How the ethical dimensions of game design can illuminate the problem of problem gaming

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Introduction

Though various practical guidance on game design exists, the ethical implications of particular design choices have rarely been considered academically. Kultima and Sandovar (2016) point out that where the ethical values embedded in a given game design are studied, they tend to be studied in universities, which differ significantly as an environment from that of a studio. Industry codes of practice, such as those of the International Game Developers Association, thus focus on good contractual practice and employee welfare rather than on the welfare and happiness of the end user (IGDA n.d.).

When academics do consider the issue of ethics, they rarely come to firm conclusions. This is understandable, particularly given that this intersection of ethics and game design is a relatively new field: some degree of exploration will be necessary before consensus is reached. Still, it seems worthwhile to move beyond these initial explorations. To give an example, Foddy (2011) suggests that 'it looks like videogames give rise to behaviours with all the characteristic traits of an addiction', but argues that the real issue is the use by game designers of a variable schedule of reward-based reinforcement (Skinner & Ferster 1957), since that is 'exploitative'.

This is an understandable conclusion, but somewhat surface-level; it takes little or no account of the user's experience, nor of the context of the game as a whole. We might thus ask whether the user considers a game to be a problem, given his or her experience of the game in context, or is it only others – academics, parents, or politicians – who perceive games as inherently problematic, and seek evidence to support their views? It is surely at least possible that some users' concerns about problematic play are due to societal and cultural disapproval and problematisation.

Yet, it would be as wrong to fully dismiss concerns about problematic play as to accept them wholeheartedly, particularly when it comes to the issue of games that may have been designed especially to be 'addictive.' 'Addiction' is thus considered a

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compliment by certain industry actors when it comes to game design: 'we think that quality [addiction] in a game is a good thing' (Adams 2002).

In this chapter, I will first introduce self-determination theory (SDT) and its use for analysing motivation for videogame play. Next, I will consider in-game rewards and, in particular, how they might be understood to either support or undermine intrinsic motivation. Then, I will examine flow theory in relation to games. Next, I will critically analyse two games, in relation to all of the above. Finally, I will consider what makes a particular game design decision problematic, in light of what we have learned so far.

Motivation for play: self-determination theory and games

In efforts to answer questions like 'What is play?', and, very often, 'What is play for?', much has been written about the nature of play. The various answers to these two questions are arguably closely related to the answers to 'What is the motivation for play?' This issue of motivation is key to the problem this chapter addresses, that is, problematic design. This issue is explored in relation to self-determination theory (SDT), a psychological research paradigm that has frequently been used to frame research into motivation for videogame play. I shall start with outlining SDT's approach to motivation.

Existing research into motivational psychology (the overall area within which SDT is a prominent theory), divides human motivation for action into two areas, intrinsic and extrinsic. Intrinsic motivation would be when one performs a task for the sheer joy of doing so; for example, a purely intrinsically motivated violinist may play the violin due to the love of music, the experience of hearing him or herself play as well as the experience of executing musical skill at a high standard. Extrinsic motivations, on the other hand, are external factors influencing one's desire to perform a task. A second musician, motivated purely extrinsically, might play the violin due to a threat of punishment for failure, or because of being paid a fee to play. Other forms of extrinsic motivation include social status, peer group pressure, trophies, grades, etc. Perhaps not surprisingly, research has shown that the type of motivation matters for the nature, experience, and consequences of a performed activity: when people are extrinsically motivated to perform a task or engage in an activity, they tend to perform it with less enthusiasm, less creativity, and more stress than if intrinsically motivated (Deci 1975; Joussemet & Koestner 1999).

SDT identifies three intrinsic motivations, also known as basic needs: *competence*, *relatedness*, and *autonomy*. Competence is the feeling of effectiveness when exercising skills. Thus, competence motivates people to seek out challenges that will be well-balanced in relation to their capacities, as well as motivating them to hone those capacities. Relatedness is the feeling of connectedness to others, both as individuals and in the context of belonging to a community. Relatedness, though, is not connected to social status or the attainment of specific goals or outcomes; rather, it is a more

generalised need to connect with others. Autonomy is the feeling that one chooses one's own behaviour, rather than being controlled by others (Deci & Ryan 2002).

Extrinsic rewards

Receiving an extrinsic reward is almost always considered to be extrinsically motivating, and to undermine the person's intrinsic motivation (Deci & Ryan 2002).

