An Analysis of the Shift in Video Games from “Fun” to “Addictive”

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Abstract

Video games, since their inception, have been a source of entertainment, enabled by advances in computation. Now, with even more computation power and the help of behavioral psychology and economics, games have the potential to be not only fun, but also addictive. Newer games and genres increasingly use tools which encourage video game addiction as a way to keep players gaming. This paper first analyzes the causes of this shift—examining the primary tools used in both “fun” and “addictive” video game design. Following the causes of the shift, the paper examines the shift itself and its addictive effect on gamers. Finally, I evaluate the current methods of combating the negative effects of addictive video games through regulation and beneficial games and highlight the elements of these that show promise for the future of video games.

1. Introduction and Motivation

For decades, video games have been a source of entertainment made possible by advances in computing technology. The primary objective of video games was to make the experience of playing the game as fun as possible for the user. However, video games are now a multi-billion dollar industry [1] and are motivated not just to have players buy a game, but to keep playing the game. Accordingly, this focus on “fun” has taken a sinister turn: many video games will use any form of engagement to keep their players playing, putting less focus on “fun” as we understand it. As a result, games can become tedious chores for players rather than fun activities [2], even becoming and addictive to many gamers. Overall, games have been moving away from classical conceptions of “fun.” However, this does not mean they serve no purpose, or even that people cannot gain enjoyment out of playing video games.

Many video games have deviated from their original goal of providing fun through interactive play, but by either regulation or the development of active and educational video games, these video games still have the potential to benefit their players. Video games are now being used to help young cancer patients learn about their cancer treatment [3] and to encourage physical activity in young children [4]. In these cases, the behavioral tools crafted to keep users playing can help players of these video games to learn valuable skills and knowledge, no longer just taking away time with no external benefit. Of course, video games will still be a form of entertainment, and regulation is necessary in order to guide video games which are not educational or active away from addiction and back towards “fun.” Ultimately, there is no requirement for video games to be solely a form of entertainment. Although video games are shifting away from their original purpose of entertainment towards a model that can be harmful and cause addiction, there exist strategies to counter this addiction by regulating video games as well as by channeling the addictive power of video games into beneficial video games.

1.1. Why People Play Video Games

The answer to why people play video games can be found largely in behavioral economics and psychology. In general, the reason a person chooses to perform any action is to optimize their “perceived expected utility.” Utility is the true benefit that a person gains from performing an action, and can come in many forms. One such form of utility is the enjoyment gained from playing a fun video game. This enjoyment comes mostly from specific rewards given to a player throughout the game. These rewards are elements present in both games that are primarily “fun” and games that are primarily “addictive.” However, not every game tries to maximize the actual expected utility of its players—instead, many game designers create games that maximize players' perceived expected utility, well aware that they have certain behavioral biases that make their perceived expected utility far higher than their actual expected utility. These behavioral biases are the key design element that differentiates video games that focus on “fun” from video games that focus on maximizing revenue.

1.2. Why People Enjoy Video Games

There are multiple design aspects of video games that make them “fun.” Among these elements are competition [5] and interactivity [6]. Both of these can contribute to how fun a game is, but neither are necessary conditions for a game to be fun.

First, we will examine competition’s contribution. Competition has the ability to both greatly increase or greatly diminish a player’s entertainment based on whether the player wins or loses [5]. Although both may lead to continued desire to play [5], if there is sufficient expected success, competition leads to a net positive enjoyment. Under this understanding of competition, it is clear why a game that is “too easy” will not grant much enjoyment, while a game that is “too hard” will cause too much frustration for the competition to be valuable. So, in order to be fun, a game must find the correct balance of competition.

Second, interactivity is a crucial element in many video games. The primary reason behind interactivity determining enjoyment is the direct feedback which is experienced from player actions [6]. Whether this is active exploration, social interaction, or survival, this interactivity demonstrates the causal effects of the user on her environment which contributes to enjoyment. Likewise, players generally prefer to have more control rather than less control over their actions [6]. Overall, users interact with video games for enjoyment, and the more they are able to interact, the more enjoyment they can receive.

