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Are Loot Boxes Gambling?

Random Reward Mechanisms in Video Games

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ABSTRACT

In this paper we investigate the phenomenon colloquially known as “loot boxes”. Loot boxes became a hot topic towards the end of 2017 when several legislative bodies proposed that they were essentially gambling mechanisms and should therefore be legislated as such. We argue that the term “loot box” and the phenomena it covers are not sufficiently precise for academic use,

and instead introduce the notion of “random reward mechanisms” (RRMs). We offer a categorization of RRM, which distinguishes between RRM that are either “isolated” from real-world economies or “embedded” in them. This distinction will be useful in discussions about loot boxes in general, but specifically when it comes to the question of whether or not they represent instances of gambling. We argue that all classes of RRM have gambling-like features, and may be problematic in different ways, but that only one class can be considered to be genuine gambling.

Keywords

gambling, gaming, addiction, gaming disorder, internet gaming disorder, classification, taxonomy, loot boxes, loot crates, micro-transactions, in-game purchases, random reward mechanisms

INTRODUCTION

There is no doubt that the phenomenon of so-called “loot boxes” was one of the dominant controversies discussed in the specialized gaming press towards the end of 2017. In a nutshell, the term “loot-box” refers to specific visual representation of intermediary mechanisms that reward the player with random objects, provided a certain objective has been met. They are typically presented as containers of different sorts – boxes, chests or packs. What is important, even though the term “loot boxes” belongs to the gaming jargon and is often discussed in a very technical way, is that it managed to break into the mainstream discourse. Doing so, it inspired the resurgence of the debate about the relation between gaming and gambling and provoked questions as to whether some of the game mechanics could be considered to be psychologically exploitative. For this reason, loot boxes became the subject of public political debates, and resulted in legal action in some European countries. As is often the case with new phenomena (or at least new notions), the way the term “loot box” is used is rather haphazard. It is not obvious if the discutants refer to

the same mechanism and how many types of similar existing and hypothetical future implementations of such mechanisms should be considered under the same moniker. Discussing and especially regulating games using ill-defined or understudied concepts may lead to two possible risks. Firstly, future regulations may end up using a notion that is too general (and thus throw the baby out with the bathwater). Secondly, they may end up using a notion that is too narrow (and focus on a particular implementation which can then be easily circumvented by future developers). For this reason, we believe that creating a better conceptual apparatus and a typology of “loot boxes” is needed. A better description of the phenomenon of “loot boxes” and a classification of its different implementations is the main aim of this paper. The main intent of this classification is to facilitate public and academic discussion of this new trend in gaming, and to help establish its relations to gambling. It is especially important because, even though taxonomies of gambling games exist, they are not very well suited for the “loot box” discussion. For example, a taxonomy proposed by Gainsbury et al. (2015) proposes four categories of gambling games: “social casino game”, “social game or virtual world with casino features”, “practice game”, “stand-alone console, online or mobile game”. Even a cursory glance at the names of the categories shows that it cannot be used to discern categories of “loot boxes” as they could just as well appear in all four types of games.

We provide a general definition of the “loot box” mechanism in the following section and their typology later. We are going to argue, that this classification reveals, that some of the implementations of “loot boxes” are so different from each other that they should be studied and discussed separately.

The notion of a Random Reward Mechanism

Even though invoking the term “loot box” is important in a preliminary discussion, as it helps to put our paper in the

contemporary context, we will refrain from using this term from now on. We believe that using this particular term may be misleading, as its etymology suggests a particular implementation of a more general phenomenon, that is, the implementation of random procedures used for selection and delivery of rewards in video games. This may obfuscate the fact that there are many other functionally similar implementations that use different visual representations and metaphors (for example card packs), but do not differ from “loot boxes” in significant respects. Since the relation between the random mechanism in games and other, better studied, phenomena (for example gambling) is yet to be established, we believe, that at this point it is best to use a neutral, technical notion of “Random Reward Mechanism” (RRM for short). In order to cover many different implementations of RRM, we can describe their structure in a very general form; any RRM consists of three components:

Eligibility condition → Random procedure → Reward

The “eligibility condition” is the requirement the player must meet in order to trigger the random procedure. What exactly this requirement boils down to depends on the particular implementation. It can be the death of a given monster, achieving a certain number of experience points, spending a given number of minutes in a game, or a micropayment made with real money (or in more technical terms *fiat currency* or *legal tender*).¹ The random (or pseudo-random) procedure can be achieved by any of the popular methods used in programming.² The technical details of this procedure are irrelevant to our discussion – the procedure could be just as well replaced by any physical method of achieving randomness, such as shuffling.

1. For a discussion for virtual economies and virtual currencies see e.g. Lehdonvirta & Castronova (2014).
2. The status of randomness used in programming is not without merit for the discussion on digital forms of gambling, but it is not specific to the problems related to RRM. A good rundown on struggles to generate true randomness can be found at <https://www.random.org/history/>.

In a similar fashion, we do not specify the nature of the reward in question. It can be any element of the game that can be awarded to the player (a digital object, in-game currency, a new character, a new weapon, a character costume, new color scheme, or a new game mode or level).

