

Wanting the Unwanted – What Games Can Teach Us about the Future of Software Development

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Abstract. Do you know anyone who likes to engage in uncomfortable topics like tax return, household chores, diseases or death? Nevertheless, this is necessary in various life situations. The presentation of suitable motivational factors can offer an answer to the problem. In terms of Gamification, corresponding approaches have already been finding their way into the development of business and educational software. But we can still learn from the games industry that motivational problems can be overcome easier by taking into account game design mechanisms in early conceptions of interactive applications. As an example this paper considers the platformer *Limbo* [1], dealing with death crucially. The game which has been published in 2010 has experienced global success until today by providing its recipients a framework to reflect upon this topic, frustration and motivation factors being balanced skillfully. This paper examines how gaming systems can facilitate engagement in otherwise uncomfortable topics, analyzing one game within the entertainment business and describing two implementations of gaming systems in medical and educational fields.

Keywords: Game Design, Emotional Design, E-Learning, Achievements.

1 Introduction

Software developers often encounter the problem of making complex content understandable for their users. In developing e-learning and business applications, components of visual design, conceptual design, emotional components and narrative strategies pose important motivational factors for communicating content effectively. Games have been making use of this for a long time already in form of digital puzzles, tutorials, cut-scenes and other forms of communicating with the user. But especially in Germany games still need to become more widely accepted not only in the entertainment business, but as a medium of artistic expression and as a means for teaching all kinds of content as well. However, there are tendencies of a slowly changing attitude towards video games as an article in *Der Spiegel* from January 2014 suggests, titled “Why computer games are better than their reputation” – but there is still a long way to go. In the United States, modern hospitals are already beginning to embrace the good video games can do in a medical context, whereas in countries like Germany, a rather skeptical view towards video games often prevents games from

being seen as meaningful, ending up being neglected outside an entertainment context [2]. A feature analysis of the game Limbo also discussing how this game manages to evoke thoughts about its core theme is followed by two practical examples within the context of motivational software design based on game systems.

2 Case Study Limbo – Breaking Down Barriers

Limbo seems to have almost nothing publishers for current generation consoles these days would want from a game. Being unable to use social features or to share content online, the game shows just minimalistic graphical quality and offers little complexity in its core mechanics. So why choose Limbo when it looks like such a bad example for successful software development?

Because it is not. This game shows very clearly, how skillful use of reduction can establish complexity. Minimalistic controls, an abstract, black and white and not even textured world, the total lack of spoken language or even an interface do make sense in this game's environment. Neither the thematic context of the game being obvious from the beginning (which could be considered a very unpleasant situation for the developer) nor the gamer being told what awaits him or her within the next 3-5 hours of playtime, the player has to come to terms with the topic of death himself first and unravel what Limbo is really about by playing through it for the first time.



Fig. 1. Untitled screenshot of Limbo's opening (Source: <<http://bulk2.destructoid.com/ul/178410-/192.168.0.254-image4-noscale.jpg>> [visited 07 February 2014])

It starts out by letting the player wake up in a dimly lit forest – the avatar being the black silhouette of a little boy with glowing white eyes – and sets up the one overarching quest of the game: walking to the right and finding out what lies beyond.

While venturing further into the forest, the player encounters various dexterity-based and thinking puzzles that have to be solved to advance. Although the controls being simple and therefore easy to learn, the thinking puzzles make the most of it by turning the options of the single use button into a variety of events that can be activated context sensitive by using switches or other devices. Most of those puzzles almost cannot be solved on the first try. In fact the player will die frequently due to the world of *Limbo* being extremely hostile with deadly traps hidden everywhere. Although save points are placed fairly to avoid having to replay too much of the content on each retry, it feels quite harsh seeing the character die over and over again, often in cruel ways. Through play-testing this game at the GameLab Freiburg¹ we found that although the abstract visuals providing enough distance between the events happening on screen and the dramatic content portrayed, players empathize with the protagonist, suffering with him each time he falls to his death yet again. This emotional connection with the character already might bring up some questions about the necessity of dying so often and the theme of death itself.

