Emotioneering

Or how to create emotions in games

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Abstract

There's an old saying in biology: "Ontogeny Recapitulates Phylogeny." This is more of a myth, but what it means is that the developing embryo of an organism roughly replays its evolutionary history. The human embryo, for instance, goes through successive stages that closely resemble fish, reptiles, small mammals, then man (Freeman, D. E., 2003).

Games are mirroring the emotional development of humanity. The earliest games appealed primarily to more primitive instincts. These instincts originate in the central portion of the brain, the so-called "reptilian" brain stem. Over time, the emotional palette of games has broadened beyond instinctive issues of survival and aggression to include the more subtle mechanisms of empathy, nurturing, and creativity. It is a long way to go, however, to reach the outer cerebral cortex. Compared to other forms of media (books, films, music), games are still stuck somewhere around the "small rodent" phase (Freeman, D. E., 2003).

That leads us to the research problem of a current assignment. How to expand the emotional palette of games to create a deep emotional connection between the player and the game which improves the game experience? This research aims to investigate effective engagement strategies to increase emotion connection between players (20-25 years old) and the game. It identifies the most significant factors in creating emotions through surveys and interviews, and conduct experiments to measure the effectiveness of different strategies. To answer the main question of this research in the scope of current assignment an Interactive Visual Novel was created. Then based on the literature study the specific techniques of "electioneering" were chosen to implement them in the Interactive Visual Novel. Finally, those techniques were tested on the group of testers. Based on the feedback which was gathered during the interviews with each member of the testers group the answer for the main research question was found. The result of this research made clear the fact that it is impossible to create precise emotion in different people through the Interactive Visual Novel because of the nature of feelings. It is simply impossible to cause two the same, predesigned emotions in the different people. But using different levels of perception and all the elements of the Interactive Visual Novel it is possible to cause a similar general impression from the game. It is considered as a successful result because this overall impression is also emotion. And using different writing techniques, visual and audio components, game design – it is possible to cause a similar impression for each member of the testers group.

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1. Introduction

Emotion has been investigated from various perspectives and across several domains within human-computer interaction (HCI) including intelligent tutoring systems, interactive web applications, social media, and human-robot interaction. One of the most promising and, nevertheless, challenging applications of affective computing (AC) research is within computer games. This research focuses on the study of emotion in the computer games domain, reviews seminal work at the crossroads of game technology, game design and affective computing and details the key phases for efficient affect-based interaction in games.

The focus of the current research is "emotioneering", the process of causing emotions using different screenwriter techniques, visual and audio elements, game design. Games which cause a strong emotional connection between the player and the game are considered as emotional deep (*Freeman, D. E., 2003)*. Emotional deep games are more competitive products on the game dev market in 2020 (Semenov, A., 2020).

People choose to play games as a "voluntary attempt to overcome unnecessary obstacles" (Suits, 2005) as play is amongst the main motivators for learning, mental and physical development, and an essential element of evolution (Deci & Ryan, 2000). Arguably, players seek games for enjoyment and for emotional experiences and pursue in-game challenges that – when achieved – do not necessarily result in immediate, tangible, rewards. What is fascinating is that players willingly engage in an experience that is likely to even involve negative emotions such as frustration and fear (Salen & Zimmerman, 2003). So, while games can be utilized as an arena for eliciting, evaluating, expressing and even synthesizing emotions, we argue that one of the primary aims of the study of emotion in games is the understanding of players' emotions and its link with their experience. Indeed, by the nature of what constitutes a game, one cannot dissociate games from emotions. Emotions are not only the trigger for positive game experiences but also one of the main targets for game design. For this purpose, this chapter focuses on emotions that can be detected, modelled from, and expressed in games with human players. Computer games are dynamic media which embed rich forms of user interactivity. Collectively, such HCI attributes allow for high levels of player incorporation (Calleja, 2011) and yield dynamic and complex emotion manifestations. The potential that games have to influence players is mainly due to their ability to place the player in a continuous mode of interaction (loop) with the game which develops complex cognitive, affective and behavioral responses. Undoubtedly, the study of emotion in games not only advances our knowledge about human emotions but also contributes to the design of better human-computer interaction. Moreover, affect-based game interaction can drive players in particular emotional patterns which, in turn, can enhance game-based training and educational activities (McQuiggan, Robison, & Lester, 2010), (McQuiggan & Lester, 2009), (Yannakakis G. N., et al., 2010). Arguably, as we will see in this chapter, games offer the best and most meaningful domain of affective interaction for the realization of the affective loop which defines a system that is able to successfully elicit, detect and respond to the emotions of its user (Sundstrom, 2005). Every game features a user (i.e. player) – or a number of users – which control an avatar or a group of miniature entities in a virtual/simulated environment (Calleja, 2011). The interaction between the player and the game context (i.e. the game state containing all pieces of game content) is of key importance for affective computing (AC) research and modern game development as it breeds emotional stimuli and yields emotional manifestations to the player – those manifestations, however, cannot trivially be captured by standard methods in AC research. Given the particularities of emotion

research in games, we both discuss what games can offer to emotion research but also what emotion research can bring to game design and game technology research.

Nowadays game dev market needs games which appeal to the players' emotions. It creates a connection with the player and improves the game experience. It leads to increasing of players loyalty. The game industry in the Netherlands is well developed but this country is not among the first ranked countries in this sphere (PwC, 2016). The game industry throughout the World is one of the most promising for creative media market specialists (A closer look at the Dutch games industry, 2017). Looking at the most perspective and popular genre of video games, Storytelling (Interactive Visual Novel) is in top 15 the most popular genre of games which makes it the perfect choice for the current assignment (Figure 1). This genre is considered as the most suitable to design emotions for the gamers (Semenov, A., 2020).
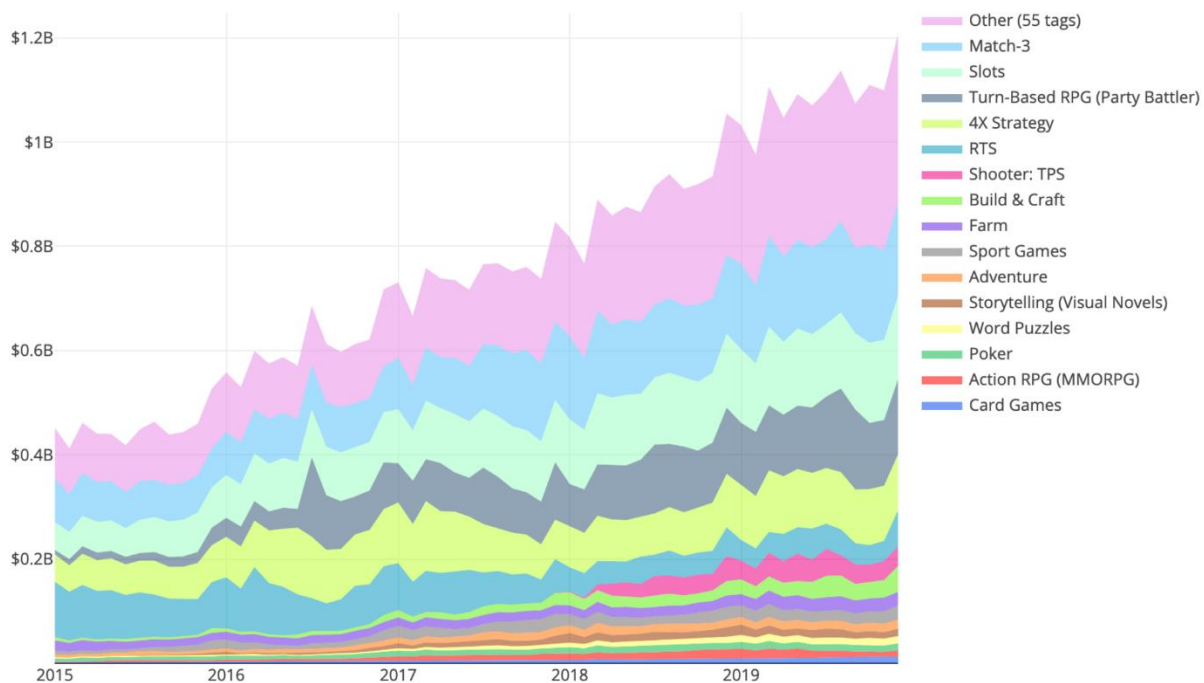

Figure 1, (Semenov, A., 2020).

The main question for the research will focus on the creation of the specific emotions of a player on the story-based video game.

1.1 Reason for the assignment

Games can offer contextual building blocks (i.e. game content) that can elicit a broad spectrum of emotional responses and emotional patterns. Games – as a medium – have unique properties that make this possible as they incorporate rich forms of interaction with the player within a virtual world, provide direct placement of a player onto an avatar and a player detachment from reality, and finally allow for direct control of the context presented to the player. For these unique features, games can be used (and have been used quite extensively) by emotion researchers as handy and off-the-shelf emotion elicitors. More importantly, games can offer the most meaningful realization of the affective loop (Sundstrom, 2005). As games are by definition both entertaining (whether used for pure satisfaction, training or education) and interactive activities that are played within fantasy worlds, any limitations of affective interaction (such as justifiability of affective-based game decisions) are absorbed. Games are designed to offer effective experiences which are influenced by player feedback and players are willing to go through e.g. frustrating, anxious, and fearful episodes of play to experience involvement and powerful emotional gaming. To that end, a user under gaming conditions – more than any other form of HCI – is generally open to effectively based alterations of the interaction and influences of his/her emotional state.

"Emotioneering" in games is beneficial for the design of better games for various reasons. First, emotions can drive the design process of most game genres. Game designers usually explore and test a palette of mechanics and game dynamics that yield emotional states and emotional state sequences they desire to put the player through. Emotional states such as engagement, fear and stress, frustration, and anticipation but also cognitive states such as challenge define critical aspects of the design of player experience, which is dependent on the genre, the narrative and the objectives of the game. Second, the holy grail of game design, that is player experience, can be improved and tailored to each player but also augmented via richer and more affective-based interaction. As we will see in the following section and in the discussion of this chapter, emotion-driven game adaptation primarily targets the personalization of the playing experience. Third, as a direct consequence of better and faster design, the whole game development process is boosted and improved. Fourth, games that incorporate rich emotion-based interaction which is further tailored to the needs of the player can enhance learning in training or educational (game-based learning) settings as indicated by numerous studies in the literature (McQuiggan & Lester, 2009), (McQuiggan, Robison, & Lester, 2010), (Yannakakis G. N., et al., 2010). Research on emotion in games is nowadays becoming increasingly important in the research and development departments of top-class (i.e. AAA) and indie game developers (Yannakakis G. N., 2012). More specifically, there exist several commercial-standard games that incorporate emotion as a core (or peripheral) part of gameplay including the arousal-driven appearance of non-player characters (NPCs) in Left 4 Dead 2 (Valve Corporation, 2009), the fearful combat skills of the opponent NPCs in F.E.A.R. (Monolith, 2005), the avatars' emotion expression in the Sims series (Maxis, 2000) and Black and White (Lionhead Studios, 2001), the emotional playthrough for characters in Psychonauts (Double Fine Productions, 2005), the emotional responses of game characters in Prom Week (McCoy, et al., 2010) and Façade (Mateas & Stern, 2003), the emotion-driven narrative building system in Storybricks (Namaste Entertainment, 2012), the personality-based adaptation in Silent Hill: Shattered Memories (Konami, 2010), the affect-based cinematographic representation of multiple cameras in Heavy

Rain (Quantic Dream, 2010), the aesthetically pleasing locations of World of Warcraft (Blizzard Entertainment, 2004) and affect centered game narratives such as the one of Final Fantasy VII (Square Product, 1997). Ultimately, all above-mentioned intelligible benefits from the coupling of games and emotion research can be revealed as long as phases of the affective loop (or the affective loop as a whole) are successfully realized within a game.

Storytelling (Visual Novels) takes an important place in the mobile game market and this genre of mobile games tends to grow in 2020 (Semenov, A., 2020). Visual novels are an independent genre of video games. The final product for this assignment will be provided in June 2020, witch suits market predictions. The final product by itself will use "emotioneering" techniques to research how they can be implemented in the interactive visual novel. This genre was chosen as the most story-based genre in the world of computer games (Semenov, A., 2020).

This graduation project is an interactive visual novel with the name "Another World". Essentially it is a digitally written story, which will be implemented as a virtual book with illustrations and animations on the pages. Those elements support the story and help players to imagine the story. The goal is to develop a story where the player becomes not only an observer, the player will become a writer, in some sense, by playing some of the chapters of the story for the main character and changing the story depends on player`s actions in the game. The main research will be focused on searching, inventing and testing techniques of creating a breadth and depth of emotion in a game, and induce a player to identify with the role he or she is playing. These techniques allow player fills in the way it was designed by the game author.

1.2 Objectives of the client

The game dev studio "Umi Studio" is focusing on creating interactive visual experience (for exp. Mobile applications). The studio specializes on the player`s emotions. Their aim is to understand how to create an experience which will develop a strong emotional connection between the player and their products. The main purpose of this is increasing the general revenue of the studio. The products which create a deep emotional connection with their clients are more competitive on the game dev market (*Freeman, D. E., 2003*).

As the first step in this research studio wants to create a product, an experience for the player which will cause a specific, expected from ahead emotions. After analyzing the market, the decision to create Interactive Visual Novel was made. This genre of games is the most suitable and perspective in the mobile game dev market in 2020 (Semenov, A., 2020).

1.2.1 Question of the client

Taking into account that the development team of "Umi Studio" is specialized on creating Interactive Visual Novel and this genre of games matches to the current assignment the question of the client can be formulated as follow:

How do you design an Interactive Visual Novel using Unity Real-Time Development Platform with elements of storytelling and game design to cause a specific emotion experience for the player?

To answer the client`s question the main product is a concept of Interactive Visual Novel (IVN) with a focus on emotion development. The IVN will consist out of:

- A research report, a visual and virtual design model released as a digital novel. The goal of this product is to find and test techniques which allow the players to feel pre-designed emotions which leads to better game experience. These techniques support a stimulation for the players to feel an emotional connection with the game, provides more differentiation and rich user experience for the player. The main research will focus on:
- Find techniques which could create predesigned emotions.
- Test if the player feels the predesigned emotions.
- Which predesigned emotions lead to a better game experience.
- How much these predesigned emotions lead to a better game experience.
- If these techniques support a stimulation for the players to feel an emotional connection with the game.

If an emotional connection provides more differentiation and rich user experience for the player.

1.2.3 Concerned parties

The concerned parties are:
- Players (20-25 years old) for whom the noun 'story' is crucial in the game and who likes fantasy as a genre in the games.
- Psychiatrists as in the current graduation project will be researched the methods of creating emotions through the video games. So, it can be a ground for the research of new ways of creating and controlling emotions, which can be used in the therapy.
- Game publishers as it is a fact, that games which cause emotions in their player are more beneficial for publishers and investors (*Freeman, D. E., 2003*).

1.2.4 Purpose of the result

The IVN will be the base to test the game techniques implemented in the game to develop the expected emotions from the players. The aim is to find out if knowledge about these techniques can provide the opportunity to create games with deep emotional levels which will lead to better game experiences for the users.