Obvious extrinsic rewards in gameplay include such things as positions on a leaderboard, prizes, and social acclamation. In open-ended (i.e. not bounded by time constraints) massively multiplayer online roleplaying games (MMORPGs), and similar game types inspired by and/or being remediated versions of *Dungeons and Dragons* (Gygax & Arneson 1974), it also seems plausible to include under extrinsic rewards such things as in-game rewards, that is, virtual 'gold', armour, weapons, and other equipment gained during play to enhance the appearance and in-game capabilities of the player's avatar, as well as other forms of game-mechanical character advancement such as increases in the avatar's game statistics.

The status of such in-game rewards is a complex issue. Massively multiplayer online games (MMOs) share many qualities with physical-world economies, to the point that they have been studied by economists wishing to gain insight into physical-world economies. Research into the neurology of reward mechanisms seems to support the concept that in-game rewards may be treated by the player as a similar type of reward to out-of-game money[1], even if economists might need to treat them differently for some purposes. According to Ariely's (2008) research into behavioural economics, people do think of non-standard economic systems somewhat differently to the way they think of dollars, pounds sterling, etc., in that the more divorced an economic system is from hard currency, the more likely people are to try to cheat or otherwise be dishonest, if given the opportunity. Ariely argues (2008) that this is why investment bankers, given huge sums of what are, in effect, virtual money to play with, seem to be prone to swindling-related scandals; from a Game Studies perspective, virtual economies do not offer quite the same opportunities for dishonesty, and game studios do their best to police the situation, but perceived cheating, or behaviour perceived to be against the spirit of the game, is often policed even more harshly by the gamers themselves, who react viciously against anyone perceived to be a 'Gold Farmer', i.e. a player being paid real currency for in-game gold and goods (Nardi & Kow 2010).

'Real Money Trade' (RMT) is well-established in virtual worlds, with some worlds such as Second Life encouraging or even relying on it, but with most games studios attempting to ban it; despite disapprobation from both players and publishers[2] *World of Warcraft* has an active RMT economy, with the top Google sponsored search hit for 'buy wow gold' claiming eight years in business, and stocks of 800 million gold coins, at prices as low as 0.4 euro per 1,000 gold (Google, n.d.).

Rewards and feedback

In some contrast to the notion that in-game rewards function purely as extrinsic rewards, it has been argued that, at least to some extent, in-game progress such as in-game currency (as described above) as well as improvements to strength, stamina, and equipment, can act instead as feedback, which basically tells the player how well they are doing in the game.

SDT distinguishes between two aspects of feedback, informational and controlling. Informational feedback, such as unbiased, numerical data that measures task performance, tends to support the recipient's feelings of competence, and thus, their intrinsic motivation for a task. Controlling feedback is any feedback which is perceived by the recipient to be primarily an attempt to control them rather than give them information, such as a teacher praising a child's cleverness after a task performance that the child knows is poor.

Any feedback related to an ongoing activity is thought to have both of these aspects, i.e. an informational aspect and a controlling aspect. Following this, it is possible to see some in-game rewards as informational feedback, specifically a form identified as *cumulative competence feedback* (Rigby & Ryan 2011: 24-29, 76). Experimental data shows (Ryan 1982) that informational feedback can support intrinsic motivation (specifically competence), at least relative to controlling feedback, which tends to undermine intrinsic motivation.

The recipient of the feedback will attach more salience to one or other aspect depending on such factors as the form and nature of the feedback, the context, their existing feelings of competence and autonomy (Deci & Ryan 2002); for example, verbal feedback relating to one's performance at a task might be seen as informational if delivered supportively from a trusted mentor or teacher, but the same words could be seen as controlling if delivered by a bullying boss with an underlying threat of being dismissed from one's job or otherwise sanctioned.

Tangible rewards in non-game contexts – monetary salary, vouchers, prizes, bonuses, etc. – are extrinsic rewards (Deci & Ryan 2002), and thus tend to undermine intrinsic motivation, measurably reducing creativity, etc., usually in an even more severe way than the undermining effect of controlling feedback, since tangible rewards are wholly extrinsic whereas most feedback contains both an informational and controlling element. If some or all videogame players do treat some or all in-game rewards as controlling, this could explain compulsive, collusive, or otherwise problematic play.

However, Deci, Koestner and Ryan (1999) have shown, in an analysis of earlier studies, that it is possible to avoid the undermining effect of tangible rewards, if those rewards are not expected by their recipients. Whether this avoidance of undermining is due to the rewards being treated as informational, or purely due to the behaviourist style of reward schedules employed by the game, is another matter entirely – the latter certainly seems the most plausible explanation, since an unexpected reward is unlikely to convey much, if any, informational content. In either case, this has clear implications

for ethical game design: even if an unexpected reward is treated as neither informational, nor controlling, that is an improvement on expected, controlling rewards.