1.3. Why People Get Addicted to Video Games

Just as there are many ways to enjoy video games, there are also many ways to get addicted to video games. Addictive video games do not focus primarily on the enjoyment of their players, but rather the retention of their players. That is, these video games simply want their players to keep playing. These factors include filling voids of social contact [7], loss aversion [8], and the overweighting of small probabilities [8]. Although a game that is not geared towards addicting its players can still have these traits, these are elements that primarily focus on player retention and increased play frequency, and so, are tools that will be especially used by addictive games.

First, online video games offer a form of social interaction. While social interaction in itself can be positive, a problem arises when this virtual social interaction replaces offline social interaction. These games particularly attract people who are deprived of or struggle with social interaction, encouraging their neglect of real social interaction, propagating the issue [7]. Because people are reluctant to lose the social relationships they do have, they are forced to keep playing in order to maintain these virtual social relationships. This behavior is accentuated by the next tool of addictive video games as well.

Next, loss aversion allows video game designers to “lock in” users to their game, making users feel like the loss of not playing would be too great. Loss aversion is a behavioral economic concept that states that losing something causes a greater

decrease in utility than gaining something of equal value [8]. When games implement mechanics such as free trials of premium access, real time events that may be missed if not playing the game, and rewards for consistent play, they are taking advantage of loss aversion in order to increase user retention and even addict their players to keep them playing the game. Along with social interaction and loss aversion, there is still another complementary feature that can make games addictive.

Last, game designers use gamers' overweighting of small probabilities in order to increase their perceived expected utility without actually offering any additional benefit. Overweighting of small probabilities is yet another behavioral economic concept; it states that people will overweight the probability of an event occurring when it is very small, but non-zero, in their calculation of expected utility [8]. The benefit of this can clearly be seen through a game like the lottery—despite any well-designed lottery offering an actual negative expected utility, people overweight the small probability of winning to the point where it is worth it to buy lottery tickets. Game designers use this in rare loot drops from enemies or purchased packs, random events, and even virtual lotteries in order to keep people playing disproportionately to their actual expected outcome. While not necessarily meant as a tool for addiction, all three of these tools can contribute to making a game addictive, which is a serious recent problem seen throughout video games in recent years.

2. Addiction

Dangerously, in order to increase user play, games are shifting away from "fun" by shifting their focus towards addiction. Most directly, addiction to video games is problematic for the reason that it eats up large amounts of time from the player's life, leading many players "burned out" [2]. However, more gravely, video game addiction has been shown to cause increased levels of depression, lower academic achievement, and conduct problems [9]. This addiction is related in some ways to an internet addiction in that video game addictions often come along with addictions to other similar

online activities such as online gambling [9]. However, many addictive video games have little to no online interaction, such as many mobile games, yet still lead many players to become addicted. Therefore, this addiction is a new problem that has arisen the development and proliferation of video games, one that has no exact parallel in psychology previously.

2.1. Problem with Addiction

In order for the shift in video games from fun to addiction to matter, there must be some reason that playing video games due to addiction is worse than playing video games for enjoyment. Thankfully, increased play of video games alone does not seem to have any serious significant negative consequences [9]. However, the causal link between video game addiction specifically and negative behaviors such as depression, lower academic performance, and conduct problems, has been found to be significant [9]. Clearly, particularly in adolescents, gaming addiction can be dangerous and lead to external issues which can cause significant harm both immediately and later in life. However, there are even more problems with video game addiction when we consider social well-being.

Additionally, video game addiction is particularly prevalent in individuals who lack the skill, experience, or confidence to build social relationships on their own [7]. Specifically, individuals that experienced loneliness, low social competence, or low self-esteem were particularly at risk to fall into a gaming addiction [10]. Unfortunately, for these individuals, playing these video games does not help. Instead, online video game interaction becomes a substitute for offline real-world interaction which can be more uncomfortable [10]. Clearly, video games can lead individuals to exacerbate their existing social issues, locking them in to their addiction while distancing them from the outside world by replacing real relationships with less concrete online ones.

2.2. Shift Towards Addiction

Recently, new types of games have been developed that utilize addictive tools more than ever before. The primary goal of these games is to maximize profits, and in doing so, video game companies are encouraged to put in tools which increase user retention and play frequency, as both of these are potential means to increase the revenue generated from a single player. Although “addiction” is not the primary goal of these games, it is an unfortunate side-effect, as the behavioral tactics discussed previously in order to retain users encourages users to become addicted. Because there are clear negatives to video game addiction, the video game industry is introducing a serious negative externality onto their users, while simply increasing their own profits. This shift in priorities started with the development of now well-established genres such as Massively Multiplayer Online Role Playing Games (MMORPGs) as well as the introduction of newer genres, such as idle games, which maximally implement multiple addictive behavioral tactics.