- The following limitations apply to this graduation assignment:
- Time limitation in the graduation project boundaries which is 5 months.
- Knowledge and skills in the next subjects: Storytelling, 2D (2D+) art, Game Design, Sound Design, Animation.
- Capacity limitation. In this project is only one person is involved.

1.3 Preliminary problem definition

As pre-humans (about 6,000 years ago) began to live in groups, their survival was determined more and more by their ability to understand and predict the other members of their groups (which they became increasingly dependent on). It became as important for the caveman to predict what his tribe members were thinking and likely to do as it was for him to understand the rest of the world around him. This would seem to be the evolutionary basis for empathy, the ability humans have to put themselves in someone else's shoes; to feel what they feel; to relive their experiences from their point of view. In essence, people can simulate the thought and experiences of other people in imagination and insert themselves into this model *(Freeman, D. E., 2003).* This information helps to understand the problem to solve in the current assignment. How to create emotions in people based on the emotions author of IVN wanted to share through the IVN "Another World"?

Story (in its many forms) seems to be important to people because this empathic ability to exercise so seamlessly is also the psychological engine educational technology of sorts that people have developed over millennia that allows sharing experiences with one another across great distances of time and space. It can be learnt to avoid failures or achieve successes from people who are long dead across the world or who never existed at all. It's a technology that's entirely dependent on people`s ability to empathize with other beings *(Freeman, D. E., 2003).* Games, on the other hand, are most directly dependent on something else entirely: the concept of agency. Agency is the ability to alter the world around, or situation in it. People are able to act, and that action has effects. This is probably the first thing people learn as babies. This is the crucial distinction between interactive and linear entertainment *(Freeman, D. E., 2003).* Interactive works demand that the player has the ability to act; to affect the situation; to make a difference at every possible turn. When a player loses control of the joystick or mouse, it's similar to watching a movie when the screen goes blank. The primary feedback loop is just closed *(Freeman, D. E., 2003).*

So, what place does empathy have in interactive works, where the player is driving the experience rather than just going along for the ride? The answer is that people really need both, perhaps in equal measures. People need an agency to engage the volition and creativity of the player; People need empathy to engage the outer region of our brain that wants to simulate and predict complex, emotional beings around us *(Freeman, D. E., 2003).*

The main reason games have been so emotionally shallow up to this point is that there hasn't really been anything in them worth empathizing with. People find it rather difficult to empathize with one-dimensional game characters that only have the ability to regurgitate canned speech and perform predictable actions. People know that they have no emotional depth, so People basically disengage that circuit in our brain and treat them more like appliances than as people *(Freeman, D. E., 2003).*

In films, Emotion is created as a series of scripted circumstances that occur to the characters, in exact order, with exact timing.

Games, on the other hand, may have some linear elements, but these are often combined with any number of nonlinear and what is called "multi-linear" (multi-path) elements and structures. In a game, it's not unusual to have some events that unfold in an exact sequence, while others might be encountered by the player in any number of possible sequences. Other environments or situations might be bypassed by a player altogether. Still, other events and tasks are often offered as optional, yet useful, diversions.

And even when it comes to linear elements, the timing between the different events (in other words, precisely when they're encountered) will differ from player to player. A game designer can't just suggest emotion and assume the player will feel it (Deci & Ryan, 2000). The player can`t be told he/she is supposed to experience a state of being, play a role and assume that the player will experience things the way the designer hopes he/she will. For instance, just because a player is being told whom he/she is supposed to be, doesn't mean that the player buys into the role. The player might be told that he is playing a jet pilot with a shameful past. But more likely than not, the player will feel neither like a jet pilot nor ashamed. Instead, the player is likely to feel just like himself.

1.4 Problem definition

The main topic of this graduation assignment became implementing the variety of game design techniques to add emotional depth to the interactive visual novel. Or in other words execute the procedure called "Emotioneering". The main purpose of this is improving the gaming experience for the players. This topic was the main problem defined in the previous problem definition. It is still a relevant problem; So, the full problem definition might be stated as followed: Which game-design techniques can cause emotions to the players? By emotions meaning a connection between the players (targeted at the 20-25-age market (Chapter 1.7)) of the interactive visual novel "Another World" and main character. And finally, capability for the player to recognize their actions and inner thoughts through the game's metaphors.

1.5 Formulation of the problem

The goal of "Emotioneering" is to move the player through an interlocking sequence of emotional experiences (McQuiggan, Robison, & Lester, 2010).

Once upon a time, the technological evolution between games was so dramatic that games could trump one another in sales just by having a better look or slightly more fun gameplay. Today lots of games look great, and consumers have no shortage of choices for truly fun games. Games that involve a player emotionally will gain a competitive advantage.

When emotion is added to a game, then the game will appeal to wider demographics. The game gets better press and is more likely to generate allegiance to the brand. The development team will have an increased passion for the project. For they know they're creating not just superficial entertainment, but something that has depth, meaning, and impact.

All this translates to increased profits and much richer game experience *(Freeman, D. E., 2003)*.

1.6 Main and sub questions

The main question could be extended by asking the following questions: what makes players feel when they are playing video games. What they want to feel when they are playing a specific video game, in the current case IVN "Another World". And how to cause the specific emotion by the player through the video game. Based on this it is possible to formulate both the main and sub-questions in the chapters 1.6.1 and 1.6.2 respectively.

1.6.1 Main question

Which game-design techniques can cause specific emotions, such as the emotional connection between players and the main character in the interactive visual novel "Another World"?

1.6.2 Sub questions

- What "emotioneering" techniques can be implemented in the graduation project?

- How to integrate "emotioneering" techniques to the interactive visual novel "Another World"?

- Do "emotioneering" techniques work in a predesigned way in the interactive visual novel "Another World" and why?

1.7 The approach of the graduation assignment

Overall approach to solve the main question can be described as follow. The main goal was creating an experience for the player. Such experience as provided the predesigned feeling, impression to the player. If an attempt to create such experience would have been successful - just created IVN became an answer for the main question.

The a-z process can be described as follow: Firstly, there was a preparatory phase. As follows from the main question the primary goal is to create an emotion for the player. This emotion, this feeling, this impression was formulated in the head of the author and roughly expressed on the paper (mostly on the text and/or using reference pictures and sounds) (Appendix 2). Then there was an attempt to express, to sculpt this feeling in the way it can be understood by other people (in the scope of current assignment the target group (20-25 years old)). It was an attempt to communicate with the player in a specific way. Example (Appendix 3). The expression of the current feeling in its final step had the form of Interactive Visual Novel "Another World", including all the components.

By components, it is meant the next list, of IVN`s components: Text (story), illustrations and visual effects, sound design, and finally game design (Chapter 1.3). All these components served as the channels of transferring the desired emotion from the IVN to the player. It worked as simple communication.

Player via interacting with the IVN triggered the programmed sequences of all the components of the IVN. They were working altogether. Step by step IVN was getting through to the player`s mind. It was expected that all incoming information to the player would have been associated and encrypted as a player`s memory and similar experience to cause desired emotion in the player. To test it and gathered crucial feedback the testers group of 10 people was created.

The age of the testers group was 20-25 years old. 5 man. 5 women. There were a few reasons for such testers group as it was chosen for the current assignment. The first reason is - testers group matched the client`s target group (Chapter 1.2). The second reason was a need to test the prototype of the final product on both sexes. The third reason was the assumption. This assumption was that communication between same age people is easier than communication between people with at least 30 years age difference. Between the same age people, information can be conveyed in a shorter period with a greater variety of methods to transfer information.

So, the process of transferring information from IVN to the player, and interaction by the player with the IVN can be called communication. Communication is the act of conveying meanings from one entity or group to another using mutually understood signs, symbols, and semiotic rules. *(Harper, Douglas, 2013-06-23.)*. The third reason for choosing current testers group was the IVN author`s age which is 22.

Member of testers group, each of them, played the IVN together with the author. There were two people in the room, the author, and the player. All the tests were in the format of the free, unstructured interview, without strict limitation in time duration. During the first phase of the experiment, the author had the role of observer. After the short introduction, the author was just letting players do whatever they wanted with the IVN prototype. After the player finished there

was a discussion between the player and the author, where the player was trying to express what he/she felt experiencing the IVN. After this author explained what he wanted to tell creating this experience for the player. The final step of the interview was the player`s answer, he/she confirmed or not that he/she understood which impression was predesigned, and he/she felt this. All interviews were recorded to analyze nonverbal player`s reaction. The interviews were transcribed, and thematic analysis was conducted. Each theme was examined to gain an understanding of participants' perceptions and motivations. The conversations during these interviews were quite private, all members asked to keep videos for the research purpose only.

Every circle of development the IVN a lot of improvements were implemented based on the feedback from the testers group. The most amount of changes was implemented in the story component to improve its` comprehensibility. Small details such as when certain text appeared on the screen and dialogues were changed and developed using "emotioneering" techniques from the current research (Chapter 2). The first, and last version of the script which was made for the IVN. (Appendix 2, Appendix 3). Also, there were a few changes in digitally drawn pictures using Photoshop (Chapter 1.7.3). Examples before and after (Appendix 5, Appendix 5).

At the last phase of developing the final product all the members of the testers group felt predesigned emotion and had a similar impression. And this impression could be described as an emotional connection between the player and main character. Moreover, in the last experiment session, it turned out that people in the testers group had not only similar impression with the author, but also between each other. It was important to know because all the interviews were one to one.

1.7.1 Which kinds of "emotioneering" techniques can be implemented in the scope of the graduation project?

This question requires the defining types of emotioneering techniques presented in the book "Creating Emotion in Games: The Craft and Art of Emotioneering *(Freeman, D. E., 2003)*. This book was chosen as one of the best researches in the game emotioneering (Semenov, A. 2020). In this book presented more than 300 "emotioneering" techniques. Afterwards, some of those techniques were analyzed and selected for future testing. The last step was implementing these techniques to the interactive visual novel "Another World".

1.7.2 How to integrate "emotioneering" techniques to the interactive visual novel "Another World"?

Using the variety of the critical ways of creating emotion in games such as storytelling, music, art, animation, and level design the number of "emotioneering" techniques were implemented to the IVN "Another World". The next step was testing those techniques on the testers group of people. After a few iterations of testing the answer to the question, which of them do add emotional depths to the novel and what is the most optimal way to implement them in the scope of the current novel, was clear. This answer was based on the data collected from the testing and feedback of the testers group.

Afterwards, it is a technical question. It simply requires the use of the tools (Chapter 1.7.3).

For this graduation assignment, the student will work on developing a game, interactive visual novel. This game is based on technical subjects. The game subjects are Unity3D, C#, Zbrush, Adobe Photoshop, Adobe Illustrator.

Unity3D is a powerful cross-platform 3D engine and a user-friendly development environment. Easy enough for the beginner and powerful enough for the expert; Unity should interest anybody who wants to easily create 3D games and applications for mobile, desktop, the web, and consoles.

Unity gives users the ability to create games and experiences in both 2D and 3D, and the engine offers a primary scripting API in C#, for both the Unity editor in the form of plugins and games themselves, as well as drag and drop functionality.

ZBrush is a digital sculpting tool that combines 3D/2.5D modelling, texturing and painting. It uses a proprietary "pixel" technology which stores lighting, colour, material, orientation, and depth information for the points making up all objects on the screen.

Photoshop is Adobe's photo editing, image creation and graphic design software. The software provides many image editing features for raster (pixel-based) images as well as vector graphics. Photoshop is used by photographers, graphic designers, video game artists, advertising and meme designers.

Illustrator is a vector graphics editing program published by Adobe. It is useful for designing logos, clip art, blueprints, and other precise, resolution-independent illustrations.

To achieve the desired result of the product, described in chapter 3.2 Products, the following research will contain exercises to achieve desired results and gain knowledge about the possibilities of tooling. The online courses "Game Design and Theory" (Will Wright, 2019), "Intro in Zbrush" (XYZ school, 2019) will provide the exercises needed in order to achieve the products required.

2. Theory

The key concept in this research is "Emotioneering". "Emotioneering" techniques – screenwriters' techniques to develop, improve and create the emotional depth in the story in order to create an emotional connection with the player and main character *(Freeman, D. E., 2003)*.

The goal of this research is to check the next assumption: It is possible to cause a specific emotion in the player thought the player`s interaction with the IVN. The basic idea of this assumption is: For the person X to cause a specific emotion for the person Y, person X should feel this emotion and express it in the way person Y is able to encode them and have similar emotion. In the scope of the current assignment person X, it is the student who is making this graduation project. Person Y is a testers group for this project. The way of the expression the emotion is transferring information through the elements of IVN to the player.

The whole concept was to build IVN using next elements together: story (storytelling), visual components (illustrations, particle systems, shaders, and textures) and audio component (sound design), game design. Those components were chosen based on the client`s question (Chapter 1.2.1) and the list of elements which can be used in the process of "emotioneering" IVN *(Freeman, D. E., 2003)*.

The first element to develop was a story. Because all other elements relayed on this story. As a core of the story author put the feeling which was desired to be transferred to the player. To roughly express this feeling the first scratch of the script for the IVN was written by the author. Then some of the techniques of "emotioneering" *(Freeman, D. E., 2003)* were applied to this script, and the script was updated and rewritten. Then after few iterations of testing and improvements *(Chapter 4.2, 1.7)*, it was expected based on the testers group feedback, that each member of the group would felt the similar feeling as it was pre-designed by the author of IVN. To achieve this goal the best practices of storytelling were used *(Caldwell, C. 2017)*.

The next element was the illustrations *(Appendix 5)*. They were created based on the final version of the story and they not only supported the general mood and impression created by the story. But also evaluated it and created the visual association with this impression. The evolution of final illustrations from scratch *(Appendix 5)*.

After the sound design was done the final element to develop was game design. The goal was to create such interactive experience which would include all previously developed components and supported and evaluated the story and the experience itself. The first concept was created with the usage of techniques and principles of game design *(Schell, J, 2008)*. The detection and modelling of emotion in games is, primarily, the study and use of artificial and computational intelligence (AI and CI) techniques for the construction of computational models of the emotions of players. Emotion detection and emotion modelling bring an AI umbrella to the multidisciplinary intersection of the fields of the user (player) modelling, affective computing, experimental psychology and human-computer interaction. Emotion detection in games is an area that has provided the most research studies thus far, leaving, however, large unexplored spaces. One can detect the emotion of either a human player or a non-player game character. While the challenges faced in the latter case are substantial, the issues raised from emotion

detection on human players define a far more complex and important problem for the realization of the affective loop in games. By clustering the available approaches for emotion modelling we are faced with either model-based or model-free approaches (Yannakakis & Togelius, 2011) as well as potential hybrids between them. The space between a completely model-based and a completely model-free approach can be viewed as a continuum along which any emotion modelling approach might be placed. While a completely model-based approach relies solely on a theoretical framework that maps player's responses to affect, a completely model-free approach assumes there is an unknown function between modalities of user input and affect that a machine learner (or a statistical model) may discover, but does not assume anything about the structure of this function. Relative to these extremes, all approaches may be viewed as hybrids between the two ends of the spectrum, containing elements of both approaches. The rest of this section presents the key elements of both model-based and model-free approaches and discusses the core components of a derived computational model (i.e. model input, model output and common modelling tools).

