# The Mechanics of Losing: To Hate or Not to Hate

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Abstract—The unpredictability of games lies at the very heart of what makes them interesting and exciting. One of its consequences is that when a game ends, there is one or more players who are either winners or losers. Obviously, players desire to win. Hence, the bibliography focuses on how to define who wins the game. However, the losing party of the game have a greater potential of learning from the mistakes and correcting attitudes in the future, which makes losing relevant to serious games, in which the player must develop some kind of skill during gameplay. In this paper, the mechanics and consequences of losing will be explored in order to gain some insight as to how to use losing to improve learner performance.

Keywords-loss aversion; serious games; player motivation

#### I. INTRODUCTION

One of the initial design decisions made when creating a game – albeit, a serious one – is the win condition [1] [2]. If the game is a non-serious, the win condition must be aligned with the game mechanics and possible to be achieved during gameplay. Otherwise, the game will not only be impossible, but it will have no objective whatsoever, resulting in a pointless experience for the player.

In the context of a serious game, the win condition plays an even more central role, as it must be aligned with the educational purpose of the game, as the goal is not (only) provide a means for the player to have fun, but to acquire any given practical skill. The design process must guarantee that if the players succeed in the game, they succeed in the learning process.

However, the opposite outcome  $-\log ing - does$  not receive quite the same attention as the one given to winning the game. This is an odd fact, taking into consideration that the existence of a winner implies the existence of a loser. The lack of attention to the losing state lets the opportunities for game design and benefits acquired from losing go without the deserved attention, which may prevent designers to take advantage of some opportunities to create interesting experiences for the player.

This paper discusses how losing affects the player and how the current theories regarding player motivation address this topic. Moreover, it will be discussed the beneficial impact that losing may have on the game and how it can impact (and benefit) serious games in general.

#### **II. SERIOUS GAMES**

This oxymoronic term was defined by Charles C. Abt, in the book *Serious Games* [2], in which he states:

Games may be played seriously or casually. We are concerned with 'Serious Games' in the sense that these games have an explicit and carefully thoughtout educational purpose and are not intended to be played primarily for amusement. This does not mean that serious games are not, or should be not entertaining.

This definition is a quite interesting, as it makes clear that the game is an artifact that aims to convey an experience, much like any other game. What differs a *Serious* game is that the designer intends for the player to acquire some insight regarding a specific subject through such an instrument.

In this context, the win condition of a game is the objective of the learning experience itself. If the game is a cooperative game, the players must beat a scenario and learn something that will prove useful in the future (how to work as a group, the dynamics of any given process, to understand better the variables in a social phenomenon, etc.).

If the game is a competitive one, the designer may intend to the players/learners to try and outsmart each other while learning something (a game about mathematics, history or languages, for instance).

In this context, losing simply means that the subject have not been completely learned or that some other player has gained a deeper understanding of the dynamics regarding the studied subject.

## **III. PLAYER MOTIVATION MODELS**

Player motivation was discussed by the same author in [3]. Nevertheless, some highlights of the theories are presented here as a basis for the comprehension of the current paper.

In [3], two of the theories presented were the Flow theory and the PENS model.

## A. Flow

The Flow theory was developed by the Hungarian-American Psychologist Mihaly Csikszentmihalyi in 1990 [4] and further explained by the same author in 1997 [5]. It is widely accepted by the bibliography as a theory that explains player motivation. The main point of interest for the current paper is the relation established between the motivation in playing a game and its difficulty.

At the present moment, the main interest is in the part that addresses the perceived challenge and skills of the player. In relation solely to the issue of perceived challenge and skill, Csikszentmihalyi wrote:

First, the experience (of enjoyment) usually occurs when we confront tasks we have a chance of completing. [...] Third and fourth, the concentration is usually possible because the task undertaken has clear goals and provides immediate feedback. [...] The combination of all these elements causes a sense of deep enjoyment that is so rewarding people feel like expending a great deal of energy is worthwhile simply to be able to feel it.[4]

So, there must be a goal that can be achieved by a given player while performing an activity; otherwise it becomes a pointless one. If the task is too easy, the player will become bored. If the task is too difficult, the player may feel either anxious or frustrated depending on how imperative the completion is. The relationship between skill and challenge is depicted in figure 1.

To successfully navigate the activity, the player must be able to receive feedback, which is used by the brain as a means to predict how well the players are performing in the game and how likely they are to lose [6] — or, simply not to reach a desired goal.

The player experiences a sense of control "or, more precisely, a lack of anxiety about losing control that is typical of many situations in normal life [7]". This sense of control is used by the player to try and steer away from anti-goals. This mechanism is also described as *goal-seeking efforts* [8].



Figure 1. Flow state, frustration/anxiety zone and boredom zone. Reproduced from [9]

This is due to the fact that when feeling in control of a situation, players feel that they can foresee the consequences of any given action they take towards a goal or can handle any given setback that should eventually appear, steering away from anti-goals. These movements allow the players to assess their skill level and calculate how possible a victory is.

The interaction of the Flow theory with the theory that describes loss aversion does provide a framework to understand player motivation and how the proximity of goals affects the motivation and the degree of engagement of the player in the game.

### B. PENS - Player Experience of Need Satisfaction

This theory aims to explain the mechanics of what makes a game compelling [3]. The main characteristics of this model is the mapping of needs that must be satisfied in order to create an experience that the players will desire to engage in [10].

PENS maps three needs, namely: Autonomy, Relatedness and Competence. The need for autonomy is satisfied when the players are presented with interesting choices that they can freely explore. The need for relatedness is satisfied when the players are able to create a meaningful relationship with others and to have a feeling of belonging (either with other players or with Non-Player Characters).