As the user progresses, the scenery in the background changes from a natural forest setting to a more industrial one. Other human characters appear in the world, all of them being hostile towards the protagonist as well. Those characters, too, need to be overcome to progress. Towards the end of the game the player will have a lot of questions about what the world of *Limbo* actually means or resembles. These questions become even more relevant after solving the final puzzle and then ending up in the very place the game started out from. After slowly having woken up again, the player discovers a scene to his right clearly being different from what was there before, raising the question whether the journey experienced by the player was real or not. At this point, the game ends.

At first players might feel disappointed with this unfinished ending. But after the credits disappear from the screen, the game presents a new menu screen showing exactly the same location the game ended with - except that in this version, there is no protagonist anymore. A swarm of flies indicates that it might be a dead body lying there in the grass. This summarizes the reality of the world the player just went through. Even more, the title “*Limbo*” resolves that the whole game could be about the speculative idea of the ‘limbo’ in Roman Catholic religion. Brian Duignan describes this as a world where people who recently died must face and overcome several trials to be allowed to finally pass away [3]. In this context all of the puzzles presented in *Limbo* become much more relevant on a meta-level, resembling life challenges that need to be overcome and relived again. The protagonist having been dead all along contextualizes the game much clearer and motivates to see this game in another light on a second play-through. Featuring challenging achievements, the constant desire of wanting to know more is kept alive even after the game has ended. The player is rewarded for discovering hidden locations for which certain skill based puzzles have to be exploited or different altitudes of the current level have to be investigated. By doing so, the game encourages the player to explore its world further by even rewarding him for things he is actually not even supposed to do in terms of storytelling.

¹ GameLab Freiburg - new media research facility. Part of “Hochschule für Kunst, Design & Populäre Musik, Freiburg”.

This game can basically be understood as a game in the sense of the game being a space a player can enter voluntarily, in which a goal is to be achieved within a given set of rules “by overcoming obstacles that would not necessarily have to be there” except for the cause of conflict and choice [4]. Being a well-designed puzzle game, Limbo basically resembles an extended tutorial at its core. Almost every puzzle, every new section of the game is bearing new challenges for the player to take up that have to be understood, learned and mastered to progress. In most cases, the developers anticipated potential player behavior and designed follow-up puzzles almost always completely different from what the one before was working like, while letting some of them still visually resemble one another. The frustration that can arise from falling for another trap yet again or the joy of having anticipated a situation correctly and therefore succeeding at the first attempt both contribute to a very important human component Limbo makes use of quite often: situations associated with strong emotional contents are more likely to be memorized [5], posing a vital point in digital learning environments.

In analyzing Limbo as a concept and regarding the features mentioned above, a lot of aspects can be discovered that professional software development could benefit from. Firstly, a game does not have to offer complex mechanisms to convey complexity as this can be achieved through the system reacting context sensitive to the actions of the player. Secondly, feedback mechanisms and achievements can facilitate cohesive learning processes about a topic in understanding causality through interaction. Thirdly, crafting emotionally charged events as well as a meaningful scenery inviting the player to explore can lead to more memorable content.

Additionally, a rewarding and well-designed product can generate something very important considering its reputation: fans. Every successful game and even more every successful game-series has a lot of people worshipping the product, practically generating free marketing via ‘YouTube’ videos, willing to buy merchandise, but most important being loyal to a brand. This phenomenon has not just happened with games, movies or music, where it has been existing for decades, but even with product design as shown by the immense fan base and brand loyalty Apple’s iOS-devices have created over the past few years. But what about professional software – can it be engaging at all?

3 Implementing Game Mechanisms in Professional Software

When have you ever heard someone talk vividly about programs like Word being the latest installment in entertainment software? After “Clippy”² - the helpful paperclip - as a first and not very successful attempt in the 90s to make that product more personal and engaging, not much has really happened on that part. It can be argued that this has never been Microsoft’s intention with this product, but would an attempt to make such programs more engaging be such a bad idea?

²<http://www.microsoft.com/en-us/news/features/2001/apr01/04-11clippy.aspx>

Imagine a software like Word having an optional “explore” mode where just a very limited amount of features are accessible from the beginning until the user unlocks the more advanced features by using associated basic features of the same type more and more. The user could be questioned about his level of experience with the product at hand on the very first startup. An ‘explore’ or ‘expert’ version would then be loaded automatically leaving advanced users with their current state, but offering new users a responsive exploratory tutorial version of the software explaining itself throughout being used and could therefore offer a more engaging and understandable experience.