According to a model-based (Yannakakis & Togelius, 2011) approach, a model of emotion is usually built on a theoretical framework or is entirely based on a theory of emotion. Such a topdown approach to emotion detection and modelling refers to emotional models derived from emotion theories (e.g. cognitive appraisal theory (Frijda, 1986)) such as the emotional dimensions of arousal and valence (Feldman, 1995) and Russell's circumplex model of affect (Russell, 1980), in which emotional manifestations are mapped directly to specific emotional states — e.g. the increased heart rate of a player corresponds to high arousal and therefore to player excitement. Within game studies, examples include the theoretical model of incorporation (Calleja, 2011) proposed as an approach to capture player immersion in games composed of six types of player involvement: affective, kinesthetic, spatial, shared, ludic, and narrative. Seminal work in psychology-based approaches to player emotion includes the concepts of challenge, curiosity and fantasy of Malone (1980) which collectively contribute to high entertainment, and the theory of flow (Csikszentmihalyi, 1990) incorporated in games (Sweetser & Wyeth, 2005). Within the game design, the theory of 'fun' by Koster (2005), the notion of the 'magic circle' in games (Salen & Zimmerman, 2003) and the four "fun" factor model of Lazzaro (2004) constitute popular views that place players' emotions at the centre of player's experience. Model-based approaches can also be inspired by a general theoretical framework of behavioral analysis and/or cognitive modellings such as usability theory (Isbister & Schaffer, 2008), the belief-desire intention (BDI) model, the cognitive theory by Ortony, Clore, & Collins (1988), Skinner's model (1938), and Scherer's theory (1993). Even though the literature of theories on emotion is rich, one needs to be cautious with the application of such theories to games (and game players) as their majority have not been derived from or tested on ergodic (i.e. interactive) media such as games. Calleja (2011), for instance, reflects on the inappropriateness of the concepts of 'flow', 'fun' and 'magic circle' (among others) for games. Finally, while ad-hoc designed emotion models can be an extremely powerful and expressive way of representing emotions, these models need to be cross-validated empirically, which is a rare practice in AC research.

Model-free approaches refer to the construction of an unknown mapping (model) between (player) input and emotional state representation. Player data and annotated affective states are collected and used to derive the model. Classification, regression and preference

learning techniques adopted from machine learning or statistical approaches are commonly used for the construction of the computational model. This approach is very common, for instance, for facial expression and head pose recognition since subjects are asked to annotate facial (or head pose) images of users with particular affective states (see (Shaker, Asteriadis, Yannakakis, & Karpouzis, 2011) among others) in a crowdsourcing fashion. A bottom-up approach is also common in studies of psychophysiology in games (see (Tognetti, Garbarino, Bonarini, & Mateucci, 2010), (Yannakakis, Martinez, & Jhala, 2010) among others). The model-free approach to emotion modelling offers the tremendous advantages of data-driven (and even large-scale crowdsourced) model building but it also limits itself to the quantity and quality of the data gathered.

The model's input can be of three main types: a) anything a human player (or an agent) is doing in a game environment gathered from gameplay data (i.e. behavioral data); b) objective data collected as bodily responses to game stimuli such as physiology and body movements; and c) the game context which comprises of any player-agent interactions but also any type of game content viewed, played through, and/or created. The three input types are detailed in the remaining of this section. Gameplay (behavioral) input: The main assumption behind the use of behavioral (gameplay-based) player input is that player actions and real-time preferences are linked to player experience as games may affect the player's cognitive processing patterns and cognitive focus. On the same basis, cognitive processes may influence emotions; one may infer the player's emotional state by analyzing patterns of the interaction and associating user emotions with context variables (Gratch & Marsella, 2005), (Conati, 2002). Any element derived from the interaction between the player and the game forms the basis for gameplay-based emotion detection and modelling. This includes detailed attributes from the player's behavior (i.e. game metrics) derived from responses to system elements (i.e. non-player characters, game levels or embodied conversational agents). Game metrics are statistical Spatio-temporal features of game interaction (Drachen, Thurau, Togelius, Yannakakis, & Bauckhage, 2013). Such data is usually mapped to levels of cognitive states such as attention, challenge and engagement (Conati, 2002), (Shaker, Asteriadis, Yannakakis, & Karpouzis, 2011). In addition, both general measures (such as performance and time spent on a task) and game-specific measures (such as the weapons selected in a shooter game) are relevant. Objective input: Games can elicit player emotional responses which, in turn, may affect changes in the player's physiology, reflect on the player's facial expression, posture and speech, and alter the player's attention and focus level. Monitoring such bodily alterations may assist in recognizing and synthesizing the emotional responses of the player. The objective approach to emotion modelling (i.e. the second type of objective model input) incorporates access to multiple modalities of player input. Within objective emotion modelling, a number of real-time recordings of the player may be investigated. There are several studies that explore the interplay between physiology and gameplay by investigating the impact of different gameplay stimuli to dissimilar physiological signals. Such signals are usually obtained through electrocardiography (ECG) (Yannakakis, Martinez, & Jhala, 2010), photoplethysmography (Yannakakis, Martinez, & Jhala, 2010), (Tognetti, Garbarino, Bonarini, & Mateucci, 2010), galvanic skin response (GSR) (Mandryk & Inkpen, 2004), respiration (Tognetti, Garbarino, Bonarini, & Mateucci, 2010), electroencephalography (EEG) (Nijholt, 2009) and electromyography (EMG). In addition to physiology, one may track the player's bodily expressions (motion tracking) at different levels of detail and infer the real-time affective responses from the gameplay stimuli. The core assumption of such input modalities is

that particular bodily expressions are linked to basic emotions and cognitive processes. Motion tracking may include body posture (Savva, Scarinzi, & Bianchi-Berthouze, 2012) and head pose (Shaker, Asteriadis, Yannakakis, & Karpouzis, 2011) as well as gaze (Asteriadis, Karpouzis, & Kollias, 2008) and facial expression (Pantic & Caridakis, 2011). Game context input: in addition to gameplay and objective data, the context of the game is a necessary input for emotion modelling. Game context refers to the real-time parameterised state of the game. Without the game context input, affective player models run into the risk of inferring erroneous affective states for the player. For example, an increase in galvanic skin response (GSR) can be linked to a set of dissimilar high-arousal affective states such as frustration and excitement; thus, the cause of the GSR increase (e.g. a player's death or level completion) needs to be fused within the GSR signal and embedded in the model.

The model's output is usually a set of particular affective states (i.e. classes), a scalar (or a vector of numbers) that maps to an emotion such as the emotional dimensions of arousal and valence, or relative strength of emotion (i.e. rank or preference). The output of the model is provided through an annotation process which can either be driven by first-person reports (self-reports) or by reports expressed indirectly by experts or external observers (Yannakakis & Togelius, 2011). The most direct way to annotate an emotion is to ask the players themselves about their playing experience and build a model based on these annotations. Subjective emotion annotation can be based on either players' free response during play or on forced data retrieved through questionnaires. Alternatively, experts or external observers may annotate the playing experience in a similar fashion. Third-person emotion annotation entails the identification of particular affective states (given in various types of representation as we will see below) by user experience and game design experts. The annotation is usually based on the triangulation of multiple modalities of player and game input such as the player's head pose, in-game behavior and game context (Shaker, Asteriadis, Yannakakis, & Karpouzis, 2011). Annotations (either forced self-reports or third-person) can be classified as a rating (scalar), class and preference. In rating, annotators are asked to answer questionnaire items given in a rating/scaling form (e.g. in (Mandryk & Inkpen, 2004)) – such as the affective aspects of the Game Experience Questionnaire (Poels & IJsselsteijn, 2008) – which labels affective states with a scalar value (or a vector of values). In a class-based format, subjects are asked to pick an affective state from a particular representation which could vary from a simple boolean question (was that game level frustrating or not? is this a sad facial expression?) to an affective state selection from e.g. the Geneva Emotion Wheel (Scherer, What are emotions? And how can they be measured?, 2005). Finally, subjects are able to provide answers in a preferred format, in which they are asked to compare an affective experience in two or more variants/sessions of the game (e.g. (Yannakakis G. N., Preference Learning for Affective Modeling, 2009) among others) (was that level more engaging that this level? Which facial expression looks happier?). A recent comparative study has exposed the limitations of rating approaches over ranking questionnaire schemes (e.g. pairwise preference) which include increased order of play and inconsistency effects (Yannakakis & Hallam, Rating vs. Preference: a comparative study of self-reporting, 2011). The tools for constructing models of emotion rely on the modelling approach followed: model-based or model-free. For the model-based approach components of the model and any parameters that describe them are constructed in an ad-hoc manner and, sometimes, tested for validity on a trial and error basis. No machine learning or sophisticated computational tools are required for model-based approaches even though one could envisage the optimization of the

parameter space to yield more accurate models; that, however, would require empirical studies which brings the approach closer to a model-free perspective. Model-free tools for creating models of emotion, on the other hand, are dependent on the type of model output available. If data recorded includes either a scalar representation of effect (e.g. via ratings) or classes of annotated labels of affective states, any of a large number of machine learning (regression and classification) algorithms can be used to build effective models. Available methods include artificial neural networks, Bayesian networks, decision trees, support vector machines and standard linear regression. Alternatively, if the effect is annotated in a preference (i.e. ranked) format, standard supervised learning techniques are inapplicable, as the problem becomes one of preference learning (Yannakakis G. N., 2009). Neuro-evolutionary preference learning (Yannakakis G. N., 2009) and rank-based support vector machines (Joachims, 2002) but also simpler methods such as linear discriminant analysis (Tognetti, Garbarino, Bonarini, & Mateucci, 2010) are some of the available approaches for learning preferences. Finally, unsupervised methods such as self-organizing maps, neural gas and sequence mining (Martinez & Yannakakis, 2011) can be used to identify clusters within the model's input space and profile players accordingly. Empirical studies suggest that the model accuracy is improved when such clusters are fed as complementary input to the model (Martinez, Hullett, & Yannakakis, 2010).

A general overview of the most important literature in this assignment:

- I choose the book "Creating Emotion in Games: the craft and art of Emotioneering" *(David Freeman, 2003)* because the author is David Freeman. He is an American novelist, screenwriter, playwright, and journalist who studied playwriting and dramatic literature at the Yale Drama School and currently teaches screenwriting seminars in Los Angeles.
- Freeman wrote the last draft for Alfred Hitchcock 's final project, The Short Night, a projected spy thriller which was never produced due to Hitchcock's failing health. Freeman wrote about his experiences in the 1984 book The Last Days of Alfred Hitchcock, which includes his completed screenplay.
- "Story Structure and Development. A guide for Animators, VFX Artists, Game Designers and Virtual Reality" (Craig Caldwell, 2017). In these sources, you find information about the number of "emotioneering" techniques and approaches in storytelling. With this information, an interesting approach to further research would be what type of design the current Interactive Visual Novel.
- Moving on, the book "The Art of Game Design" (Jesse Schell, 2008), gives a good overview of the general subject "Game Design" and basic principles of gameplay. This book answers the question of how to keep people involved in the gameplay of IVN "Another World".

3. Scope

The following topics are excluded from this research/assignment, because of the time constraint:

1. The gameplay will be simplified up till the point where current gameplay can be called "Casual". More specific below in section 3.

2. The refined graphical effects and the processes of creation those effects such as shader writing, creating wool/hair, complicated particle systems are excluded from this research/assignment.

3. This graduation assignment is the Interactive Visual Novel. It consists of 4 chapters. In the scope of the current research first chapter will be written, illustrated, animated, game-integrated. This chapter consists of 3 animated illustrations, sound design and game with the next mechanics:

- Controllable space comet with the possibility to move in the 2 dimensions.
- The player will be able to interact with the items called "Energy" through the collision with them.
- The player will be able to follow prerendered hints in the game to cover the needed distance.
- Animated illustrations with the main actions of the story plot (Appendix 5).

To be able to provide a complete and reliable solution, the prototype of this project is limited to the one chapter (out of 4) of the interactive visual novel. In this chapter, I am going to implement all approaches, methods and techniques mentioned in this report will be just scaled in the future chapters.

Therefore, the final product will be designed as an application for mobile devices which is also available from the WEB.

This research is only limited by the complexity of the subject, which is human emotions. And the number of methods of how it can be influenced by interactive visual novel.

The user experience should be based on the feedback of the testers group. Because only this feedback can provide the necessary data from the market. In turn, markets for all mobile applications are divided into relevant countries (PwC., 2016). So it is enough to perform a so-called "Soft launch" in the Netherlands in order to finish a second phase of testing IVN.

As a final product in the scope of the current graduation assignment, IVN "Another World. Chapter 1" will be delivered. This novel consists of four fully illustrated, animated, voiced and eventually game-integrated chapters of the story. And only one chapter will be delivered as a graduation assignment.

4. Experimental Design

The first step in the developing of the interactive visual novel was writing a story. This process was started from the research. The main goal of this research was the best practice in storytelling and the ways how it can be applied in the story for this graduation assignment. Eventually, the research was done by using the theoretical framework. After three iterations of the story testing the story were approved. During the testing, the main goal was achieving the maximum of clarity for the readers. The story should answer the following questions: why, where, when, what, who and how. The first scratch of the story (Appendix 2). The story plot (Appendix 1). The final script for IVN Chapter 1. (Appendix 3).

The next step requires two processes which should be done simultaneously due to the time restrictions applied to the current graduation assignment. The first process involves the creation of illustrations based on the story. Those illustrations manifest the main plot events in chapter one.

The research for the look and feel of each illustration was very important. To allow the player to engage with a story, a unique visual look was created. For testing purposes, several concept art pieces were created to test out different styles. The inspiration was taken mainly from the retro-futuristic style, Studio Ghibli cartoons, Moebius. Since the main element of the story is something intangible - energy, aura, feelings - were visualized throughout all the illustrations in a way that would allow consistency but support different moods at the same time. To achieve this goal there were a number of experiments with white particles and different textures, forms, and various ways how to show its luminescence. By the end of the research, there was a good solution - a combination between hand-drawn look, photo bashing technique and applying textures (Figure 1, Figure 2).

Based on testing providing by testers group the next style and approach were approved and chosen for all upcoming illustrations. It is implied that the current illustration conveys the desired impression from the testers group of players. This impression should appear after going through the finished first chapter of the interactive visual novel. The impression (in the future just "The desired impression") can be described by the next filling: Thrilled joy before diving into total suspense. It is quite hard to manifest the specific feeling or the emotion in one sentence, especially when it is about many different people.