Reward mechanisms and reward schedules

As indicated above, the context and user experience are key factors in determining whether any given reward mechanism is perceived as controlling, informational, or some mixture of the two. The concepts of controlling feedback vs informational feedback originate with SDT researchers' investigations into verbal praise delivered by parents, teachers, bosses, etc. (Ryan 1982).

It seems unlikely that a reward that the user experiences as wholly informational is also experienced as exploitative, and indeed Rigby and Ryan (2010) consider all competence feedback to be inherently supportive of intrinsic motivations rather than being associated with extrinsic motivation or with amotivation. Yet, all these feedback techniques or reward mechanisms can equally well be considered to be deliberate manipulation of the player, using techniques from behavioural psychology to condition players to respond in a manner chosen by the designer of their user experience. Such deliberate manipulation surely, by SDT's own definition of controlling feedback, risks undermining intrinsic motivation if the player is aware of the manipulation.

Many of these manipulation techniques are ultimately derived from experiments in behavioural psychology, originally involving manipulating the 'user', typically a rat or pigeon, to behave in a certain way so as to receive a reward or avoid a punishment, e.g. in Skinner and Ferster (1957). Søraker argues, however, that some uses of these techniques is appropriate, to 'avoid gamers abandoning the game because of the simple and repetitive nature of the gameplay' (2016: 110). Arguably, then, they may be more suited to casual, free-to-play or freemium style games, where the user rarely if ever becomes highly tactically engaged, or enters a flow state, but plays primarily in a light, time-filling way, probably in short bursts several times a day.

Gameplay as flow

Flow theory is closely related to intrinsic motivation, particularly the competence need. Many game designers and theorists have seized upon flow as a key aspect of videogame play, e.g. Jones (1998), Sweetser and Wyeth (2005), McGonigal (2011), and Nacke (2012). Yet, uses and gratifications studies of game players often find players self-reporting activity that would not automatically be associated with the high levels of skill involved with a flow state, such as 'activity/action, solitude/escape, excitement, tension reduction, to pass time, for entertainment, arousal, and stress reduction' (Sherry 2004: 338).

Some researchers do note these distinctions between flow and gameplay, or at least recognise that the situation is not so simple as flow being the state that most

players are in most of the time when playing videogames. McGonigal (2011: 31-33), though suggesting that 'hard fun… positive stress' is a key part of both the enjoyment and importance of videogames, also recognises that some games such as *Bejewelled* and *Farmville* offer only 'busywork… completely predictable and monotonous'. This type of busywork is surely 'easy fun' by definition, if the concept of 'hard fun' used by McGonigal and others is to be considered valid. Yet, McGonigal considers such busywork games to still be fulfilling so long as they are self-chosen. This concept of self-chosen easy fun makes sense from an SDT perspective: self-chosen busywork would primarily relate to an autonomy motivation rather than competence or relatedness. It is, however, very clearly not flow as Csikszentmihalyi (1990: 149) observed it, which after all relies on 'challenging opportunities for action'.

It is likely that some or all these less-engaged players are intrinsically motivated in the ways most associated with flow, notably SDT's competence and autonomy motivations. At the same time, they do not report their state as flow, but rather express motivations as 'to pass time' and 'for entertainment' (Sherry 2004: 338), which suggest a much lower level of engagement and mastery. Indeed, although a flow state implies that the subject loses track of time – '[the subject is] completely involved in something to the point of forgetting time, fatigue, and everything else but the activity itself' (Csikszentmihalyi 2014: 230) – it also requires, as strict prerequisites, 'clear goals' and a 'sense of control' (Jackson & Marsh 1996: 19), which would seem to differentiate it from at least some videogame play. Easy, time-filling, low-concentration videogame play is not necessarily problematic, and again is probably no more harmful than most pastimes and hobbies, but it is far from the refined, high-art experience idealized by advocates for videogames-as-flow-experiences.

It might be reasonable to argue for a continuum from problematic videogame play, likely to be characterized by either feelings of being compelled/controlled by the game, or amotivated; through light, entertaining play, sometimes performed when the gamer has nothing better to do, but also including 'perfectly valid non-fun reasons to use games' (Koster 2012: n.p.) such as story, practice, meditation, and comfort; to the 'hard fun' of more consciously arty, intense, high cognitive load, and risky play.

This more intense form of play does seem to have far more of the characteristics of flow than the others, though even Koster argues that it is not inherently the same as flow, partly because of Marr's (2001: n.p.) comments on flow: 'Flow represents a neurological event that differs in degree rather than type from other similar events, and is no more distinctive than high anxiety is from low anxiety, or running from walking.' If Marr is correct, the second category might be considered a lower-level form of flow in any case: 'lower levels of activation… may not produce self-reports of elation or satisfaction' (Marr 2001: n.p.).

