emma approaches the door and rings the buzzer. Her brother, Rick, answers but instead of opening, he starts asking questions through the intercom.
"Check around you, have you been followed?" he asks, "I don't think so", she answers while being surprised by the question. "why would anyone follow me?" she continues.
"Trust me, sis, check if anyone around seems suspicious" "I don't see anyone, can I come in?" she answers. Emma tries to understand what all the stress is about, but she is just confused at this point.
Rick opens the door, and Emma comes in. Rick apologize for the questions and asks Emma if she wants coffee.
[["yes please" -> rick explain]]
[["No thanks" -> police]]

---

**Coffee break**

"You know what? Sure," she answers. Emma didn't have her chance to drink coffee, and whatever it is that her brother is so anxious about, it for sure will demand her to be in her full power.
She makes both of them a cup of coffee, and they start chatting.
Ben tells her about his history and how he ended up living by himself here. It seemed like he went through a lot in his life, making Emma think about her own life path and direction.
While Ben talks, Emma continues to go around the living room, exploring photos and art, hanging on the walls.

Emma: "Is that you?" while pointing at a photo of three guys.
Ben: "this? yeah, it's me and some old friends."
Emma started wondering about the friends. She is not much of a social life kind of girl. She questions if they are still friends.

[[ask Ben about the friends->ask]]
[[Continue Looking around->dont ask]]

---

**Head to work**
"I would love to, really, but my brother keeps calling me. I think I really need to get going, or he will get furious."
"Of course! I would not want to get you into trouble," says Ben as he turns on the TV. "Just remember, dear, no one decides for you. You are free to choose whatever you like. Trust me, I know what I talk about."
Emma smiles slightly and promises she will come to visit later today for that promised coffee.
She politely leaves and goes down to her motorcycle.
[[Take the Highway->Highway]]
[[Go through the streets->Streets]]

---

**ask**
"Are you still friend with them?" she asks nervously
Ben: "Well no, not really. You know how it is, after few years, you drift apart. but we used to be very close, we use to hang out all the time".
Emma:" Yeah, I don't have many friends from the past either. but that's because I moved a lot when I was young. My parents died when I was 9".
Emma is not even sure why she just said it, she doesn't usually bring it up, but something in Ben made her comfortable talking about it.
Ben: "I'm sorry to hear dear, I'm sure they are proud of you".
While he said that tension grows in the room. It is as if she got too personal with him.

[[Ask him more->not show up]]
[[Go to Rick's house->Leave Ben house]]

---

**dont ask**

Maybe, for now, it's better to not ask. She doesn't want to get him triggered or something like that. Instead, she continues exploring while having small talk.

Ben: "I'm sorry for the mess. I don't host many people nowadays".

Emma feels as if she got an answer to the question from before.

Emma: "Oh, don't worry, I visit my brother every week, and this is Hilton hotel next to his mess."

Ben laughs a bit and apologises.

Rick continues sending messages from time to time, asking her to arrive already.

[[Ask him more->not show up]]

[[Go to Rick's place->Leave Ben house]]

---

**not show up**

Emma decides to stay and learn more, she doesn't know what exactly is it, but she feels comfortable in Ben's place. like an old wise parent, she didn't have that growing up.

She sends an SMS to Rick, saying she is helping her old neighbour.

"So you always lived here?" Emma asks, trying to revive the conversation

Ben says no and tells his history. Emma tries to listen, but it seems as if the dusty objects all around the house tell it better.

Suddenly she receives a phone call.

Emma: "Oh, I'm sorry."

Ben: "No, no, please, answer it."

[[Answer the call -> answer the call]]

[[Reject and continue conversation -> Ask more]]

---

**rick explain**

Rick serves Emma coffee and opens in a monologue. Emma still is trying to understand what on earth is going on.

Rick: "Emma, what I'm about to say might sound crazy, but I need you to believe me."

Emma always had a sweet spot for Rick in her heart. Growing up together without parents made it impossible for her not to care for him, sometimes even more than she cares for herself.

Rick: "You remember the night mom and dad died?" he asks while serving the coffee.

Emma: "I was nine years old. I barely remember what happened yesterday."

Rick: "Well, I do. I remember it, and I will never forget. I remember those three drunk idiots rioting and attacking them, the funeral and everything that happened after."
Emma: "We talked about it. We cant chase the past. What happened sucks, I will not deny it. but if we want to be anything in this world, we have to continue forward."
Rick: "And what if I told you that I found who is it? and that we can finally excute our revange plan?"
[["Grow up Rick!" -> against his plan]]
[["Who is it?" -> hear more]]

---

**against his plan**

Rick: "Just listen! I went through the files last night"
Emma: "As you did every night for the last 20 years."
Rick: "Well yeah, but this time it was different".
Emma: "Oh yeah? How so?"
Rick: "So we know there were three people who were there that night mom and dad died. We know that one of them died when the police arrived, and that the other killed himself in jail. But what about the third one?"
Emma: "Isnt he is like prisoned for life?"
Rick: "You would think... Apperntly, there was lack of place in jail and guessed who was choosen to be released?"
Emma: "What do you mean released?"
Rick smiles and whispers "exactly".
Rick: "It gets worse, that guy, Ben, is your new neighbour"
Rick: "So, are you coming with me or not?"
[["Not with you driving, ill meet you there" ->On her way]]

---

**hear more**

Rick: "So thats where it gets intresting. I went through the files yesterday night"
Emma: "As you did every night for the last 20 years."
Rick: "Well yeah, but this time it was different".
Emma: "Oh yeah? How so?"
Rick: "So we know there were three people who were there that night mom and dad died. We know that one of them died when the police arrived, and that the other killed himself in jail. But what about the third one?"
Emma: "Isnt he is like prisoned for life?"

Rick: "You would think... Apperntly, there was lack of place in jail and guessed who was choosen to be released?"
Emma: "What do you mean released?"
Rick smiles and whispers "exactly".
Rick: "It gets worse, that guy, Ben, is your new neighbour"
Rick: "Now, are you coming with me or not?"

