

Game Reward Systems: Gaming Experiences and Social Meanings

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ABSTRACT

The authors give an overview of how various video game reward systems provide positive experiences to players, and propose classifications for rewards and reward characteristics for further analysis. We also discuss what reward systems encourage players to do, and describe how they provide fun even before players receive their rewards. Next, we describe how game reward systems can be used to motivate or change behaviors in the physical world. One of our main suggestions is that players can have fun with both rewards and reward mechanisms—enjoying rewards while reacting to the motivation that such rewards provide. Based on relevant psychological theories, we discuss how reward mechanisms foster intrinsic motivation while giving extrinsic rewards. We think that reward systems and mechanisms in modern digital games provide social meaning for players primarily through motivation, enhanced status within gaming societies, and the use of rewards as social tools.

Keywords

game design, reward system, motivation, social interaction in games, flow

INTRODUCTION

Examples of videogame rewards include virtual items received after completing *World of Warcraft* (Blizzard, 2004) quests, added points and visual effect after clearing block lines in Tetris, and finding treasure items in secret hiding places in the *Super Mario Bros* series (Nintendo). Reward systems can be viewed as player motivators or as compromises for easing disappointment. In modern video games, reward systems also provide social meaning within and outside of games (Reeves & Read, 2009; Salen & Zimmerman, 2004). To our knowledge, there is plenty of information and multiple theories in the psychology literature on optimal experiences, intrinsically motivating environments, sense of accomplishment, satisfaction, choice, and other concepts that reward system designers can take advantage of. Reward mechanisms provide sense of fun by fostering intrinsically rewarding experiences and are equally or more important than the extrinsic rewards that are distributed. The term “intrinsic” we use in this paper is about fun of playing itself while “extrinsic” is about the actual reward. Our goal in this paper is to review and analyze the main structural features of videogame reward systems.

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Specifically, after classifying rewards and discussing their use and effects, we will suggest characteristics for analyzing rewards, and discuss how players use them.

ABOUT PLAY

Reward systems differ based on type of play, and have different effects on players according to their preferences and motivations. Social and cultural contexts also determine how reward systems affect gaming experiences. Huizinga (2003), one of the first to argue that culture is derived from play and to stress the cultural function of play, suggested that play has five characteristics: it is a free activity, therefore anyone forced to play is not actually playing; it is separate from ordinary life; it involves no real-world profit; it proceeds according to fixed rules within temporal and spatial boundaries; and players tend to form social groups marked by secrecy and separation from other groups. These characteristics, which have attracted much research attention and discussion, are associated with general play rather than video game play. Some ideas may not fit video game contexts—for example, a *World of Warcraft* player may not feel free to leave a game at any time because of social pressure from teammates or fellow guild members. In addition, reward systems sometimes make players play for extrinsic reward like virtual items while not really enjoy the play activity itself. Web games and Facebook games are examples of play that blur temporal and spatial boundaries—people can play games at any time, even during work time in their offices.

In *Man, Play and Games*, Caillois (2001) proposed four characteristics for game classification. The first, *Agôn* (“competition”) is typical of sports and most games involving two or more players. Games that have *Agôn* are promoted in many societies because they imply training, discipline, perseverance, and other positive characteristics. Reward systems provide things that are easy to compare between players like scores and virtual items thus can add *Agôn* to many kinds of games. *Alea* (“chance”) means that players have no control over game outcomes; *Alea* deemphasizes or eliminates the skills and other attributes that *Agôn* promotes. Unlike Huizinga, Caillois gave serious consideration to games of chance involving gambling. The fun of chance itself is also an important element in reward systems. The third characteristic, *mimicry* (“simulation”) refers to make-believe play, in which players portray imaginary characters. *Ilinx* (“vertigo”) refers to the characteristic of players temporarily surrendering their physical or mental stability—for instance, taking a fear-inducing rollercoaster ride. These characteristics are not mutually exclusive: in most sports, both competition and chance contribute to enjoyment. Games can also be analyzed in terms of rule influence and structure—that is, in terms of *paidia* (“turbulent, improvisational play”) or *ludus* (“play with tight, fixed rules”). The video game *The Sims* is more *paidia*, while *Starcraft* is more *ludus*.

