Punishment and reward as motivational factors

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Abstract—**Many computer games work with the motivational factors of punishment and reward (P&R). While research already exists about how this influence aggression and violence, little has been done in the ways of how using one or the other might affect the gaming experience. In this project we made a game with two different scenarios in order to highlight the different effects between P&R on the players experiences. Through two separate focus groups we analyze which effects the specific scenarios have on the players. This can be used as inspiration for further research into whether the use of P&R in video games might affect the players' ability to transfer in-game habits to real life situations.**

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I. INTRODUCTION (HEADING 1)

Punishment and reward are often used in video games to drive the player motivation, but the majority of the research within this field has been focused on how video games affect player aggression or violence. Little research has been focused on the general effect of usage of punishment or reward as motivational factors on the players' gaming experience.

This research project will be centered around the exploration of the difference between the gaming experience of games using respectively P&R as motivation factors. However, before we can explore this phenomenon, we must develop a platform through which we will be able to carry out our research. The goal of this research is to collect data about P&R in video games and how these motivational factors can be used to affect the players' gaming experience. Furthermore, the research will be focused on the field of energy management, which is an aspect featured in many video games. !!

How does the players' gaming experience differ in relation to games using respectively punishment and reward as primary motivation?

And as a sub question - How can these two motivational factors be explored?

II. DEFINITION OF REWARD AND PUNISHMENT

==When we look at P&R we find this situation where rewarding players can create the sense of punishment when they are not being rewarded and vice versa, thus it is important to clearly define what we mean by P&R. Punishment and reward when applied to video games could be interpreted in many different ways.== In the case of this paper we are talking about reward and punishment tied to a set of one or multiple mechanics of the game. Our understanding of game mechanics are drawn from Miguel Sicart's definition that "game mechanics are methods invoked by agents, designed for interaction with the game state" [3]. They connect the players' actions with the purpose of the game and its main challenge, and are in most cases directly connected to input devices. Furthermore, they are best described by using verbs; e.g. to walk, to jump, to turn on, to shoot, etc. [3]. So in our case we understand P&R as an effect of the players' use of game mechanics, or put in another way; as the players are interacting with the game are they then rewarded for doing it right or punished for doing it wrong.

So what form might P&R take in video games? Drawing on the common definitions from the website Dictionary.com; to reward: "something given or received in return or recompense for service, merit, hardship, etc." [1]. and to punish: "to subject to pain, loss, confinement, death, etc., as a penalty for some offense, transgression, or fault" [2]. Reward would in this sense be to give the player something and punishment would be to remove something, confine the player or end the game. Since we cannot physically take or give something to the play, we can only affect the game state in which the players find themselves. Game state in this relation being the current situation the players find themselves in within the game. Thus it can be said that P&R in video games are respectively decreasing- or increasing the value of the current game state to the players.

We see three ways in which games can reward or punish its players; through power (i.e. leveling up/down, gaining/losing equipment, gaining temporary bonuses/penalties etc.), progression (i.e. progression towards- /away from the game goal) and social acknowledgement (i.e. online ranking, highscore lists, etc.). It could be argued that juiciness, a term coined by Jesper Juul as the way games gives the players positive feedback for user input [6], could be considered as a way of rewarding the player and in some ways it is. However, juiciness as we understand it is the sensual feedback on the players actions and does not necessarily entail a correct use of the game mechanics. Juiciness can be used to indicate a correct use of a game mechanic just as well as an incorrect use of a game mechanic, and thus does not make much sense within this terminology of P&R. To sum things up; the players start the game in a neutral game state and as they actively use the

game mechanics correctly they are then rewarded in the sense of transitioning to a game state that is of increased value to them. Likewise if the players use the game mechanics incorrectly they will be punished in the sense of being reduced to a game state of lower value, or by ending the game. Thus, even though the players might feel punished when are not being rewarded it is in fact not true punishment as they are not being reduced to a game state of lower value but remains in their current game state.

When we state that a game can be based on punishment or reward we are talking about how the game communicate the players' progress. For example if a game is based on punishment we mean that the game puts an emphasis on punishing the player for doing something wrong, while a game based on reward likewise rewards a player for doing it right. This means that the players would get slapped on the fingers for making wrong decision or just not making the right one more in a punishment based game. The reward based game applauds the players if they do right. It should be noted that both of these games would have both punishment and reward, but what we mean by punishment/reward based games is the what the emphasis is in the game - punishment or reward?