Recent research has found that players of certain genres of games are particularly prone to addiction. Specifically, time spent playing Role Playing Game (RPG), Shooter, Action, and Simulation games are all statistically significant towards video game addiction [7]. Most notably, RPGs, particularly MMORPGs, implement the most previously discussed behavioral tools for addiction. While RPGs have been around for many decades, only relatively recent advances in networking power have allowed MMORPGs with millions of players, such as World of Warcraft, to become feasible and prevalent. The introduction of the online social component to the already addictive RPG genre means online RPGs have become some of the most addictive games [7]. Many studies have been conducted on the effect of MMORPGs specifically on their players [2], finding staggering results. With an average time spent playing of 22 hours per week for both addicts and non-addicts, MMORPGs absorb many people’s lives. The loss aversion of getting behind in such a competitive environment forces people to keep playing, the online social relationships replace those in real life, and the

small probabilities associated with obtaining the best in-game items all contribute towards an extremely addictive environment that replaces real-world interactions for many players. As Yee emphasizes in [2], these games are second jobs for many players, performed out of obligation, not out of enjoyment. However, not all addictive genres require constant attention from the gamer.

One of the most effective recent game genres has been the idle game. Unlike most games, which require constant interactivity while playing, idle games continue to "play" in real time even while the user is not directly interacting with the game. Nevertheless, these idle games absolutely take advantage of all three of the aforementioned tools for addiction. First, they implement loss aversion by requiring some gamer interaction in order to collect resources and improve the ability to gather resources, all in a time-sensitive manner (e.g. by capping the amount of resources that can be gathered between game interactions, forcing the player to play regularly if they don't want to "lose" resources). Also, they implement social relationships by having online groups in which players can cooperatively work together to improve or can compete in order to gain more resources. Finally, they implement small probabilities by having random "boxes" which can contain different, potentially valuable in-game items, as well as rare benefits that can be gathered simply through normal play. All the while, they accomplish these while minimizing burnout by eliminating the "grinding" or tedious play that other genres such as MMORPGs have so prevalently [11].

The shift in more recent game genres towards addiction is dangerous, and these newer genres have optimized the use of addictive tools. Nevertheless, there are still ways in which addictive video games can be utilized or countered.

3. Countering Addiction

Video game addiction is undoubtedly harmful in its current state, causing depression, lack of motivation, social issues, and behavioral misconduct. From an economic perspective, this negative effect on the users that is not accounted for in the

actual price of the game is a negative externality. That is, addictive video games impose a greater cost on society that extends beyond simply the cost of the games themselves. However, the video game companies themselves do not suffer from this cost—instead, they simply benefit from the profits of having players which consistently play the game. In order to solve this issue of the negative externality of video game addiction, I will examine two primary strategies. The first will look at the conventional economic approach towards a negative externality: regulation. The second will examine a way to turn the negative externality of video games into a positive externality by making video games something that can be beneficial to the players in the rest of their lives by making beneficial games.

3.1. Regulation

Although games are regulated and rated by the appropriateness of content, there is little existing regulation on the addictiveness of games [12]. Regulation of game content can prevent some younger gamers from being exposed to inappropriate content, but even these regulations are not followed, and this does little to prevent addiction [12]. However, some countries have instantiated direct regulation with respect to video game addiction. For instance, China requires all online game providers to monitor playtime, limiting the time played for users under 18 years old to three hours maximum. This has decreased the amount of young players of online games, but this regulation is not always enforced and can be easily circumvented with the help of an adult over the age of 18 [12].

There are alternative forms of regulation in place elsewhere, such as in Vietnam and South Korea, where there is an online game curfew [12]. Children are disallowed from playing video games at certain hours of the night in order to prevent play beyond normal hours that could also infringe on sleep along with contributing to video game addiction. Again, this is difficult to enforce, and there are many ways in which young gamers could easily continue to play in the nighttime. Additionally, this method, along with the strict limit imposed in China, does not tackle the addictive tools of these games

directly, but rather tries to combat addiction by placing hard limits on actual play, which still could allow for addiction to develop, even if game use is curbed.