[["Not with you driving, ill meet you there" ->On her way]]

---

**answer the call**

Emma answers the phone while walking to a different room. Rick sounds stressed
Rick: "Listen, Emma, you have to get out of there" he pauses, "Now!".
Emma: "Get out of where. What are you talking about?"
Rick: "The apartment you currently belong to the man who killed our parents."
Emma: "Ben? no way! what are you talking about?"
Rick: "Trust me, Sis, he got out of jail a month ago. Get the hell out of there. I'm on my way now. Just wait for me outside."
Emma: "But I can't just leave."
Rick: "Just tell him you have to go. We will meet outside and plan everything."
Emma agrees and hangs up, but then she thinks maybe she shouldn't wait. She can handle him herself.
[[Confront Ben -> confront ben]]
[[Go out and wait -> run down]]

---

**Ask more**

Emma avoids rick call and apologizes again for the sound
Ben continues his story when suddenly Emma encounters a piece of paper. She knows this article. She recognizes herself and Rick in the photo.
It's a piece about her parent's death and their legal case after it. It's been so long since then. Why the hell does Ben own it?
She looks to check if he notices, but he seems to just talk without even looking. She looks closely, trying to find any usage that he might have done to the article, like marked words or anything, but nothing appears to be unusual. She then turns the page and sees a photo of the suspects, but the faces are blurry.
"Of course", she whispers, this is the exact photo of Ben and his friends. Suddenly she feels

like everything is dropping. She takes a sip from the coffee just to not faint.
She quickly looks at her phone, seeing a text from her brother saying, "On my way".
[[Confront Ben -> confront ben]]
[[Run away -> run down]]

---

**stay outside**

Emma: "No, Rick, not this time. I'm not going into your crazy world again. you have something to say, just come here outside and talk to me."
Rick: "Believe me, we should go inside for this one. The guy who murdered mom and dad is free".
Emma: "What, what do you mean?"
Rick: "Exactly what I said. and if you will be smart enough, we would go in and discuss the actual plan of how we do it."
Emma: "Plan?"
Rick: "Oh don't chicken now, we talked about it before. both of us know exactly what we need to do".

[[Who even is it? -> hear more]]
[[Object his plan -> against his plan]]

---

**confront ben**

Emma walks back to Ben and stares at him, waiting for him to look at her
He feels the silence and raises his head looking at Emma looking directly at him
Emma: "Why are you here?"
She is not really sure why that's what she asks. She definitely has better things she wanted to say after all these years but somehow that's what came out
Ben: "Emma, I'm here to fix it."
Ben says after understanding the situation.
Emma: "What is it? me? you think you can "fix me?"
Ben: "Emma, please, let's talk about it. I'm not in shape to argue like that."
Emma: "I should feel sorry for you? Tell me, why did you do it? why did you do it?"
Before Emma completes her questions, Rick comes In.

[[Continue -> threat Ben]]

---

**run down**

Emma: "I'm sorry, I forgot to give food to my cat. I need to go now", that always works as an excuse.

Ben: "Oh poor thing, ok off you go then."

Emma can't believe that it worked. He doesn't seem to suspect a thing.

She quickly takes her stuff and leaves. She then runs down to the street. Rick should be here any meet according to the text.

She usually likes to have her own plan but today caught her by surprise. Maybe it's better to let Rick take the lead on this one.

[[meet brother ->Meet rick]]

---

**Go home**

Rick arrives when Emma is standing there, still shocked. She tells him what she did and says we have to run away.

Rick can't believe it happens. He can't understand why she has done it. The two are arguing outside when a police car is arriving.

Two armed policemen go out of the vehiacle aiming towards Rick asking him to lay down.

The police arrest both Emma and Rick, who keep fighting on their way to the station

Emma is being lead into her cell while she is crying. Is that how she ends up? Does she even deserve it?

---

**run away**

Emma decides to run away. Whatever Rick intention is, she does not want to take part in it.

She whispers, "Sorry", as Rick get close by and run away.

She goes into her apartment, packs a bag and her cat and leaves. She is about to drive off when she sees Rick being arrested by two policemen.

They are aiming their guns toward him and asking him to lay down.

Emma gets emotional, she stops to look for few seconds.

She momentarly looks down than raise her head, presses the gas and leave the place.

---

**stop him from killing**

Rick starts shaking, he looked so sure until this moment. Suddenly, Emma sees her brother as if he is still a kid.
Emma slowly get closer to Rick, while Ben is standing still.
Rick: "You think you deserve to be free?"
Ben: "What happened 20 years ago was a mistake, I paid my price. If you kill me you will have regrets for the rest of your life!"
Emma knows Ben is just saying anything to save himself but she really agrees with this one.
She notices Rick loses attention and jumps on him. By mistake Rick pulls the trigger and the bullet hits Emma. Ben runs to help but rick pushes him away.
Rick is holding Emma in his arms but she is not moving.

---

**let Rick kill Ben**

Rick pulls the trigger, and Ben falls down to the ground
Emma covers her mouth and starts crying. She knows they will soon be arrested by it.
She starts crying and hugs Rick, who starts crying as well. She is angry at him for not listening, but she also understands him completely.
Before they leave the scene, the police arrive and arrest them both.

---

**threat Ben**

Rick grab Emma and pulls her back. Rick: "Stay away from her!"
Ben: "Stop idiots! I'm not in the age to fight or any nonsense like that. You want to kill me? Do it."
The two freeze in place. It seemed like all their fantasies broke.
Ben: "But listen to me, if you think for any second that it will give you closer, you are completely wrong."
Emma notices ricks gun in his bag.

[[take the gun -> Emma has gun]]
[[let rick do it -> Rick has gun]]

---

**police**

It's been a while since Emma visited Rick, his apartment is very messy, and she never liked it. She goes around scanning his mess. there are food leftovers and pieces of newspapers everywhere

"Jesus, Rick, do you ever clean here?" she asks. Ricks releases a small laugh and answers, "I will clean it after. For now, we have more important things to deal with".
Emma:" well, at least you can open a window" Emma approaches the curtain and moves it. Rick shouting at her not to do so, she quickly closes it again. Just before closing, she notices two policemen next to her motorcycle.
[[Warn rick -> warn rick about police]]
[[Follow the police -> spy on police]]

---

**warn rick about police**

Emma: "Hey Rick, when you asked about being followed, did you mean the police?", "What?!" he asks nervously.
They look at each other as if looking for the other to give instructions. Rick shakes himself and starts going around collecting things into his backpack.
Rick: "Listen! I don't know how they got us, but we need to get away of here as soon as possible, take this bag and let's go from the emergency exit".
Emma is still unsure what is happening, but Rick seems very serious, and it does not seem like a time to go against him. She takes her helmet and his backpack and follows him to the emergency stairs.
Rick:" We should use my car. It's parked down the street."