History of RRM

It is important to remember that RRM are fairly common in games, and that they are also not exclusive to gaming. Before people started to use the notion of a “loot box”, they referred to various forms of RRM using the notion of “loot”. A widely recognized example of this type of mechanism can be found in games such as *Diablo* (Blizzard North, 1996) or *Borderlands* (Gearbox Software, 2009) where killing a certain enemy [eligibility condition] triggers an event [random procedure] which awards the player with a new object [reward]. These forms of RRM have been extensively used in digital games, almost from the beginning of the medium and have often been accompanied by other techniques of random content generation (Toy et al., 1980). One obvious reason for the popularity of RRM in early games was that they gave the developer an inexpensive way of introducing variety, novelty and replayability to the game, because the player could be constantly surprised by the objects they found during their playthrough. For the same reason, RRM are often used in contemporary independent games, which also experienced a demand for using cost-effective techniques (consider the resurgence in popularity of rogue games as an example of this (Garda, 2013)).³ It is also worth pointing out that one of the popular marketing strategies used in the 1980s (especially in the case of the British ZX Spectrum market) was to use the completion of whole games as eligibility conditions in lotteries. Players who finished a given game and proved this feat to the publisher were then able to win a prize. RRM are also quite common in analog

3. For a detailed description of the notion of an independent game, see (Garda & Grabarczyk, 2016).

games – Monopoly Chance cards are a good example of this. If the player lands on a specified field (eligibility condition), they draw one of the pre-shuffled cards (random mechanism) and receive a reward (or sometimes a penalty).

There are also well-known forms of entertainment that can be said to be built around RRM – for example: collectible baseball and football cards, collectible card games such as *Magic the Gathering*, random capsule toy dispensers (so called gacha toys⁴) popular in Japan, and chocolate eggs containing random toys (so called *Kinder Eggs*, *Kinder Surprise* or *Kinder Joy*), just to give a few examples. The main idea behind these types of purchases can probably even be traced back as far as to 19th century collectible picture cards attached to cigarettes⁵ because, contrary to the main item (the cigarettes), they were not chosen by the customer, but given semi-randomly (depending on what was left in stock and which pack the seller randomly happened to choose). One important reason why these mechanisms became popular is that they increased sales of products because the more cards or pictures the customer already had, the less probable it was that they would get what they wanted with a single purchase. The result of this statistical scarcity was that the customers had to purchase more items to increase the odds. Contemporary producers of collectible cards (and their digital equivalents) embraced this phenomenon by introducing artificial scarcity as the cards are classified as common, rare, very rare etc., depending on the probability of getting them (which results from the variability of the cards issued). The same techniques have been implemented in most games that classify the rarity of objects in a similar manner. The connection between these earlier forms of RRM and the solutions found in contemporary video games is even stronger once we realize that some of the earlier implementations of the contemporary style RRM in games originated as digitalization of collectibles or used the iconography and metaphors of collectible cards (e.g., *Plants vs Zombies Garden Warfare* (PopCap Games,

4. See Shibuya et al. (2015) for an analysis of a digitized version of gacha.

5. See examples of these at <https://www.collectorsweekly.com/tobacciana/tobacco-cards>.

2014)). It is worth noting here that the random elements in RRM's are not truly random, but rather constricted or designed. The rewards may seem random to the player, but they may not be depending on the algorithm that selects them.

It is also worth mentioning that RRM's are similar to some of the marketing strategies that have gained popularity in recent years – specifically, various “blind” purchases such as (aptly named) “Loot crate” or “Humble Bundle Monthly” – a subscription service that lets the customer buy an undisclosed set of games, which are revealed only after the sales of the particular set are closed. One important difference between “blind” purchases and RRM's is that, although both of them bank on uncertainty and the enjoyment that people feel when they are pleasantly surprised, “blind” purchases do not contain a random procedure (or the appearance of a random procedure). For this reason, we do not treat them as a form of implemented RRM's, but rather as a related phenomenon.

Still, even though RRM's are hardly new, they have recently been the subject of heated public debate. Players of older games (even those that used randomness extensively, such as *Diablo* or *Borderlands*) might have not even realized that the reward allocation was random. Even though the information on the randomness of the procedure wasn't in any way hidden from the player (for example, it was often present in marketing materials), the games themselves did not indicate this with their iconography. Contrary to this, many newer implementations of RRM's accentuate randomness by using easily recognizable tropes, such as spinning wheels, dice shaking sounds, shuffling, packs of collectible cards openings etc. It can be argued that this ostentatious glorification of randomness represents a genuinely new trend in video games. This shift can be seen in all of the early examples of modern RRM's that appeared around 2006-2007: Chinese action RPG game *ZT Online* (Giant, 2006), *UEFA Champions League 2006–2007* (EA Sports, 2007) and *Team*

Fortress 2 Mann-Conomy Update (Valve, 2010).⁶ The crucial difference between earlier implementations of RRM and this new trend is that, even though the older games celebrated the reward the player received, the newer implementations celebrate the random procedure itself by objectifying it. Instead of a hidden procedure, it becomes a box, a pack, a wheel or something similar. The importance of this aspect of the modern implementation of RRM can be seen in the fact that the sheer act of opening a box, a card pack, or spinning the wheel (in other words the sheer act of triggering the random procedure) is transformed into a form of entertainment, as players broadcast it to viewers on streams.⁷

