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Zachow, Alexai Robert

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PATTERNS AND PSYCHOLOGY OF VIDEO GAME MONETIZATION

A thesis submitted in partial satisfaction
of the requirements for the degree of

MASTER IN SCIENCE

in

COMPUTATIONAL MEDIA

by

Alexai Zachow

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The Thesis of Alexai Zachow
is approved:

_____
Professor Jim Whitehead, Chair

_____
Assistant Professor Adam Smith

_____
Peter Biehl
Vice Provost and Dean of Graduate Studies

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ABSTRACT

Patterns and Psychology of Video Game Monetization

by

Alexai Zachow

This paper provides a pattern library of monetization methods that are common in games today, providing a resource for future designers and computational media, psychology, and business researchers to reference in their work. Such strategies as battle passes, loot boxes, premium currency, DLC, and subscriptions are discussed. The psychology, fairness, and narrative aspects of each strategy is examined in depth. The idea of games as a service is also examined as a framework for modern monetization models. A short history of games is also presented, to give background and context to the emergence of modern monetization models.

DEDICATION

I dedicate this thesis to Charlie Glassberg , Richard Torres , and Andrew Sims . Their adamantine friendship, continued presence in my life, and unwavering support of my creative and academic endeavors is what makes all of this possible.

CHAPTER 1

Introduction

Video games are a prevalent form of entertainment in the present day. In 2022, the games and services market reached $191 billion globally.[1] However, much of the information of how this money is obtained from players does not exist as academic research, and instead exists in a myriad of informal sources. Compiling these resources into one, unified, formal source will allow those with an interest in game monetization easy access to information on the topic. Furthermore, this paper provides consumers with information about the monetization systems that they are presented with in games, thus allowing them to make more informed decisions regarding their interactions with such systems.

This paper starts with an abbreviated history of monetization approaches in video games. This is relevant to game monetization, as games have been commercialized for the past 50 years; the point of corporate game development is to make money. As such, current monetization strategies have evolved from previous ones, and this history contextualizes current monetization patterns. Sale of the first commercially-available consoles quickly transformed into a credit-based arcade business model. This, in turn, was slowly replaced by home consoles as powerful hardware became more available to individuals. As the Internet, and other new technologies gained prevalence, they were incorporated into games, and often into their monetization models as well.

Succeeding this topic, the paper covers a library of five monetization models, which are currently prevalent, as well as the underlying framework of games as a service. For each model, this paper explains the strategy itself, the psychology which allows each strategy to be effective, and how the strategy can tie into the attached game's narrative. This approach

enables one to examine each strategy individually, and it allows one to compare and contrast pairs of strategies.

This paper concludes by discussing possible combinations of strategies and directions that current monetization strategies could head toward in order to be more ethical and responsible with regard to consumers. By comparing and contrasting the discussed strategies, it is possible to visualize relationships between them, and graph them based on similarities. In doing this, one can view unoccupied spaces on the graph and speculate new strategies that might fill in the gaps.

Very few sources have holistically covered game monetization as a topic. Many academic sources have covered loot boxes and their psychological effects in depth.[2–4] More recently, there has been discussion about battle pass systems in academic work as well.[5,6] Despite the academic work that has been done on this subject, much of the work is either more general than the topic of game monetization, such as the information presented on Deceptive Patterns, or business oriented, such as market reports.[7,8] As such, this paper is novel due to its subject matter.

CHAPTER 2

A Brief History of Games

To understand where we are, we must first understand where we came from. Game monetization does not exist in a vacuum, and it is strongly influenced by the history of practices and technologies from which it emerged.

Before the 1970s, video games were relegated to universities. Games such as *Spacewar!* (1962) and *OXO* (1952) were created by students and researchers as creative methods of exhibiting what was possible with computers at the time. These projects were not publicly-accessible, nor were they for sale; they were shared between engineers, programmers, and researchers. At this point in the history of video games, computers were far too bulky and expensive to be salable to the general public.[9] The cost of game hardware and software were subsidized by the institutions hosting the computers.

This was the case until 1971, when *Computer Space* was released as the first commercially-available game, in the form of a coin-operated arcade cabinet. The next year saw the release of the Magnavox Odyssey, the first home game console. While neither of these products saw the same level of commercial (or cultural) success as *Pong*, they demonstrated that a space for an industry existed, and this attracted competition.[10–12] Notably, *Pong* released in 1972, only three months after the Magnavox Odyssey. 1976 saw the release of the first console that accepted read-only memory ("ROM") cartridges, the Fairchild Channel F. This allowed a user to buy new games, instead of being stuck with whatever was preloaded on the console, as was the case with earlier consoles. However, the late 1970s also saw the release of many popular arcade titles, such as *Breakout* (1976), *Galaxian* (1979), *Asteroids* (1979), and *Space Invaders* (1979). The pay-per-play arcade model (a merit-based variation on the approach of renting time on a machine) would maintain

its status as the form of gaming producing the most revenue, all the way into the late 1990s.[13,14]