[["No way im leaving my motorcylce here" ->Run alone]]

---

**spy on police**

Emma decides to keep it low. With one eye, she keeps following the police while the other follows Rick, who seems uneasy.
Rick:"Listen sis, I wouldnt call you if I wasnt sure but now I am. After 20 years of questions I finally got some answers. You remember the day mom and dad died?"
Emma:" I was like 9 years old, I barley remember what happened yesterday".
Rick:"Im being serious Emma!".
Emma:"Of course I remember some stuff, but anyway, how is that connected to anything? Suddenly you care for memories"
Rick:"Ill tell you what, I remember everything, I remember grandma taking us and running away, I remember those three drunk idiots rioting, I remember exactly the way mom was crying".
Emma:"Rick, we already went through it, they are all prisoned or dead. there is nothing we

can do at this point".
Rick:"Here you are wrong, apperntly, one of them got free. and its time we get the justice we deserve".
Emma is not sure how to feel about it, she for long time tried to ignore her past but the current present is not much better. Maybe this is what she needed.
She lost focus over the police, but they are already gone by the time she looks again. She guesses it was a false alarm.
Rick: "So are you coming?".
Emma: "Coming where? You didnt even say where is he"
Ryan: "He is your neighbour! Now, are you coming?"
[["Not with you driving, ill meet you there" ->On her way]]

---

**Run alone**

Rick: "Are you insane? The police are next to your motorcycle. You can't get it now" Emma: "I'm not leaving it. Can you at least tell me what is going on?"
Rick: "Go to your stupid motorcycle, call me when you're on the way", they split, and Emma is slowly going around, trying not to be suspicious. When she gets to the motorcycle, she can't find the police. She gets closer and sees a fine attached to her bike.
"Oh god damn it! Again Rick and his fantasies. Can't believe I got fined for this nonsense." she calls Rick on her phone and waiting for him to answer.
Emma: "Rick, you paranoid! I just got fined for your crap". Rick:" Forget the fine. I have something much better - The guy who killed mom and dad just got released from prison. Oh, and we are going to kill him"
Emma: "What are you talking about?" Rick: "Go to your place, ill meet you there and tell you everything. We are finally going to get justice."
Emma: "my house, why?". Rick: "Cause that's exactly where the killer is".

[[Go to the bike ->On her way]]

---

**Act against the plan**

Emma stops outside of her house.
Her emotions are changing, and she doesn't know really what to do, but she decides it's best to stop it from happening, For her own safety.
She is going back and forth, trying to figure what to do. She is not sure if she can stop Rick herself. He is in crazy mode, and she knows how much he wants it. Damn it, she wants it

as well.

But she can't. Not right now, not after getting so far. If she can't do it herself, she will call the police with whatever the hell that means

[[Call the police -> Call the police]]

[[Try and stop Rick herself -> Try to stop rick]]

---

**Call the police**

Before Rick arrives, she dials 911 on her cell and about to press dial, but her hand is shaking

Does that mean Rick will get arrested? And what if she will get arrested?

How many years do they even give for intentions?

She dials, she gives the address and suggests they should come as soon as possible.

Emma looks around and sees Rick car's arriving. She suddenly understands what it means the fact that she called the police. Does she regret it?

[[Stay there and warn Rick -> Go home]]

[[Dissapper before he arrives -> run away]]

---

**Try to stop rick**

Rick arrives in his car and stops right next to her.

Emma: "Rick, you can't do it!"

Rick: "What do you mean can't do it? we both should do it!"

Emma: "Let's talk about it, Rick, please, before you ruin our lives."

Rick: "This man is the reason why our lives are ruined. This man is the reason why our childhood has been a full-on nightmare."

Emma: "Killing him won't change it, though."

Rick: "It won't, but it will be hell satisfying."

At this point, people started looking from their windows at Emma and rick.

Rick: "Oh, you little.." Emma looks back and sees Ben coming out of the door. She guesses he understood what happened.

Rick takes out the gun aiming at Ben

Ben: "Rick, you don't want to do it."

Rick has murder in his eyes. He doesn't blink or takes his eyes off from Ben. He aims.

[[Stop him from shooting -> stop him from killing]]

[[Let him do it -> let Rick kill Ben]]

---

**Choose weapon**

Emma arrives and waiting for Rick by the sideway. Rick parks his car and starts talking.
Rick:" Listen, I know it's a lot, believe me, I don't want to put any of us in this position. But I can't help it. I would do anything to revenge their death."
Emma: "Rick, I'm with you, I'm always with you, but are we really going to kill someone?".
Rick: "I can't do it without you. This is our legacy and what we deserve to get after all these years. Go inside. No one will suspect you even if they find anything. This is perfect revenge. Besides, the guy is like 70 years old. No one will care!". Emma knows precisely who he talks about. That's Ben, her new neighbour.
Emma: "Even if I agreed, with what tools exactly I would do it?". Rick takes out from the bag a gun and a bottle of poison, "It's your choice", he says.
[[ Choose gun]]
[[ Choose posion]]

---

**Choose gun**

Emma: "Can you remind me why I'm the one who needs to do it again?".
Rick: "No one going to suspect you if they find something of yours, it's just because you live there!"
Emma is still not entirely convinced. Yeah, she is not a saint but killing someone is different. She practised in her mind a lot for this day, but she didn't really consider it happening.
Emma approaches Ben's door and knock. This is it. Now she needs to step up.
Before he opens, she loads the gun and aims directly to the door. Ben opens, but he does not seem surprised.
Ben: "Oh Emma, it is not worth it. You will not gain anything from it." Emma: "Don't tell me what is worth or not worth it. You murdered my parents".
Ben: "I know, that's exactly why I'm here. A gunshot will not punish me, I'm punished for 20 years and the rest of my life, if anything, this will just release me from shit life".
Emma:" Is this some reverse psychology? You followed me?", she shakes and cries but still aiming the gun.
[[Shot him ->  Kill Ben Gun]]
[[Spare his life ->  Spare his life]]

---

**Choose posion**

Emma: "Can you remind me why I'm the one who needs to do it again?". Rick: "No one going to suspect you if they find something of yours, it's just because you live there!"

Emma is still not entirely convinced. Yeah, she is not a saint but killing someone is different. She practised in her mind a lot for this day, but she didn't really consider it happening.

Emma approaches Ben's door and knock. This is it. Now she needs to step up.

Ben opens the door slowly. Seeing Emma's eyes, he understands she is unstable. Ben: "Emma, please, before you do anything, consider it carefully. I don't know what you know, but I'm sure we can discuss it?"

Emma: "Discuss it? you murdered my parents".

Ben: "I know, that's exactly why I'm here. I'm here to repay for my sins. "Well, if you want to repay, you will drink this", Emma says while she takes out the position bottle handing it over to Ben.

Ben: "Is that what you want me to do?"

Emma pauses to think.

[["Yes" ->  Kill Ben Poison]]

[["No" ->  Spare his life]]

---

**Kill Ben Gun**

Emma looks at Ben, she knows exactly what she wants, and it's him to pay for her suffering. She doesn't care. It won't change the past. All she wants is a bit of justice. She deserves it after so long.

"Yes," Emma says and pull the trigger. A sudden wave of energy pushes her back, and when she looks again, she sees Ben lying down. She shot him right in the heart.

Emma is still standing there shaking. She goes to her apartment, takes her cat and pack her bags and leave.

---

**Spare his life**

Emma wants to do it. She knows this might be her only opportunity, and she does not want to miss her. She is about to say yes, but somehow, she says "No" and falls down to the floor. She did not want to disappoint her brother or herself, but killing someone is just not what she is willing to do.

She shakes herself upstand and looks at Ben.