Gameplay as fulfilling busywork

Could the lower-engagement 'busywork' games and casual games offer something resembling the flow experience, but without all its benefits? Juul (2009) argues that casual games afford an easier entry point into much the same pleasures as more game-literate players will find in hardcore games, where casual games particularly appeal to an audience who enjoyed the videogames of the 1970s and 1980s, and who find more recent Triple-A games overcomplex. This stance is at odds with the common complaint among hardcore gamers that contemporary games are too easy. Conway (2012: 29-40) argues that contemporary AAA games negate 'tension, discomfort, and dissatisfaction', because old-school difficulty has been designed away due to the contemporary desire, on the part of studios, to offer a mass-market entertainment experience that can be consumed rather passively.

It seems there is a middle ground where both Conway and Juul are correct: many contemporary games may indeed be overcomplex and have a high barrier to entry, requiring mastery of multiple controls and 3D-visualisation skills to even play them, while they are still able to support a low-level flow state, once that initial game-literacy has been attained. Yet, most contemporary AAA games do justify Conway's (2012) complaints that they are more intended as easy consumer entertainment than as challenging puzzles, which also reflects Koster's (2013: n.p.) observation: 'A tremendous amount of the content pumped through media today has as its goal mere comforting, confirming, and cocooning.'

Traditional, more passive media forms may offer such comforting entertainment, but videogames are considered to be different: after all, they are ergodic, requiring effort on the part of the user to unlock their entertainment potential (Aarseth 1997). Such effort, in the pursuit of a clear goal and supported by informational feedback, is intrinsically motivating as we know from SDT theorists' investigation of the competence motivation (Rigby & Ryan 2011) and from the many theorists who associate gameplay with flow. If this effort is rendered trivial, what remains to hold the player's attention? Likely possibilities are one or both of the other intrinsic motivations, relatedness and autonomy; or the lower-level flow state as proposed by Marr; or extrinsic motivation, including that caused by controlling feedback; or amotivation/boredom, compulsion, addiction, or other highly problematic forms of play.

Designing for such light entertainment-style gaming is likely to involve some similar techniques to designing for more challenging games: consideration of twitch skill vs strategic skill vs chance (Brathwaite & Schreiber 2008), design of puzzles, narrative design, etc. Within the chance element, though, is likely to be an array of complex formulae based not on a traditional cards- or dice-based chance game mechanic, but on the reward schedules found by Skinner and Ferster (1957) to be optimal at getting pigeons and rats in boxes to push buttons in exchange for rewards. These variable schedules, while being perceived as chance by the player, are carefully designed to shape player behaviour, as noted by Søraker:

> Variable schedules... are characterised by high-rate, steady activity – there is no reason to pause because your next trial is the one that may be rewarded. The key is to keep gamers occupied while playing the game, to allow for a pause after having completed the daily 'chores' and then to offer an incentive for returning again later – often in the form of having one's resources renewed at a particular time of day. (Søraker 2016: 110)

Thus, in some designs of game, variable schedules may be necessary. They may even be recognized and accepted as necessary by gamers, even gamers who might feel manipulated or exploited by a similar design in a different style of game. Though one feature of videogames, as contrasted with non-digital games, is that the game mechanics and algorithms are essentially concealed from the player, more and more players are aware of manipulative and exploitative design, particularly since the popular *Extra Credits* (2012) video series did an episode condemning Skinner box game design as an endemic problem. So, in some games, for some users, a variable schedule of rewards will certainly be perceived as exploitative, particularly if the game otherwise fails to be intrinsically rewarding.

Conversely, a game that maximizes the player's opportunities to satisfy the intrinsic motivations of autonomy, relatedness, and competence (Rigby & Ryan 2011) may well be able to use such a reward schedule without players feeling exploited, or, for that matter, addicted. Both player motivation, and the motivation of the designers, are likely to be salient in determining whether a given design feature is exploitative.

Machine gambling as 'negative flow'

Could an amotivated or compulsive, i.e. potentially problematic, gamer be in some form of flow state, too? Research into compulsive machine gamblers offers an instructive example. Machine gamblers seem to self-report a flow-like state, and Schüll (2012: 166) makes the connection explicit: 'intensive machine gambling is characterised by the hallmark psychophysiological shifts and desubjectifying effects of flow', but with the crucial difference that this particular flow state is 'depleting, entrapping, and associated with a loss of autonomy' – quite the reverse of the usual autotelic, fulfilling, positive experience of flow (Schüll 2012: 167).