The 1980s was a mixed era for video games. 1983 saw a massive crash for the industry, largely caused by low-quality video games flooding the market.[15] This was a significant problem, as consoles followed (and still follow) a razor and blades model, often being sold close to cost, or even at a loss.[16,17] As such, companies were not able to profit off of a console if the games did not sell well. Somewhat famously, Atari attempted to discreetly bury 700,000 units of unsalable game cartridges in a New Mexican, desert landfill.[18] 1983 also saw the release of the Nintendo Entertainment System in Japan, by the titular company, previously known for making hanafuda cards and toys.[19] The console would later be released in the United States in 1985, and other markets later into the 1980s and 1990s. Nintendo implemented a process for approving what games would be on their console, and implemented hardware solutions to prevent unauthorized games from running.[20] This commitment to quality assurance led to success, and in large part, restored the video game market in the following years. This model also allowed Nintendo to extract licensing fees from third-party publishers, increasing profit margins, and allowing Nintendo to further subsidize the cost of their console. Sega released its Mark III console in 1985, in an attempt to compete with Nintendo, and exported the console to other markets (rebranded as the Master System) between 1986 and 1989. While this console never gained much traction in most markets, it saw success in Europe and Brazil.[21]
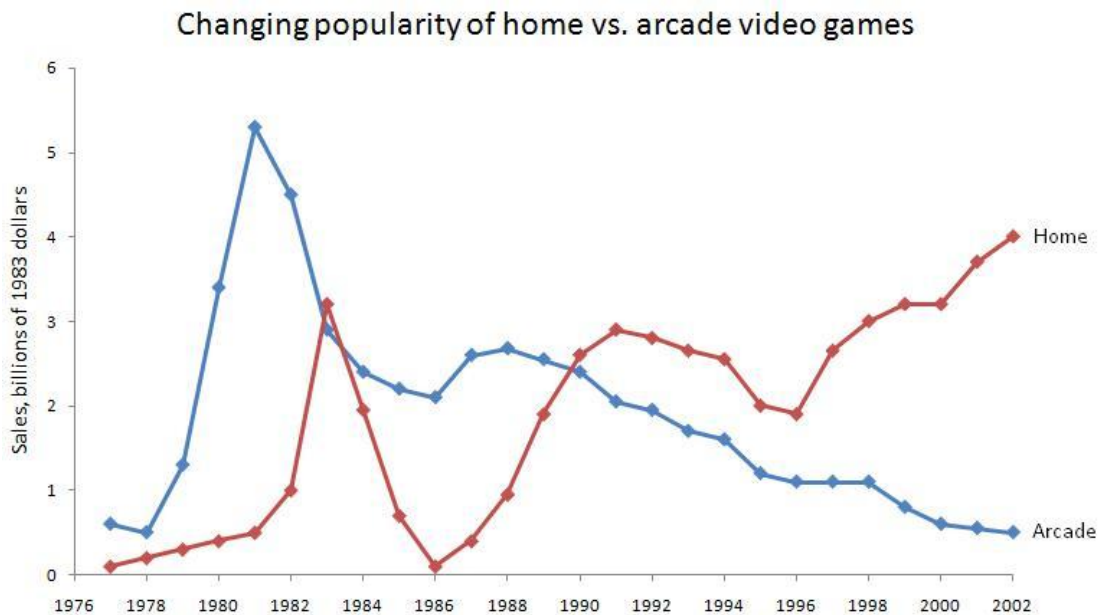
Figure 1. Graph demonstrating the video game crash of 1983 and declining popularity of arcade games into the 2000s[15]

The 1990s was a period of marked advancement and innovation for video games. The capabilities of consoles during this decade were rapidly improving. Sprite art became more advanced, with the advent of consoles running 16, 32, and 64-bit processors allowing for more complex graphics. 3D graphics also started appearing in console games, with both the Nintendo 64 and Sony PlayStation supporting full 3D graphics. Several game genres were popularized during the 1990s, including the first-person shooter ("FPS"), massively-multiplayer online game ("MMO"), and fighting genres. The rapid spread of the internet contributed specifically to the rise of the MMO genre. *Neverwinter Nights*, a then-popular MMO based off of the *Dungeons & Dragons* intellectual property, was run by AOL, the largest internet service provider in the world, at the time.[22] (*See Section 3.5 for further information about the pay-per-hour model and how MMOs were monetized.*)

The 2000s saw the move towards high-definition graphics and the popularization of online gaming. New advancements in computer technology enabled developers to make use of better graphics hardware. This, in turn, led to the development of games with better

graphical quality: more polygons able to be displayed at once, post-processing effects, more

complex lighting, and higher resolutions for both textures and screens. Microsoft released the

Xbox in 2001 and started their online service, Xbox Live, in 2002. While it wasn't the first

example of a console trying to sell a subscription service to its users, Xbox Live was met with

unprecedented success, reaching one million members by July 2004.[23] This service was

initially sold at $49.99 per year, only increasing to $59.99 per year in 2010.[24] Sony debuted

the PlayStation Network in 2006. This service was free. However, Sony began offering

PlayStation Plus for $49.99 a year in 2010. This paid service offered subscribers exclusive

content, discounts, and other perks. This subscription became mandatory for online play, with

the release of the PlayStation 4 in 2013.[25,26] This pricing model was maintained, until 2022,

when the service was split into three tiers, the cheapest of which being $59.99 a year.[27]

These online services, combined with integrated matchmaking, allowed for console players to

access social spaces at will, helping to normalize gaming culture. The success of these

services also allowed the parent companies to subsidize the attached consoles. The

popularization of social media, through Facebook, Twitter (currently rebranding as "X"), and

Reddit in the mid 2000s, also helped to normalize gaming. Casual games gained popularity in

the late 2000s, with games such as *FarmVille* (2009) peaking at tens of millions of daily active

users.[28,29] The first smartphones also released in the late 2000s, creating the mobile gaming

market. These categories of games both regularly employed aggressive monetization

strategies, and attempted to gain as many users as possible by being very casual. As such,

they played a large part in normalizing games as a service and current monetization

strategies.

(a) *Counter-Strike* (2000)[30]

(b) Call of Duty: Modern Warfare 2 (2009)[31]

Figure 2. Graphical comparison of two military FPS games, released nine years apart

The 2010s was another period of innovation for games, as new technologies were released at a rapid pace. Smartphones became common at the start of the decade, and mobile gaming quickly became a multi-billion-dollar force in the gaming industry, solidifying the monetization strategies mentioned previously.[32] Some console and computer games chose to implement mobile application functionality as well.[33,34] Virtual reality headsets started to enter the market in the mid 2010s, and became more affordable in the following years. Finally, digital distribution became the most prevalent form of distribution for games, as internet speeds and drive storage capacities increased. Services such as Steam, Origin, and Good Old Games (GOG) became the most popular marketplaces for games on computers. Nintendo, Sony, and Microsoft also started distributing games for their consoles digitally. However, physical copies of console games remained a standard form of distribution, unlike with computer games. With digital distribution came the widespread implementation of games as a service models and disk rights management ("DRM"). Furthermore, this integrated the experience of buying downloadable content into the platform selling the game, streamlining the process for consumers. These developments allowed for a breadth of monetization strategies to take root.