Sutton-Smith (1997) has analyzed play according to seven value systems that he refers to as rhetorics: (a) play as progress—children can adapt and develop through play; (b) play as fate—games of chance (gambling) in which players surrender control over outcomes; (c) play as power—using play as a form of conflict, mostly applied to sports and contests; (d) play as identity—that is, maintaining social group identity in the form of activities such as festivals and carnivals; (e) play as imaginary—play as creative activities in a visionary context; (f) play as self—solitary activities ranging from hobbies such as stamp collecting to immersive activities such as mountain climbing; (g) play as frivolous activity—nothing is considered productive outside the boundaries of play. The first six rhetorics entail possible real-world benefits, and therefore suggest that play can be justified. Reward systems can create a sense of progress by providing, for example,

developable avatars. The play as power element can be added to games through rewards comparable between players. Recently, there are also games that provide collectable rewards.

Salen and Zimmerman (2004) have grouped aspects of play into three categories: game play, ludic activities, and being playful. The first category is only applied to games. They suggest that the goal of successful game design is creating meaningful play, which occurs when relationships between player actions and outcomes are discernable (clearly perceived by players) and integrated (actions affect play experience in subsequent games). Reward systems help build relationships and make them stronger over time; immediate feedback makes outcomes discernable, while rewards that can be accumulated and used later make outcomes integrative.

PLEASURE AND MOTIVATION IN VIDEO GAMES

Many researchers have tried to clarify why people play video games. LeBlanc (2004) has proposed an MDA (mechanics, dynamics and aesthetics) model for game design analysis that includes a list of eight kinds of fun: sensation, fantasy, narrative, challenge, fellowship, discovery, expression, and submission (see also Hunicke, 2004). Lazzaro (2004) has listed four keys to creating emotion in video games as hard fun, easy fun, altered state, and a people factor. Bartle's (1996) four player categories, based on multi-user dungeon (MUD) games, are achievers, killers, socializers, and explorers—a taxonomy that corresponds to player activities. Based on player responses to massively multiplayer online role playing games (MMORPGs), Yee (2007) has extended Bartle's taxonomy to propose three major MMORPG gaming components: achievement, immersion, and social interaction. According to Ryan et al. (2006), the pull of a game is sometimes associated with out-of-game effects. Using self-determination theory (SDT), they posit that the pull of games largely results from their ability to generate (at least in the short term) three key feelings of well-being: autonomy (sense of willingness), competence (challenge and feeling of effectance), and relatedness (feeling of connection with other people). Koster (2005) views game fun in terms of four categories: fun, aesthetic appreciation, visceral reactions, and social status maneuvers. In that taxonomy, fun focuses on mastering a problem mentally—that is, recognizing new patterns based on our brain's desire for stimuli. Thus, Koster's definition of a good game is one that teaches a player all aspects of the game before the player stops playing. In the following sections, we analyze how reward systems provide pleasure and satisfying experiences by classifying rewards and playing activities, and relate reward mechanics to psychological theories.

FORMS OF REWARD

Based on multiple surveys and analyses of video games, we propose an admittedly incomplete list of eight reward forms:

1. Score systems, one of the earliest forms, use numbers to mark player performance. Score-keeping is one controlled feature that Malone (1981) used to investigate what makes a game fun; he is one of many researchers who consider it crucial to fun. Scores, which sometimes affect gameplay indirectly, generally serve as tools for self-assessment and comparison. Researchers have classified rewards (mostly in role-playing games, or RPGs) as glory, sustenance, access, and facility (Hallford & Hallford, 2001). Scores are typically placed in the glory classification, since they generally exert no direct impact on game play. Systems that connect scores with players' virtual identities are currently popular among Internet-based games—they are persistent, can be accumulated long-term,

and represent a player's status rather than a single play performance summary. For example, the ladder system in *World of Warcraft* uses scores to calculate player ratings that change after each victory or defeat.

2. The majority of games in which players control developable avatars (e.g., RPGs) use experience point reward systems. Avatars earn experience points during gameplay, and "level up" when specified goals are achieved. Thus, experience points represent a facility type of reward, since they enhance avatar ability (Hallford & Hallford, 2001). Rewards are often given in the form of new skills or increases in attributes such as strength or intelligence. These systems differ from score systems in at least three ways: they are bound to specific avatars rather than single gameplays or specific players; they are rarely used for purposes of player ranking because they reflect time and effort rather than player skill; and they directly affect gameplay by making certain tasks easier to accomplish, as well as by expanding the number of ways that a game can be played. Avatar or player account levels affect game play in several ways, therefore almost all kinds of players are influenced by them. Players cannot explore game worlds without gaining a proper level, and social-oriented players must gain sufficiently high levels in order to play with other high-level players.