Schüll's work is situated in a recent tradition of researchers into gambling who consider problem gambling, and problem gamblers, to be one end of a continuum of behaviour, which at the other end includes recreational gamblers, who almost all feel at least some compulsions and report at least occasional problematic play or problematic results of play. She considers it important 'to understand how commercial gambling activities and environments might create the conditions for – and even encourage – such behaviour in consumers' (Schüll 2012: 16).

It should thus be possible to learn from Schüll's research when considering problematic videogame play, too. Though the consequences of problematic videogame play, in terms of the negative impact on relationships, work, and/or finances, tend to

be less severe than problem gambling, and may be overstated in some cases due to societal problematisation of all videogame play, such negative consequences do exist, and they are certainly affected by game design decisions. This is particularly the case when such decisions are deliberately made to maximize 'time on machine' and/or game studio revenue, according to an understanding of behavioural psychology; this approach closely parallels that taken for the design of gambling machines.

There are, however, important differences between machine gambling and videogames. Machine gambling is distinct in its solitaire nature, unlike videogames which are frequently social, multiplayer activities, even when problematic, e.g. as reported by Rigby and Ryan (2011). Machine gamblers exhibit a 'rigorous exclusion of relationality' (Schüll 2012: 193), deliberately and consciously removing themselves from any possibility of the relatedness motivation that is so commonly found in videogame play. Even a solo videogame will often deliberately simulate human relationships, and it seems very likely that the deep emotional connection felt by gamers with computer-controlled characters is almost as strong as that felt for a human-controlled character, at least in co-operative gameplay (Lim & Reeves 2010).

This emotional connection with other characters is associated with the relatedness motivation, 'even when one is playing alone', i.e. only interacting with computer-controlled characters, also known as NPCs (Rigby & Ryan 2011: 69). Much videogame play, especially that of players who play frequently and for long periods, is inherently social, with the Entertainment Software Association finding that 51per cent of the most frequent videogame players play with others, either online or in person, at least once a week (Entertainment Software Assocation 2016). So, there are major dissimilarities between videogame play and machine gambling, despite some similarities.

Reward scheduling: a comparison of two games

As a more concrete example of how rewards and reward scheduling may be implemented in existing video games, the following worked example compares *Minecraft* (Mojang 2011) with *Star Wars: Galaxy of Heroes* (Electronic Arts 2015). Both use variable schedules of rewards, but with quite different design intents and equally different user experiences.

Minecraft is a digital game of crafting, building, mining, and exploration. Among other reward mechanisms such as levelling up, it incorporates one unusual way in which the player can gauge their own progress and success within the game world, in the form of rare blocks or other goods found within the game. From the player's perspective, these rare blocks are generally found according to a variable schedule of rewards, since the player must usually 'mine' or clear a large area of rock before finding a scant few blocks of diamond or other ores. The player can maximise their chance of success by mining in specific areas that have a higher chance of having ore, but the experience is still that of a variable reward schedule.

Even then, it's worth noting that in actual play, exploration, and the satisfaction of intrinsic motivations tend to be the main reasons players explore deep caverns. The discovery of a vein of diamond ore is most commonly experienced as a pleasant side benefit of exploratory, self-motivated spelunking. It is possible to systematically mine out a 'chunk' of rock (a 16 block by 16 block area), at the correct height for finding diamond, and be very nearly guaranteed to find one vein of diamond ore, but this does not seem to be the typical play pattern. As Deci, Koestner, and Ryan (1999) have shown, it is possible to avoid the undermining effect of tangible rewards, if those rewards are not expected by their recipients. Thus, in typical play, where high-value ores are perceived more as a pleasant surprise than as a reward that has been earned for complying with the designer's expectations of 'correct' play, there should be no great feeling of being exploited, on the part of the player. Nor does compulsive or otherwise problematic play seem likely, though the chance of finding diamond may well be a small part of the reason players consider *Minecraft* to be 'addictive', in the colloquial, positive sense of that word among gamers. In any case, for players who are solely interested in the building aspects of Minecraft, and not in mining, combat, or exploration, a 'creative' mode is available, in which the player can spontaneously create any resources they desire. Again, this maximises feelings of autonomy; resources are useful to play the game, but most players appear to prefer to play the more standard 'survival' mode, enjoying the challenge this brings (Minecraftforum.net 2016).

Star Wars: Galaxy of Heroes is a typical MMO-style, freemium mobile game, in that it has enough content to allow for an hour or two of play daily, and focuses entirely on various forms of combat and on mechanical character advancement, incorporating variable reward schedules throughout its design along with similar features inspired by findings in behavioural psychology. For example, it deliberately uses multiple forms of in-game currency and other resources, with bewilderingly arcane relationships both between the different resources, and between out-of-game cash and in-game resources. These include: credits, training droids, experience points, crystals, battle energy, cantina energy, guild coins, guild currency, cantina currency, galactic war currency, arena reward currency, ship credits, ship arena rewards, character shards, ship shards, mods, character stars, ship stars, and gear.