CHAPTER 3

Current Monetization Methods

There exist a number of monetization strategies that are prevalent in the current day. These are implemented as solutions taken from a template of sorts. These generalized solutions are referred to as "patterns."[35] In the space of monetization, there exist several such patterns. Common among them are battle passes, loot boxes, premium currency, expansion content, and subscriptions. These are often implemented into a larger, games-as-a-service model that enables them to function without user interference ("user interference" meaning bypassing the system through the use of cheats or external tools).

It is important that game designers and researchers are able to recognize these patterns when they are encountered. Designers need to understand how each pattern works psychologically so that they can implement said patterns in ethical ways. They need to understand what mistakes have been made with previous implementations of said patterns so that they can avoid them in the future. Researchers should understand how these patterns interact with one another. When presented with a topic as complex as how a game maintains engagement with its audience, a researcher must be able to separate the different patterns that compose it. As such, discussion of this topic is pertinent to the field of games.

Most of these patterns share a list of four factors that warrant consideration: a description, the psychology that allows the pattern to function, how fair said pattern is to consumers, and what narrative value the pattern has to its host game. The need to describe each pattern is self-explanatory. The psychology that enables each pattern to function, as well as the fairness of the pattern, is relevant to both consumers and to developers. Knowledge of these factors allows consumers to make informed decisions about how they interact with each monetization model when presented with it. Game developers, on the other hand, are able to make informed decisions about how they can implement said models, both

ethically and effectively, when presented with this information. The narrative applications of

each pattern are most relevant to developers, as they can consider how to design their

game's narrative to support the implemented monetization strategies, or vice versa.

3.1 Battle Passes

Examples: *Dota 2* (2013), *Overwatch* (2016), *Fortnite* (2017), *Destiny 2* (2017), *Deep Rock Galactic* (2018), *Apex Legends* (2019), *Call of Duty: Warzone* (2020), *Halo Infinite* (2021)

Figure 3. Non-monetized battle pass system, captured in *Deep Rock Galactic*

Description: Battle passes are a monetization method primarily used by competitive shooters and multiplayer online battle arenas ("MOBAs"). However, they appear in some non-competitive games as well.[36] The core idea around the system is that a player progresses down a track of rewards as they complete activities in game. These activities earn experience points ("XP") towards rewards. Said rewards are often cosmetic in nature. Although, some games offer more substantial rewards, such as items, increased XP gains, or premium currency, as rewards on the track.

In and of itself, this is not a way for a developer to generate income. *Deep Rock Galactic* is an example of a game with a non-monetized battle pass. Monetization is added to these systems in the form of a parallel, premium reward track. The premium track offers additional (often unique and superior) rewards. Access to the premium track requires that a

player pay a certain amount of money (or premium currency) on a regular basis. This is once a season (with a season being around a quarter) in most cases. However, some games, such as *Destiny 2*, allow players to pre-pay for a longer amount of time (a year in *Destiny 2*'s case). Some games, such as *Fortnite*, allow players to stay on a premium battle pass without paying, if they complete the entirety of the previous season's battle pass. In *Fortnite*'s case, all premium rewards combine to provide players with just enough premium currency to afford the next battle pass.

Psychology: Beyond simply encouraging players to interact with the battle pass system by offering a product, varieties of this system often use psychological tricks to encourage interaction. Most often, this is done by giving players a fear of missing out (commonly referred to as "FOMO"). Essentially, this is achieved by providing a selection of items that are only available for a limited amount of time. This can be on a rotation, but some games, such as *Fortnite*, only offer such items once ever. In *Fortnite*, this is often done with cross-promotional content, such as cosmetics from *DOOM* (2016) and *The Witcher 3: WIld Hunt* (2015).[37] Such artificial scarcity provides many players ample incentive to participate in the system far past the point where they otherwise would, or spend money on digital goods that they otherwise wouldn't.[38]

Battle pass systems also play off of the psychological desire to complete started tasks. Humans generally do not like to leave unfinished tasks. People want to feel closure upon completing a task and release the associated tension. In fact, it has been shown that people more readily recall interrupted or incomplete tasks. This is known as the Zeigarnik effect.[39] The continuous progression on a discrete reward track inherently causes this sort of tension-closure pattern to occur. These systems can be fine-tuned, such that players are led to play more, just to get a sense of closure. This is often achieved by setting XP rewards to leave players most of the way towards a battle pass reward at the point where most playtesters would naturally stop playing. This motivates players to continue to play past the point where they otherwise would have stopped.[40]

Fairness: Despite the psychological methods employed by many battle pass systems, they tend to be a fair method of game monetization. These systems have a low degree of randomness on their own. Other systems that rely on random chance, such as loot boxes, might be added as rewards on the track, and there might also be variations in XP gain based on uncontrollable factors. However, the progression itself is predetermined. Every player that reaches level 2 in Season 21 of *Destiny 2* will get three upgrade modules from the battle pass, guaranteed. Put another way, battle pass systems have a high degree of transparency. A consumer knows exactly what their money is buying them when they spend it. Again, other systems might lead to an unfair monetization scheme when used in conjunction with battle passes, but they are fair on their own.

Narrative: Battle passes are also able to serve a narrative function when designed around contributing to a game's narrative. Rewards on a battle pass' tracks, as well as the distribution of items on the tracks themselves, can be tailored to fit in-game events. This has been done for *Deep Rock Galactic*, *Destiny 2*, *Fortnite*, and other games. This elevates battle passes beyond simply being a tool used to extract money out of players; they have the ability to serve a storytelling function.