III. HOW CAN THIS BE EXPLORED?

Finding two games that based respectively on P&R would be doable but posses a comparative problem; how can we know that it is the differentiated focus on P&R that causes the difference in player experience and not the native difference that lies in the games themselves? In order to properly explore the motivational effects of P&R we need two games whose gameplay are as close to each other as can be, with the only exception being the emphasis on different player motivational factors. This proved to be very difficult task and thus it was decided that the best course of action would be to develop a testing platform ourselves.

IV. DESCRIPTION AND ARGUMENTATION FOR THE GAME

Our game was developed as a two-scenario game; one scenario putting an emphasis on rewarding the players and the other on punishing, but both sharing the same mechanics and game play. The overall theme of the game was that of a miner trapped in a mine with a generator running the lights and air supply. It low the players' job to scour the mine for jerry cans filled with gas and bring these back to fill up the generator. The mine, however, is dark and and in order to navigate the mine the players need to switch lights on and off. As the players turn on more and more lights the generator will use up its supply of gas more quickly; thus leaving the players with the challenge of managing their light sources and gas usage carefully. The game was set to a three dimensional first-person view and the main gameplay consisted of running out into the mine, locate a jerry can, bring it back to fill the generator by using as few lights as possible to do so. The main difference in the two scenarios were in the fact that the emphasis on punishment or reward shifted. In scenario one (SC1) the players were tasked to keep the generator going for as long as possible, with the game ending if the generator ran out of power. The second scenario (SC2) gave the players 5

minutes to fill up the generator as much as possible while constantly receiving a varying amount of score-points, depending on how much gas was in the generator. Should the generator run out of power, the lights would turn red, but the game would keep on going until the 5 minute mark had been reached.

In SC1 the main motivational factor was punishment. Players are punished for incorrect use of the game mechanics tied to turning the lights on and off. By not managing the lights as the players navigate through the tunnel, the gas usage of the generator will increase and should the gas run out; the game ends, thus reducing the value of the game state by ending the game. Furthermore, if the player does a good job managin their lights and gas usage they are not rewarded in anyway except for the extended playtime. In SC2 when the players use the game mechanics correctly they are rewarded with an increase of value in the game state with no risk of decrease of said value. The players are given points throughout the game and the amount increases greatly whenever there is gas in the generator. Furthermore, even if they players stop managing their lights they are not punished in any way.

missing section

Argumentation. Why does our solution work, and why did games that are so alike prove that much better than different games?

V. DESCRIPTION OF FOCUS GROUPS

We conducted two focus groups, one group got to play our game that was based on punishment (SC1), the other group played our game that was based on reward (SC2). Each of the respondents did not know that the other scenario existed, and both were told to merely playtest a game and talk about afterwards. Having each of the focus group's participants play a different version of the game enabled us to compare the analysis of the focus groups to grasp the effects of P&R as motivational factors. We tried to run both focus groups similarly, group 1 played SC1 of our game and group 2 played SC2 - otherwise mostly everything was run the same way, so our respondents had the same basic settings for playing.The

respondents and the moderators did not know each other, so there is also a greater chance that the moderators will not miss the imponderable of everyday life [7].

In the first focus group we only had two respondents, so our two moderators had to participate in the group discussions it would have been very difficult to keep our respondents talking for very long otherwise. The second focus group had four respondents, so we had more of a traditional focus group where the moderators more or less sit back, listen to the conversation and take notes - then ask questions if something needs to be elaborated or a topic needs to be mentioned [5]. We find that the two focus groups are still comparable even though there was a difference in the executions of them. Halkier says that the one of the pros of using a smaller focus group is that you can go in depth with the analysis and to a greater extend analyse language and meaning [5]. This is exactly the approach we have, we want to analyze what each person says about the gaming experience - and find out what the group discussed about the game. So rather than having a bigger group where our respondents would have a tougher time getting to express themselves, we had two small groups and more accurate data for this project.