3. Item granting system rewards consist of virtual items that can be used by players or (much more commonly) avatars. These systems are widely used in RPGs and MMORPGs. Items can be considered glory and/or facility rewards, depending on player interest. Item granting mechanisms encourage player exploration of gameworlds, and are thought to maintain player interest during lull times in between plot-advancing conversations, major enemy encounters, and other exciting moments. In the dungeon crawler game *Diablo II*, item collection was originally meant to be the main source of fun. Some MMORPG players are known to devote considerable time and sometimes real money (Guo & Barnes, 2007) to accumulate rare forms of game equipment, thus making item granting mechanisms an important concern among game designers.

4. Resources are valuables that can be collected and used in a manner that affects gameplay. Examples include virtual wood and stone in *Age of Empires III* (Microsoft Game Studios, 2005), and life counts in the Super Mario Bros series. Players can put a lot of effort into collecting MMORPG resources (Yee, 2006). This kind of reward system primarily corresponds to sustenance (Hallford & Hallford, 2001). Resources and items differ in at least one important aspect: resources are mostly for practical game use or sharing, whereas items have collecting and social comparison value. In addition, though the experience points in leveling system somehow also act like resources, they mark the growth of avatars and create a feeling of progress and achievements while resources create feelings mainly about timely support.

5. Achievement systems usually consist of titles that are bound to avatars or player accounts; users collect them by fulfilling clearly stated conditions. Achievement systems encourage players to complete specific tasks, play in challenging ways, or explore gameworlds. These kinds of reward systems are classified as glory. Collectable titles serve as metagoals, and thus provide "multiple level goals" for various challenges (Gee, 2007; Malone, 1981). *World of Warcraft* players can collect more than a thousand titles, some of which are considered very difficult to earn, thus giving players a sense of achievement in addition to rewards. Blizzard Entertainment publicly acknowledged the first player to collect all achievement titles, making him a celebrity in gaming circles. Xbox 360 also has an achievement system for the same purpose (Jakobsson, 2011).

6. Feedback messages are mostly used to provide instant rewards. Juul's (2010) five elements of casual game design include fiction, usability, interruptibility, difficulty and punishment, and juiciness. Juiciness is the instant positive feedback that players receive in response to successful actions. Its purpose is to create positive emotions; it is not limited to casual games only. One example is the word "perfect" shown on screens in rhythm games such as *Dance Dance Revolution* (Konami, 1998) when players hit the correct buttons with precise timing. Pictures, sound effects, and video clips are also commonly used as feedback mechanisms. Since they are ephemeral, they are neither collectable nor available for player comparisons, and do not directly affect gameplay. Their value exists in the sense of praise they evoke; as Reeves et al. (1996), Bracken et al. (2004), and others have shown, computer-generated praise can affect human emotions and behaviors. In addition, as the name implies, instant feedback systems provide the immediate rewards that are a central concern of flow theorists.

7. Plot animations and pictures, which are used as rewards following important events such as the defeat of a major enemy, clearing a new level, or ending a game. Their purpose is to motivate players to advance game stories. They provide a sense of fun in at least two ways: the animations and pictures are visually attractive, and they serve as milestones marking player achievement.

8. Unlocking mechanisms give players access to game content (e.g., new levels, access to special virtual environments, and mini-games) once certain requirements are met. This kind of reward is best classified as access (Hallford & Hallford, 2001). When discussing ways to arouse curiosity, Malone (1981) suggests that one of the most important features of intrinsically motivating environments is providing incomplete information about a subject. Rather than show all possibilities and choices at the beginning of games, these mechanisms reward players as games progress by gradually exposing hidden parts of gameworlds. For example, *World of Warcraft* avatars must achieve certain levels before gaining access to higher-level environments. Unlocking mechanisms are thought to maintain player curiosity about what might be made available for future play, and to make players feel as though there is always something new to look forward to. This form of reward is strongly associated with Gee's (2007) ideas regarding the correspondence between learning and game playing. The reward system serves not only as reinforcement for good performance, but also as an environment in support of an "ongoing learning principle."