3.2 Loot Boxes

Examples: *MapleStory* (2003), *Team Fortress 2* (2007), *Hearthstone* (2014), *Overwatch* (2016), *Star Wars Battlefront II* (2017), *Apex Legends* (2019), *Genshin Impact* (2020)

Figure 4. Loot boxes in *Team Fortress 2*

Description: Loot boxes are a common form of monetization with a long history. The idea behind loot boxes is that players pay for in-game items selected from a random pool. The number of items obtained varies, but it is usually between one and four. The nature of the items is also variable. Often, the items obtained are cosmetic in nature. However, in-game currency is also a common prize. Some games also offer prizes that confer an advantage to the player.

There are several variations of loot box systems. Arguably, the oldest of these are known as gacha (short for gachapon) systems. Players interact with these systems by spending an amount of in-game premium currency in exchange for an in-game item, chosen at random from a pool. These systems are derived from a toy vending machine model,

trademarked by Bandai, where a consumer inserts money in exchange for a plastic capsule containing a random toy.

Card pack systems are similarly derived from a real-world equivalent. These systems allow players to acquire packs of digital "trading cards" in exchange for money or premium currency. Despite being widely referred to as "trading cards," they are almost never actually tradable, and attempting to do so is almost always against a game's terms of service. The main difference which distinguishes card pack systems from other loot box systems is the prize. The cards gained through card pack systems provide players with new tactical and strategic options in game. In fact, entire strategies may be impossible or non-viable if a player is lacking the requisite cards. These systems are universally pay-to-win, by nature of what they offer as prizes.

As stated earlier, different games allow players to obtain loot boxes (or the contents thereof) via different means. *Overwatch*, for example, gives a player a loot box every time they reach an XP threshold in game. Players also get a loot box if they log on during certain season events. XP is gained faster if a player wins the match, as well as if they play multiple games in a row without requeuing (win or lose). Players are also granted a large amount of XP for their first win of the day. This system, in tandem with the matchmaking rating (commonly referred to as "MMR") system, encourages continuous play, increasing engagement metrics. Alternatively, players can buy loot boxes with real money. Loot boxes are sold in packs of 2, 5, 11, 24, and 50. These cost $2, $5, $10, $20, and $40, respectively.[41] Thus, this encourages players to spend more money to get "free" boxes.

Team Fortress 2, another class-based FPS game, follows an entirely different monetization model for its loot boxes. In *Team Fortress 2*, players receive "item drops" at regular intervals during play. For most items, such as weapons and cosmetics, these drops are capped at between 5 and 12 per week. There are numerous caveats to this. For example, if a player does not get all of their allotted drops the prior week, they are able to get those drops in the current week. The player must also be "active," as determined by a number of

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criteria. However, the drop rate for loot boxes is determined by different, independent criteria. In fact, the exact details behind the loot box drop system have not been made public. Once a player has obtained loot boxes in *Team Fortress 2*, they are unable to open them without a "key." These keys can be purchased from Valve, the publisher, for $2.50. Alternatively, the keys can be bought and sold on the Steam Marketplace, which is also operated by Valve, for a variable price. There are also loot box variations which are only available for a limited time (along with their corresponding keys). Some special variations of these keys can be found on the Steam Marketplace for hundreds, or in some rare cases, over a thousand dollars. Of course, all transactions on the Steam Marketplace are paid out in credit of Steam, ensuring the money put into buying digital items there is kept in Valve's ecosystem. Valve also taxes all transactions there 5%, with said tax going straight to Valve. This system encourages interaction via FOMO and reward removal, and ensures that the money spent on interaction with any level of this system stays in Valve's ecosystem.[42(p. 2)]

Psychology: As demonstrated, loot boxes can be presented to players in a variety of formats. At their core, however, loot boxes rely on variable-ratio operant conditioning to entice players into interacting with them. Research has recently started to show a link between interaction with loot boxes and the development of problematic gambling behavior.[2] Several countries have also regulated loot boxes as a form of gambling or pseudogambling.[43]

Variable-ratio operant conditioning is a process through which human behavior can be modified. In the case of loot boxes, the behavior being reinforced is the act of opening loot boxes. This behavior is reinforced on a variable basis (hence, "variable-ratio"). Reinforcement occurs in the form of rare items from the item pool being distributed. Such items are designed to have perceived value to the player by being aesthetically pleasing, mechanically advantageous, scarce, or some combination of the three. Since a player doesn't know when the next reward will come, they are more likely to consistently engage with the system, hoping that the next interaction will result in a reward.[3]

Fairness: Notice the parallels between the description of this system and a slot machine; both loot boxes and gambling work off of the same principle. As long as the player is receiving something with perceived value, this type of conditioning will be effective. It doesn't matter if the reward is money, trading cards, or digital cosmetics. Players that are trained to find satisfaction in these systems from a young age are likely to find satisfaction in these systems later in life, if they are presented as monetary gambling.

Narrative: Loot boxes can serve a narrative function in games. Often, this is done by releasing themed loot boxes that contain limited-time content, as is the case with *Overwatch* and *Team Fortress 2*. However, beyond visual theming, there is nothing that makes a loot box particularly well-suited to distribute content for a narrative purpose over any other method. They do not have the ability to tell a story through arrangement, like a battle pass does. If attaching the distribution of items to a narrative function is of importance to a designer, they should look to other methods first.