It's hard to gauge how much of this apparently deliberate obfuscation of reward mechanisms, is an attempt to reward system mastery on the part of the player, and how much is more about enticing the player to pay out-of-game-cash for additional currency of one kind or another. Certainly, such a complex system will make it difficult for a player to gauge the real-world currency value of any given in-game resource. As one of the simpler examples: a player may know that £9.99 will buy them 1,340 crystals, that 100 crystals can be used to buy 120 cantina energy, that 8 cantina energy can be used to fight one cantina battle that might or might not drop one character shard for your already 4-star Geonosian Soldier character, that said character needs 65 shards to go from 4-star to 5-star, 85 shards to go from 5-star to 6-star, and 100 shards to go

from 6-star to 7-star… but it is a non-trivial task to work out, given that information, how much money it will cost you, on average, to go from 4-star to 7-star, particularly because the game does not reveal the drop rate of shards, i.e. the chance you will gain a shard in any given battle.

These drop rates bear all the hallmarks of deliberate design for behavioural psychology style operant conditioning. Alongside the deliberate obfuscation of the, wholly optional, financial costs involved in progressing more rapidly through the game, this is ludo-capitalism[3] at its finest, and therefore, also at its most potentially problematic, at least outside of the gambling industry, which also uses similar techniques of obfuscation and conditioning.

The parallels to gambling do not end there. The financial model of this type of freemium game revolves around the 'whale' – this is a term originally from the gambling industry, with a similar meaning to the more well-known 'high roller', but in videogames representing a player who spends so much money that a company can base its entire business model around a small number of whales, with little or no concern for any income that might come from non-whale players. Market research by Swrve found that 60 per cent of the revenue in freemium mobile phone games comes from 0.15 per cent of the players (Swrve 2016).

A whale might spend hundreds or even thousands of dollars a month on their favourite freemium game. This may be acceptable so long as this spend is freely chosen – again, would anyone voice concerns over a horse-riding enthusiast whose stabling and other costs were of a similar amount – but it will be cause for concern if it comes alongside other issues, e.g. financial problems or a pattern of deception of the user's family regarding the amount spent.

Behaviourist-influenced drop rate schedules originate in MMOs, probably starting with *EverQuest* (Daybreak Game Company 1999) but now most notably found in *WoW* (Blizzard Entertainment 2004). In MMOs, they have a different, but related, design aim: to prolong the play experience, increase the player's sunk costs, and generally keep them coming back, month after month, grinded-out quest after grinded-out quest. Again, the user's enjoyment is not the main aim, and the purpose of these low drop rates is somewhat obfuscated by the publisher. That said, with an increasingly game-design-literate user population – given the keen interest in game design found in so many game fans – most experienced adult gamers are well aware that this kind of game will involve a good deal of grinding and farming, and many will happily play the game with that understanding. Still, the mention of *WoW* and similar games, in so many of the accounts of gamers with self-described problematic gaming (e.g. Rigby & Ryan 2011), must give us cause for concern that this style of open-ended MMO is inherently associated with a high risk of problematic play.

When is design problematic?

It is difficult to generalise that any given game, or game feature, is inherently problematic from an addiction/overuse perspective, though it is certainly worthwhile to look for patterns and warn of tendencies. Given that the purpose of behaviourist style design, as described above, is to condition the user to act in a certain manner, it is no surprise that games with a core dynamic – the single thing the game is 'about', and the pattern of gameplay, according to Brathwaite and Schreiber (2008) – that is heavily reliant on a behaviourist design techniques, will also be associated with overuse or other problematic play, particularly in users particularly vulnerable to problematic play for whatever reason. Games with this core dynamic tend to be either a subscription-based MMO such as *WoW*, or a freemium style game such as *Star Wars: Galaxy of Heroes*.

Some games may thus be more likely to be played problematically than others, and some gamers may be more prone to problematic play due to 'emotional stress or malnourished needs' (Rigby & Ryan 2011: 117), but we must also examine the relationship between game and player. Addiction or problematic play does not happen instantaneously, but through repeated building of a relationship between subject (player) and object (game or device): 'rather than a property that belongs solely to one or the other, it becomes clear that objects matter as much as subjects' (Schüll 2012: 17). It will be of little use to further problematise problem videogame players, characterising them as weak-willed escapists, particularly if we also ignore the deliberate act of game creation by game designers and game industry psychologists.