REWARD CHARACTERISTICS

In consideration of how rewards, reward mechanisms, and players interact, we believe there are at least four reward system attributes that can be used to analyze their influences on different kinds of players (Bartle, 1996; Csikszentmihalyi, 1990; Ducheneaut & Moore, 2004; Yee, 2007). The first is social value, which is suitable for either comparison purposes or social interactions. It is common for gamers to invite other players to their homes or to upload game records to show off their skills and to compare their current levels. Similar to children in a playground, they may gather for competition; unlike playground players, they are much more likely to record scores for viewing by others, especially in gaming arcades (Höysniemi, 2006). Arcade machines present lists of player scores along with their names, whereas online players compare their achievements in the form of in-game rewards or announcements on gaming forums. Scores are considered one of the best mechanisms for comparisons because they can be easily presented and understood. Virtual items are convenient for comparisons among players—especially in MMORPGs, where players can show off their rare pieces of equipment as

proof of their advanced skills. Avatars wearing hard-to-get but well-known items always draw attention, and funny virtual items may be displayed during social occasions. The World of Warcraft system supports presentations of multiple player achievements on a webpage, making it possible for individuals to achieve fame. We have observed that players are more likely to compare their game-related accomplishments or luck rather than resources, which can be purchased for virtual or real-world currency. The ease of resource availability has been criticized as breaking the atmosphere of a closed play world, also known as Huizinga's "magic circle" (Lin et al., 2007).

The second attribute is how rewards affect gameplay, ranging from no direct effect, to helping advance a game, to providing new content. Each type attracts different kinds of players. Using Bartle's taxonomy as an example, achievers and killers focus on making personal progress, developing their avatars, challenging strong enemies, and defeating other players. These kinds of players are the least interested in visual rewards and mini-games, and the most interested in accumulating treasure, weapons, titles, and other evidence of their advanced skills and accomplishments. In comparison, socializers show greater interest in superficial game aspects that can draw attention to them and support interactions with other players. Explorers are similar to achievers and killers in their desire to earn rewards that are new or unique. Their motivation for accumulating standard rewards differs in that their primary interest is in gaining sufficient strength to explore gameworlds in detail. We suggest that it is possible to determine gamer playing styles by looking at what kinds of rewards they are most interested in acquiring.

The third attribute is the suitability of a reward for collection and review, with players having motivations that range from building a sense of accomplishment to preserving game memories (Formanek, 1994). Obviously, items that require a lot of effort have greater value as reminders of past experiences, or as representations of goal fulfillment. From a social point of view, collecting helps players recognize other players with similar interests when gathering in online forums or at real-world meetings. We have observed an especially strong interest in collecting achievement titles in games such as World of Warcraft and the Metal Gear Solid series. Their clearly structured reward systems facilitate comparisons, create a sense of collecting aesthetics, and strengthen feelings of completion and perfection (Danet & Katriel, 1989). For these reasons it is important that rewards be easy to present and review.

The fourth attribute is the time required to earn and/or receive a reward. Whereas real-world rewards may take years to emerge (e.g., job promotions), game rewards can be as instantaneous as a pop-up message (e.g., "Perfect!"), or as delayed as achieving a new level after days of repetitive monster killing. Game companies clearly put a lot of effort into planning this aspect of reward distribution in order to enhance positive gaming experiences. Properly timed rewards can help create senses of accomplishment and value, while poorly timed rewards can cause players to give up and move on to other games (Gee, 2007; Koster, 2005). Differences in individual willingness to accept delayed satisfaction increase the complexity of reward timing. The designers of games that use item reward systems must carefully limit the potential for player frustration. Also, in order to attract casual players, designers must carefully balance required player commitment with reward quality (Juul, 2010).

HOW PLAYERS UTILIZE REWARDS

In video games, players can choose how to utilize the rewards they earn. By making player communication and organization much easier, the Internet offers new options for

utilizing rewards. Our proposal for a dual-axis classification system for reward usage is illustrated in Figure 1. The self-other axis emphasizes the idea that rewards may be oriented to personal satisfaction or to other players within a community (partly corresponding to the idea of play as self versus social activity), and the progress-casual axis reflects how seriously players view their gaming activities and accumulated rewards (partly corresponding to play as frivolous versus play as power). As shown in Figure 1, our proposed model consists of four classifications:

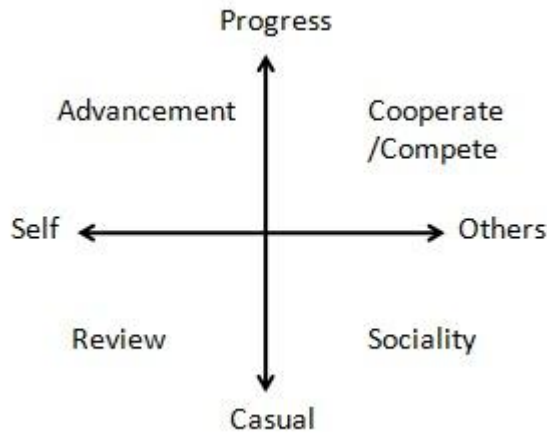


Figure 1: Reward usage classifications.