One of the obvious reasons for the recent debates on RRM is that the popularity of this solution erupted in recent years. Initially these systems were dominant only in the mobile market. Interestingly, the dominance of RRM on this platform did not spark controversies similar to those described above. This can probably be attributed to the fact that most of the games containing these systems were distributed via the “free to play” model. This situation has begun to change in recent years because big game publishers (Activision and Electronic Arts are good examples of this) have introduced analogous systems to paid games developed for consoles and PCs, such as *Overwatch* and the *Call of Duty* series. The popularity of RRM can be best seen in their reintroduction to re-releases and remakes of older games, which did not contain similar systems (the remake of *Call of Duty 4* (Raven Software, 2016) is a good example of this) or sequels of single-player oriented games, such as *Middle-earth: Shadow of War*.

It is worth noting that even though this historical aspect of RRM matters, as it can help explain the recent public interest in them, the problems discussed in this paper are independent of the sales

6. The original game was released in 2007, but it did not contain RRM in the sense discussed in this paper.
7. Interestingly, the streams themselves can contain RRM as the viewers are often randomly rewarded with items by the streamer or a developer.

model chosen by the publisher and apply to both free to play as well as paid games.

It is not surprising that all of this iconography, as well as the unusual focus on random procedures, has inspired comparisons of games containing RRM to gambling, which opens a new chapter in the study of the relation of both of these ludic phenomena.

The relationship between video games and gambling

Similarities and differences between gambling and gaming have long been a topic of academic and public interest. In the 1980s and 1990s, researchers argued that the two were similar, based on rather superficial similarities such as audio-visual feed-back following wins:

Sound effects have been used on fruit machines to give the impression that winning is more common than losing (e.g. sound of falling coins onto the machine's metal tray or machines which buzz loudly or play a musical tune after a win). Since there are usually several slot machines in one venue, this illusion is magnified. Sound effects are a vital component of video games and provide a sense of realism and drama. Apparently, playing a popular game like Tetris with the sound off, is a greatly diminished experience and players report the game as being less tense and/or exciting. (Griffiths and Fisher, 1995, 243).

However, less superficial similarities were also noted. Fisher (1993) points out how slot machine arcades and casinos, like coffee bars and pool halls, are commercially provided cultural spaces, monopolized by young people. In these spaces “teenagers can meet peers, relieve boredom, act on emerging sexual identities [...]” (Panelas, 1983, 62 in Fisher, 1993, 401) and find shelter from the authorities and institutions that usually govern their lives. Arguably, coin-operated video game arcades can function in largely similar ways. In the U.K., arcades featured both types of

machines side by side (Fisher, 1995). Fisher (1995) describes their similarities as follows:

Competition is encouraged by electronic features such as digital bank displays and screening the initials of top video scores to enhance the egos of successful players. Both video and fruit machines incorporate stunning visual displays and electronic jingles, so that they are visually and aurally attractive to children and adolescents. (Fisher, 1995, 73)

Griffiths (1991) refer to both types of machines under the umbrella term “amusement machines” (53). He further argues that “a video game could be considered as a non-financial form of gambling, and taken to excess, both behaviors can be considered non-substance addictions” (54). The main differences, according to Griffiths, is that of *skill* versus *luck* and *points* versus *money*. However, he argues that the similarities outweigh the differences:

Amusement machines [...] are typically played upon by older male adolescents, some of whom develop gaming machine addictions which can cause a number of negative behavioral consequences (Griffiths, 1991, 67)

We disagree with this assessment. We believe that games of chance played for money and games of skill played without financial stakes are indeed very different from each other. We believe that academics, legislators and the gaming community should make a clear distinction between the two.

ADDICTION TO GAMES OR ACHIEVEMENTS, PEOPLE AND SPACES?

As coin-operated video games were all but completely replaced by other platforms such as consoles, smartphones, computers etc., the focus of video game addiction research has shifted. Recently, massively multiplayer online role-playing games (MMORPGs) have been the focus of video game addiction research. This interest

in online games at the expense of offline or single player games is reflected in the terminology employed by the American Psychiatric Association (APA), which has proposed that video game addiction needs to be further researched under the term, “internet gaming disorder” (American Psychiatric Association, 2013). According to the APA, internet gaming disorder is also known as “internet use disorder”, “internet addiction” and “gaming addiction” (p. 796). That such different terms are used interchangeably implies one of two things: 1) a reorientation away from viewing games as addictive objects, towards viewing them as addictive spaces, or 2) a confusing conflation of the internet and video games.⁸ Yee (2006) provides perhaps the most robust view of player motivations for playing MMORPGs. He condenses the main motivations into three clusters, or components:

Achievement component

- Advancement—The desire to gain power, progress rapidly, and accumulate in-game symbols of wealth or status.
- Mechanics—Having an interest in analyzing the underlying rules and system in order to optimize character performance.
- Competition—The desire to challenge and compete with others.

Social component

- Socializing—Having an interest in helping and chatting with other players.
- Relationship—The desire to form long-term meaningful relationships with others.
- Teamwork—Deriving satisfaction from being part of a

8. For a discussion of how internet addiction and video game addiction came to be conflated in the DSM-5, see e.g. Nielsen (2018).

group effort.