3.3 Premium Currency

Examples: *Eve Online* (2003), *Clash of Clans* (2012), *Fortnite* (2017), *Destiny 2* (2017), *Skullgirls Mobile* (2017), *Genshin Impact* (2020), *Diablo 4* (2023), *Limbus Company* (2023)
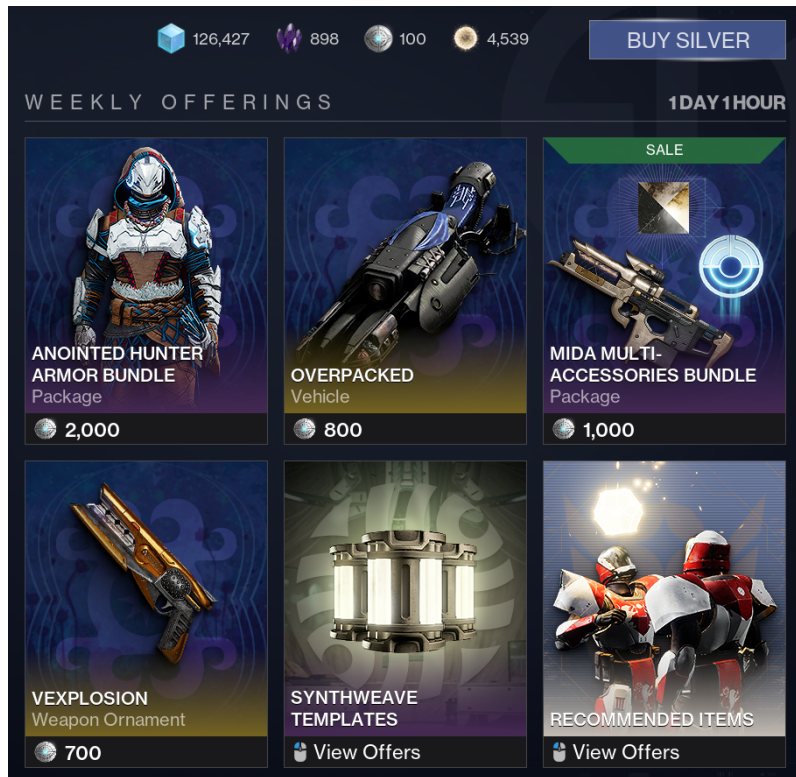
Figure 5. Premium currency (third item in top row) pictured in *Destiny 2*

Description: Premium currency is a common monetization strategy that exists across all genres of games. The core idea behind premium currencies is that they act as a resource to complete some set of objectives in a game. This may simply speed up a timer, as is seen in social and mobile games, like *Clash of Clans*. Alternatively, certain game features may be entirely gated behind premium currency, such as the premium battle pass track in *Fortnite*, or the extra activities gated behind The Witch Queen Dungeon Key in *Destiny 2*. Such systems provide a clear transactional reward for interaction.

However, unlike "standard" currencies, which can be earned more or less freely through gameplay, premium currencies can only be earned in very limited quantities through gameplay, if at all. Premium currencies are primarily obtained through purchase with real money. This achieves two main goals. First, the conversion from real money to premium currency traps the money in the game's ecosystem. Second, because the conversion from real money to premium currency is rarely one-to-one (or even one-to-rational-number), the player is meant to have a distorted perception of how much the premium currency is actually worth. Thus, they are led to have a distorted perception of how much money they're actually spending on systems relying on the purchase of premium currency. Furthermore, as a result of how premium currencies tend to be packaged, games that employ them can encourage people to spend more money via content pricing models.

As with the previously mentioned monetization systems, the purchase of premium currency usually traps the money spent on it in the game's ecosystem. However, there are examples of online games that allow real money trading ("RMT"). *Entropia Universe* (2003) and *Wurm Online* (2006) are two such games that allow RMT.

Entropia Universe works much like a traditional casino. Project Entropia Dollars (PED) are bought at a fixed rate of 95 PED for 10 USD.[44] The player then uses their PED to engage in activities, such as controlling facilities in player-versus-player-enabled areas, or buying ammunition to hunt with. Both of these activities have a chance of providing a return on investment. Much like in a casino, however, this chance is far from guaranteed. *Entropia Universe* also taxes all withdrawals 1% or 100 PED, whichever is greater.[45] Thus, players must have significant returns on their ventures to turn a profit on them.

Wurm Online, on the other hand, does not provide players with a method to directly withdraw their currency. Instead, the terms of service of *Wurm Online* allowed a player to post RMT offers in the in-game chat, until March 1, 2020.[46] Thus, players were free to set their own rates for the currency. While these transactions were not taxed by the game directly, free-to-play activities generate very little premium currency. Players require a monthly

subscription, costing €8 in real-world money or €13 in premium currency, to have access to activities which generate worthwhile amounts of premium currency.[47] Barring these two examples, legitimate RMT is almost unheard of.

Psychology: The two main psychological tactics employed by premium currency models are value distortion and waste aversion.

Many games intentionally have their premium currencies priced in such a way that masks their true value. *Genshin Impact*, for example, has its premium currency bundles priced between $1:60 and $1:648.[48] *Destiny 2* prices its currency between $1:100 and $1:120.[49] *Clash of Clans* prices its premium currency between $1:88 and $1:154. Many of these games also advertise certain packs as containing "bonus" currency in an attempt to mask the artificial scarcity inherent in such systems. *Clash of Clans*, in particular, advertises its smallest premium currency pack as containing "10% more."[50] This is arguably deceptive in all cases and blatantly deceptive in some.

Fairness: These premium currency packs often contain inconvenient amounts of currency, with regard to the pricing of digital goods. For example, *Destiny 2*'s battle pass costs 1,200 units of premium currency. This means a player has to spend a minimum of $15 on premium currency if they are to buy it. However, this will leave a player with between 300 and 500 units of premium currency left over. A player is made to think that they are leaving money on the table, so to speak, if they don't spend this. Unfortunately, very few, if any, items are priced this low, forcing a player to spend more money than they otherwise would, if they are to end up with a balance of zero.

These systems act as forced digital gift cards at best, and digital poker chips or tools of manipulation at worst. They rarely serve a narrative purpose or other artistic purpose. Games as a whole would be better off without these systems, as they are unnecessary, and highly unfair to players.