1. Advancement. Players use rewards to make game progress—for example, building avatar strength with powerful *World of Warcraft* items. Rewards in this category mitigate challenge levels so that players can advance and gain feelings of increased skill and power. It can be argued that player skill levels are not actually affected by the use of rewards, but that players simply feel a greater sense of fun if they believe that their skills are improving. According to Malone (1981), players who merely think they are good at a game like the game more than others, while those who are actually better at a game do not.

2. Review. Players like to check their achievement collections, view their avatars wearing powerful items, and watch animations presented in games. Reviewing rewards provides entertainment, a sense of accomplishment, and memories linking play events to specific rewards (Formanek, 1994). Thus, making rewards accessible for review is an important aspect of game design.

3. Sociality. Examples of using rewards as social tools include giving *World of Warcraft* avatars funny appearances, sharing information about rewards with other players, and showing off rare achievements or powerful weapons to establish status. These kinds of activities reflect the growing importance of player interaction via online forums or informal gatherings of gamers for single-player games. Game companies are therefore creating more elaborate reward systems that motivate and support such interactions. For example, a reward system based on revealing secrets can be explored by all players, who then discuss their search activities in forums, thereby building relationships with others.

4. Cooperate/Compete. Examples include sharing resources with teammates and hoarding powerful items to maintain advantages over other players. *Diablo II* encourages

cooperation in order to accumulate pieces of equipment called “set items” as bonuses. It is not easy to collect all items in a set, therefore many Diablo II players possess multiple items belonging to different sets. The game design encourages player interactions to make item exchanges.

SOCIAL ASPECTS OF REWARDS

Game players rarely play alone. Even users of single player games tend to share their experiences and compare achievements with others. As stated above, social aspects are important motivations for play, and social relationships inevitably affect and are affected by game play activity. Juul (2010) lists three kinds of social gaming considerations as goal orientation (“I want to win”), gaming experiences (“I should play slightly below my best to make the game more fun”), and social management (“I better let my boss win”). How do reward systems create social meaning? To earn rewards, players must locate information, thus reward systems that require information exchange or sharing encourage social interaction (Sun et al., 2006). Many games require players to work together to fulfill a requirement, and therefore encourage cooperation. In *World of Warcraft*, the need for cooperation to achieve personal goals has inspired players to create a dragon kill point (DKP) reward distribution system to manage their cooperative play. Players accumulate DKPs by making contributions to team effort, and can use accumulated DKPs to buy virtual items that teams have access to. This is an example of transformative social play (Salen & Zimmermann, 2004), in which players change the game to enhance gaming experiences. Rewards that can be easily demonstrated affect social interactions by showing what a player or group of players have achieved. Rewards can accelerate social interaction as a symbol of personal achievement, ability, playing style, and so on (Reeves & Read, 2009). Players can quickly decide whether to interact or how to interact with other players. For example, players who want to know how to solve a quest can ask someone who owns the type of reward that is given by solving the quest. According to Koster’s (2005) discussion of social status maneuvering, the value of showing off a reward should not be ignored. In groups such as MMORPG guilds, rewards that show group achievement can enhance feelings of belonging and experiences of “play as identity” (Sutton-Smith, 1997).

REWARD MECHANISMS AND FUN

In this section we will summarize reward mechanism-based design heuristics aimed at creating better gaming experiences. According to Koster (2005), people enjoy learning, but tend to be lazy; in gaming, this means that players tend to give up. Hallford and Hallford (2001) believe that reward systems should keep players excited over the course of a game. Although the direct function of any reward is to provide a goal, a well-designed reward mechanism can push players by maintaining positive gaming experiences and motivations, thus helping endure inevitable slow times and low points.