Alongside with illustrations, the work with "emotioneering" was performed. To make characters more interesting – so-called "Character Dimond" was applied to each of the main NPC in the IVN (Appendix 3). This "Character Dimond" give to NPC 3-5 traits. Through these traits, the player can recognize the patterns of how this character thinks, his point of view on life, the way he or she acts. It makes NPC more alive, and eventually, the games with interesting NPCs are more appealing to the players. Then it is an important part to give to the characters in the IVN the interesting backstories which support their "Character Diamonds". And finally, the

story was written in the was the characters expressed through their dialogues, actions and animation.
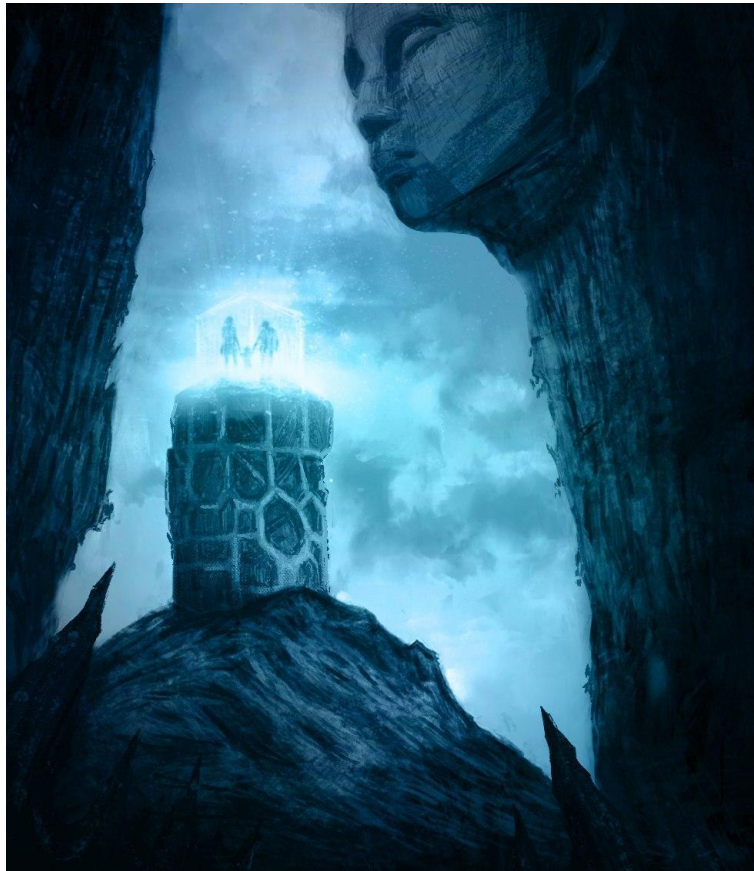

Figure 1. The final prototype for the illustration №1.

Figure 2. The final prototype for the illustration №2.

5. Testing

Affective "emotioneering" can lead to personalised experiences for the player. A key test question, is: how do we appropriately evaluate the efficacy of the "emotioneering"? While several different methods from human factors research are available, all seem to converge to control-based experiments where games are usually evaluated with and without the adaptation module (e.g. see (Yannakakis & Hallam, 2009) among others). The outcome of such an experimental protocol usually allows concluding whether adaptation seems to have an impact on the player's engagement (or any other relevant emotional state). The efficacy of adaptation can be indirectly measured from standard usability metrics (such as response time), or more directly from the output of the emotional model itself (i.e. testing if adaptation yields higher values for the model's output). In addition, one may perform a user survey that asks players to evaluate the adaptation experience (e.g. see (Yannakakis & Hallam, 2009)). Based on this information and due to the scope of the current assignment – unstructured interviews were chosen as the main test method.

5.1 Testing Methods

The expected result of testing was creating a product which provides an experience for the player and causes an emotional connection between the player and the main character of the IVN "Another World". As a minor goal of the testing was to cause not only a general emotional connection between the player and the game but also create a predesigned impression from this game. One to one, unstructured interviews were the tool to test IVN on the testers group.

The role of deliverable interactive product for this graduation assignment takes the interactive visual novel. Since this novel consists of several components such as storytelling, "emotioneering", illustrations and animations, sound design, game design – the testing are split between all these components. It means that each of the distinct components of this interactive visual novel will be tested separately and then the ready product will be tested as one. This approach will provide enough attention to each part of the novel`s aspects because all of them require a unique testing method and feedback.

To gain knowledge in the "emotioneering", storytelling, game design a literature review was conducted (Chapter 2). Besides this, observations on different interactive visual novels obtained. Face-to-face interviews were chosen as a research method to gain better insights as to what people feel and think while going through the story. This method shows a more honest and relevant reaction from people. Another possible research method is questionnaires. Questionnaires are less likely to provide good quality feedback in the other aspects of the novel, where there was a need to understand what player actually felt. Due to a lot of non-verbal information which would have been lost in the questionnaires one to one interviews were chosen as the main type of tests. To be able to answer the research question at hand were built a number of prototypes of the story which were constantly improved from one testing iteration to another. The first and the last versions of the story for the IVN (Appendix 2, Appendix 3).

The benefits of usability testing are the possibility of early problem identification and the appropriate fixes in an early stage. This can save not only money but also time, as usually problems that are spotted early in the process can be adjusted quicker ("Usability Testing", n.d.).

5.2 Test flow

The first step in the process of testing the story took place with professional feedback provided by the associate professor/researcher in Saxion Taco van Loon. It gave professional feedback on the early stage of the story developing and helps a lot. On the first stages (Appendix 2) it was hard to follow the story, the questions such as what, where, why, when, and how are unclear for the readers. Also, this feedback helped to develop a good conflict in the story to increase readers interest in the story.

The second step in the testing the story started right after the feedback from the first step was implemented. The second step was testing with a tester group.

All components of the story required major and minor changes. The basic criterion for all the tests was the creation of the story which provided a "desired impression" (mentioned in Chapter 10.1) for the players. All of them read the story and provided feedback right after the reading during the face-to-face interview. After the interview, the video record with that interview was analyzed to support the player`s feedback with non-verbal and non-conscious information provided by the player mostly through the body language. It allowed me to test how the same stressors from the story influence on people with different age and sex.

At this stage, the story was integrated with the illustrations. Both components were discussed with the testers group and desired impression was reached. The main goal of this test was a creation of the illustrations which represent and support the story. In the scope of the current assignment, 2 animated illustrations were created, representing main story events (Appendix 5). They were tested in the exact same circumstances as it was during the "Second story test" (Chapter 10.3.2).

The focus of the second usability test was the interactive part of IVN "Another World". Basically, it was a playtest. The main goal was to understand how to expand and support the feelings and the emotions caused by the story component during the game itself. Which mechanics and visual components should be used?

The result of the testing process was creating the final prototype (Appendix 4) based on the testers group feedback.

5.3 Technical difficulties during testing

The main difficulty during testing the story component of IVN was language. The story originally is written in Russian. During the work with the testers group, it was notified that the story feels completely different in English. Russian speakers in the group mentioned that implemented game-design techniques worked much more effective when they were going through the IVN in Russian. It could be a reason for the more detailed research in future to choose the appropriate testers group for the product or to choose techniques which work in both languages.

It was hard to collect and measure data during the testing because each person is unique and feels his/her own emotions. The same things in the IVN were associated and understood differently by different people. For each interview, there was a need to create a specific, unique approach which, however, tested the same things and still had a relevant result.

The testing was also limited due to the lack of involved people in this project (Chapter 3).

5.4 Testing Conclusions

Based on the results of the usability tests the following conclusions can be drawn:
It is impossible to create the same feelings and emotions for the people with different age group and sex, but it is possible to create similar emotional connections between users 20-25 years old and the main character of IVN, using different levels of interaction (visual, audio, story, etc.). The development and research were focusing more on the general, overall impression. Not on the exact sequences of feelings as a reaction on each irritant in the IVN "Another World".

There are a few goals of this testing. First of all, the story, which is the base for IVN "Another World." was built in the way people who read it, should be interested in the continue of this story. After the second usability test this goal was successfully achieved. The main issue in first concept of the story was too many text. It was taking too long to read all the story and then to play a game. The solution was a combination of visual and audio effects together with the text. This combination provided enough information on different levels, which previously was encoded just in the text. As a result, the same amount of information conveyed through the different levels of perception so the part of information in the text was no longer needed. Compare Appendix 2 and Appendix 3. Due to the variety of levels, through which this information is being conveyed, player is absorbing this information much better and faster *(David Freeman, 2003)*.

The second goal of the testing was creating the visual look of the illustrations, which player sees while going through the story part of the IVN "Another World". It was decided to take the main actions in the plot (Appendix 3) as a reference for the illustrations. So, during dark and tense events in the story player sees dark, contrast illustration. Point of attention on this illustration is the subject of the next actions. The environment is dark, it makes the player feels compressed. Which is, based on the provided research and user feedback supports the story. Actually, the result of this goal is also a success for another testing goal. Which is creating predesigned emotions for the people in the testers group.

Based on the professional feedback a story plot was developed. Coherence was insufficient. It was hard to follow. Characters and relationships between them were reworked and improved either. The main goal was creating a minimum amount of non-player characters, merely enough to provide a story with all desired components such as animated illustrations, sound and game design and integrated into the interactive game story. With a bigger amount of characters, it seems impossible to continue this research because of the time restrictions in the scope of the current graduation project. New dialogues were written and rewritten up till the moment they provide all the necessary information, represents the speakers as they were developed and feel natural.

Testing with the testers group gave an understanding of what makes different people start and continue going through the story. Which elements of the story are clear and understandable for the target group. It helped to create the theme of the story which is close to everyone in the testing group. Feedback prom that people made possible the development of the whole novel using different levels of abstraction. I put elements of IVN on distinct layers so everyone despite anything can have the "the designed impression".

The second circle of testing. A result of this phase - test failed. "The desired impression" was not reached. However, the main reason for this failure was the lack of supporting visual elements to cause emotions. The story was good enough to illustrate it.

Result for the last phase of testing – a number of illustrations with different style and content and eventually a final prototype which includes story and 3 illustrations. Based on the feedback collected from the testers group novel felt better, closer to "the desired impression". It was sufficient for the current test.

6. Results, Discussions and Conclusions

Answering the sub-question "Do "emotioneering" techniques work in a predesigned way in the interactive visual novel "Another World" and why?" – "emotioneering" techniques do work. In this research, a solution on how to create an emotional connection between the players from the target group (20-25 years old people both genders) and the game (main character of the game) was found. The first prototype of IVN 'Another World' was built to help define the ways and approaches how to cause the emotional connection between people with different age and sex and the main character. 'Another World' therefore featured the traditional game elements such as illustrations, animations, sounds as well as storytelling. Based on the testing the decision to use different levels of perception: visual, audio and text. Similar information was encoded in each source (illustration, sound, sentence) to create one impression for different people.

After implementing some improvements based on the first testing session the second version of IVN was ready to test. This version showed great improvements regarding the usability, comprehensibility, as well as the positive reactions shown by the testers group. The final test results were the key to understanding how to appeal to absolutely different people causing similar feelings and emotions. Those results are the answer for another sub-question "How to integrate "emotioneering" techniques to the interactive visual novel "Another World"? The answer on this question can be formulated as follow: to integrate "emotioneering" techniques to the interactive visual novel "Another World" you need to use a different level of perception on the visual and audio level to appeal to all testers group.

To answer the next sub-question: What "emotioneering" techniques can be implemented in the graduation project - It was crucial to understanding which levels of perception were going to use. In the current research, the focus was on scriptwriting techniques. The way how the text component built in the IVN "Another World". But it would be impossible to achieve the desired goal (to cause the emotions, similar overall impression in the testers group) without other components such as illustrations, animation and sounds which support the story in the IVN. Also, the graduation assignment restriction such as time restriction (5 months on the project) and capacity (1 person) was taken into the consideration answering this question.

Eventually based on the answers for sub-question it is possible to formulate one for the main question. The number of screenwriting techniques, illustrations and sounds were used to cause specific emotions, such as the emotional connection between players and the main character in the interactive visual novel "Another World".

For future work, the company could think about implementing new elements to 'Another World' to make it more universal and interesting for a broader target group using different visual style and changing the theme of main components. A future version of 'Another World' could use an improved version of sound design using this element as an internationally understandable

element to improve the connection between the all-age group of people. This could possibly also lead to a more socially interactive experience.

A number of promising research directions for the area of emotion in games that, I believe, will contribute to the advancement of the field in the near future.

- Mixed-initiative experience design: the mixed-initiative (i.e. human-machine cocreation) approach to design and creativity is getting increasingly important for game design. Innovative projects such as Sentient Sketchbook (Liapis, Yannakakis, & Togelius, 2013), Sketchaworld (Smelik, 2011) and Tanagra (Smith, Whitehead, & Mateas, 2011) have focused on aspects of level design. However, the potential of emotion-driven, mixed-initiative design has not been investigated in-depth yet. We believe that co-creative environments which are affected by emotion, intention and preference models (of players and/or designers) may enhance creative thinking in game design.

- Emotion in the game pipeline: the impact of emotion in game development can be evident in all phases of game production. Future research needs to focus on establishing protocols for the integration of emotion research in the pipeline of game production. Placing emotion research as the driving force of game production can ultimately lead to better game design, more efficient development, more reliable testing and richer quality assurance.

- Links to adjacent fields of study: the study of emotion in games as represented by the AC community can only benefit from stronger links to and collaborations with adjacent research fields which include the areas of game studies, game design, user and user experience research, and experimental psychology. In that way, advances in a field can inform relevant research areas for a better understanding of player emotion and its particularities.

- Content creation is automated: the use of procedural content generation techniques for the design of better games has reached a peak of interest in commercial and indie game development which is showcased by successful (almost entirely procedurally generated) games such as Minecraft (Mojang, 2011) and Love (Eskil Steenberg, 2010). Future games, in general, are expected to contain less manual and more user or procedurally generated content as the cost of content creation and the content creation bottleneck are key challenges for commercial game production. As the number of games that are (partially or fully) automatically generated grows, the challenge of detecting and monitoring emotion in never-ending open worlds of infinite replayability value increases substantially. The automation of content creation, however, offers a unique opportunity towards realizing affect-driven content generation in games (Yannakakis & Togelius, 2011).

- Multimodal game interaction: several modalities of player input are still nowadays implausible within commercial game development. For instance, existing techniques for physiological recording require the contact of body parts (e.g. head or fingertips) to the sensors making physiological signals such as EEG, respiration, and skin conductance rather impractical and highly intrusive. Modalities such as facial expression and speech could be technically plausible in games even though the majority of the vision-based affect-detection systems

currently available cannot operate in real-time (Zeng, Pantic, Roisman, & Huang, 2009). On a positive note, recent advances in sensor technology have resulted in low-cost unobtrusive biofeedback devices appropriate for gaming applications (such as Emotiv1 EEG system and Empatica2 bracelet). In addition, top game developers have recently started to experiment with multiple modalities of player input (e.g. physiological and behavioural patterns) for the personalization of experience of popular AAA games such as Left 4 Dead (Valve, 2008) (Ambinder, 2011). Finally, recent technology advances in gaming peripherals such as the PrimeSense3 camera showcase a promising future for multimodal natural interaction in games.

- General emotions across games: after sufficient research has been put in the study of emotion in different game genres, methods for recognising emotional manifestations across game genres would be required. Such methods could focus on the inference of generic emotions that are linked to reward systems and game mechanics across game genres.

- Game data mining: massive sets of player metrical data (metrics) are currently available and analysed, thus empowering the design of future games (Drachen, Thurau, Togelius, Yannakakis, & Bauckhage, 2013). While such data usually contain behavioural aspects of playing experience, data mining and data analysis research will need to focus on inferring the relationship between detailed player metrics, and cognitive and affective maps of experience. Making sense of massive game data sets is amongst the largest challenges from both an analysis and an algorithmic perspective.

7. Recommendation and project reflection

The potential use of "emotioneering" in creative media sphere is huge, improving the user experience is the key to create a competitive product on the game dev market in 2020. The goal of the current assignment was to research the approaches on how to cause pre-designed emotions for different players, specific players in the target group (20-25 years old). It is impossible to cause the exact same emotion in the different people because of the uniqueness of brain structure for each person. We can observe this effect by analyzing two people who watched the same movie in the same room, with the same conditions. However, they have got a different impression. This is emotion nature. But it is possible to create a similar overall impression for different people, so it was the main focus of this research.