3.4 Expansions/DLC

Examples: *Populous: The Promised Lands* (1989), *SimCity 4* (2003), *Command & Conquer 3: Tiberium Wars* (2007), *LittleBigPlanet* (2008), *Spore* (2008), *Train Simulator Classic* (2009), *The Witcher 3: Wild Hunt* (2015), *Rain World* (2017), *Deep Rock Galactic* (2018), *Age of Wonders 4* (2023)

Figure 6. Some games, such as *Train Simulator Classic* (2009) sell large amounts of DLC[51]

Description: Expansions are packs of content which are released for an existing game. This content is sold to players as a way of generating income on an existing product. The sale of said content is what differentiates expansions from patches. Despite this, some patches are marketed as "free expansions" as a way of generating good will with consumers. The nature of expansion content is also variable. Some content may merely be cosmetic, such as outfits or skins for in-game items. Other content may be minor, but still mechanical, such as new weapons in a first-person shooter, or buildings in a city-building game. Some content makes major changes to the base game, such as adding new modes, locations, mechanics, story content, or reworking existing elements of the base game. While this content was originally distributed physically, distribution largely became digital in the late 2000s and early 2010s. Digitally-distributed expansion content is often referred to as "downloadable content" or "DLC."

Expansion content is one of the most varied forms of monetization. As stated, the size and nature of said content is highly dependent on several factors of the game in question. Many games sell content that could feasibly be given out as a prize from a loot box, or as an item on a battle pass track. Games such as *The Sims 3* (2009), *Path of Exile* (2013), and *LittleBigPlanet* follow this model, selling cosmetics, and other inconsequential items, as microtransactions. *LittleBigPlanet* did this through the PlayStation Store, selling outfits for a few dollars each. However, with over 100 outfits, getting all of the content would cost more than the full price of the game at release, several times over. This is also the case with the other two games, except they sell their content through their own online stores, using premium currency models. Indeed, games that follow this expansion content model do not expect most players to buy most of the content that is for sale; players are meant to pick and choose items that suit their personal tastes. This expansion model was largely made possible by the popularization of digital content distribution platforms, as releasing such inconsequential content on physical storage media would likely not be profitable.

The middle ground of expansion content encompasses content more significant than cosmetics, but which still fundamentally doesn't change the game. Some examples of content that falls under this umbrella include the map packs from the FPS games *Halo: Reach* (2010) and *Call of Duty: Modern Warfare 2* (2009); the expansions to various Paradox Interactive games, such as *Stellaris* (2016) and *Age of Wonders 4*; and expansions to the Monster Hunter series. This content is less optional than smaller expansion content. In the case of games with online multiplayer, this content can cause schisms in the matchmaking pool, since players without the content will often not be eligible to play on the expansion maps. If there is not a balance in the number of players that have and do not have the content, the smaller group will suffer increased queue times. For single-player games, the issue is less significant. However, expansions can influence compatibility with third-party modifications to the game, which can impact games with a large modding scene, such as *Stellaris* and *Cities: Skylines* (2015).

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The largest packs of expansion content significantly change the core of a game. These are expansions such as *Spore: Galactic Adventures* (2009), *Rain World: Downpour* (2023), and the three expansions released for *RimWorld* (2018). These expansions are impactful enough to shift the general development focus away from the core game and towards supporting the new content. This is generally a positive change, as it allows developers to continue earning money by developing something substantial. It also allows players to choose whether or not they want to accept drastic changes to their game. While the core game may be deemed complete by the developers, the possibility exists that they make changes to the core game, but make those changes exclusive to versions that have the expansion installed. This practice was more common when expansions were distributed via physical media, and when patches had to be manually downloaded.

Psychology: The act of releasing more content for an existing game generally uses the same psychological tactics as with any other product being sold. The psychology of collecting does play into the acquisition of expansion content, as many people are inclined to complete collections of similar goods.[52] Often, publishers will sell bundles of DLC at a discount, hoping to get consumers to spend money on content they otherwise wouldn't be interested in, just because they want to complete their DLC collection. There can also be issues of manipulation in certain cases when expansion content is released. If an expansion is released, and said expansion breaks the core game, or otherwise negatively impacts distribution of the core game's content, this could be viewed as a bait-and-switch scheme. Care must be taken when allocating development resources away from a paid product, towards a similar, separately-paid product.

3.5 Subscriptions

Examples: *Meridian 59* (1996), *Ultima Online* (1997), *EverQuest* (1999), *RuneScape* (2001), *Second Life* (2003), *World of Warcraft* (2005), *Final Fantasy XIV* (2010)
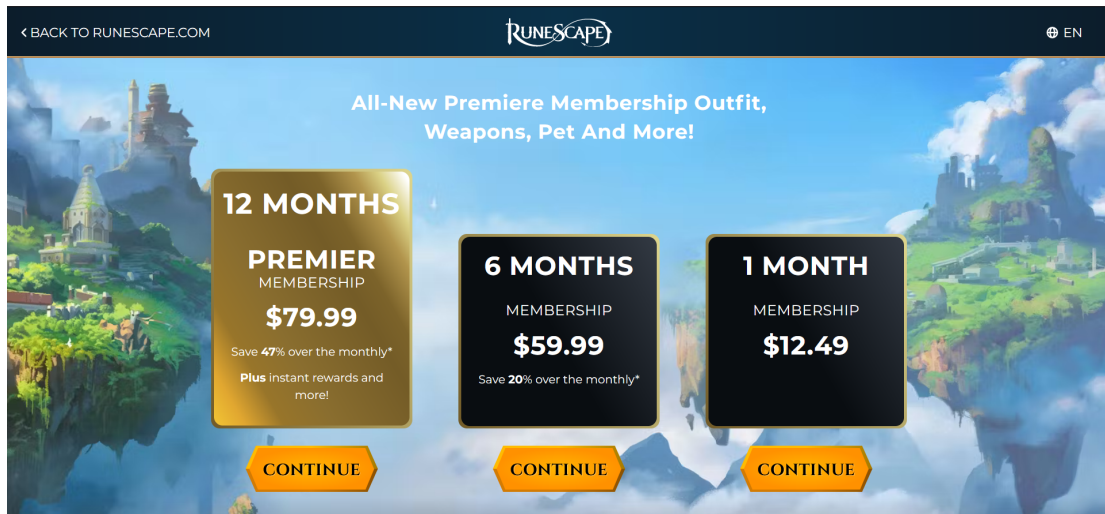
Figure 7. *RuneScape* requires a monthly subscription to access much of its content[53]