One final possible regulation that does not seem to be implemented anywhere is to financially dissuade the the video game companies themselves from making their games overly addictive. In economics, this is a common way to deal with a negative externality—penalize the producer with the cost comparable to the cost that they impose on society due to their negative externality. While this may be effective in theory, there are still difficulties towards implementing this method. First, although this paper has discussed some addictive tools, there is no clear-cut way to distinguish a tool that is addictive from a tool that is meant to keep users playing, which any game designer must do in order to make an effective game. In turn, this may punish games which are legitimate forms of entertainment, limiting the social benefit that can be gained from future games because they may be less fun. Additionally, so long as game designers still make some games of this nature, players will still become addicted. Even though there will be motivation for the game companies not to make these types of games, regulation is ultimately is always imperfect, and addictive games will continue to exist. No one regulation will fully solve the problem of video game addiction, although some regulation is better than none in steering the game industry away from addiction.

3.2. Beneficial Games

The other major counter to addiction is not so much opposition to addiction, but rather a utilization for a better purpose. Video games have historically been created for entertainment purposes, but they can also be used in a setting of encouraging a healthy lifestyle or education. By embracing these addictive tools that can be so harmful with certain video games, beneficial video games can encourage positive habits that improve the lives of their players.

One widely-known usage of beneficial video games are active video games (AVGs), or games that encourage physical activity. These games are primarily intended to allow children to perform some level of exercise in a particularly enjoyable manner

[4]. These games of course are largely interactive, as the primary benefit of these games is the physical activity itself, which is performed specifically while playing the game. Many earlier games, such as Wii Sports, did not include many retention tools such as small probabilities and social interaction, favoring instead the fun of competition and highly controllable interaction. However, more recent games, such as Pokémon GO incorporate light exercise in the form of walking as a main mechanic in a game that includes social interaction with other players, small probabilities from finding different pokémon, and loss aversion due to real-life events. In the case of Pokémon GO and other augmented reality games, these also encourage real social interaction and real-world exploration, which avoid some of the unhealthy social implications of purely virtual online games Although these more recent games use more addictive tools they do so in a way which benefits the player more, greatly decreasing the negative externality of these tools while keeping the benefits for the game designers.

One less widely-popularized but important use of beneficial video games is in the treatment of young cancer patients. In children and young adults with cancer, one common issue in treatment is inconsistency of self-administered medication [3]. In order to remedy this problem to ensure optimal cancer treatment, beneficial video games have been successfully used. By playing the video game, patients were much more likely to adhere to their medication schedule, ensuring as effective treatment as possible [3]. It is not clear to what extent potentially addictive tools were used in these video games, although they do seem to have a clear potential benefit as consistency is so important in cancer treatment. Clearly, although recent video games are more addictive as a whole than those in the past, video games are also being put to better use to have a positive effect on people’s lives.

4. Conclusion

Video games have long been a source of entertainment for billions, but their addictive qualities have become more prominent in recent years. Video games are

played by addicts and non-addict alike for the same fundamental reason: it is an activity with a high perceived expected utility. Video game designers understand this, and have shifted their focus from solely on “fun” video games, legitimately increasing the utility a player should expect from playing the game, to “addictive” video games, increasing primarily just the perceived expected utility from playing the game. In both cases, game makers use behavioral tools in order to encourage the user to play. However, when addictive tools are overused, players of the game are more likely to become addicted to video games, which has a significant effect of the entirety of a person’s life. However, strategies to counter this addiction do exist and can be effective.

The mitigation of the adverse effects of addictive video games comes in two forms: regulation and beneficial video games. Regulation has the possibility to mitigate the negative externality of existing video games on players and their society, either by limiting when and how much players can play—attempting to limit the effect a video game addiction can have on a person’s life—or penalizing the companies themselves for the continued use of addictive tools in video games—shifting the societal cost back onto the video game producer. On the other hand, beneficial games offer a distinctly different solution—create a new positive externality on game-players so that playing video games helps them in the rest of their lives. While neither strategy will fully stop the adverse effects of video game addiction, embracing these strategies is the best and only plan we have to counter the recent shift towards addictive video games.

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