Emma: "Now listen, Don't say anything, don't ever mention it. You will now pack your stuff and get the hell out of here. I don't want to see you ever again. was I clear?"
Is it a solution? Emma is not sure, but she at least knows that after so long, she finally understands what she wants, and that is to move forward.

---

**Kill Ben Poison**

Emma looks at Ben, she knows exactly what she wants, and it's him to pay for her suffering. She doesn't care. It won't change the past. All she wants is a bit of justice. She deserves it after so long.
"Yes," Emma says, "Drink it right now in front of me. I want to see you doing it". She hands the bottle to Ben, who does not seem to object to it at this point.
He takes the bottle and chugs it all in once. He then looks at Emma and says: "If you excuse me, I have now a bed to fall asleep in. I'm sorry, Emma."
He leaves and goes his way. Emma is still standing there shaking. She goes to her apartment, takes her cat and pack her bags and leave.

---

**On her way**

Emma goes on her motorcycle. That's the first time she has alone to process all this information.
Her head says she should avoid it. She just now started to actually progress a bit after years of challenges. If she goes with her brother plan, she is throwing it all away.
But her heart, her heart wants revenge. All the foster houses, the struggles, they all go back to this exact moment. The moment those hooligans just ran over her parents. She doesn't care why they did it, she doesn't care what they wanted to get, all she cares about is for her parents and the fact that she didn't have them when she needed them.
"You need to be more strategic", that's what she was told growing up with different families. "All they want is to see you fail, don't let them have it". Is killing someone a failure? Or is it the other way around?
[[Do it -> Choose weapon]]
[[ Refuse to do it ->Act against the plan]]

---

**Leave Ben house**

"Thank you for the coffee. I really need to go now," says Emma before she quickly leaves.
[[Arrive and park->very late]]

---

**Meet rick**

On her way down, she dials Rick, only a second pass before he answers

Rick: "Are you ok?"

Emma: "Yes, I'm ok. I'm not sure if he noticed anything."

Rick: "Good, ill be there in 5 minutes. Listen, I know it's a lot, but I have a plan".

Emma: "A plan? what exactly is your plan?"

Rick: "Let's talk about it when I get there."

Emma: "No, Rick! you will tell me now, what is your plan?"

Rick: "My plan is to kill him."

Emma hangs up the second he says that. She starts tearing. She knows exactly what he was going to say, and he said it, that's what happens when you live with your brother only for so long.

She doesn't have many options. She can either try and stop Rick or help him, and she needs to choose before he gets here.

[[Do it -> Choose weapon]]

[[ Refuse to do it ->Act against the plan]]

---

**Emma has gun**

Emma takes the gun and points right at Ben. Rick seems to be surprised by her action and takes a step backwards.

Ben: "Emma come on, take it down, we both know it's not worth it".

Rick: "Do it! for mom and dad, do it!"

Ben: "We can fix it, Emma. I'm here to fix it."

Emma: "We don't need anything to fixed, Ben."

Ben seems to lose hope. He stands up and looks straight into her eyes. Emma does not move even one bit.

[[Shot him ->  Kill Ben Gun]]

[[Spare his life ->  Spare his life]]

---

**Rick has gun**

Emma decides to leave it to Rick, if he wants to kill him that's on him.

The three continue argueing when suddenly Rick pulls out the gun

Emma: "Rick, you can't do it!"

Rick: "What do you mean can't do it? we both should do it!"

Emma: "Let's talk about it, Rick, please, before you ruin our lives."

Rick: "This man is the reason why our lives are ruined. This man is the reason why our childhood has been a full-on nightmare."

Emma: "Killing him won't change it, though."

Rick: "It won't, but it will be hell satisfying."

At this point, people started looking from their windows at Emma and rick.

Rick: "Oh, you little.." Emma looks back and sees Ben coming out of the door. She guesses he understood what happened.

Rick takes out the gun aiming at Ben

Ben: "Rick, you don't want to do it."

Rick has murder in his eyes. He doesn't blink or takes his eyes off from Ben. He aims.

[[Stop him from shooting -> stop him from killing]]

[[Let him do it -> let Rick kill Ben]]

## C.2 The Council

### The Council

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**Prolog**

"Well hello dear councial, and welcome to our 328th annual meeting." says Anthler as he leads all of you to your seats in the court room.

Anthler was the legal master of the king. He did not look strong or big yet his presence always brought stress to his surrondings. He had a quite charisma. ones that can threathen even the strongest warriors.

"As you all know, this kingdom has relayed on the service of its councial for many years now and since the second civil war it is the only authorty to decide on matters related to the people of our fine kingdom."

"As every year,  we are meeting in this court to present you with the most burning issues within the kingdom, it will be your job to decide between right and wrong, good and evil, life and death. As you remember, The only acceptable punishment within this court is death."

"But before we start", he stops and smiles, "Fine ladies and gentelmens has arrived from all over, within our kingdom and outside of it. For some, the road was long and tiring and it is our duty to serve and feed them. A wine would be a proper choice, if I may. Releases human true self and allows him to be free of fears and concerns. On the other hand, A water would be much more suitable if we want to maintain the order in this place."

[[Serve water ->Serve Water]]

[[Serve Wine -> wine]]

---

**wine**

Wine is being served to the audiance which seems to only grow in size and noise.

"Dear councils, dear audiance, we are here to bring our most burning topics to delibartion. To ask the questions and give the answers. To reach justice for those who desereve it." Says Anthel facing the crowd. "In the last year, we sadly lost Sir Bertholm who was beloved by everyone. He was known for his grace and kindness to all, rich and poor. After long investigation, we have narrowed the suspect list to one person - Mr Cordis."

"I will now call the suspect to stand infront of our councial and plead his case"

[["Please do, Anthel. And thank you for your service" -> Cordis]]

[["Before you do so, we would like to hear the summery of the investigation" -> Accusations]]

---

**Serve Water**

"Water it is! It will be my honer to maintain the order here under your instructions" Says Anthel. He than turn to the crowd and welcome them.

"Dear councils, dear audiance, we are here to bring our most burning topics to delibartion. To ask the questions and give the answers. To reach justice for those who desereve it." Says Anthel facing the crowd. "In the last year, we sadly lost Sir Bertholm who was beloved by everyone. He was known for his grace and kindness to all, rich and poor. Due to his status and condition, one must assume that the death of Sir Bertholm was no accident. After long investigation, we have narrowed the suspect list to one person - Mr Cordis."

"I will now call the suspect to stand infront of our councial and plead his case"

[["Please do, Anthel. And thank you for your service" -> Cordis]]

[["Before you do so, we would like to hear the summery of the investigation" -> Accusations]]

---

**Cordis**

Mr. cordis approches the stand to a booing sound from the audiance. he slowly takes off his jacket and put his right hand on his chest"

Anthel:"For protocol reasons, what is your name?"

Cordis:"Geofard Cordis"

Anthel:"And what do you do, Mr Cordis?"