Description: Subscription-based games are games that require a recurring payment in order to continue accessing the paid content or services. This is different from recurring battle passes and expansion content. In those two cases, content which is paid for is permanently owned by the player. Subscription-based games will, instead, revoke access to the paid content if a payment is missed. These payments are almost always on a monthly basis. Likewise, the games that use this model are almost all MMOs. Some games offer a subscription to services, such as bonus resources or reduced ads, in lieu of access to content.[54] Generally, these recurring fees go towards the post-release development of content, which is expected of MMOs more than other genres of games. These fees also support the continued maintenance of the servers needed to host large amounts of players. Despite this, some games have devised a pseudo-subscription model, as previously described in the section on expansions and DLC, to support extended development.

This model has its roots in the pay-per-hour models of MMOs deployed in the 1980s. The earliest MMOs, such as *Island of Kesmai* (1985) and *Habitat* (1986) charged over short intervals of time. The former cost between $6 and $12 per hour, while the latter cost $0.08 per minute, and both were restricted to users of specific internet service providers.[55,56] However, games such as *Meridian 59* and *Ultima Online* popularized the monthly subscription model that is common for MMOs today.[57,58] This model allows games that require externally-hosted servers to maintain service for their playerbase. The monthly fees pay for the servers and provide the developers with a steady stream of revenue. A portion of this revenue is often devoted to further development of the game, the release of expansions, and advertising, to attract more players to the game.

The execution of subscription services is similar across many MMOs. There may exist a free tier of play that allows players to access limited portions of the game. *RuneScape* offers its subscribers additional in-game skills, more quests, and an expanded map to explore, among other benefits.[53] *World of Warcraft* allows players to reach level 20 without a subscription, but requires players to subscribe in order to reach the level cap of 70 and access endgame content.[59] *Final Fantasy XIV* only allows players to continue any sort of play if they pay a monthly "service fee."[60] Effectively, these games only offer players a trial version of the game, if that, unless they continually pay a monthly subscription fee.

Psychology: Subscription models mainly work off of the sunk cost fallacy.[61] In this case, the "product" is the game itself. The cost of the subscription pushes players to interact with the game more often than they would if it was free. Likewise, the player is more likely to pay back into the subscription since they've spent time playing the game and advancing a character. This is slightly manipulative, but not much more so than subscription services for other, non-game products.

3.6 Games as a Service

Examples: *RuneScape* (2001), *City of Heroes* (2004), *Battlefield 2142* (2006), *Darkspore*
(2011), *Overwatch* (2016), *LawBreakers* (2017), *Hitman 3* (2021)
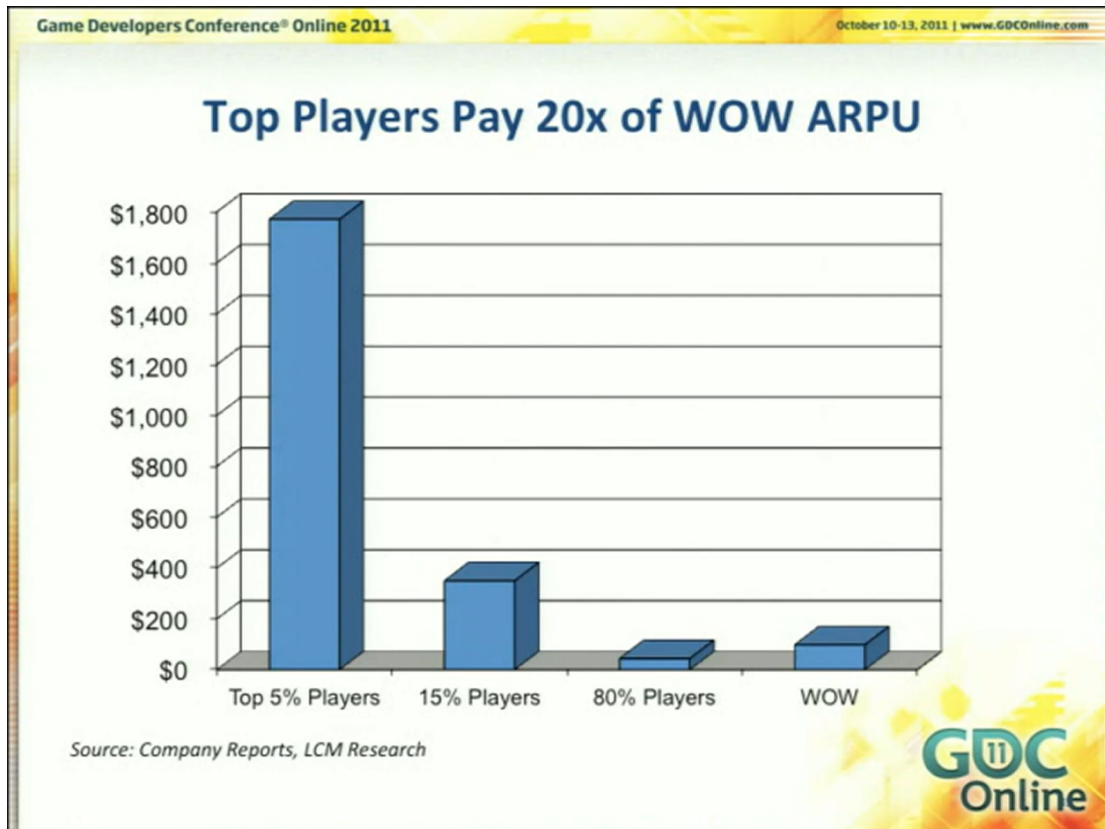
Figure 8. In *World of Warcraft*, a player in the top 5% of spenders puts orders of magnitude
more money into the game than a player in the top 80%[62]

Description: Games as a service (often abbreviated to "GaaS") is a set of
foundational, meta-monetization structures. The goal of such structures is to create games
that cannot function without continued revenue. This is often achieved through some
combination of the above-mentioned monetization methods. In fact, other than expansions,
none of the above methods can effectively function without a GaaS framework in place. If a
player has complete control over their game, because it exists entirely on their computer
without any way to verify the user's purchases online, they could simply bypass any attempt

to monetize the game by giving themselves the items or resources via a hex editor or some other software. This often means that a player becomes unable to play a game when a company decides to stop making the game available, even if they paid for it previously.