- Everything below this line is still under heavy construction --

VI. RESULTS & ANALYSIS

The two focus groups gave us some similar data and some that differed. When we asked whether the players wanted to finish off their game before we started the conversation in the focus group, the respondents playing SC1 stopped playing immediately, and the respondents playing SC2 finished up their game. This could be an indicator that points to the respondents had more fun playing SC2. Furthermore when we asked about the playing time, the respondents in the first group thought they were given a tad too much time to play, whilst the other group felt it was just fine - although they did state that they did not want to play for much longer. One thing that might have an influence on this is the fact that in SC1 ones ending score is shown in time - and in scenario 2 it is shown in points. From what we heard in the focus groups people reacted better to points, they were fired up to beat their high score. The first group even asked for a point system to be added to our game, they thought this would greatly enhance the experience of the game.

One common topic in the focus group was how frustrating it was when one had journeyed out in the cave system and then the lights turned red. Basically our respondents felt like they might as well start all over as it is so difficult to navigate in the dark. One difference in this aspect though was that the respondents who played SC only returned one jerry can to the generator in red light all together, while everybody managed to at least return one jerry can each during red light. The respondents playing SC1 also seemed a bit more frustrated about it than those playing SC2. (Indsæt citater fra begge fokusgrupper).

Respondents of focus group 1 missed reward, Participants of focus group 2 missed reward (citater fra lydfiler).

Both focus groups missed overall juiciness (Juul) and feedback from the game especially at the end of SC2 where the game fades to black and displays a score, the players were wondering if they had died or what happened.

VII. DISCUSSION

The choice of the motivational factors P&R can be argued that it brings a specific focus on the gameplay itself and the gamer instead of context of the game itself.

As Nick Fortugno defines a hardcore game: an unforgiving system, where failure is noted more greatly through punishment than in casual games [4]. For instance, a way of punishment in a hardcore game could be that the gamer has to restart a whole level if his character is terminated just once. This can force the gamer to focus heavily on the gameplay instead of the metaphors, because there is a steeper learning curve because of the focus on failure. However, this was our ultimate intent, so the gamers would discover the metaphors subconsciously.

In casual games according to Fortugno [4] we find greater feedback on success achieved by the players in the form of reward. A reward could be more winning point or an extra avatar to help you win. This is because the casual gamer does not have the experience in game playing as the hardcore players does. Without the experience the casual gamer has less patience and therefore has to be rewarded more notable for the interest of the game to be kept.

The gamers are made winners basically no matter what, and so they can focus more on the game itself and its content. This positive way of steering the game could give a significant different outcome than the usage of punishment as a motivational factor.

As we saw in the focus groups the participants, who played the punishment weighted game wanted more positive motivation in the form of reward and vice versa, in the same way Fortugno says that because of the culture of casual games where the gamers try them before they buy them, the casual gamer gains more experience within the field [4] and this would explain the desire to merge the two games.

However, with this desire some concerns arise, for instance with the design of the game [4]. For even the most inexperienced gamer (non-gamer) to be able to play the game, the gameplay has to be fairly simple and this could put off a hardcore gamer from playing the game. Therefore, the focus was more on the gameplay, than the context of the game for the hardcore gamers. The game was then aimed to be a casual game.

The game design of SC2 had some flaws, as it was forced into shape based on SC1 which were the original concept. SC1 relied on punishment, whereas SC2 had to rely on reward. This resulted in a scenario that used no less than 2 extra information meters (point score and time), which ended up

decreasing the game experience as the game was less accessible. This was also pointed out during the SC2 focus group. However, it is a challenge to design two identical games with such a different focus, as in this case, and it can be argued that the problem could possibly be solved in a better way. The dilemma is to make similar games to better test or to make less forced game designs.

This were, at the time we decided to make similar games, unexplored waters to us and since we did not have time and resource for researching which option were best. However it is a definite possibility, that this has created a more positive opinion of the less forced game concept. This also showed itself during the focus group of SC2, where the respondents used a lot of energy on trying to correct the flaws of the game, and interestingly enough ended up developing an exact replica of SC1.

Creating different games with less forced game designs however might yield different results altogether making it harder to distil the effects of P&R through the analysis.

The best possible outcome of this dilemma might be to brainstorm a game design that without being forced can be both focused on P&R. However given the creative process of designing games it is very hard to define a solution as optimal. As ours definitely is not.

Given the situation our solution was the best!

(Also possible to discuss whether scenario 2 should have more visual feedback when winning etc. to give more reward)

VIII. CONCLUSION

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IX. SUGGESTION FOR FURTHER RESEARCH

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