One of the main restriction factors was the capacity of people who were involved in this graduation project. There was only one person. Implementing this project together with the UI designer, Concept Artist, Animator and Developer would make the relevant aspects of the final product much stronger in the sense of creating the experience for the player.

It was hard to test such a vague theme as emotions and feelings. It was almost impossible to stay objective and find a solution for the research question. With more people, it would be possible to test more things regarding the final product and have more precise data from the testing.

However, there was a remarkable work with the story component of the IVN. Good quality feedback from the industry professionals and users helped to create an immersive story, what is the base in the current assignment to create emotions for people. And eventually, it was satisfying to build IVN using a lot of elements, but all of the elements led to one aim, creating one, similar, overall impression for the different people.

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What this about?

Become a king of yourself - is the motto of this story.

It is about travelling in the depths of your mind. There you can face your faires, issue or whatever what holds you from being happy by all means. It is about finding peace through the struggling with your demons. It is about the trip inside of your mind space. But at the same time, it is a fairy tale, fantasy metaphor.

What if …

What if people can send their mind to space where they can find other worlds and life forms and they can live their lives and eventually come back with this experience and grow in this way?

Describe your story spine?

- Once upon a time, there was a boy on some planet.
- People there were able to send their minds to space and develop their spirit in this way. But not all of them were addressed to do it because it is a quite dangerous practice.
- But one day this boy started this adventure.
- His friend sacrificed the part of his energy so the boy can go farther in the space and have more chances to find his main planet.
- Boy was looking for his planet in the infinite space till finally found it (almost died here).
- The boy ended up on the planet which essentially was a huge ancient forest as a tiny (a bit bigger than the ant) creation.
- The boy found and fix the problem (helped the local giant) (with an imperceptible help of the king).
- Until finally he came back as an enlightened person.
- And ever since that day he became a student of this king and eventually he became a king and ali ali ya.
- But it all was the creation of his imagination and in the end, it was a psychological trip where the mind of the person is being illustrated as a universe and all mind-issues are the planets with the problems.

Describe your theme?

- The moral of the story is - if you want to find the peace inside of you - be the king of your self, fix your planets and be happy. Or, just have fun reading/playing this story/game. (another side of this philosophy coin).
- Basically I put in this fantasy my own experience, both internal and external.
- Describe why we should care for this story: because this story can be about everyone, you can interpret this story in any way for yourself and find something which is applicable for you. If not - it is still an interesting fantasy (for those who like it) with the complicated plot and not obvious ending. Characters there have realistic characteristics, so they also can appeal to you. Finally, it can be about art, illustrations, world by itself, quests (game part of the novel) and so on.

...

It begins on Earth or maybe on a similar planet with people. At that time among the people the spiritual practice which allows you to send your mind to space, find another planet with alive creations and live their lives - was super popular.

The idea behind is to find the planet which needs help (something is wrong there) and apparently you are the hero who is gonna fix it. What does it give to the person who sent his/her mind? Essentially this person is going through the adventures which makes him/her more mature in the sense of their spirit and human being in general. The idea behind the idea is that you are actually travelling in your mind space and the planets which need help are actually your issues and solving a problem on the planet you are solving this problem in your head and become 'enlightened'.

Eventually, this story is about the boy from that planet who wanted to open this force inside of him and went to this dangerous adventure. He found the main planet which needs his help but it was too far for him and he was not able to keep connection with his body. He was slowly dying. His family asked the most enlightened person (maybe the king or something) to help him and to recover this connection. This king using all his power and experience found this guy, but he could not return his spirit because it was too weak and exhausted by this journey. The only way was to fix this planet so spirit becomes stronger, enlightened and then they can come back together. So the king helped (passively, because he couldn`t help directly) this guy to fix his planet and they came back, the boy became a student of this king and finally the next king.

Who?
Who is the main character?

It is a boy 13-15 years old from the planet where people are divided into 3 groups. This division based on the spirit development level. Enlightened, non-enlightened and lost (those who lost in this adventure). This boy lived in the non-enlightened family and all his dream were about how to open this power inside of him. His family was against it, they considered it too dangerous. However, despite anything, in the big secret, with the help of his best friend he started his adventure.

This boy is a young, ambitious adventurist. He is smart (good at math, but he hates it) and creative. Kind of lazy and a huge romantic. He loves sea and stories. He hates cold. Finally, he would sell his soul trying something new.

Who are the other characters?

- Another character is a soul-dragon (Chinese dragon), the spirit guardian of this planet. In the story, it becomes clear that this dragon is an embodiment of the king from the planet of the main character. His personality is an iconic ancient sage (Yoda?). He has been through endless battles and now he is the mix of great warrior in the past and wise old (but still powerful) man.
- His best friend, they are like brothers. He appears at the beginning of the story to help the main character to start his adventure. And then he has a secondary role to take care of his friend while this dangerous trip. The relationship between the main character and his best friend can be described as an infinity competition between them where they help each other to become better for their common goal.
- The family of the main character. Also, the secondary role characters just to describe the complexity of the situation in which the main character started his adventure. They are afraid but proud of him. They can`t allow him to make the first step but they are the first who is going to help and support after the first step. They truly believe in their son.

Where?
Where and When does your story take place?

My story takes place on the planet similar to Earth, maybe it is Earth in some parallel universe.

The Earth year there would be 3146.

Does the place change or time pass?

During the story, the place is being changed to another planet somewhere in the galaxy where the main character takes over the body of the local creation. Essentially this planet is a huge, ancient magic wood where the main character is a bit bigger the ant.

The Earth year there is 1178.

What?
What is going to happen?
Think of the inner conflict, (and how it drifts away from the theme)?

The main character is going to send his mind to space where he will find 'The heart of his universe', the planet which is 'sick', he is going to solve the problem there and come back.

What is your character's problem? (Or are they the problem?)

My character`s problem is that he lives in a world where people can become 'enlightened' and rule this world and do cool stuff (please work on this place, why it is essential, crucial and cool to become 'enlightened'). But he is not and his family against him to be enlightened because it is too dangerous. However, he feels that he can go through this adventure and he does. So it can be considered as an inner conflict.

Think of the outer conflict (and how it reflects the theme)?

This adventure is crazy dangerous because you are sending your mind to infinite space where you suppose to find your heart-planet (or another one if this planet is okay) and take over the body of local creation (if it exists, if not wait or create life on this planet) and bring the peace to this planet. You can easily be lost in space or die during this trip which leads you to the end where you are a lost person or to the death respectively. So your outer conflict is the world around you.

What are the turning points in your story? (resolutions to conflict, different perspectives)?

- Start the adventure despite anything.
- Find the planet.
- Fix the planet
    - Surviving in the new conditions. (moving through the forest, dangerous fields, local pirates, catching the moth, learning how to drive it).
    - Finding the problem on the planet (giant).
    - Battle with the giant.
- From the family and his friend perspective:
    - Taking care of the main character.
    - Asking the king about help.
- From the king perspective:
    - Finding the mind of the main character.
    - Finding the way to communicate and help him.
    - Helping to fix this planet (to make his soul stronger).
    - Coming back.

Why?
Why do your characters do what they do, or behave as they do?

- *The main character is being driven by his ambitions and he believes in the better future for himself, his family and friends.*
- *The king is being driven by his duty to be a king for his people, personal favour by the main character family and his friend and his personal sympathy to this guy (because he was on his place or something, please work on this place or remove it later).*
- *The family and the best friend are being driven by the love to the main character.*

Why is the story being told?

To explain the philosophy "Be the king of yourself" and the way how I found it. I believe it can make some people happier and make this World a bit better. Otherwise, it is just a good story, it is a pleasure for me to tell good stories so just have fun.

How?
How is the problem solved?
Decide what happens in the story. Is it going to be funny, strange, scary?

The problem is solved by fixing the planet and coming back as a new person.
It is going to be exciting, strange, interesting and a bit scary adventure (The Hobbit).

Is there a lesson to be learned? Will it make the reader think about their own behaviour?

My message is - fix and develop your mind and it leads you wherever you want to. Keep balance and keep moving. If there is something which makes you happy and you are not - find out what makes you happy and go there, this is the way.
Yes, I hope it will make the readers think about their own behaviour as soon as it is about the general point of view and approach for life. The characters are quite alive people and can be easily represented in real life.

All the footage is a kind of comic book.

Feelings. Emotions, fears, pain, bliss, all this. All this can be called the purpose of the existence of mankind. Isn't that right? After all, almost everything that people have had such a hard time inventing and acquiring over many millennia is for this very purpose. Music. Painting. Sculpture. Architecture. Machines. Clothes. Weapons. Letter. Money, war, porn, food, humour, love, stories, smells, alcohol, technology, science and so on.

But it so happens that people have changed after many centuries of evolution. They became more perfect, I think. Now they began to resemble golden spirits with a bluish aura around them. Their lives resembled utopian sai-files of their time stories of 20-21 centuries. Nothing bothered them, their development was faster than ever. Harmony reigned in those parts. But time went by, and evolution did not have time to destroy the unbridled thirst for sensations in the violent human souls. Perhaps the last stumbling block on their reincarnation. And this thirst has to be quenched. There are many legends as it happened, but they all reflect the same essence. Their aura still regenerates them halfway through the physical body, maintaining energy stability in them, but thus jamming out the pain and all other sensations (shots) received from outside. And people were convinced of it, enough casually (shots of comics as people have casually touched each other without an aura and storm of emotions caused it). It quickly gained popularity and the most intelligent began to earn on it (shots like people make attractions where they fly off their protective shells and they feel everything hundreds of times stronger than before). But there were people there who were also smart and dreamy. They invented a way to move the soul outside the natural protective aura (the shots of the garage where the guys are experimenting). Unfortunately, the first attempts ended badly. The soul, having found itself behind the aura for a long time, which has been evolutionally forgetting how to get so many external irritations at once, goes mad, literally tearing it apart (frames). Of course, these experiments have been banned, but enthusiasts have remained (frame). One of them did it all the same (frame). He learned to take out a part of the soul and place it outside the aura, and then return it, and this piece did not die, but, on the contrary, accumulated all the sensations, and then shared his experience with the rest of the soul, which brought experience and new sensations to all parts of the soul (frames comics). It was instantly spread all over the world (comic strip shots). It became a necessary part of the lives of all self-respecting people (shots), the rest were despised and driven away as opponents of evolution (shots). On this basis, a huge corporation was formed and grew, providing equipment and specialists for this practice (human resources). Soon it all came to the point where a person lay down for several centuries in a special capsule (personnel) and his or her parts of the soul were sent to travel around the galaxies (personnel). After their return, these people changed radically, gaining experience from all their pieces of the soul, they grew spiritually (shots). And it was believed that the more pieces of your soul you could send on a journey, the more prestigious you were (shots). And of course, there was a whole club, with the guys who could disconnect 10 and more pieces from themselves, and that means more than 97% of the population (shots). Soon they became rulers (staff). But there was also a nuance, each trip became more and more difficult (personnel) because although the experience moved from cell to cell, like each part and altogether there was a limit to the portability of experience (personnel).

Conflicts broke out on this basis among both the majority of people and the rulers (human resources). The latter wisely decided to go to the last journey, sending all their particles to the farthest land, so that upon return, once and for all to finish with this practice (shots). The same they offered to everyone. (frames of agreement). And now the great journey has begun (shots). Millions of particles flew into space and time (frames). And it was the greatest and most beautiful sight in the history of mankind. Who is the most, who is the least, who is the next, who is the closest, it did not matter, all flew for the last time and got maximum pleasure from it (shots). As the centuries went by, people began to slowly come back and watch the others (shots). Soon everybody returned and started waiting for the rulers, whose travels obviously lasted (shots). The rulers returned for a long time but returned (shots). Only three out of 10 were delayed. But one of the three went too far. This was visible from his fading light (footage). Those two had already returned and began to observe the last traveller. Years later, each part of his life made a current show so that the whole world could watch the last of their countrymen, whom they had been waiting for (shots). 9 pieces of it came back. There were difficulties in coming back from such a distance (shots). And the last one was stuck in one world. And it was so far away that the connection with the master was broken at some point, and there was only a saving thread, the only thing that connected them. (shots).This caused anxiety among the people because everybody knew that if a single piece of it came to an end and didn't come back, you were dead. But there was no way to help, no one could get that far. And everyone just watched (frames). Meanwhile, the soul had forgotten how it should look and gradually turned into something incomprehensible (the ninth, Vlad, the skinny body, the rabbit from a bag of the head, the magic on the fingers as in the appendix) (frames). The end of the prehistory.

(Continuation). And this soul at that time gained so much experience that it began to get its own character (the frame as the soul acquires a face and opens its eyes). And because of the conditions around her, she became stern (the frame of this part of the soul, in the forest, where she moved into what, local aborigine, to maintain the stability of his energy, and now manages it to maintain his viability, that is, his safety). The soul killed animals (frame). Then there were others like him (frame). The soul fought for its stability, it flew through so many light-years, was on the verge of death (frames of a yellow lump of energy in the expanses of space), and it simply couldn't let its host die. Years passed by. The soul, in the circle of life, forgot where it really came from, and who is now. All she was interested in was her, who was always in danger - stability (human resources). She did not give her keeper a chance to die (frames). His body was already falling apart, but the soul found a way to collect pieces of the body from handy materials and replace them with old ones, like parts (frames). Some of them did not work well at first (frames). But the soul picked up all the best variants (frames). Soon there was no molecule left from the previous body. And the new one looked like a canvas doll (frames). But we have to admit, as a body, it functioned perfectly. (frames). Besides, now there was no extra, weak consciousness in it, which only took place. Now the soul could rightfully take all the place in this, its own created guardians (personnel). And since there was no one else to resist, another will, the soul could finally afford the luxury. To use the energy, ancient, strong, which she received from her master (frames), which she forgot long ago (frames as a soul with an old body survive in caves, fights with wild animals, fights with other tribes, it cannot sleep well, it reacts to every rustle (frames), And of course she didn't have time to think and remember where she started, because it was worth to pause in the battle for life with the outside world, as she had to fight for life and place with another, local consciousness, and young consciousnesses, as a rule, cling to their masters. (Personnel. Where on a white background, in the cube, Ala two souls in

the guise of their keepers. One of the savages, another of the ranks of a higher humanity, and besides, one of their rulers. The savage constantly attack him, growls and rushes. And the ruler sweares ridiculously, like "Oh, my God, Bob, again you're for yours! What an unpredictable blow, for the seventeenth time in a row, with your left hand, to the same place! "Look at you, we are about to be eaten! And in moments of mad fear and despair, the young consciousness was distorted and as if turned off. At that moment, the soul could finally fully master the body).

Now it was up to the owner, who was trying to track down his precious particle (frames), which threatened to break the last binder, thus killing one of the rulers of the ancient people (frames). His adventures brought him to the screens of the whole country (shots). The other 20 particles have already returned to him (shots). And everybody watched the adventures of his last part and his manipulations in his mind to return it, on a thread long in tens of light-years (frames).