Reward mechanisms in video games can enhance feelings of fun long before rewards are actually given—that is, rewards can create a sense of anticipation among players who know what is specifically required to earn them. Loewenstein (1987) and Rozin (1999) are among many researchers who have commented on how the pleasure of anticipation is an important aspect of positive experiences—for instance, looking forward to a trip to a new country is exciting by itself. In the context of video games, players feel pleasure when anticipating rewards. One tactic used by designers is reminding players about potential rewards, perhaps programming non-player characters (NPCs) to talk about a legendary sword owned by a demon, thus encouraging players to challenge that demon and capture the sword. At a certain point, the pleasure of anticipation can be replaced by a

sense of anxiety or displeasure. For example, players may not be happy if they unlock a piece of equipment and discover that it is only slightly better than the one it was designed to replace. Game designers thus need to keep in mind a basic rule when creating a reward system: the longer the delay, the greater the necessity to provide a reward that is significantly higher in terms of quality or usefulness.

Interest in rewards can be increased by withholding details about them. Players who are not completely certain about what needs to be done to gain a reward may exert considerable energy trying to figure that out; many players consider this learning process enjoyable. Players are fond of discovering unknown facts by themselves; someone from outside their game community may be viewed as “bossing them around” (Gee, 2007) if they try to give instructions. Anyone who visits a casino understands the attraction of chance. As with gamblers, video gamers are encouraged and expectations are increased when they receive rewards at random intervals (Hopson, 2002). However, probability must be established so that players do not get used to rewards or feel frustrated when they don’t arrive as frequently as expected. Greater risk must be accompanied by the potential for more valuable rewards. Note also that rewards can destroy intrinsic motivation (Lepper & Greene, 1978; Pittman, 1982), and that rewards located outside of games can corrupt play (Caillois, 2001). The question of how rewards can degrade gaming experiences needs further exploration.

When designing rewards, one of the most basic and intriguing tasks is determining target customer motivation. Yee (2006) found that male players are more interested in achievement, while female players are more interested in the social aspects of a game. However, Begy and Consalvo (2011) have very recently reported that female players are exceptionally attracted by achievement-related content in the Facebook game *Faunasphere*, which conflicts with Yee’s finding. Flexibility in required commitment is also very important, especially in casual games. A well designed game should reward both casual and hardcore players. Even in hardcore games, goal mechanics that feature optional goals can attract more players by supporting casual play (Juul, 2010). Games should also encourage trial-and-error, which is considered key to creative play—an important source of fun (Salen & Zimmerman, 2004). As Koster (2005) observes, “Fun is about learning in a context where there is no pressure, and that is why games matter.” Hallford and Hallford (2001) emphasize the point that reward systems should support rather than punish player curiosity. According to flow theory, the absence of concern about failure is a key ingredient of flow experiences.

Games can attract a broader range of players and keep them playing longer by providing relatedness (Ryan, 2006), social status (Koster, 2005; Salen & Zimmerman, 2004), and other positive experiences. Social play reward systems should have at least two characteristics: provide rewards that require players to share information, seek help from the gaming society, and cooperate; and be easy to demonstrate, share, and use to communicate meaningful player information (Reeves, 2009). Reward quality should increase in step with skill level to keep players at the margin of ability (Gee, 2007; Koster, 2005). In terms of randomness and delay, rewards should be predictable enough to maintain a fun level of anticipation (Loewenstein, 1987; Rozin, 1999). However, occasional surprises are intuitively good and supported by evidence from biology experiments (Caplin & Dean, 2008). Goals and game mechanics are two primary forces that drive players and provide pleasure. Short-term goals link pursuit of achievement to engagement in game mechanics, and provide a sense of control (a flow characteristic) by giving some direction about what to do next. With short-term goals, players feel

accomplishment and get feedback during the course of play, which are essential to meaningful play (Salen & Zimmerman, 2004).

FLOW AND REWARD

Flow theory, which addresses optimal experiences associated with activities, is currently at the center of research on fun in games. Although it is generally used to analyze intrinsically rewarding experiences, we believe that flow theory is also an appropriate tool for analyzing game systems that distribute extrinsic rewards. Flow experiences have nine characteristics: clear goals at every step, immediate feedback, a balance between challenge and skill, merged action and awareness, a neglect of distractions, no worry of failure, absence of self-consciousness, distorted sense of time, and an autotelic quality. We will focus on three of these in our analysis of how reward systems offer positive experiences: balance between challenge and skill, clear goals, and immediate feedback.

Many video and online gaming researchers have studied the balance between challenges and skills and between boredom and anxiety. Koster (2005) suggests that fun is at the margin of a player's ability when mentally mastering a problem. When players face challenges that seem too high for their skill levels, their anxiety motivates them to either improve their skills or reduce their challenges; the first option is considered much better because the second generally results in increased frustration. Using a score system as an example, players may not be able to finish a complete game, but they can try to break their own records, create a sense of accomplishment, or return to complete a full game at a later time. In this example, the reward system makes it easy for players to set goals appropriate for their skill levels. In a game such as *Diablo II*, which uses an experience point and item reward system, players may not be good enough to defeat the boss, but they can still strengthen their avatars by killing monsters. Thus, players feel that they are getting better while the challenge level remains the same—a desirable balance in terms of game design.