Cordis:"Im a stable manager and driver"

Anthel smiles lightly and says "And who do you work for?"

Cordis:"Sir Bertholm and his family sir, well that would be before the incident"

The crowd continue booing after every time he speaks

Anthel:"Than please, describe the incident from your eyes"

Cordis:"Well, I finished washing all the horses by the afternoon. Knowing that there are no scheduled drives I went to my cabin to eat supper with my family. It was then when I heard screaming coming from the main castle. I of course went to check what the noise is about, they were coming from the private library of the sir so I went there directly. In there I found Sir bertholm laying on the floor, dead. Few of the workers were around, none know what exactly happen".

Anthel:"And tell me Mr Cordis, did you get to see an object which might be related to the death?"

Cordis:"Yes, there was a horse leather strap around his neck". The audiance gasps as Anthel looks directly to the councial.

[["Any evidance which are not based on speculation Anthel?" -> evidance strong]]
[["And how do you explain that Mr Cordis?" -> explenation]]

---

**Accusations**

Anthel: "Very well, if that is your wish I shall first read the accusation. And so it goes:"
"The people of Neymala, the greatest and richest empire of them all, accuse Geofard Cordis for the murder of Sir Frank Bertholm. The accused has served for the last 9 year as the stable manager and driver of Sir Bertholm. According to family memebers the two had close relationship, making Geofard one of the only few people who are able to estimate and acsses the great tresures of the Bertholm family. But this is just the beginning, in this trail you will be exposed to other reasons why Geofad Cordis should be punished for his actions!"
[["Thank you Anthel, we appriciate your opinion and work but we believe its time to hear out Mr cordis himself" -> Describe the night]]
[["Please enlight us with the evidances" -> first evidance]]

---

**Describe the night**

"Cordis, it is time for you to pled your case."
Slight booing is coming from the audiance. Few who are shouting against him
Cordis:"I know where this is going. I might be only a stable manager and I dont have strong friends, hell, I dont have any friends. But Im not stupid. Every day I wash the Horses, I look at the rides schedule and go to eat supper with my family. That exactly what happend that day."
The audiance booing gets stronger as he speakes
Cordis:"Few hours later I heard the scream coming from the main castle so I rushed off. When I got there I found the body and few of the workers. I dont know how one of my leather straps got there, And I dont have good explenation for the signed threat letter, I never seen it in my life."
The audiance gasp as he mention the letter.
Anthel:"As you can see, our suspect has love for flair, Even at the cost of burrying his case".
"He didnt do it!" a sudden shout coming from the audiance. everyone become quiet.
Anthel:"Who said that?"
"I did", a young teen appears from between the audiance, "And I know he did not commit that murder because I was the one who did that". Tension fills the room.
Anthel:"And who are you exactly?"

The young teen: "Im Joqart Cordis, Im the son of Geofard.

[["Lets listen to what he has to say" -> boy explain]]

[["That's nonsense, take him away!, Anthel please continue" -> Anthel continue]]

---

**first evidance**

"Bring in the first evidance!" says Anthel, "Dear Councial. What im about to present, will leave no doubt in your mind that this man is a murderer". The audiance cheers as the evidance is being carried to stage.

Anthel:"Our first evidance is the weapon found in the scene. A horse leather strap that was used to choke the poor victim. Needless to say, none of the other workers who were in the castle that night had any accsess or the twisted mind to use such weapon."

The audiance gets heated as Anthel continues.

Anthel:"If that is not enough, we also found a letter, which if I may I shall read infront of all of you"

Anthel picks up the latter and starts reading

"Those who are worried for the enemies outside, shall not take their guard off from the enemies inside. Terrible events might happen to this who disregard the threat by whom who is closest to the plate. Sincerly, Mr Cordis".

"I wrote that!", A sudden shout makes the audiance go silence. A young teenager appears from between the crowd.

Anthel:"And who are you?"

The young teen: "Im Joqart Cordis, Im the son of Geofard".

[["Lets listen to what he has to say" -> boy explain]]

[["That's nonsense, take him away! Anthel please continue" -> Anthel continue]]

---

**evidance strong**

Anthel:"Dear councial, what im about to present you gives me no joy. Our dear Sir was threathend for his life. And the worse thing is that this terrible person had the audcity to sign his name on the threat".

Anthel starts reading:"Those who are worried about the enemies outside, shall not take their guard off from the enemies inside. Terrible events might happen to this who disregard the threat by whom who is close to the plate. Sincerly, Geofard Cordis".

Anthel:"Geofard Cordis, Are you familiar with this letter?"

Mr Cordis:"Yes I am but..."

Before he finishes his sentence Anthel breaks in

Anthel:"No But! this is a clear proff!"
Anthel:"Let me tell you exactly how things went through - You had full accsess to the Sir schedule, You know exactly the time he was alone, You know that no one would interupt his reading time. So you took one of your leather straps, went straight into the library and choked the Sir to death".
Mr Cordis:"I work in the stable all day, my hands are not clean. If I was the one who did it you would have found something more than a warning letter I sent to keep the Sir safe".
[["Safe from who?" -> listen to conspirecy]]
[["This is not a warning, this is a threat! get back to your seat" -> Anthel continue]]

---

**explenation**

Mr Cordis:"Thank you for allowing me to defense myself. I might be only a stable man but I do understand my place in this world. The audiance wants blood and justice, and so do I. The sir was more than just my boss, he was honest friend and admired leader. I dont know where the leather strap came from, I have never brought any of my tools to within the castle and certinly not for the purpose of murdering Sir Bertholm."
Few of the audiance response by shouting "Liar!", "Murderer!" and "Traitor!".
Anthel:"I cannot stand by hearing this lies, Mr cordis, if you are not the murderer than please explains the letter I have here"
Anthel starts reading:"Those who are worried about the enemies outside, shall not take their guard off from the enemies inside. Terrible events might happen to this who disregard the threat by whom who is close to the plate. Sincerly, Geofard Cordis".
Anthel:"Will you explain that to our councial?"
Mr Cordis:"This is out of line and you know that. this letter is a private letter I wrote to the sir and it has no place in this room."
Anthel:"This letter is one of the reasons we are in this room!"
Mr Cordis: "This was a warning from others, not a threat. I would never harm him".
Anthel:"Others?! you have some shame Mr Cordis".
[["Lets listen to what Mr Cordis has to say" -> listen to conspirecy]]
[["Mr.Cordis your attempt to throw the responsability is rediculs" -> Anthel continue]]

---

**boy explain**

Joqart:"Thank you councial for allowing me to talk. I would like to confess. I was the one who did that".
Anthel:"Thats absurd, A kid at your age has no ability to overcome a stong and experienced

man as Sir Bertholm".

Mr Cordis:" Joqart! stop with this!"