Immersion component

- Discovery—Finding and knowing things that most other players don't know about.
- Role-Playing—Creating a persona with a background story and interacting with other players to create an improvised story.
- Customization—Having an interest in customizing the appearance of their character. (Yee, 2006, 773)

Based on his analysis of player motivations, Yee argues that the concept of 'addiction' is too simplistic to adequately describe people's complex interaction with digital games. Weinstein and colleagues (2017) conducted a longitudinal study of internet gaming disorder and concluded that unfulfilled needs were the underlying cause of people's 'addiction-like' gaming behavior. Interestingly, they also found that no one who exhibited 'addiction-like' behavior when they were first surveyed did so six months later. This is especially important because this is the first ever longitudinal survey study of internet gaming disorder.

There are multiple debates about video game addiction: does it even exist to begin with? Is it a symptom of underlying disorders or is it a disorder in its own right? These questions and many more are still debated in the academic community (e.g. Aarseth et al., 2016; Bean et al., 2017; van Rooij et al., 2018; Griffiths et al., 2017).

In our view, video games are only addictive in the sense that any human activity that is rewarding can be addictive, i.e. there does not appear to be anything uniquely addictive about video games (Nielsen, 2017). So, as long as other activities, such as sex, work and exercise are not officially considered to be addictive, it is incongruent to argue that games are. The introduction of

purchasable random reward mechanisms⁹ into mainstream video games, however, may now force us to reconsider. As mentioned, the introduction of fiat money, random rewards and “pay-to-win” mechanics has caused a significant outcry in the gaming community. This outcry has moved legislative bodies around the world to consider if this trend in gaming is actually gambling. This spawned articles with titles such as “This game is a Star Wars-themed online casino designed to lure kids into spending money” (Phillips, 2017) and “Why EA is Wrong to Say That ‘Star Wars Battlefront II’ Loot Crates Aren’t Gambling” (Kain, 2017).

Gambling is currently the only human behavior that is officially recognized as addictive by the American Psychiatric Association. The World Health Organization, on the other hand, decided to include ‘gaming disorder’ as a ‘disorder due to addictive behavior’ in the draft version of the ICD-11 (Bean et al., 2017).¹⁰

Are gambling mechanisms at play in video games with RRM’s?

This section will discuss some of the characteristics of gambling that are believed to explain why people gamble. These characteristics go by different names such as: psycho-structural elements (Karlsen, 2010), biases and irrational thinking (Rogers, 1998), heuristics and biases (Wagenaar, 1988), or cognitive distortions (Toneatto et al., 1997).

The Gambler’s Fallacy

According to Wagenaar (1988), this bias occurs when: “the expectation that the probability of winning increases with the length of an ongoing run of losses” (chapter 1, n.p.). In the context

9. Purchasable random reward mechanisms (PRRM’s) are simply those with an eligibility condition that requires payment of a currency.
10. It is worth noting that the notion that behaviors can cause addictions is still controversial and was not a part of the DSM until the release of DSM-5 in 2013 and the forthcoming ICD-11. In the ICD-10 (World Health Organization, 1992) and DSM-IV (American Psychiatric Association, 1994) ‘pathological gambling’ is considered an impulse control disorder.

of RRM, the similarity is straightforward: a player easily starts to overestimate the chances of receiving the loot that they desire during “a run of bad luck”.¹¹

Near misses

Schüll (2012) describes how slot machines are designed to artificially produce situations where the player experiences nearly winning by, for example, showing the winning symbols just above or below the losing ones that the player actually got. This is supposed to encourage the player to try again. This same mechanism is arguably also at play in games like Star Wars Battlefront 2 where players first get to see how rare the rewards they are about to receive are, before it is revealed what the actual rewards are and if the players already own those rewards (and thus will not benefit as much from them).

Losses disguised as wins

According to Schüll (2012), “multi-line slot machines” introduced a subtle yet radical innovation. By allowing players to control the number of lines they are betting on, along with the amount they bet, players experience winning more, even though they may be steadily losing. The actual fact of losing is masked by a new kind of “quasi winning” or “losing disguised as winning” (p. 123). Losses disguised as winning is especially interesting in the context of video games and RRM. When people purchase RRM in digital games and get “common” rewards instead of “uncommon”, “rare” or even “epic” rewards, are they then winning or are they in fact quasi-winning (and actually losing)?

11. An anecdotal story told to one of the authors of the present paper alleges that a Danish FIFA Ultimate team player spent 120,000 Danish Kroner (the equivalent of about \$20,000) on RRM. If such stories are true, they may be instances of the “sunk cost” bias. Unfortunately, we have not been able to verify the story.

Cognitive entrapment

This cognitive bias is also sometimes referred to as “sunk cost” bias; it describes a decision-making heuristic where an individual escalates their commitment to a previously chosen, but unsuccessful course of action in order to justify these prior investments (Rogers, 1998, p. 120). If a player spends \$5 on RRM and does not receive what they were hoping for, they face the choice of either stopping and accepting the loss or spending an additional \$5, \$10, \$100, etc. to recuperate the initial loss. Once a player has started down this path it may be hard to stop.