When skill levels exceed challenges, players will eventually experience boredom. A reward system can rectify such situations in two ways: modify the emotion through rewards, or help players establish higher challenges. Increasing avatar level (the most common strategy in RPGs) provides fun by making players feel that they are in an active stage of development. However, players may feel bored if the tasks they need to fulfill in order to level up are not sufficiently enjoyable, or fail to trigger a strong sense of anticipation.

Reward systems that provide quick feedback also play an important role in clarifying short-term goals; without them, many games suffer from the problem of having clear long-term but ambiguous short-term goals. Some of the most effective reward systems divide large, complex quests into a series of shorter tasks, each with a separate subgoal. These organizing and gathering tasks are completed as subquests that have clear short-term goals within much larger contexts. While most online games provide rewards via item-dropping and achievement systems, these activities are inadequate for single-player casual products such as rhythm and puzzle games. In these situations, players are more likely to be rewarded immediately following skillful moves by receiving points or praise from virtual characters. In gaming arcades where onlookers are present, immediate feedback (visual and audio messages) that follow expert moves play a large role in attracting audiences and triggering feedback (Höysniemi, 2006).

PHYSICAL WORLD APPLICATIONS

Games are now used for many real-world purposes, including in-game marketing, advergaming, games with a purpose (GWAP), activist games, and employee training. In *Persuasive Games*, Bogost (2007) argues that games can be very persuasive, affect player opinions concerning real-world issues, and play roles in long-term social change. A common game marketing strategy is to give players valuable virtual items as easily achieved rewards. Edery and Mollick (2008) suggest that effective advergaming offers competitive or cooperative activities, trigger desire for reaching a goal, and support sharing. A reward mechanism with social characteristics can help achieve advergaming design goals. There are cases in which virtual rewards are gained by purchasing physical products. *Webkinz* distributes virtual pets as rewards to promote their real-world toys; the strategy is effective because the virtual pet is easily shared with player communities for inspection. Note that anti-advergaming is being designed to put certain brands, companies, and ideas in a bad light. These games use reward systems that set either undesired goals or goals that can never be achieved to convey their ideas (Bogost, 2007).

Researchers have shown that reward system heuristics can be applied to workplaces. The authors of *Total Engagement* (Reeves & Read, 2009) have shared insights about how digital game elements and mechanisms can be used to improve employee performance and satisfaction. Primary causes of employee dissatisfaction include not knowing if they are progressing, lack of transparency in promotion routes, repetitive work, and remote enterprise visions that are not connected to personal feelings. These ideas correspond to certain game design shortcomings—for example, “decisions are arbitrary” (“I’m not going to be promoted anyway”), “losing a game without knowing why” (“I don’t know why I wasn’t promoted”), and “not knowing what to do next” (“How can I act according to the organization’s vision?”) (Salen & Zimmerman, 2004).

Reward system designers have addressed similar problems in complex games such as MMORPGs, whose players must perform repetitive tasks in order to collect rewards. MMORPG guilds try their best to create systems that support meritocracies, and players build their reputations by sharing their knowledge. It is possible to say that the meritocracy concept is quite natural in MMORPG guilds and game societies. Game achievement systems also separate long-term goals into sub-goals that help players determine if they are progressing in the right direction; this idea may help mitigate employee dissatisfaction (Reeves & Read, 2009). Games are also used to motivate people to do real-world work—for example, Microsoft used a game to increase the number of volunteers willing to debug its Vista product. The online game *Handipoints* lets parents give virtual rewards to their children to encourage good real-world behavior (Edery & Mollick, 2008).

Reward mechanisms have long been studied by education researchers. Early behaviorists viewed learning as a process of reinforcement, with students taking exams on a regular basis, getting feedback on wrong answers, and receiving rewards for correct answers. Gee (2007) has summarized 36 learning principles when arguing that video games can be used to support and improve teaching and learning quality. Inspired by his work, we believe that game-like reward systems can be helpful in some non-traditional ways. In terms of situated learning, Gee argues that it is important for learners to take on the identities of successful characters in subject domains. Rewards can be aimed at encouraging creative thinking when building virtual identities. It is also important to motivate learners to put in lots of effort toward achievement. A game-like reward system may be an effective

motivating tool if it reduces pressure and fear of failure, or provides alternatives to scores as marks of meaningful success.