Game designers do run large playtest programmes to examine the player experience, and iterate their designs accordingly, but even an intensive playtest is unlikely to call attention to problematic play or feelings of compulsion. Part of the difficulty here is that playtesters are, to a large extent, likely to be complicit with any genuinely problematic aspects of videogame design; their relationship with the videogame industry is not the kind of counter-play stance identified by Dyer-Witheford and de Peuter (2009), in opposition to the overarching dominion of the twenty-first century entertainment economy, but is closer to the 'collusion' identified by Schüll (2012: 73) as characteristic of the relationship between machine gamblers and the gambling industry. Thus, playtesting will not usually identify aspects of game design that will later cause problematic play in some consumers, and even if it did, such playtest results are not what game designers and playtest supervisors are looking for in a playtest. Particularly in freemium games, compulsive or collusive patterns of play are likely to mean higher revenue, after all.

Conclusion

Though videogame play is an enjoyable, rewarding, and stimulating pastime for most players, a significant problem has been identified and examined in this chapter: collu-

sive or compulsive game mechanics, which will tend to turn pastime into problematic habit, even if they feel amotivated or externally regulated rather than finding play to be fun and creative.

This problem can be avoided or reduced through improved game design. Many mainstream game design processes can be seen to cause or enhance this type of problem, primarily through deliberate design of game mechanics and reward schedules according to behaviourist principles. The core mechanics of the game are designed to control the play experience, and tempt players to continue play even if they lack intrinsic motivation to do so.

Notes

1. See, for example, experiments by Izuma et al. (2008), and Zink et al. (2008).
2. 'Players who buy gold actively support spam, hacks, and keyloggers, and by doing so diminish the gameplay experience for everyone else' (Blizzard Entertainment Inc, n.d.).
3. See Dibbell (2007) for more on ludo-capitalism as a concept.

References

Aarseth, Espen. J. (1997). *Cybertext: Perspectives on Ergodic Literature.* Baltimore: John Hopkins University.

Adams, Ernest (2002). *Designer's Notebook: Stop Calling Games 'Addictive'!* [Online] Available at: www.designersnotebook.com/Columns/046_Stop_Calling_Games_Addicti/046_stop_calling_games_addictive.htm [Accessed 20 August 2017].

Ariely, Dan (2008). *Predictably Irrational.* London: HarperCollins.

Blizzard Entertainment Inc (n.d.). *Gold Sellers and Levelling Services.* [Online] Available at: http://us.battle.net/en/security/theft#gold [Accessed 2 September 2015].

Blizzard Entertainment (2004). *World of Warcraft ,* Irvine: s.n.

Brathwaite, Brenda & Schreiber, Ian (2008). *Challenges for Game Designers.* New York: Delmar Publishing.

Conway, Steven (2012). We Used to Win, We Used to Lose, We Used to Play: Simulacra, Hypo-Ludicity and the Lost Art of Losing. *Westminster Papers in Communication and Culture,* 9(1): 29-40.

Csikszentmihalyi, Mihaly (1990). *Flow: The Psychology of Optimal Experience.* New York: Harper Collins.

Csikszentmihalyi, Mihaly (2014). *Flow and the Foundations of Positive Psychology.* Dordrecht: Springer.

Daybreak Game Company (1999). *EverQuest.* s.l.:s.n.

Deci, Edward (1975). *Intrinsic Motivation.* New York: Springer US.

Deci, Edward; Koestner, Richard & Ryan, Richard M. (1999). A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation. *Psychological Bulletin,* 125(6): 627-668.

Deci, Edward & Ryan, Richard M. (2002). *Handbook of Self-Determination Research.* Rochester, NY: University of Rochester Press.

Dibbell, Julian (2007). *Play Money: Or, How I Quit My Day Job and Made Millions Trading Virtual Loot.* NYC: Basic Books.

Dyer-Witheford, Nick & de Peuter, Greig (2009). *Games of Empire: Global Capitalism and Video Games.* Minnesota: University of Minnesota Press.

Electronic Arts (2015). *Star Wars: Galaxy of Heroes.* s.l.:s.n.

Entertainment Software Assocation (2016). *2016 Sales, Demographic, and Usage Data: Essential Facts About the Computer and Video Game Industry.* [Online] Available at: http://essentialfacts.theesa.com/Essential-Facts-2016.pdf [Accessed 04 March 2017].

Extra Credits Season 1 Episode 18: The Skinner Box: How Games Condition People to Play More – Extra Credits (2012). [Film] Directed by Extra Credits. USA: Extra Credits.