Illusion of control

Research shows that even in games of pure chance, like lotteries, people are more likely to overestimate their chances of winning if, for example, they are allowed to pick their lottery number themselves (Rogers, 1998). This tendency is seen even more clearly in sports betting, horse betting and the like where people have been shown to falsely believe that they have a better than random chance at predicting winners and losers (Wagenaar, 1988). In video games, a similar effect might arguably be observed when the player is offered the choice between different loot boxes, crates, packs or even llamas.

Chasing

Karlsen (2010) shows that *chasing*, a gambling behavior where recuperating losses are sought by gambling even more, with devastating economic results, arguably also exists in MMOs. Griffiths and Hunt (1998) suggest the chasing behavior in gambling is similar to people trying to beat their own high score in video games. But is this a fair comparison? This will be the subject of the following discussion.

Investments of time versus investments of money

The above-mentioned behavioral heuristics or cognitive biases do not belong exclusively to the realm of gambling. The advice given to designers: “don’t be afraid to kill your darlings” is not only good advice for designers, who might keep sinking more and more time into a project that is going nowhere. This would also be sound advice for gamblers who have already lost a lot and are about to further compound those losses with even more gambling. One might also argue that it is good advice for certain people playing certain digital games. Karlsen (2010) makes the argument that RRM in World of Warcraft can also “entrap” players in similar ways (as an interesting side note, it is worth mentioning that Karlsen also shows how players devise social systems that effectively entrap them even more).

It seems to us, though, that an important difference exists between gambling and gaming when it comes to these cognitive traps. In gambling games, players can lose money that may have otherwise been used to cover important expenses such as food, rent and so forth. In relation to gambling games, one can also take out loans in order to win back money that has already been lost. For someone who has lost more than they can afford on roulette, it may be tempting to try and redeem those losses by taking out a large loan and betting everything on black. However, it is not reasonable to believe that you can win back lost time, if that is what you have invested. In some ways, the old adage that “time is money” is true, but when it comes to gambling, it is also decidedly untrue: one cannot regain lost time by spending more time (though one can try to justify time already spent by spending more).

Similar differences exist in relation to purchasable RRM. Someone who has unsuccessfully spent a month’s salary in an attempt to find a copy of a virtual Cristiano Ronaldo in FIFA Ultimate Team by purchasing RRM may fall prey to the Gambler’s Fallacy and falsely believe that the odds of finding him have magically increased as a result of previous failures to

do so. However, since it is not possible to sell virtual players for real currency, no one would ever think that the already-incurred financial losses could be recuperated with additional spending (even if the sunk cost fallacy might drive players to try to justify previous spending with further spending).

We have yet to find instances of RRM's where there is no reward. In games like FIFA Ultimate Team or Star Wars Battlefront 2, the player may not get what they want, but they always get something (which, in the long run, can be exchanged for the thing they really want, at least in the case of these two games). An interesting question, however, is whether the "something" that one always gets is actually best described as "winning something", or if it is better described as an instance of "losing disguised as winning"? In "multi line slot machines", as described by Schüll (2012), it is possible (though perhaps not straightforward) to identify "losing disguised as winning" because it is possible to compare winnings and losses in cents and dollars. However, in digital games that do not have a market for virtual items it is impossible to evaluate the monetary value of winnings, exactly because there is no market on which to sell them.

The differences in RRM's warrant classification, which will be the topic of the next section.

Classification of random reward mechanisms

To reiterate – even though the idea of RRM's is fairly old and has been used in gaming rather extensively, its current incarnation differs from earlier implementations in that it objectifies and celebrates randomness. Still, this easily recognizable difference is hardly everything there is to the "loot box" phenomenon. As mentioned in the beginning, we believe that in order to facilitate further discussions and regulations of current RRM's (with a specific focus on the relation between gaming and gambling) we have to discern between their different types.

Genuine vs simulated gambling

One key distinction we should start our classification considerations with is the distinction between simulated and real gambling. This is important because some of the games (or sections of games) directly simulate gambling (particular games like poker or roulette, or sometimes even whole casinos) and because of this, use RRM presented via gambling iconography. This distinction is hardly new, as it was proposed by King et al. (2012) and incorporated in practical categorizations such as ERSB.¹² Using this distinction is also good for practical reasons, because recognizing games containing such sections isn't difficult, although some of the sections of this type may be accessible only after many hours of play.¹³ What is especially interesting from our point of view is that the number of games that directly simulate gambling has declined over the years. In particular, none of the games that spawned the current "loot boxes" discussion contain such sections. A natural way of expanding this category would be to look past the representational aspect of games, because focusing only on audiovisual elements seems to be rather naïve and too strongly tied to the particular types of gambling games and machines that are known today (and these can change at any time).

Scholars recognized this problem and proposed the notion of non-standard simulated gaming (King et al., 2012), which boils down to the idea that some activities, even if they do not use gambling iconography, are structurally similar, or in other words, are modelled on gambling (and thus should be classified as gambling simulations).