Joqart:"Father, it is ok. I am the one who did it and I should be the one punished for it. I did not mean to do it. My dad has been working every day for this man. He never complained, never resisted, always did what is best for the Bertholm family. I wanted to give him the rest he desrve by getting some money. The old sir was spouse to be in the librery, my dad was resting after his hard day of work and I know it was my chance. I took one of the lather straps to help in getting to the safe of the Bertholm family. I did not want to involve dad or mom until I have the money so I kept it a secret. Than suddenly, Sir Bertholm appears asking me questions. I know at this point that getting caught means death for me and my parents and that there is only one thing I could do. I straped the lether around his neck and waited for him to choke". he starts crying.

Anthel:"Please stop this nonsense, Sir Bertholm was found in the library and your story suggests that it happened in his safe. I ask the councial to reconsider their decisions, for the sake of the people and to allow me continue the trail as intended!".

[["We should have stopped your before you started, this is clearly a lie." -> witness]]

[["Joqart, can you counter this claim?" -> change to trail boy]]

---

**Anthel continue**

Anthel stands up and says "Thank you dear councial, for not allowing this to become a circus. I shall procced".

[[Call witness -> witness]]

---

**listen to conspirecy**

Cordis:"As a family driver, I get to share with the different family memebers momenets. Some of which ones Im not spouse to remember. For the last nine years I kept loyal to Sir bertholm and his family but as none of the family memebers is willing to support my claims I might as well expose it"

"Dont you dare!" Sir Bertholm wife shouts at him.

Anthel:"This man is clearly insane, we shall end his and our suffering here".

Cordis:"If you just give me a chance, I promise I will provide you with evidance of who is to be blamed"

Anthel:"I think you are mistaken, you are here to be trailed! you are in no position to prove

anything".
Cordis:"Please, all I need is one witness and I would help this councial get to justice"
[["A Witness by the person on trail? uneahard of!" -> witness]]
[["A witness? and who is the witness?" -> accept consipirecy]]

---

**change to trail boy**

Joqart seems nervous, he thinks for awhile, cough and says "At that moment, I understood what I did. I did not want my parents to find out so I connected a curtain rope to the leather strap and carried his body to the library".
The audiance seems to be disgust by the description and some of them are chanting to kill the boy.
"I wrote the letter as well, my father has nothing to do with it".
Anthel:"I find it hard to believe a person who did not intend to kill someone would write such a threat letter".
Geofard:"I wrote the letter before. I know that when the missing money would be revealed Sir Bertholm would look to find who did that. I wanted to protect me and my dad by warning from other people".

[["you are laying to protect your dad" -> confront lie]]
[["Do you understand the consequences of your claim?" -> Confirm theory]]

---

**witness**

Anthel:"I would like to call to the stand Miss Tros, the accountant of the Bertholm family".
Miss Tros approches the stand as the audiance cheer
Anthel:Miss Tros, would you describe the night of the murder from your eyes?"
Miss Tros:"As every day I finished my shift at the afternoon, I counted the tresure in the safe and went away. I was on my way out, looking for one of the stable workers to give me a ride. I live few miles away in the town. I know something was wrong as there was no one in the stable. I than notice all horses were in their place, resting, but one of the riding equpiment kits was missing. I decided to look around, maybe someone was still there and could help me get home. I than noticed behind the stable in a man. He seemed to be possed, walking around in circles and talking to himself.
Anthel:"Could you hear what he said?"
Miss Tros:"No Sir, just parts. He was talking about killing someone and something about money".

Anthel:"And can you identify that man?"

Miss Tros looks offended by the question. "This is not what we agreed on" she slips between her lips as Anthel looks confused

[["Is everything alright Miss Tros?" -> Push witness]]

[["Can you Identify the man?" -> let  witness talk]]

---

**Father Guilty**

Double-click this passage to edit it.

---

**Father Free**

Double-click this passage to edit it.

---

**Push witness**

Miss Tros looks nervous, she moves her eyes fast as she tries to avoid eye contact

Miss Tros:"No sir, Im sorry but I cant do it".

Anthel:"Miss Tros please consider your actions. Or you shall regret".

Miss Tros:"No! I will not lie infront of the commitie. Anthel has failed to build a case against Geofard. Knowing that the people will look for someone to blame, so he offerd me bribe. He said I would do it for justice but it does not feel justice to me. Anthel has paid me to lie infront of you dear councial, and I shall carry the sin of even let him speak about it".

Anthel:Liar! how dare you try to drag me down to this. This is outrages. Disrespecting myself and this court, you shall be punished for this crimes same as the real criminal in this hall, Geofard, will be punished! I demand the councial to stand behind me!".

[["We find Geofard Cordis guilty" -> Father Guilty]]

[["We find Geofard Cordis innocent" -> Anthel Guilty]]

---

**let  witness talk**

Miss Tros hasitates, looks at Anthel and than at the audiance.

Anthel:"Miss Tros, please identify the man for the councial".

Miss Tros:"It was Geofard Cordis".

The audiance cheers and chants "Murderer!", Anthel looks pleased

Anthel:"Thank you Miss Tros, My dear councial, I think it is very clear at this stage that

Geofard Cordis should be found guilty for the murder of Sir Bertholm".
Geofard:"Councial, I ask you, dont believe those lies. I was and am loyal to Sir Bertholm, I have no desire for his money, nor do I seek vengence. Im thankful for the life I was given and would like to spend the rest of my days with my family".
The emotional speech does not seem to convince the crowd who is almost celebrating at this stage. They start throwing things over towards Geofard and his family as they lose patient.

[["We find Geofard Cordis guilty" -> Father Guilty]]
[["We find Geofard Cordis innocent" -> Father Free]]

---

**Anthel Guilty**
Double-click this passage to edit it.

---

**accept consipirecy**
Mr Cordis:"I would like to call to Anthel to the stand"
Anthel:"Im sorry, what? Are we allowing it?"
Mr Cordis:"Anthel, you always said justice is highest priority, so it is we shall bring it. Mr Anthel, you know so much about me yet you forgot the most basic thing I do every day of my life. I escort the family memebers of the Bertholm family. But even more important, I write down every single ride. Can you confirm that you met with Ms Bertholm three times after the night of the death of Sir Bertholm?
Anthel:"Yes, I was updating her about the case".
Mr Cordis:"That was the discussed topic on the first two but not on the third. On the third there was money involved. You paid Ms Bertholm to keep her quite while you wil vicously discredit my self and my family. And why? Just so no one will remember you the first case you did not managed to solve. This man, has failed to find the murderer, so instead he paid off half of the people in here and lies infront of the council. He is not a people representator but a fraud."
[["Those accusations are serious, Anthel do you have any response?"  -> delay the trail]]
[["This is a mad house, we shall postpone any decision" -> Anthel Guilty]]

---

**delay the trail**
Anthel:"The councial has decided to postpone their decision in the case of the murder of Sir Bertholm".