Foddy, Bennett (2011). *Addiction by Design.* [Online] Available at: http://blog.practicalethics.ox.ac.uk/2011/01/addiction-by-design/

Google, n.d. *Google Search: buy+wow+gold.* [Online] Available at: https://www.google.com/search?q=buy+gold+wow&ie=utf-8&oe=utf-8#q=%22buy+wow+gold+%22 [Accessed 2 September 2015].

Gygax, Gary & Arneson, Dave (1974). *Dungeons and Dragons.* Lake Geneva: Tactical Studies Rules.

IGDA (n.d.). *International Game Developers Association Code of Ethics.* [Online] Available at: https://www.igda.org/?page=codeofethics.

Izuma, Keise; Saito, Daisuke & Sadato, Norihiro (2008). Processing of Social and Monetary Rewards in the Human Striatum. *Neuron,* 58(2): 284-294.

Jackson, Susan & Marsh, Herbert (1996). Development and Validation of a Scale to Measure Optimal Experience: The Flow State Scale. *Journal of Sport & Exercise Psychology,* 18(1): 17-35.

Jones, Marshall G. (1998). *Creating Electronic Learning Environments: Games, Flow, and the User Interface.* St. Louis, Association for Educational Communications and Technology (AECT).

Joussemet, Mireille & Koestner, Richard (1999). Effect of Expected Rewards on Children's Creativity. *Creativity Research Journal,* 12(4): 231-239.

Juul, Jesper (2009). *A Casual Revolution: Reinventing Video Games and Their Players.* Cambridge, MA: MIT Press.

Koster, Raph (2012). *A Theory of Fun 10 Years Later.* [Online] Available at: http://www.raphkoster.com/games/presentations/a-theory-of-fun-10-years-later/ [Accessed 11 February 2017].

Koster, Raph (2013). *A Theory of Fun for Game Design.* 2nd ed. Sebastopol, CA: O'Reilly Media.

Kultima, Annakaisa & Sandovar, Alyea (2016). Game Design Values. Paper presented at
the 20th International Academic Mindtrek Conference, Tampere, Finland, 17-18 October 2016. Marr, Arthur J. (2001). In the Zone: A Biobehavioral Theory of the Flow Experience. *Athletic Insight,* 3(1).

McGonigal, Jane (2011). *Reality is Broken.* London: Jonathan Cape.

Minecraftforum.net (2016). *Survey: What Type of Servers Do You Usually Play On.* [Online] Available at: http://www.minecraftforum.net/forums/minecraft-discussion/discussion/2663976-survey-what-type-of-servers-do-you-usually-play.

Mojang, 2011. *Minecraft,* Stockholm: s.n.

Nacke, Lennart (2012). Flow in Games: Proposing a Flow Experience Model. Paper presented at *Fun and Games 2012*, 4-6 September 2012, Toulouse, France.

Nardi, Bonnie & Kow, Yong Ming (2010). Digital imaginaries: How we know what we (think we) know about Chinese gold farming. *First Monday,* 15(6).

Lim, Sohye & Reeves, Byron (2010). Computer Agents versus Avatars: Responses to Interactive Game Characters Controlled by a Computer or Other Player. *International Journal of Human-Computer Studies,* 68(1-2): 57-68.

Ryan, Richard (1982). Control and Information in the Interpersonal Sphere: An Extension of Cognitive Evaluation Theory. *Journal of Personality and Social Psychology,* 43(3): 450-461.

Rigby, Scott & Ryan, Richard (2011). *Glued to Games: How Video Games Draw Us in and Hold Us Spellbound.* Westport: Praeger Publishers Inc.

Schüll, Natasha. D. (2012). *Addiction by Design: Machine Gambling in Las Vegas.* Princeton, New Jersey: Princeton University Press.

Sherry, John L. (2004). Flow and Media Enjoyment. *Communication Theory,* 14(4): 328-347.

Skinner, B. F. & Ferster, Charles B. (1957). *Schedules of Reinforcement.* East Norwalk, CT: Appleton-Century-Crofts.

Sweetser, Penelope & Wyeth, Peta (2005). GameFlow: A Model for Evaluating Player Enjoyment in Games. *ACM Computers in Entertainment,* 3(3).

Swrve (2016). *Six Secrets of Monetisation in Mobile Games.* [Online] Available at: https://www.swrve.com/images/uploads/whitepapers/The-six-secrets-of-monetization-in-mobile-games.com1.pdf [Accessed 12 March 2017].

Søraker, Johnny H. (2016). Gaming the Gamer: The Ethics of Exploiting Psychological Research in Video Games. *Journal of Information Communication and Ethics in Society,* 14(2): 106-123.

Zink, Caroline F. et al. (2008). Know your Place: Neural Processing of Social Hierarchy in Humans. *Neuron,* 58(2): 273-283.