The need for this category is hardly surprising, as games excel in modelling different domains of human activity, and procuring

12. ERSB defines simulated gambling as follows: "Player can gamble without betting or wagering real cash or currency", https://www.esrb.org/ratings/ratings_guide.aspx

13. Final Fantasy 7 (Square Software 1998) is a good example of this. The game contains a whole casino where players can win in-game money, but it is only accessible after many hours of gameplay.

structurally similar experiences or playable models can often be the main aim of the developers (think of the usage of the word “simulator” in many games, as an indicator of this).

The big problem with this seemingly intuitive notion is that it is far from obvious which properties are to be treated as constitutive for this structural similarity. A good exemplification of a controversial choice of constitutive properties can be found in the literature that compares coin operated games with fruit machines (i.e. Fisher & Griffiths, 1995). Should we treat them as structurally similar just because they happen to be operated in a similar manner (they require the user to insert a coin and push buttons to initiate the game)?

The most radical solution to the problem of the status of RRM would be to declare all games containing these procedures as simulated gambling (standard or non-standard). It could be argued that, even though RRM were present in many earlier games, they were simply overlooked or underappreciated by scholars. For example, they were not listed amongst similarities between games and gambling presented by Fisher & Griffiths (1995), and the only paper which specifically addresses the modern RRM implementation was by Griffiths & King (2015) (although it is not treated as a separate category of games). Maybe the only thing that the current prominence of RRM introduced to the discussion is that they made us more aware of the characteristics that were present in games almost from the beginning. An obvious upside of this radical solution is that it provides a clear-cut distinction and gives the policymakers a convenient classification tool, because it is easy to differentiate between games containing RRM and those that do not contain them. The downside of this line of argumentation is that mechanisms of this type are very common in culture, and there is no non-arbitrary way of differentiating between their usage in games and other activities based on surprise and randomness. For example, in an ironic twist, one of the newest studies on the relation between gambling and gaming used RRM

as an incentive for the participants in the experiment (the participants could win a \$50 gift card) (Macey & Hamari, 2018).

What is even more important is that, even if we treated all games containing RRM as simulated gambling, we would still have to answer the question as to how simulated gambling relates to real gambling (and how games containing simulated gambling should be treated). The reason is that there is no obvious general relation between simulated activities and real activities that can be discovered without empirical studies. Players simulate a plethora of things, from killings through to Formula 1 racing to farming. It is possible that some of these activities influence changes in their behavior in real life, but it is impossible to speculate on the specifics of these changes.

The problem of the relation between simulated gambling (no matter if representational or structural) and real gambling can be analyzed from two different angles. The first angle is empirical – as we said, we still need to study the effects of simulated gambling on future players’ behavior. But there is also a second, conceptual angle, as we can wonder if it is possible that some games transcend the boundary between simulation and the reality they depict and simply become a form of gambling. It is easy to see that this particular question continues to be at the heart of the current discussion on the effects of RRMs.¹⁴

One attractive way of singling out suspicious cases would be to say that RRMs slide into gambling whenever a game containing it involves real currency. This constraint seems natural because it is compliant with some of the existing social practices (a poker game played by a family with Monopoly money is not typically considered gambling) and existing regulations.

This perspective enables us to reframe the question about the relation of games to gambling in a more precise way: are games that combine RRMs with real currency a form of gambling? It

14. See (Hood, 2017, Wiltshire, 2017, BBC News, 2017).

is worth pointing out that this line of argumentation has led to institutional investigations¹⁵ and remains the most controversial aspect of RRM amongst users and journalists (Cross, 2017a). Unfortunately, talking about the involvement of “real currency” or “real value” without additional restrictions is hardly helpful, as it only introduces confusion to the discussion.

However, it is not only fruitful to distinguish between games that allow the player to spend money and games that do not; but also, to distinguish between games that allow players to ‘withdraw’ money or virtual items that can be translated into other currencies. The Danish Gambling Authority does not consider loot-boxes in *Star Wars Battlefront 2* to be gambling because the content of the loot-boxes cannot easily be exchanged for money, whereas skin-betting¹⁶ in *Counter-Strike: Global Offensive (CS:GO)* (Valve, 2012) is considered gambling because the skins can be changed into currency relatively easily. According to the Danish Gambling Authority, skin-betting is covered by the Danish Gambling Act, which regulates gambling games (2017, n.p.), but it is unclear from its statement whether the agency views the purchase of access to RRM in *CS:GO* to be gambling, or if it only becomes gambling when the skins are used as currency in gambling games. In the words of the agency:

The winnings obtained in a loot box in *Star Wars Battlefront 2* cannot be converted into financial means, as the fictional items in the loot box cannot be sold or otherwise converted into money. Therefore, loot boxes in their present form in *Star Wars Battlefront 2* are not covered by the gaming act. This is also the reason why skinbetting [sic.] in connection with computer games such as *Counter Strike Global Offensive* etc. are covered by the Danish Act on Gambling. They are covered by the Act on Gambling

15. A good example of this is the intent expressed by a representative of the Belgian Gaming Commission who pointed out the danger of mixing real money and gaming (VTM Nieuws, 2017). Links to two other similar cases can be found in Good (2017).
16. “Skins” are purely cosmetic items in video games that change the appearance of items, characters, etc. Skin-betting is the wagering of skins; usually on third party sites.

because skins from these games can be sold on different websites, and thus converted into money. (Danish Gambling Authority, 2017, n.p.)