The need for competence is the desire to grow one's abilities and to master new challenges. It is a need that is innate to the human condition [10]. This drive comes in each of the developmental stages of the human being, and games replicate this feeling during the course of gameplay.

Just like in the Flow theory, for this need to be satisfied, the goals must be presented clearly and must not constitute an overwhelming challenge in the players perception. In order for the players to be able to assess their progress, the task must provide clear feedback regarding how the player will either reach a goal or will fall in an anti-goal.

In this theory, the feedback must show to the players how much they have learned and how much they have improved their skills. If a players lose a game, in order to prevent the activity from feeling pointless, they must have improved their skills in order to — at least — perform better in the future. Otherwise, the players will feel discouraged and might begin to lose interest in the game.

#### IV. LOSING AND PLAYER MOTIVATION

Losing a game means that the player has failed to meet the win condition. In other words, the player was presented with a goal and did not achieve it. Assuming that there are no design mistakes on the creation of the game, the player could perceive the goal and recognize it as being achievable – the players know what the goal is and they know that it can be achieved if sufficient effort is invested in the task.

The fact that the goal is perceived as being achievable does meet one of the basis for the Flow theory. However, the theory does not state that it must be *immediately* achievable.

However, if a game is too difficult, the player will feel that the goal is unachievable and, therefore, will lose interest in pursuing it, causing the player to give up the game [8].

#### V. REACTIONS ON LOSING

As previously stated, losing may induce the player to try more times to reach a certain goal and the gameplay may be enhanced in the process. In other situations, however, the players may give up the goal.

This is the core point in both the Flow and the PENS theories, that an activity that seems to have a goal impossible to achieve is either abandoned or generates feelings of anxiety in general. However, it is not discussed how the players judge which is the optimal course of action, nor is explicitly said how to use losing as a means to encourage the players to try again.

The psychology behind this mechanism is detailed by Carver and Scheier [8] in a general manner — i.e. not related to games. However, it can be aligned to theories such as Flow and PENS in order to provide some insight on losing and its coping mechanism.

The starting point of analysis is the fact that losing (or, failing any given goal) gives rise to negative feelings, such as anger, annoyance, frustration or irritation. If the struggle persists, that is, if the goal has not been achieved and has either begun being perceived as impossible to reach or is gone, these initial feelings are replaced by apathy and depression.

In the former case, these feelings provide incentive to the player to keep trying to achieve the goal. It serves as a psychological coping mechanism to make the goal seem attainable again. This mechanism aims to foster the goal attainment. If the goal seems unachievable, however, the same coping mechanism produces a sensation of loss, grieve, melancholy or depression. The purpose is to make the individual disengage from the goal, to cut the losses and to reduce the effort that would be undertaken pointlessly. Hence, energy is conserved instead of being expended in a useless manner.

According to the authors, two factors determine if the individual feels that the objective is still attainable: confidence and control.

#### A. Control

Control has already been discussed in both the Flow theory and the PENS model. The discussion regarding the feeling of control, however, may be further extended in the circumstances where control is either threatened or lost [8, p. 538].

The threaten to lose control is said to provoke a reaction in which the individual — the player — tries to reassert control. In a game, this would be the case where the players feels that they may not win. In this case, they would try and take action in order to reacquire the upper hand in the match; i. e. a card game player might adopt a more aggressive strategy, a tycoon game player might try and redistribute resources, or a sports team may try and change strategy.

The feeling of losing control, though, is felt more dramatically. This feeling produces the feeling of helplessness and, ultimately, the definitive disengagement of the player in the form of giving up, as further effort investment is pointless. The previously mentioned card game player may stop thinking about the strategy and let the game follow its course, the tycoon game player may quit the game and the sports team may simply show apathy towards the adversary.

# B. Confidence

The other variable — confidence — mapped by the authors is not previously recognized as a factor for the player. Furthermore, evidence points that confidence is the key element in determining if the player will either continue or quit playing.

Confidence is the key feature the brain uses to determine if the individual should invest more effort in the pursuit of any given goal. Should doubt start to settle in, the individual disengages from the current goal and begins the process of giving up — apathy begins to settle in, the individual feels demotivated, sad and/or depressed.

There is a great difference also in the manner seen by the individual that seeks to win — to achieve a goal — and the individual that simply aims to avoid failure to meet the same goal.

## C. Goal hierarchy

Another thing to consider is how goals are distributed in a hierarchy. Higher level goals depend on lower level ones; playing a video game depends on pressing buttons in an orderly manner, or writing a letter depends on being able to hold a pencil, for instance.

When players get engaged in an objective, they try to reach it. Should the objective seem unattainable, the brain disengages from the said objective and tries to pursue either a collateral one or a lower level objective as a replacement.

This means that even if a player disengages from a goal, there is still a possibility to achieve a positive result - one that could enable the player to attain the higher level goal in other opportunity.

# VI. CONCLUSION

The theories about how a goal is pursued and the reaction of individuals facing a failure do connect to the theories usually used to describe player motivation and how to keep the player invested in an interesting gameplay.

Furthermore, these theories can be applied to serious games, if the game goals are carefully planned and organized in a hierarchy.

Should the game designer decide to create a hierarchy on the lessons a serious game aims to convey to the player, even if the ultimate learning goal is not met, there is still the possibility for the player to learn from the prerequisite goals or from a collateral one. This creates a game in which the message is conveyed more efficiently; perhaps the full learning may not occur, but the player/learner will develop some new skill in the process.

#### ACKNOWLEDGMENT

This work was developed by the "OneReal Research Group" (partnership between Copel Geração e Transmissão S.A., Universidade Federal do Paraná UFPR and Institutos Lactec) within project PD-6491-0299/2013 of the R&D programme of Agência Nacional de Energia Elétrica (ANEEL)

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