These are just general ideas how professional software concepts could venture a lot further. How making use of the mechanics a game like Limbo offers and changing the paradigm in how we approach software concepts can improve development is portrayed in the following two examples.

3.1 An Example from Health Care

Dealing with psychological disorders is almost never an engaging experience to begin with, whether from the perspective of the one concerned or that of an outsider. Games might not be able to convert a psychological disorder into a fun experience, but making the process of understanding the illness itself more engaging could make dealing with it a lot easier. These might have been the thoughts of the concept team at Area Effect³ who developed Bipolife [6], a game published by Ubisoft in 2013. Bipolife can be described as an interactive experience about the struggles a person suffering from a manic-depressive disorder has to face every day. The program is being used not just for educational purposes and to raise awareness about this kind of bipolar disorder, but also accompanying psychotherapy for patients with that very diagnosis. To ensure the authenticity of the product, the concept for the game was developed by an interdisciplinary team of game designers and therapists.

The avatar controlled by the player features resources (energy level, health and mood) needed to execute every single activity during the day. Even common tasks such as getting out of bed, eating breakfast or calling a friend will consume those resources. The game balances them so cleverly that the players eventually finds themselves not being able to do anything as resources deplete much faster when in a depressive state. This interactive experience illustrates more clearly why people suffering from a sincere depression sometimes cannot find the energy for even the simplest tasks. Patients often are not aware of the symptoms they are experiencing and what kind of actions could affect their current state. The game therefore offers the possibility of replenishing the psychological resources by attending therapy, taking medication, trying to be more active, calling a friend etc. The environment of the game even reacts visually to the other bipolar end – mania – with changes in color, creating a more vivid scenery and even illusions the player can only experience when in this more hectic and agitated state.

Being structured in this way, the game manages to teach the player more than scientific facts that can be learned from literature about this topic. By actually

³ <http://area-effect.com/>

experiencing the simulated restrictions of a depressive phase by literally not being able to do anything without enough energy or motivation, the recipient is able to get a deeper understanding of how this kind of situation might actually feel. In the case of a patient playing this game, it will help to understand the experienced symptoms. Even when a person with enough empathy could achieve this level of understanding as well, a learning game built like an interactive case study though offers the recipient a stronger sense of identification with the main character.

The concept for Bipolife needed to be developed up-front, so that these interactive learning structures could add up to an immersive experience featuring actions and consequences rather than an interactive book, where the same theoretical information could have been acquired from reading a digital version featuring mere descriptive texts. The didactic process had to be resembled by the mechanics of the game or it would have failed as an interactive learning environment.

Similar to Limbo, Bipolife encourages the players to explore the world of the game and makes them want to see what can or cannot be accomplished within its boundaries. It also creates the desire of wanting to know more about the topic at hand - as presented in Limbo. In this case, the world to explore is the psyche of the main character (associated with a bipolar disorder) in an otherwise very ordinary world. The game has been available for approximately 10 months now and therefore longitudinal studies about reproducible effects on therapy programs have yet to be published.

3.2 An Example from Professional Learning

Becoming a restaurant manager can be an ambitious goal to thrive for; undertaking the education to do so on the other hand may not be that exciting. At IMC⁴, we are currently working on a software solution providing an interactive and engaging e-learning game for training franchise restaurant managers. The learning game functions alongside classic reading materials and is intended to evoke a deeper understanding of team dynamics and work guidelines through interactive modules. It is focusing on different aspects of the job such as social and organizational skills, problem analysis and the development of training strategies for co-workers in a motivating way.

While taking the role of a restaurant manager in the game, case study oriented scenarios confront the player with difficult situations one after another. One example could be a competitor building his restaurant next to the one the player has to lead and consequentially having to deal with insecurities of his own employees concerning this development. Playing a fixed character and not just fulfilling a role helps identifying with the protagonist, and actions therefore feel more relevant to the player. Employees' characters (NPCs) will show changes in mood and motivation according to the actions taken by the user to provide feedback. Alongside that 'social' feedback, the system shows the player an overview of food resources as well as production efficiency statistics at all times. By examining those emotional reactions and values, the player can evaluate every decision immediately and thereby develop an overview of how motivational factors, mood changes in the team and productivity are interconnected.