Chapter 1

As soon as the player is on stage, he must understand that he, in the role of an ancient soul, controls a disobedient body that was previously a local creature, but over time it began to disintegrate, his leaving this body, the spirit fought in mortal agony and made it extremely difficult to find the necessary materials to resume the performance of the vessel of the soul. Your first quest will be to find the necessary materials to replace the affected part of the body, because otherwise you will be without a shell, and then you will not last long if you do not find a new one. You will become acquainted with the dying young spirit of this body, its real owner. He will be a significant hindrance to the management of an already unruly obedient body. The frame will go first to shoot a close-up of this floor teddy creature, like a lilliput in a giant forest. Then the camera flies in the face of this creature, cutting off the obvious view of him, and flies between the threads in his head, where a white dot appears in the black plan, and then it becomes clear that it is a white cube on a black background. The camera enters this cube and stops inside it. There is a large room with two huge windows, which are located somewhere at the same time on the ceiling and on the wall, outside the windows you can see a giant forest, with old trees, moss, and some magical attraction. There were also two spirits in this room. They controlled the body, fighting all the time for the channels of control of the body. Your task is to keep the body intact by collecting materials and glueing them to the body. The materials helped you to choose the "Skill-intuition" and "Skill-out imagination", slightly illuminating the materials with which you can interact. After you've seen the spirits, the camera turns around and flies to one of the windows you've seen before, as it turned out to be the eye, so suddenly, we fly out of the strange creature that was in the frame at the beginning. His body was already halfway out of the materials on hand, and it was cracking at the seams. And now the camera finally stabilizes and you see this world, a giant, ancient, magical forest on the first person of this weirdo, which looks like a canvas doll, as in the cartoon "Ninth". He just needs to make a square head, and ears like a crawl and an elephant, right and left respectively. And the expression of the face, which, by the way, will consist of buttons of different sizes and colour, and lightning as a mouth, to make like Vlad's. It must be extremely charismatic and attractive not in a vulgar way. A clever snippet suffering from being among the stupid and generally dirty world. You don't know how to

control, or what to do at all. Normas thinks the game. And you try to intuitively press the Circle Pad or mouse click and then you immediately get a semi-transparent instruction on how to control. You try. The control is extremely responsive, with beautiful animation and a lot of movements and tricks and at the same time simple. But sometimes when you try to go somewhere, the body does not listen and makes random movements, the camera starts to shake and your eyes shimmer with white light. As soon as it happens for the first time, the camera stabilizes and turns inside the eye, head. And it shows the perfume that it stopped at the last time. One of them looked very much like the ancient people from the old legend that you had heard before. A noble golden glow, stable light coming from an ordinary human being, in itself reminiscent of a statue of a Roman from the Roman Empire. The second spirit radiated a white, almost transparent glow, which flashed like a volcano and filled the entire room with its still-unstable light, or almost galloped like a shadow, clogged in a corner. It was extremely unstable, it should be said that it was dying, and long ago it should have left this body, but the invader, so if the ancient soul did not let this body depressurize and let out spirits, it could not allow it, that is, you could not. And then on the screen, you have new indicators, one of them in the form of a segmented body, each segment was highlighted with its own light, reporting on the state of this or that part of the vessel body. It is said to you like your subconscious, as an explanation of what is happening on the screen. There is also a corresponding text near the icon. The second indicator indicated which of the spirits now controls the vessel. And your task is also by means of "intuition of skills" and "fantasy of skills" to take control of yourself, manipulating your power of the spirit of your opponent. As soon as you have it, the camera returns to its original place, and you control a vessel that does not have a name yet, and look for and master the parts of the body that fall apart. But you will have to find these parts as soon as possible because if you drag them out, dying, and so uncontrolled and very strong spirit, the real owner of the body will again take control of the body, and with him and his actions, it falls apart, which puts you in a dangerous position. And so you must deal with one obstacle, and quickly come up with how to solve the second problem. The quest will be tied for a while, thinking, and the ability to move in all directions, it will be like training after you have shown control. You have to keep this body-safe. Otherwise, you will simply be torn apart by your environment, so this piece of your soul will die, and will not be able to return to its true master, who at the same time is trying to catch out of the depths of the universes his last piece, whose life, as well as his own, was hanging by a thread, in the direct and figurative meaning. It will be the first stage of becoming a perfect body. And then the frame changes and in the camera the body that lies head to the camera, which hits him. The shape of the body and the face is immediately recognizable, it's the look of the ancient spirit that you played for and that you controlled the body. The camera picks up speed and flies directly into the forehead of this person, a second before it is in the forehead, we see a frame as a third eye opens in the middle of the forehead in the form of a black triangle, red-green stripes rotate in the triangle, and a black circle in the middle. Flying inside, you observe the art of thread control, which connects at a distance of tens of light-years, to try to get your part of the soul, which is stuck in some universe, and wrapped around a meteorite began to shrink in search of a saving vessel, and shrunk to the point where it entered this strange world, with a giant forest, found these young creatures who had only recently entered the top of the food chain and actually moved into the only place where they could continue to exist, regardless of the consequences. And the plot will be twisted on how the struggle of spirits will affect the body, and how the body can affect the way the giant block of ice and stone, rushing with incredible speed in space and time, which is the whole universe for this world, and on which the same one was wound up, The

saving thread of the master of the last part of the soul, which in turn, with the mechanics of film games, will conduct an internal dialogue, sending signals on the thread and skillfully manipulating it, and depending on the dialogue thread will either confuse or confuse the thread stronger or vice versa. In such conditions, you have to collect materials for the body, fighting with another wild spirit for existence, thus causing the effect of a butterfly, which through a long series of events affects the entire universe of this world, in such a way that the thread is released and returned to the master if you come to an agreement with yourself in your dialogue. History will continue to evolve in the way that you have finally built a perfectly functioning body, the details will have to be changed from time to time, but they will improve, and the spirit that prevented life from happening is gone into oblivion. And now you have a completely different adventure in this world.

Chapter 2

I want the feeling after the first quest to be so "eww", it was fucking intense and difficult, but I did it, I hope it will be a little easier. And it really is easier, we'll let the player rest, after such a shock and entering the game and the course of action. We'll let him walk through the woods, enjoy his nature and sounds, and be surprised by the fauna. And the next quest will be to find NPS, which will give you the next quest. Sometimes NPS will be difficult to find, but this will be built on the basic mechanics of the movement of the main character on the world map. Sometimes you will not be able to find NPS until you visit a place that will not be marked on the map, and which will not be marked as a must, only your intuition will lead you there. All the mechanics will be built on the super freedom of movement and mega interactive world. It will be possible to interact with almost everything. And your travels will be interesting, you will also visit the cloak Hong Kong bars, as well as in the night and daytime Hong Kong, and in old Europe and Central Asia. Only locations will naturally be forested. And your journey will be associated with a journey around the world.

And fall on the field of flowers, the field of illusion. These are heads of elephants that flow into absolutely unrelated things.

…

Before that to make a chain of quests, not all, but a chain, in some dungeon in the mountain, which then will be part of a giant, such as his left untitled toe.

About the Giant

The giant's gonna get the player after he's mastered the butterfly a little bit. Will initially dodge a mad giant who fights in a rage. Then to find a way to rise above, to his face, and there he will show you his face, and you will realize that he suffers from a split personality, but there is still a piece of his consciousness, which showed that there is a shot of someone like a monk from Aank, who sits in the lotus pose and his stone hands merge with the two walls made of the same stone. These are two huge blocks that seek to develop in different directions and thus stop the

transmission of energy between the hemispheres, which would kill the giant. And the work of energy transfer was performed by the monk, I will be a kind of transformer for both sides, passing through myself huge volumes of energy, stoically speaking, trying to survive, this consciousness makes the last breakthrough and connects with the first living being who also has consciousness, otherwise, the presence of another consciousness will simply have no one to contact. The giant's consciousness took advantage of it and got in touch with it in the way described above. And again the reference to our king, who thought it over, and the endless series of events caused the exact effect of the butterfly to contact his part of the soul and help it get back out. After that, the different colours of his eyes are directed directly at you, and the frame where you are on the butterfly, opposite the giant eyes with a face that barely distinguish you, a little more dust in size. His eyes are similar to the two circuits of solar systems, covered with patterns such as orbits and planets, and also moved, but one eye, the left eye, would be full of bright, cosmic clouds, colours, green, red, yellow and all the others. And the second eye keeping a similar structure had a white Lisa, as a sheet of paper protein, and black orbits with planets on them, which gradually rotated in his eye.

And now these eyes are concentrating on you, and they're spinning. The frame darkened everything but these eyes and the hero soaring on the butterfly into a layer of moe. The eyes open even wider, beginning to be lit by warm light from the inside, each with its own, bright and white, standard. And you are sucked into his white eye. The eye against the background of everything increases rotates faster, and you as if sucked into a black hole, and at the same time to arrange this process as if some images distorted in the horizon of events. At first, unrelated, incomprehensible, but then they will be useful to you. After you are sucked into the eye, you suddenly, after a beautiful, ancient, magical forest full of ancient moss and cheerful fireflies, which give this forest hidden bright colours, you get into a completely white desert, with a solid, dry, cracked earth, occasionally stick out there black, a maximum of hips sticks of the caused tree growths. The colour scheme is maximally minimalistic, rather white, black, beige. And you are the hero on an incredibly bright and stunningly beautiful furry butterfly, with shimmering wings and you are on top of it. And here you will find signs, talk to spirits, meet caravans, talk to the natives, start another line about life in these lands, about why it is so, what led to it, and what is happening now. And you kind of always went first to one, then to the second, then to the third, like just swinging, as always making quests, but then you start to notice gradually how the environment changes based on how you made quests. First of all, the saddles of all the camels will depend on the grocery, what shape, colour and so on, then you can go on and get into the relations and life of the citizens, just standing up for someone, and then stretch the chain of events that will make you the mayor of the city or a close friend so that you can manage this city from the shadows and then get into political relations to find a way to bring these lands to prosperity. And in the end, you will have the last quest where you will discover your magic without which you will not be able to go through this quest, as a result of which, you get to the other universe, as it may seem at first, and in the other, colourful hemisphere, where the story of the giant continues.

…

And the end of the second part of the adventure will be a revelation, but only for the players, as the main character does not know about it yet. Since it turns out that the reason for the thousands of years of the madness of this ancient stone giant was an attempt to the very last king to contact

his mind and then the player understands, okay, at first he did not know how to contact his guardian and he just plunged into a series of incredible but almost unrelated to the previous theme quests, he understands that the keeper of our own how to contact him, where it will be shown by such constantly moving shots as at first this giant is trampling the ground somewhere, it becomes smaller, now you can see just a planet, space and then a small pebble of meteorite crashes into another one and their fragments scattering begin a series of events that leads the giant into madness, because it is there, for example, sensitive as some kind of vibration that destroys his stone mind from the inside. Then these meteorites move away and we watch one part of it before the collision, and so prolong this chain of events to our king, who skilfully sinking deeper and deeper to get his part back.

...

And so the main character will pass the first series of interconnected quests, which in turn will be a part of a very long, tangled and interesting story, in the course of which the main character develops, at first he made his body almost not vulnerable and ideal for work in these conditions. He will start to develop his spirit in the field. It will begin in the chapter about the Giant. That's where it will end.

Add a twist, if the soul kills another consciousness, it will be one, and it will be lonely at times, but if you make friends, it will be stronger, but not without difficulty

To make a player feel that he is living a real-life with this part of his soul is a story about growing up, global.

Chapter 1

I was 4. My family was running away from Sira. It`s our planet. Everything was going on in a terrible turmoil. I had no idea what was happening around here. I was scared. The sounds of the

teleports were rattling in the clefts of the surrounding rocks. They were looking for us. Suddenly there was a bright white light under my feet, it hit me hard in the eyes.

< The cube in the picture is being illuminated. >

- We're all set! - My father's voice sounded like it was from under water.

< Particles around begin to soar and soar slowly as they rotate around their axes, faster and faster. >

The sound of the teleport. This time it`s near us. And at that moment, my conscious life began. Our consciousnesses were knocked out of the protective aura and released into outer space. Thus making us completely out of reach of the physical forms of life in general, not to mention the rabble of the police who were chasing us.

I woke up here, somewhere in the middle of space. Completely alone. Except for my family's memory, every one of them. Basically, that's how I found out about most of the events in the past. And that memory leads me now.

< Three fireflies revolve around him, symbolizing his family. >

(Optional. Skip?)

< Information:

It's been years. I was drowning in the memories left to me. The history of our family begins on a planet in an ancient but godforsaken galaxy. Our civilization moved to this planet almost as

soon as the conditions for life became perfect. We managed to pull it out of a whirlpool that leads into a black hole. We've been watching it for a while. And in the end, we moved. I wasn't really there then. I was born here on Cyrus 1173 years ago. People there were different. Evolution brought us to a spiritual rather than a physical state. We still had similar body forms, but the body wasn't the body itself. Instead of a body, we formed a protective aura. It protected us from everything that could be imagined. Together with the body, we lost the ability to feel. The imagination solved this problem until a certain point.

At this time, our new leader has launched a new dictatorship. The ideology of which was the rejection of all kinds of feelings and sensations. Considering that only a form of spiritualized consciousness is left from the physical body, we live comparatively eternal life. And changes on such a scale as a change of power are usually delayed for a long time. Our civilization has found peace in the art of being happy. Which, in a way, has led us to what we are now. To be happy was our culture. In addition, through evolution, we have learned to create an aura around ourselves that maintains the stability of energy in us. In its time, it even helped to regenerate our then still physical bodies. But after losing a body like that, we lost our main source of sensation. We were still able to induce them through fantasy. Which caused our energies to fluctuate. Our natural aura protected our not yet fully formed consciousnesses from loss of form. But with the arrival of Chin, the authorities developed methods to "improve" the aura, so that any vibrations of our energies were dampened by the aura. Which is what Chin wanted. And the thirst to feel began to absorb our consciousnesses. Thus, the natural course of evolution led us into a rather difficult position. People were slowly going crazy.

I wasn't born long before one practice started gaining popularity. This practice was that you send your consciousness on a journey in the middle of space, where your consciousness wanders in search of your so-called planet. What planet is this, why isn't there any information left? It's an ancient ritual, information about which was carefully destroyed by Chin. No one really understood how it worked, the practice was experimental and not legal at all. All we knew was that we would understand how to find our planet and that we had to reach it. The reason for its popularity was that if people returned after such an adventure, which usually happened after a few thousand years and not often, they got rid of anxious thirst, but what's more, after surviving this journey they got the experience that allows them to step to the next stage of evolution. It was, on the other hand, a dangerous venture. For an adventure like that, you'd be sprayed on Cyrus in no time. And if you try to imagine the size of space, you can see why getting lost there is no problem. And finding this so-called "Your Planet" is an interesting task. Not to mention the natural phenomena I may encounter on my way. And in the end, the life cycle for another creation often led to unpredictable consequences for our consciousness. The only way to send your consciousness on such a journey was to separate your consciousness and our protective aura. The families tormented by the regime set out on a journey together. Our choice was to submit to a local political regime that opposed feelings like that. Or to make a leap into the unknown. We were among the first to try this practice. And the first to come back from it. >

< Game on. >

< Follow your instincts and find what you want. > ...