The audiance is not happy with the decisions and things starts to get heaten up. Shouts are being thrown against the Cordis family and the councial. Anthel tries to calm things down but this is too late. Glasses are being thrown from the audiance.
Anthel:"Please calm down! wheather we agree we disagree the councial is to decide and we shall not disrespect the people who are working for the glory and safty of our nation!".
But the audiance doesnt listen and before he finishes a glass hits his head a knock him down. The councial is being escorted outside as the mob now breaks the place to the ground.

---

**confront lie**

Joqart:"I dont,please believe me! Please!!" He shouts as the audiance gets noisier.
Anthel:"Silence! You had your time. For over twenty years I was responsable to represent the people infront of this councial. I stood here infront of some of our toughest momenets as a nation. It was always the truth that saved us from our sins. It was always the truth that led us through the darkness and helped us heal as a nation".
Anthel:"I will not stand here listen to this boy as he massacres one of our sacred priniciples. This is a shameful momenet for all of us and I believe the kid should be punished immidietly".
Joqart:"Please, councial. the people are just after blood. My father was nothing but loyal. Take me, but let him be!"
[[Charge Joqart for murder -> Charge kid]]
[[Charge Joqart for lying -> kill both]]

---

**Charge kid**

Anthel:"The councial has decided to find Joqart Cordis guilty for the murder of Sir Bertholm"
Some of the audiance cheers and chant "Kill! Kill! Kill!" while the other is Booing, they were so certain Geofard did it and could not agree with the
Anthel:"As we all know, those who are found guilty within the councial will be hanged to death".
"I understand some of you are dissapointed", says Anthal to the audiance. "It is our role as the people to trust the guidance of the councial and accept their decisions, believing in a true higher justice".
A hangman approches and takes the kid away. He covers his face and lead him outside of the courtroom. "Joqart will be hanged in this court room at dawn. A feast will be served to those who come to see it and stand together with justice" Anthel says.

"I would like to thank our councial for their service" he closes the case and the audiance leave. The only one who stays are Mr and Ms Cordis who are hugging each other and crying.

---

**Spare kid life**

Anthel:"The councial has decided, the kid is found not guilty for the murder of Sir Bertholm".

The audiance is not happy with the decisions and things starts to get heaten up. Shouts are being thrown against the kid, the father and the councial. Anthel tries to calm things down but this is too late. Glasses are being thrown from the audiance.

Anthel:"Please calm down! wheather we agree we disagree the councial is to decide and we shall not disrespect the people who are working for the glory and safty of our nation!".

But the audiance doesnt listen and before he finishes a glass hits his head a knock him down. The councial is being escorted outside as the mob now breaks the place to the ground.

---

**Confirm theory**

Joqart looks around as everyone is staring at him, there is complete silence in the room.

Joqart:"I do. In if dying would be my punishment, I shall let it be. I would do it all to protect my family even at the cost of my life."

Joqart exchanges looks with his father, Geofard, as they both know what is about to come

Geofard:" Dear councial, please dont do it! he is a good boy, he does not desrve to die".

The audiance shouts "Good boy doesnt murder!" and "Kill them both!" as the tension fills the air.

Anthel:"The councial has decided to trail the boy Joqart Cordis for the Murder of Sir Bertholm. It is now for them to decide the punishement which is suitable for his actions. Death or life".

[[Kill him -> Charge kid]]

[[Spare his life -> Spare kid life]]

---

**kill both**

Anthel:"The councial has found Geofard Cordis guilty for the murder of Sir Bertholm and Joqart Cordis guilty for speaking lies in court. They both will be punished with death!"

The audiance cheers to the decision, they are hungry for blood and they get exactly what they wanted

Geofard and Joqart hug as they are being escorted outside. Geofard is trying to protect his

son from the angry mob but as they are being escorted drinks and glasses are being thrown at them.

Anthel:"I would like to thank our protectors of truth, the councial, who has shown today they are together with us in our way towards glory and justice! long live our nation!"

## C.3 Earl

**0The beginning**

The hangover was real.

Murray grabbed a cigarette and lit it. The room was already cloudy with smoke while he was wondering about what he saw in the paper.

“Earl has been murdered.” It said.

Murray was there when everything went down. He was not supposed to be there and certainly wasn’t supposed to see what the Boiler gang had been up to. Granted, he couldn’t remember much because of all the whiskey, but he was certain that no one had actually died.

“But if he’s not dead, then where is he? And why would the paper say that?” Murray thought to himself.

He’s not sure if the police can even help because of the absurd situation.

“I need to clear my head.”

Murray headed for the door and stepped outside. His front door opened straight out onto Main Street. Although the town was small, there was still a lot going on for an early Monday morning.

*1.0Left – 2.0Right*

***1.0Left***

Murray turns left and starts walking. What was he going to do about this mess? Although the weekend had been filled with liquor and beer, he was still certain about what had happened.

As he is walking down the street, he passes the police station and sees officers McLaughlin and Simmons having a heated discussion. As he comes closer, he can hear that they are panicked and trying to figure out how to solve the murder of Earl. They obviously have no clue what had happened.

*1.1Talk to the cops and find out what they know – 1.2walk past the cops*

***1.1Talk to the cops***

As Murray approaches the cops, he starts thinking about how the Boiler boys are rooted in the community and how they might have some cops on the payroll.

“What happened to Earl,” Murray asks, to see if the cops have any clue about what had happened to Earl.

“Sorry Murray, we know you two were close, but we can’t say anything right now,” Simmons replies.

The confusion on McLaughlin’s look confirms Murray’s suspicion about how clueless the police department is about the events on Saturday.

“Alright, have a nice day,” Murray says calmly, as he walks on by.

Murray wants to see if he can retrace some of his steps from Saturday and calls a cab to take him to the outskirts of town, to the industrial area.



***1.2Walk past the cops***

As Murray is about to approach the cops, he starts thinking about how the Boiler boys are rooted in the community and how they might have some cops on the payroll.

He really wants to know what the police have found, but when he sees the confusion on McLaughlin's face, he is certain that the police have nothing.

Murray keeps his head down on the busy street to get past the cops without them seeing him. The cops know that Murray and Earl were close and would probably be interested in talking to him.

Murray wants to see if he can retrace some of his steps from Saturday and calls a cab to take him to the outskirts of town, to the industrial area.

***2.0Right***

Murray turns left and starts walking. What was he going to do about this mess? Although the weekend had been filled with liquor and beer, he was still certain about what had happened.

Speaking of liquor - as he is walking up the street, he passes the local bar and sees that the lovable drunks are already hitting the bottles hard. Outside of the bar Hank and Carl are fondly reminiscing about Earl. They obviously have no clue what had happened.

*2.1Talk to the drunks and tell them what you know – 2.2walk past the drunks*

***2.1Talk to the drunks***

When Murray approaches the drunks, he can hear them talking about how Earl was always the first at the bar on Mondays.

"It feels odd that he is gone. His smiling face was always the first thing you saw when entering the bar" Hank said.