New technologies (e.g., mobile GPS, ad hoc communication) are being used to link game companies with non-gaming entities. Players of *Love Plus* (Konami Digital Entertainment, 2009) receive game rewards when they use a Nintendo DS to travel to certain physical locations in which local businesses have promotional agreements with the Konami game company. Many players of *Dragon Quest VI: Realms of Reverie* on Nintendo DS (ArtePiazza, 2010), are familiar with an activity known as “passing-by connection,” in which players in close physical proximity automatically exchange data on avatars and other game aspects. In an effort to increase sociality, rewards are also used to encourage players to write about themselves.

REWARD SYSTEM DESIGN CONSIDERATIONS

In this section, we summarize our analysis on reward systems by providing some considerations on designing a reward system.

1. Life constraint: In *A Casual Revolution*, Jesper Juul (2010) discusses casual games that exert flexible demands on player skills and time commitments. Hardcore game characteristics such as complex control interfaces and large time investment demands prevent many people from playing hardcore games. If the target audience consists of casual players, rewards must be accessible during short playing sessions.
2. Create autotelic experiences: Although reward systems give extrinsic reward, they can create intrinsically rewarding experiences. An example is setting multi-level goals to encourage players to sharpen their skills and try new ways to play, thus makes players to learn and experience the pleasure of learning and making progress. By defining subgoals, players are easier to immerse in the course of play.
3. Balance: It must be balanced between effort paid/ time spent and the value of reward. It is frustrating to receive reward not valuable enough constantly. On the other hand, the players will no longer appreciate high value rewards if they are gained relatively easy. When a game is played by many players, inter-player balance must be considered. For example, many MMOGs have both hardcore and casual players as target audience. Reward systems must be carefully designed so that hardcore players have some advantages (after all, they spend more time) while casual players can still enjoy. The importance of balance between players buying and not buying virtual items in free-to-play online games is similar.
4. Uncertainty and secrecy: The uncertainty itself of reward creates some fun. However, it is not suitable for rewards which are supposed to be tightly correlated to skills like score. In addition, for resources which are critical in clearing a stage in real-time like ammunition and life count, players prefer them to be expectable. Secrecy like hidden treasure and quest encourages players to dig into the game and be a contributor in the game society or to join online discussion and search for information.
5. Accumulated vs. instant feedback: Accumulated rewards, especially those not spent in game like experience points and virtual equipments, mark the progress of players and/or avatars and are suitable for comparison. So this kind of reward is better in creating long-term and social sense of achievement. Instant feedback, on the other hand, makes a game

responsive and “juicy”. This kind of reward helps maintain attractiveness and provide elements for flow experience.

6. Social purposes: Rewards can be used to share, compare with others, establish status, show off, etc. For example, Reward systems that distinguish players who have advanced skills or contribution to other players make it possible for encouraged players to establish status while eye candies are good for both sharing and comparison. Furthermore, rewards which can only be gained by advanced players also serve as symbols and increase group identity of these players.

7. Physical world activities: Reward systems with support of mobile technology have been used to encourage a range of activities; from shopping, traveling, even to taking exercise. The idea of making players have more physical contact and do something good for health have made more people willing to play or feeling less guilty on playing games; just like Wii has changed the image of game playing.

CONCLUSION

In this paper we discussed reward systems from several viewpoints, including classifying and characterizing rewards, and showing how players use them with a dual-axis model. We analyzed the motivating aspects of reward systems, as well as how they interact with other game mechanisms to provide positive player experiences. We also discussed how game-inspired reward systems might motivate individuals and change their real-world behaviors in business, teaching and learning, and other environments. We also discussed four points regarding how reward systems provide positive experiences. First, rewards can be used to establish status, attract attention, and build social connections with other players, or to motivate players to collaborate when searching for secret information or hidden items. With the addition of mobile communication technologies, reward systems can support real-world social interactions. Second, reward systems make other game mechanisms more enjoyable by setting goals for players (and making it feel natural for players to set appropriate goals) while compensating for game-related boredom and anxiety. Third, reward mechanisms can arouse curiosity and trigger the sense of fun associated with taking chances. Fourth, they can set the stage for players to review their collections of virtual items or achievements, even when they are not actively playing a game. Finally, we proposed our idea about design considerations of reward systems.

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