Chapter 2 …

Appendix 4. Design of the ready product

The final product is a mobile application where the player can go through the story and then through the interactive part of IVN "Another World", the game. You can see an example how the story part looks like in the application (Figure 1, Figure 2):
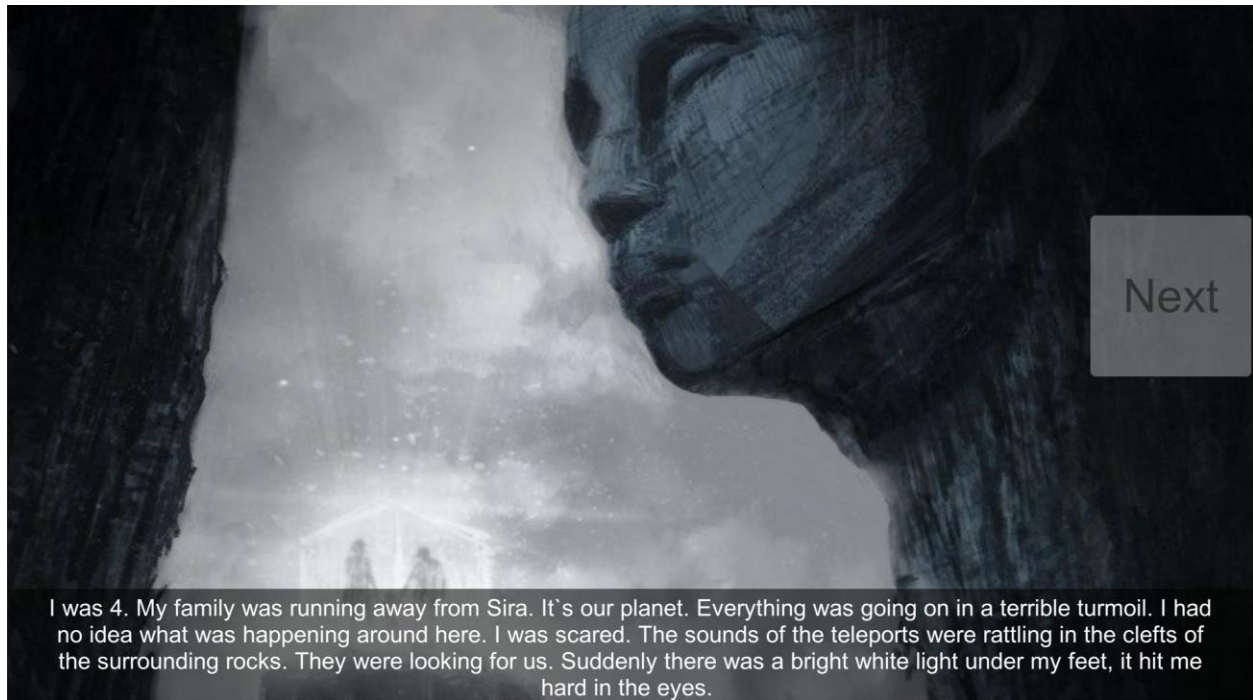

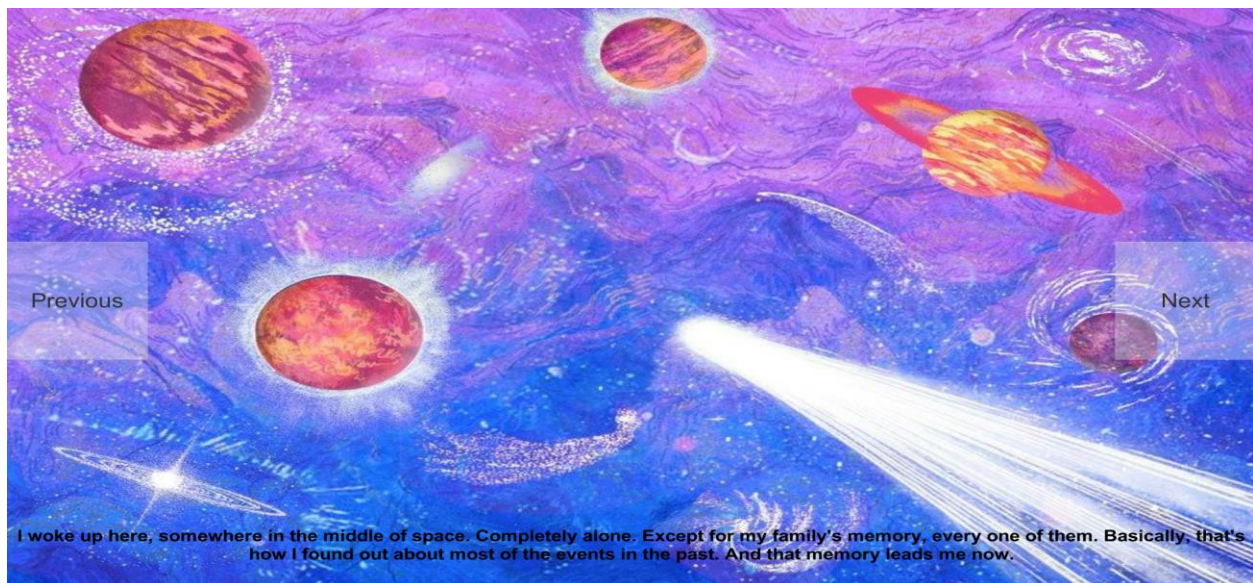Figure 1. Screenshot of one of the screens in IVN "Another World".

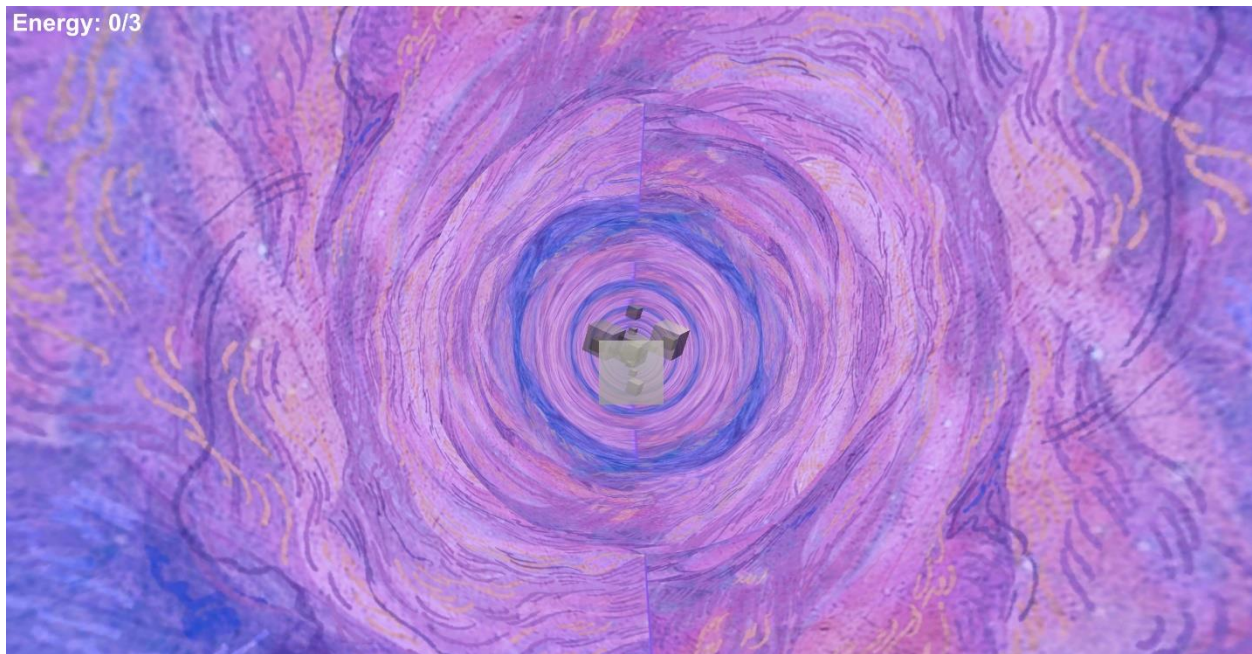Figure 1. Screenshot of one of the screens in IVN "Another World".

The game play:

Figure 3. Screenshot with the game play of IVN "Another World".

Appendix 5. Illustration evolution.

On the next pictures (Figure 1 - 5) you can see the evolution of the first illustration. In general, for the Chapter 1 2 illustrations were created. The evolution of the second illustration (Figure 6 - 8). All illustrations are done in the Photoshop by the student who is making current graduation assignment.

6.1.1 First illustration

The goal was to put user into some worrying situation, before something big was about to happen:
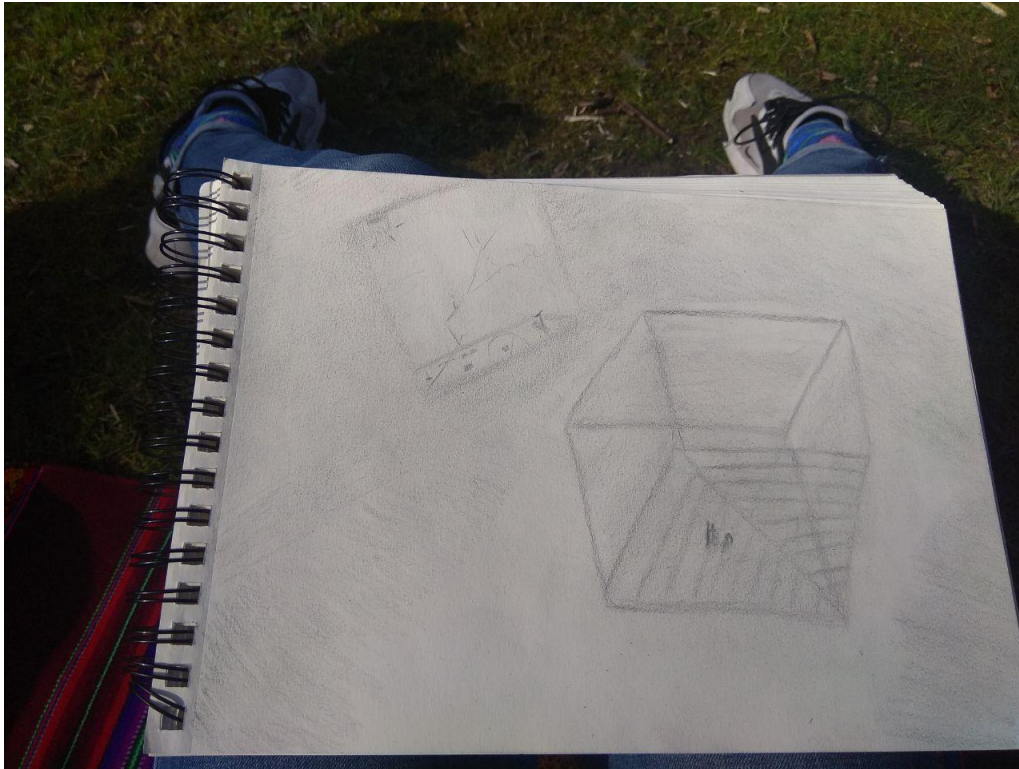
Figure 1. First scratch for the first illustration.

The first decision was to paint the picture and settle the dramatic and mystery tone to support the events in the story:

Figure 2. Second scratch for the first illustration.

Then the illustration should have supported the futuristic time when events in the story were developing:
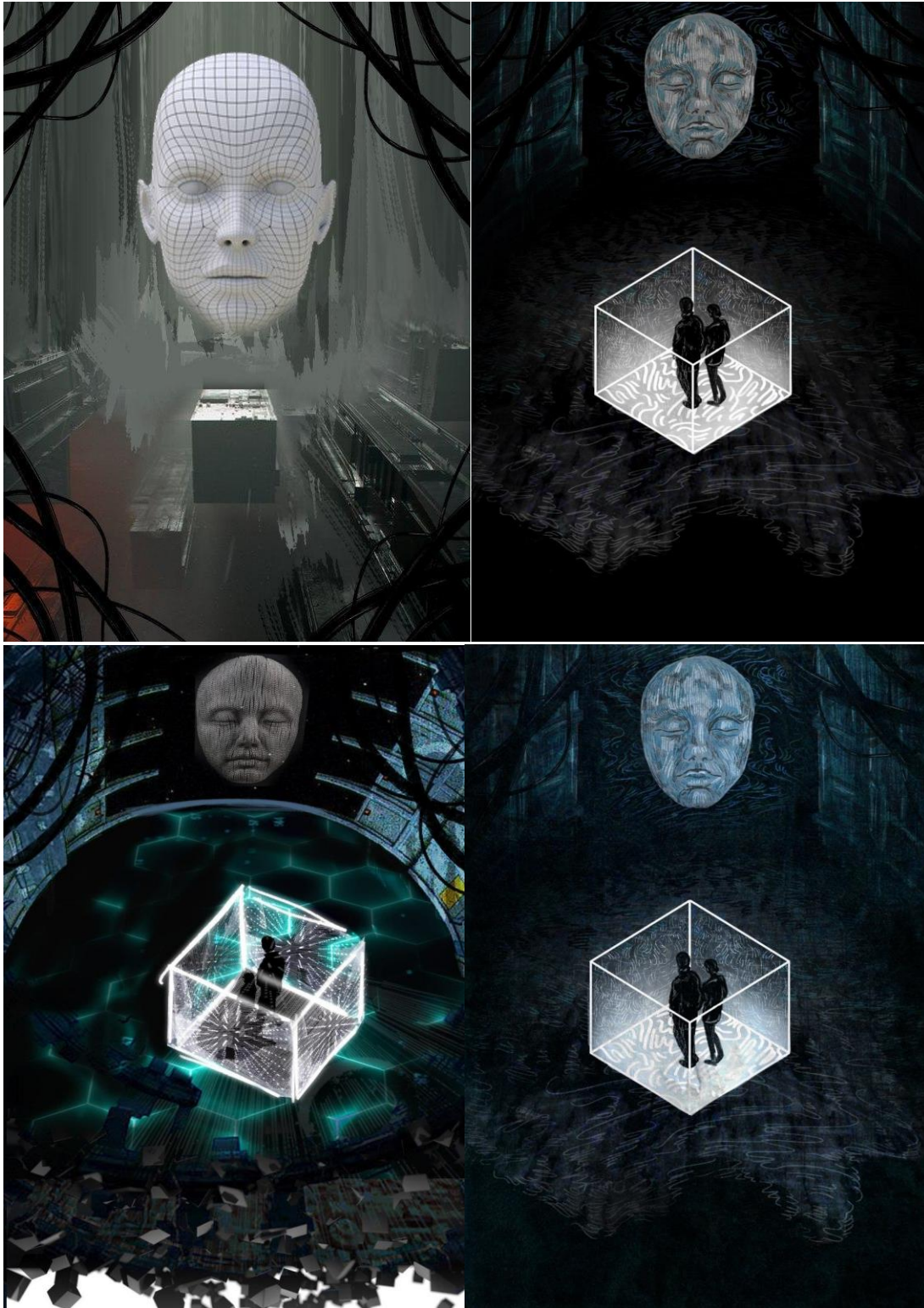

Figure 3. Experiments with the scratch for the first illustration.