"Murray!" shouted Carl.

"What the hell happened to Earl?!" he added.

"I have no idea. The last time I saw him was on the outskirts of town at the small storage facility." Murray replied.

"Do you think he's really dead?" Hank asked.

"No way," Murray said quickly and walked away.

Murray wants to see if he can retrace some of his steps from Saturday and calls a cab to take him to the outskirts of town, to the industrial area.

***2.2Walk past the drunks***

When Murray is about to pass the drunks, he can hear them talking about how Earl was always the first at the bar on Mondays.

"It feels odd that he is gone. His smiling face was always the first thing you saw when entering the bar" he heard Hank say.

"Murray!" shouted Carl.

"What the hell happened to Earl?!" he added.

Murray ignored them and kept walking.

“MURRAY!!” Carl shouted again.

“Leave him be!” Hank insisted.

The drunks seemed clueless and frustrated about the entire situation.

Murray wants to see if he can retrace some of his steps from Saturday and calls a cab to take him to the outskirts of town, to the industrial area.

**3.0The outskirts:**

Arriving on the outskirts of town Murray heads over to the old storage facility where he and Earl had been drinking on Saturday. The memories started coming back to him and he remembered that the Boiler boys came by and wanted to join them for a quick drink before heading out to do something shady.

The gang didn’t tell Murray or Earl what exactly they were up to, but Murray remembers that they looked a bit nervous.

“You guys are obviously up to no good,” said Earl.

“You just keep your mouth shut, Earl. You know what happens if you don’t.” Jimmy Boiler said with a stern look on his face.

Murray can’t seem to remember much after that but decides to look around the compound a bit. There is another building on the compound but they usually never use it. However, behind the storage facility, they have set up quite an intriguing outdoor chill zone which the Boiler gang knows nothing about.

*3.1check behind the building or 3.2check the surrounding area*

***3.1Check behind the building***

As Murray gets behind the building he can see that some pants are lying on the ground. It looks like there is blood on them. The reason for the paper writing about Earl’s death was because of the shirt that was found this morning, also with some bloodstains on it.

“If they only knew where that blood came from” Murray whispered to himself as he is reminded of the coyote that the Boiler boys had caught.

He suddenly hears a car approaching the compound. Four people get out of the car and he can immediately recognize their voices. The Boiler boys.

The Boiler gang had no idea what was behind the storage facility so the likelihood that they would come back there was very small.

*3.1.1Eavesdrop on the boys or 3.1.2Talk to the Boiler boys*

***3.1.1Eavesdrop on the boys***

Murray tries to move a bit further up to along the sides of the storage facility and crouches behind some crates to get a better vantage point of the Boiler boys.

“Where the hell is Earl?” Tom Boiler asked.

“I don’t know but if he doesn’t show up, we could all be facing some serious time!” Jimmy Boiler replied.

“If we could just find Murray, then he could clear things up for us” he added.

Murray appears from behind the crates startling the Boiler boys. If the boys found him lurking they might not be as forgiving.

“What the hell Murray!?” Jimmy shouted.

“I found his pants behind the facility. Unfortunately, there is no sign of Earl or the coyote, so I’m not sure if I will be able to help you out of this one” Murray replied.

***3.1.2Approach the boys immediately***

Murray runs to the front of the facility to greet the boys.

“Murray? What were you doing back there?” Jimmy Boiler asked.

“I’m guessing the same as you guys are doing. Looking for Earl.” Murray replied quickly.

Murray could see a nervous look on the gang and quickly added “Where is the coyote?”

“If you tell anyone about the coyote episode, we will come for you!” Tom Boiler angrily replied

“Well, as long as Earl is in danger I cannot help you. And as you probably have figured out he is still missing” Murray added.

***3.2Check the other building***

As Murray approaches the other building he can see a cage partially hidden under a tarp.

“Oh god, the cage!” Murray thought to himself.

It was clearly empty which meant only one thing. The coyote that bit Jimmy Boiler was not there anymore, and Murray was still unsure whether or not the Boiler gang had killed it or if it had escaped.

All of a sudden a car drives up to the compound and the Boiler boys step out of the car and start approaching Murray.

*3.2.1passively talk to the boys or 3.2.2Aggressively talk to the boys*

***3.2.1Passive***

Murray patiently waits for the boys to start talking and sure enough, it starts.

“Murray, where the hell is Earl?” Jimmy asked.

“I’m not sure. I just got here.” Murray replied.

The boys look very concerned and freaked out. It is clear that they don’t have a clue what had happened to the coyote or what kind of damage it could have done.

“You didn’t tell anyone about what happened, right?” Jimmy asked with a slight shiver in his voice.

“Nope, came straight to the outskirts when I woke up,” he replied.

“I think Earl might actually be dead” Murray added with a soft voice.

***3.2.2Aggressive***

Murray walks hastily towards the boys.

“What the hell were you thinking?!” He shouted at the Boilers.

The Boiler boys kind of froze. They had never seen this side of Murray before.

“It was not supposed to go like this!” Jimmy replied.

“Oh really? A coyote is on the loose and I’m pretty sure that Earl is dead and it’s all because of you idiots!” Murray yelled.

“Calm down and keep your voice down!” Jimmy quickly said.

“We just need to find Earl. I’m sure he’s alive” Tom Boiler added.

“I’m not taking the fall for you guys anymore,” Murray said with an ominous tone in his voice.

***1End***

The Boiler boys are stunned by the news and are planning to make a break for the border to the south when all of a sudden sirens can be heard approaching fast.

“Murray you better not talk to the cops!” Jimmy shouted.

“What I care about right now is finding Earl!” Murray growled back at Jimmy.

The cops pull up and McLaughlin and Simmons step out of the car.

“Well boys, this is it. You are under arrest for releasing a freaking coyote upon the town and endangering the life of Earl” Simmons said.

“Endangering? So he’s alive?” Murray asked.

“Yeah, he stumbled into town as naked as the day he was born blubbering about some dog that had bitten Jimmy and him” McLaughlin added.

“He eventually sobered up and told us the details of the event” Simmons said.

“Thank god,” Murray thought to himself

The Boiler boys only got a fine since the coyote was very small and harmless, and since Earl didn’t want to press charges all was soon forgotten.

***2End***

The Boiler boys are stunned by the news and are planning to make a break for the border to the south when a few loud voices can be heard in the distance and before they know it, they can see Hank and Carl coming through the woods with a third guy naked and covered in blood. It was Earl, drunk as ever.

After the drunks had the encounter with Murray earlier during the day, they got suspicious about the whole thing. They then went to the underpass, which was a hidden secret for the liquor lovers in the town, and there they saw a naked Earl sleeping.

Murray starts laughing and asks Earl what had happened.

“There were some complications” he answered before passing out.

The Boiler gang did not look happy, yet they were relieved to not have to escape from the town. They were probably done doing business with drunken idiots from this point on, though.