The legal legitimacy of this position by the Gambling Authority was recently cemented when the agency won a case in court to have 24 illegal gambling sites closed, six of which were skin-betting sites for games such as Dota 2 and CS:GO (Danish Gambling Authority, 2018). This case demonstrates the importance of discussing what “real value” is in terms of virtual items and currencies. This will be the focus of the next section.

“Real” money and “real” value

First of all, we have to explain precisely how “real value” or “real currency” is to be understood in this discussion. The easiest way to approach this problem is to start with a simple question: what is the opposite of “real” value in this particular context? It is rather obvious that it should not be presented as the opposite of digital currency. The fact that all of the games that are involved in the current public discussion do not allow the player to put physical money in the slot (which makes them dissimilar to fruit machines) is hardly relevant to the issue at hand, as contemporary gambling is also often fully digitized (King et al., 2012).

Another option would be to juxtapose “real” money with so called “in-game” money, or virtual money that players use while playing. On the face of it, this contrast seems quite straightforward, but it is important to be cautious with this classification, as there are important differences between the virtual currencies used by developers, which we believe to be crucial for our discussion. If you look at many contemporary games (especially in the mobile market) you might be surprised by the number of different in-game currencies they contain. What is important from our point of view is that they typically contain at least two different currencies, and even though both can be spent in the game, one of them can also be earned outside of the game (for example with a purchase from

the platform creator's store).¹⁷ In practice, this second, purchasable currency functions as a proprietary currency, usable only in one place (but still related to other currencies, since its value can be easily calculated in terms of fiat currency). Note that the practice of using additional proprietary currencies is something that is typical for gambling (casino tokens is the classic example of this), so it seems to be highly relevant to the discussion. In order to avoid confusion from the usage of many related, overlapping concepts, such as “virtual”, “digital”, “proprietary” “in-game” etc., we propose to differentiate between currencies (or any tokens of value) that are either “isolated” from, or “embedded” in, the everyday economy. The difference should be relatively easy to grasp: a token that is embedded in the everyday economy has a relation to other objects embedded in this economy, which makes it possible to establish its value in different currencies. For example – if the currency the player uses in-game can be bought or sold with one of the existing accepted currencies, it can be said to be embedded in the economy. Contrary to this, tokens that are isolated from the economy have no established relation to any other objects of value outside of the game. This difference can be easily illustrated by systems implemented in mobile games. As we already pointed out, it is fairly typical for games of this type to contain different types of currency. It is very common for one of these currencies to be embedded in the economy, and for the others to be isolated from it. What this means in practice is that only one of the currencies can be purchased with an existing accepted currency and that the currencies are not related to each other or that the relation between them is restricted.¹⁸

It should also be pointed out that in some cases players can exploit the game by changing the reward type – from isolated to embedded or from embedded to isolated. The first case can be illustrated

17. Sometimes it cannot be earned in-game at all, or it is dispensed randomly.

18. For example, the popular mobile game Clash Royale (Supercell, 2016) contains two currencies: gold and gems. It is both possible to buy gems with real currency and gold with gems (therefore buying gold indirectly with real currency), but it is not possible to buy gems with gold.

by the phenomenon of “gold farming” or selling virtual items obtained via RRM on online auctions. The second case can be illustrated by a practice of hacking or exploiting a game containing purchasable RRM, so they can be triggered without paying.

Buying, selling or both?

It is not enough to talk about the involvement of real currencies, as it also should be specified if the involvement concerns only the eligibility condition, only the reward or maybe both. In other words, we have to decide which side of the diagram has to include real currency for a given game to be classified as similar to gambling. On the face of it, this may seem like nitpicking, but even a cursory glance at the state of discussions on the subject shows that the intuitions and preconceptions of the disputants can be very different. Some of the existing popular and academic discussions focus mostly on eligibility conditions.¹⁹ Others focus mostly on the reward side of the diagram and argue that a given activity should be considered gambling only if the reward the player is getting has real economic value.²⁰ Contrary to this, for some of the disputants, the sheer fact that the players are guaranteed a reward (as RRM by definition give something to the player) excludes games containing RRM from the class of gambling games.²¹

Paying attention to the difference between the value of the eligibility condition and the value of the reward becomes even more important in our context once we realize that RRM disrupt

19. For example, in Gainsbury et al.’s (2015) taxonomy the ability to trigger RRM with a real currency is the top classification condition. Similarly, Griffith & King (2015) argue that RRM fulfill the conditions for gambling if “[...] purchases to participate are made rather than being given free spins or keys, or earning them through skillful gameplay.”
20. This is the reason provided by the Gambling Compliance office of New Zealand’s Department of Internal Affairs for not treating loot boxes as gambling (Cross, 2017b). The same reason was used by Kuchera, (2017b) to declare the RRM used in PlayerUnknown’s Battlegrounds as gambling.
21. This reason was presented by the Entertainment Software Rating Board in an e-mail to the popular gaming site, Kotaku (Schreier, 2017).

the connection between the payment and the value of the reward. In any normal transaction (for example in any regular in-game purchase of some additional game content) the distinction between the payment and the value of the object is not necessary, because the payment itself can be used as a measure of this value. To simplify – we could assume that the value of the game content is whatever the company charges for it. But the moment we introduce an RRM procedure as an intermediary between the payment and the reward, the evaluation of value based on the price of the eligibility condition becomes impossible²² because it varies from user to user. We could try to minimize this by disclosing the probability ratio of a given reward (a regulation which has been implemented for RRM in several Asian countries and by Apple in the app-store), but even this solution does not eliminate uncertainty completely. What it means in practice is that in case of an RRM we have to evaluate the value of the eligibility condition and the real value of the reward separately.