The next phase was choosing the style and creation the atmosphere for the first illustration. On this step the main goal was choosing the colors and characters of line, to make the illustration feel right:
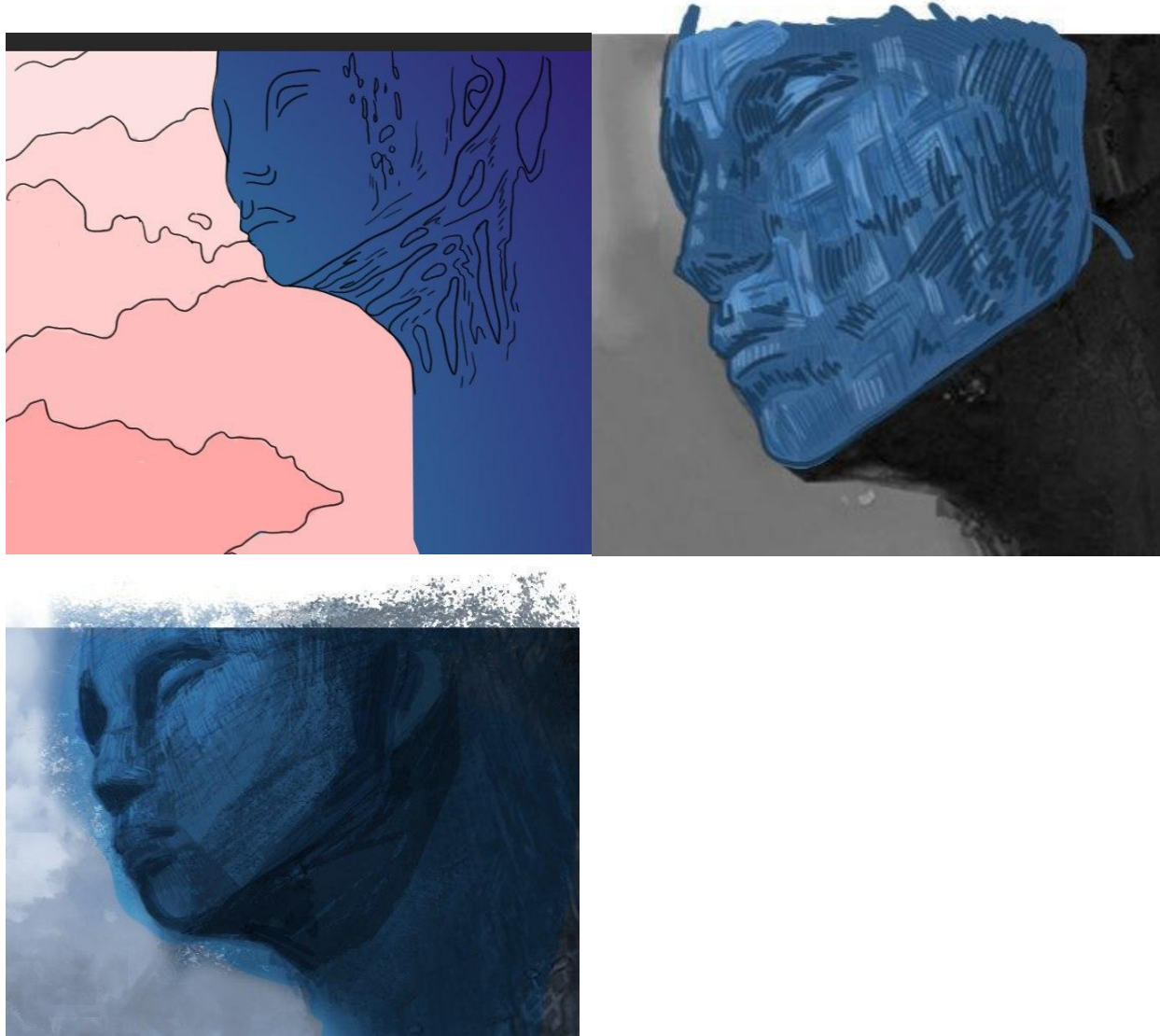

Figure 4. Choosing the style for the first illustration.

The last decision was to move the aria of events outside of the building as it was on the first scratch. The idea was to express the globality of the events in the story. Final version of the first illustration:

Figure 5. Final first illustration.

The pipeline of the developing the second illustration is exact the same as it was for the first. All decisions were made based on the story and to support the story.

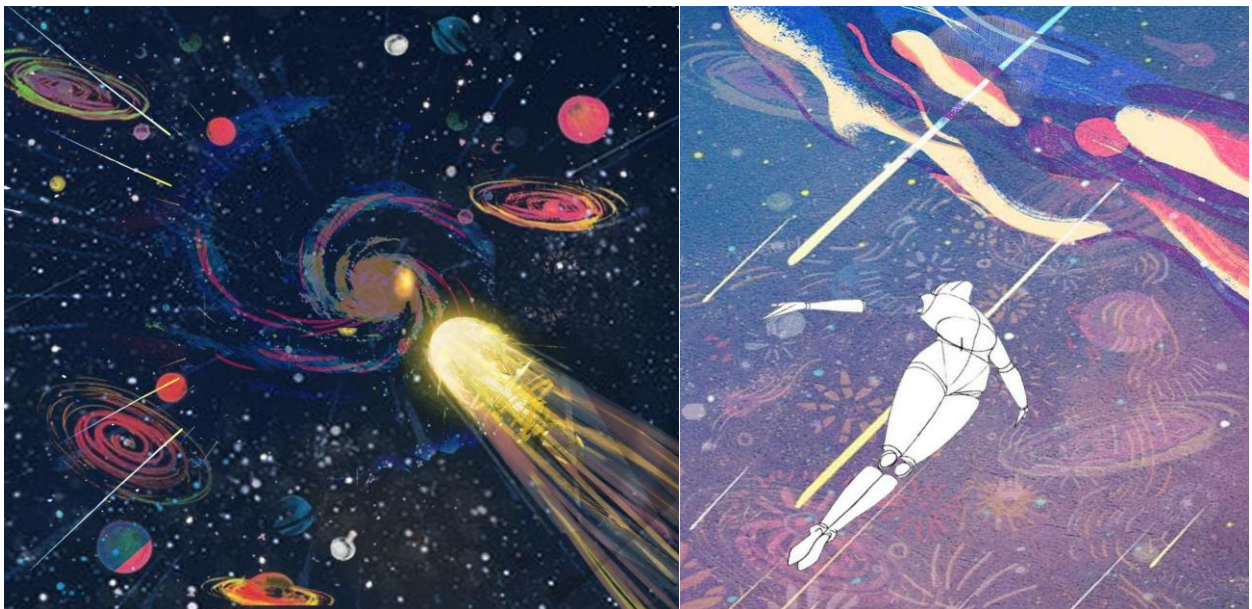Figure 6. First scratch for the second illustration.

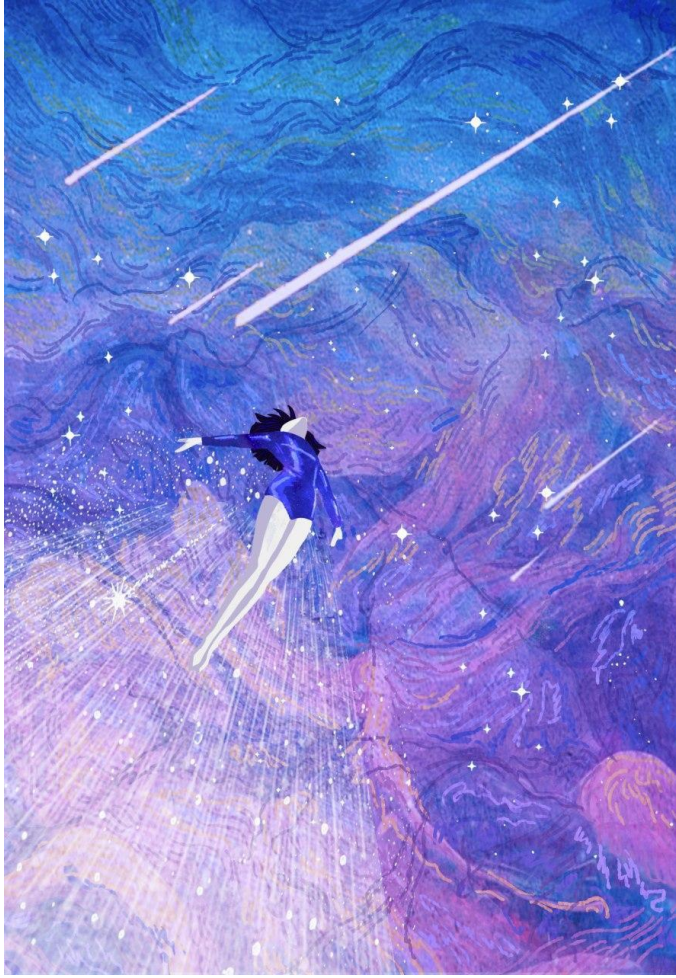Figure 7. Few steps of evolution of the second scratch.

Figure 8. The final version of the second illustration.

1. Technical research and analysis

For this graduation assignment, the student worked on developing a game, interactive visual novel. This game is based on technical subjects. The game subjects are Unity3D, C#, Zbrush, Adobe Photoshop, Adobe Illustrator, Adobe After Effect.
This graduation project is an interactive visual novel with the name "Another World". Essentially it is a digitally written story, which will be implemented as a virtual book with illustrations and animations on the pages. Those elements support the story and help players to imagine the story. The goal is to develop a story where the player becomes not only an observer, the player will become a writer, in some sense, by playing some of the chapters of the story for the main character and changing the story depends on player`s actions in the game.
The important part of the research was taken by the visual research for the illustrations. Choosing the style, forms and colours. And of course the main research of "emotioneering".

2. Designing and prototyping

The goal of this research was the prototype of IVN "Another World, Chapter 1". To test the prototype and find out what works and what doesn't, I carefully designed the first script for the story; at first on paper, then I created a prototype with based illustrations and in the end, I created a proper working prototype. Before all components were tested separately and after the first version of the prototype was done it was possible to test the product as one. One design choice that had to be made was concerning the backdrop. As I wanted to create the product, which is a mix of story and game, I came up with the idea of creating the book with animated illustrations which is becoming a game starting from some point of the story. In this way, I created a mix of novel and game, which is called IVN "Another World".

It was a huge problem to create the las working prototype because of the lack of time. I had feedback from testers group, and I knew exactly what should I build for the next testing session, but I needed to build all the components alone. Due to the different nature of art, design and technical components of the IVN – building prototype is time-consuming. The final prototype was created. After the first test, I figured out what worked and what still needed adjustments and created a second design based on that, which was again turned into a working prototype/product in less than one month. This prototype was constantly tested, evaluated and adjusted during the making process.

3. Testing and rolling out

Before the final user testing, the prototype was constantly tested by either the testers group or the responsible for this assignment student. As soon as a problem occurred, the prototype was adjusted with programming or a new design. An example of that was the menu interface of the second prototype. After testing the 'final' version, my supervisor and I realized that the interaction is too buggy and not reliable enough. During the whole graduation process, two working prototypes/products were created. For testing purpose, the testers group of 10 people with a different professional background within 20-25 years old were created. 5 man and 5 women. I needed to understand how different components of the IVN are influencing different people. The only common thing between the people in the testers group was age. Because it is impossible to communicate in such a way with the audience from a different generation. The life experience of people from a different generation is too different to cause at least the similar overall experience through IVN "Another World". To understand how and why people feel something while playing the IVN there was numerous interview with each member of the testers group. After analyzing the data from testing the feedback could be implemented in the next version of prototype IVN.

4. Investigating and analyzing

To find out guidelines to design the prototype of IVN "Another World" I first created a prototype for testing purposes. During the usability tests, I observed the people with the help of an operationalization table and analyzed the results of the test and came up with conclusions as well as recommendations for a second prototype. Based on these recommendations, I did further desk research into the problems that occurred. Additionally, I was inspired by the different museums with how the authors of masterpieces develop and convey their thoughts and emotions through their work. Together with the knowledge from my observations and desk research, I was able to design a better prototype that was more specifically designed for the testers group. Conducting interviews with professionals that work in the area of interactive game installations would have been useful to get more input and knowledge.

5. Conceptualizing

After my first test results with my prototype and consultations with two professionals, I realized that it is not feasible to create an IVN and/or guidelines for all. The prototype was specifically built for testers group 20-25 years old, so comparing how other people use it and interact with it would not make sense as they are not the intended target group. People's development level also differs immensely from year to year and from person to person. I then decided to come up with a prototype that would best fit the needs of the target group. In a brainstorming session, I found some inspirational videos about what is the emotions in the stories and how to cause them. But I wanted to make my prototype more interactive - I wanted to create the mix of the story and game.

6. Designing

To go from concept to design, I made many sketches and had a lot of discussions with my study coach and testers group. We discussed what is possible in this short period, and what is needed to make this product possible. The Moscow method was used during this phase. Additionally, I crafted and build a prototype by myself. For the actual design part, I used my newly gained knowledge from the usability tests, my literature research, and meetings with professionals to come up with my second concept for the installation. This knowledge was regarding storytelling, game design, concept art as well as audio design. The final result is an interactive prototype of IVN "Another World". Small adjustments could still take place because it is a prototype not a ready product for the market. The interaction could get some fine-tuning and debugging to work completely flawless, it does, however, work well already.

7. Enterprising attitude & 8. Enterprising skills

For the company to further use the installation, my supervisor and I had several meetings with clients who were interested in the installation or the concept of the IVN. Together with my supervisor, we came up with a new prototype which based calculations from the research can be used in-game den sphere by players, companies or therapists. But it is important to note that the product by itself, is only a prototype, but not the ready for the production product.

9. Working in a project-based

As this assignment was my graduation project, where I was working together with my graduation teacher and supervisor. Using the previous education in computer science and the experience gained in the companies working as a developer there I had a lot of programming expertise, especially in Unity. I was able to full fill the developer role in the team. I was responsible for delivering the end product in time so the role of Scrum Master was also taken by me. I was making sure that I had a task at all times, deciding on what task are more urgent, what needed more care, as well as giving deadlines. Apart from that, I was responsible for the design and execution of the prototype, including making sketches, designing the game, writing story, testing them, incorporating and testing new. Communication was done either in person or via slack, teams and tasks were assigned through Trello. My company supervisor (company owner) was always kept up-to-date and was part of brainstorm meetings to get his input.

10. Communication

The company supervisor and I had several meetings in which we discussed what choices were made, what should be done, what needs to be improved, etc. I was working alone on the project so the communication inside of the team was perfect. I got the regular weekly meetings with my graduation teacher. And a few meetings for feedback with different, not closely related to the current project teachers from Saxion. Everything was smooth and well prepared from my and their sides.

11. Learning ability and reflectivity

To create the best prototype possible in this short period I consulted with two professionals in this area. My first meeting was with Taco van Loon who is the professional story artist in the industry and the teacher in Saxion. Based on this feedback I was working in the story to make it more clear for the reader and integrate some of the writing techniques of emotioneering in the story. Based on this feedback I changed the structure of the story and decided to work with only the first chapter out of four. Together with the feedback from Taco van Loon I was researching the theory and experimenting with the testers group and people around. My graduation coach, Ruben Sinkeldam, has also helped me continuously throughout the whole graduation process. His meetings and presentations explained the graduation phase very clear. Especially his feedback on my operationalization for my observations were very valuable.

12. Responsibility

During my research phase, I have acquired a lot of new knowledge in the fields of game design, storytelling and how to work with human emotions through the interactive gameplay in the IVN "Another World". I was responsible for each component of the product, how does it look work and feel like. To be able to deliver the product I was responsible for planning and management for the project.

I took the responsibility of the whole project, taking the risk of possibly not having the prototypes ready in time.