⁴ IMC Information Multimedia Communication AG. Saarbrücken, Germany.

Changing the approach to types of learning material used in educational programs is a big step for a company in itself. But in early concept stages of the project and discussions about educational strategies, it became clear that interactive feedback mechanisms could be essential for the learner and would be difficult to communicate without personal training and by using only text based material. Being a restaurant manager most of all requires soft skills in the interaction with co-workers. Therefore, emotional understanding of the work environment will be enhanced by NPCs offering facial feedback, changes in gesture and differences in speech depending on the current situation. The goal of becoming a successful restaurant manager is established early on the course of the game being about exploring the means of achieving this goal especially when it comes to organizational and communication skills. In aiming to provide a much more motivating learning environment for future restaurant managers (compared to plain texts to learn social and productivity guidelines from), the game gives the trainee the opportunity of exploring the possibilities and challenges this job involves by using various sorts of media content (e.g. through mini-games, presentations, dialogues, interactive conflict scenarios etc.).

While the gaming system might bear the possibility of providing an interesting framework to learn about being a restaurant manager, there are also risks that have to be taken into account. In every educational program there are mandatory tasks that have to be completed in a certain period of time. The same applies to a learning game. Unfortunately, research has shown that when people are obliged to play a game, it will almost never be as engaging as if the game was participated in by choice. Johan Huizinga, Roger Caillois and many other game theorists even see the voluntary act as one of the most defining criteria of being a game [7]. Concerning this, even a good game can be no fun at all when being forced upon a player within a nevertheless stressful educational environment.

With a re-uptake rate of almost 100%, the card game *Reality Ends Here* from the University of Southern California has already shown how a supporting educational game can raise awareness for a topic and provide a productive learning situation [8]. This game, aimed at film school students of the USC School of Cinematic Arts, encourages its players to explore mechanisms, challenges and job profiles within the film industry and thereby preparing them for the time after their graduation. Considering these findings, the integration of a learning game into education also becomes a vital aspect in designing and communicating the final product. If the employer/instructor cannot be advised to create a context in which the learning game offers a more engaging yet optional way of learning, the product will most likely not be as effective. But if the resulting product is created with these risks in mind, it can have the potential to let users explore a topic much deeper, immersing themselves into a world unknown and willing to find out more about it.

4 Conclusion

Games function as interactive learning systems and do so very well. They use mechanics to immerse the player in a surreal yet fascinating world and create a desire to

explore its content. When trying to implement game mechanisms into other forms of software, components have to be chosen carefully. Also when planning to contextualize a topic in a more engaging way (as seen in Bipolife) or establishing goals for the player that can be evaluated procedurally through feedback systems (being the development goal of IMC's educational software), the interactive system has to be understood as such from the very beginning. Just applying gamification to an existing system might not always be enough and can lead to less engaging systems that, in the worst case, feel more constructed than motivating.

A development team needs to be aware that a game is not inherently fun or engaging because it is a game per definition. Just making content interactive for the sake of interaction poses the threat of unintentionally creating an interactive slide show being no more engaging than reading plain text. On the contrary, structuring content in the manner of a well-designed tutorial by teaching the user new features only when needed can boost motivation and facilitate learning. Creating meaningful content with emotional aspects that the user can still remember after completing a course, while on the developers' side taking into account the needs of the intended audience, is a crucial point in designing interactive experiences.

In my work as a designer and freelance developer for e-learning applications, I do encounter the need for motivational design every day. In developing the franchise restaurant manager training game described above, the development team has already solved motivational problems by implementing suitable feedback systems and created emotionally charged scenarios to facilitate memorizing crucial team processes. In this regard we might be on the one hand getting closer to provide a context in which the concept of "wanting the unwanted" becomes possible. On the other hand, communicating to a client that the final product/game works best when being an optional component of the education still proves to be challenging. Voluntary participation is something an employer or training instructor of a player cannot accept easily since projects of major financial investments are always expected to pay off. We are currently investigating this very issue and hope to be able to present answers to this problem soon.

Games are changing. Visionary game designers like Jane McGonigal, Brenda Romero or the development team behind the Oculus VR⁵ have already created programs and concepts that could change the future with games as a starting point. So why not change our approach to professional software through games?

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