Taking both distinctions into account (the distinction between embedded and isolated economic value, and the distinction between the value of the eligibility condition and the value of the reward) we can classify games containing RRM as belonging to four distinct categories (see Table 1 below).

As can be seen in Table 1, one distinction we consciously avoided (even though it is often raised in popular discussions of the subject) is the difference between so called “pay-to-win” rewards and “cosmetic” rewards. In a nutshell, the difference between these implementations hinges on whether the objects awarded to the player affect the mechanics on the game or only its aesthetics. A typical example of the former is the ability to win a new weapon for a competitive shooter game.²³ A typical example of the latter is

22. Or very complicated. A good example of consumers’ attempts at establishing the price of a game using RRM can be found in Kamper, (2017).

23. Hence the term “pay-to-win”. It implies that, in order to win in a given game, a player simply has to purchase more than their competitors. Note that similar problems arise

the ability to get a new costume for a game character. The reason we do not address this difference in our classification is that it concerns all additional content that can be purchased in games (independently of whether they are acquired via RRM or not), so it does not seem crucial for our discussion.²⁴

Type	Resources (required for achieving the eligibility condition)	Reward	Example
I-I	Isolated (non-purchasable)	Isolated (non-sellable)	Horizon Zero Dawn, Diablo 1, Diablo 2, ²⁶
I-E	Isolated (non-purchasable)	Embedded (virtual sellable object)	Diablo 3 (with auction house)
E-I	Embedded (real money purchase)	Isolated (virtual unsellable object)	Overwatch, Star Wars Battlefront 2, FIFA 17 Ultimate Team
E-E	Embedded (real money purchase)	Embedded (virtual sellable object)	PUBG, Team Fortress 2, CS:GO

Table 1: Different kinds of implementations of random reward mechanisms (RRMs).

An important advantage of our typology is that it helps us to avoid some of the conceptual pitfalls typical for the discussion of loot boxes.

in the context of card games (as the player who is able to buy any card increases their odds of winning).

24. A less important reason we ignore this difference is that the difference between mechanics and aesthetics cannot be presented as clearly as the distinction implies. For example – the clothing one can buy in the popular game, PlayerUnknown’s Battlegrounds, seem to be purely aesthetic. And yet it is hard to argue that any modification that changes the visibility of the player affects their odds of winning. After all, this is how camouflage works.

First of all, it enables us to single out the implementation of RRM's typical of earlier games (I-I). How exactly games containing this implementation relate to gambling remains to be seen, but every study that intends to focus on the newer implementations of RRM's should take this difference into account.

Secondly, it shows that there is actually only one implementation of RRM's that is functionally similar to gambling (E-E) and that, surprisingly, games that spawned the current controversy do not contain this particular implementation (because the rewards they give to the player are not embedded in the economy). It is also important to observe that (at least in some cases) the structural similarity between the E-E form of implementation of RRM's extends to the amounts of money involved in the process. For example – the cost of a crate in PUBG can be as low as one euro, but the player could hope to win an object they can sell for as much as 1000 euros, which is functionally very similar to a lottery.

Thirdly, it shows that the analogy between modern RRM's and collectible cards is somewhat faulty, as most of the implementations of RRM's (I-I, I-E, E-I) reward players with economically isolated objects. Interestingly, this aspect of RRM's cannot be treated simply as a side effect of digitization, because some of the existing implementations give the player the ability to sell their rewards on the market.

Needless to say, having a classification is only the first step to answering the question as to how similar games that contain RRM's are to gambling. A full answer to this question demands further empirical studies. Still, we believe that one important preliminary condition, which any further serious study of this phenomenon should meet, is that it does not talk about RRM's *tout court*, but that it studies different implementations of it separately. It is thus crucial that we do not conflate the four types of RRM's we listed above as this may severely affect the results.

Conclusion

This paper has introduced four distinct conceptualizations of random reward mechanisms (RRMs) in digital games that relate to fiat currency or real money in the following ways:

1. randomized rewards not for sale or purchase;
2. randomized rewards that can only be sold, not purchased;
3. randomized rewards that can only be purchased, not sold (i.e. pseudo-gambling);
4. randomized rewards that can both be sold and purchased (i.e. a functional equivalent of gambling).

The central point of our paper is that the debates over RRM should not conflate them, as the differences between the four types we distinguish are important in the context of gambling. Furthermore, we argue that only RRM that are embedded in the broader economy, in terms of both the eligibility condition as well as the reward, can be said to be structurally similar to gambling. In other words, only games where the player can turn fiat money into randomized rewards and then turn those rewards back into fiat currency can be considered gambling.

Thus, not all games that feature RRM are instances of gambling. However, as we have argued, the cognitive distortions that are said to underpin gambling behavior can also be found in RRM in digital games.

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