Darkspore, an action RPG, was taken offline by Electronic Arts on March 1, 2016.[63] This left players that paid for the game unable to play it, even if they owned a physical copy of it. *Battlefield 2142* had its servers shut down on July 30, 2014.[64] Players of this game suffered the same fate as the players of *Darkspore*. A group of people attempted to revive the game by running servers that were playable through a modified client, but this attempt was shut down by Electronic Arts in 2017.[65] *Overwatch*, a competitive online FPS game, had its entire monetization strategy switched in 2022. While the new battle pass system is arguably more fair for consumers than the old loot box model, players that paid full price for the game are not entitled to further content that is being released for the game after this change, and are unable to play the old versions of the game. There is no way to opt out of the current monetization model, by design. Similar controls also prevent the trading of in-game items and the resale of purchased games.

As one can imagine, this is problematic for consumers. Since software (and perpetual licenses for such) are classified as goods, and not services, publishers exerting this level of control over users' software is legally-questionable.[66,67] Regardless of this, such models are not only harmful for players, but also for people seeking to preserve games. If a game requires proprietary server code to run, and that code was never distributed to the public, the servers must be reverse-engineered. This is impossible and/or illegal in many cases.

GaaS publishers are also often not encouraged to act in the best interests of their average consumer. "Whales" are a common phenomenon in such games. Such players spend orders of magnitude more money than the average player. One study, on gamers in 2020, showed that 1.5% of players were responsible for 90% of the studied games' revenues.[68] In 2011, a game industry research analyst described how the top 5% of spenders spent 20 times as much of the average player in *World of Warcraft*.[62] Since these

players spend such large amounts of money on the game, publishers are naturally more interested in serving the interest of the whales than those of the average player. This leads to the implementation of abusive monetization strategies that the whales are likely to buy into.

While an online component might be necessary for some games to function and be profitable, there is a strong need to monetize games more responsibly, and with more care for consumers. There must also be stronger consumer protections put in place for such games, especially once a company decides to stop supporting them.

CHAPTER 4

Pattern Relationships

Certain game monetization patterns tend to pair well together. Certain patterns lend well to synergy with other ones. For example, *Destiny 2* gives out loot boxes as rewards on its battle pass. MMOs often include benefits, such as subscription time or premium currency, to users that buy expansions on release. Premium currency can often be used to buy a battle pass in *Fortnite*, a subscription in *RuneScape*, or loot boxes in myriad mobile and social games. All of the previously mentioned patterns, excepting expansions, require a games as a service model in order to function at their base level. What determines these relationships?

It is useful to think of a game's monetized rewards in the context of an in-game economy. More specifically, in terms of "sinks" (systems that permanently remove liquid monetized rewards, or convert them to a terminal state) and "faucets" (the introduction of liquid monetized rewards).[69] Terminal monetized rewards, such as cosmetics, expansion content, and the right to use certain items in game, are what primarily motivates a monetization system. While some people may be willing to spend real money for something that they can earn in game (XP towards a battle pass, for instance), many people will not be motivated to spend real money on something that they could reasonably acquire by playing the game. Liquid monetized rewards, such as premium currency or loot boxes, have the potential to be transformed into another type of monetized reward. Liquid monetized rewards are often difficult to obtain through regular play, as people would not be motivated to spend money if they could simply earn what they wanted (or a chance at what they wanted) through regular play. As such, liquid monetized rewards are generally bought, or earned in very small quantities, and are transformed into less liquid, or terminal rewards.

Games that include monetized rewards must necessarily include sinks, but not faucets. It is possible to only introduce terminal rewards, such as having a loot box system

that drops stackable items. However, many games choose to offer items that can with limited stacking, such as digital trading cards, or no stacking, such as unique cosmetic items. In these cases, there is usually a sort of recycling system that allows a player to reclaim a small amount of in-game currency from duplicate items. This currency can then be used to purchase items of a player's choice, a loot box, or some other digital good that has a chance of bringing satisfaction to the player. This being said, the addition of faucets necessarily requires the addition of sinks. A resource cannot be liquid if it cannot be converted into some other form. Even games that rely on liquid resources as their main monetization system, such as *Project Entropia* and its Project Entropia Dollars, must include activities that consume the resource, given enough interactions. A successful combination of faucets and sinks will have all of a given player's liquid resources consumed or converted to terminal resources, over an arbitrarily long period of time.

A progression of several patterns that comprise a game's monetization might be as follows: a player buys 1,500 premium currency for $15. They then use the premium currency to buy a battle pass, gaining cosmetics, and no more than 1,500 premium currency back, if they put in the time and effort to complete the battle pass. Of course, this could be tweaked via the strategies described in the last chapter to entice said player to spend more than the $15 they were initially considering, or obfuscating what their $15 is actually buying them. Each pattern carries its own psychological tactics, but they slot into each other in order of liquidity, for the reasons described above. The psychology of a specific pattern corresponds to its level of aggression (in other words, how much of a "hard sell" its engagement is) more than what niche it fits into. In fact, patterns with similar liquidity tend to be closely related, with regard to what they give a player. Being an ethical designer means using patterns with a low psychological complexity, so that consumers are able to make rational decisions about how to spend their money, unless you absolutely need to use a specific pattern for some reason other than increasing profit margins.
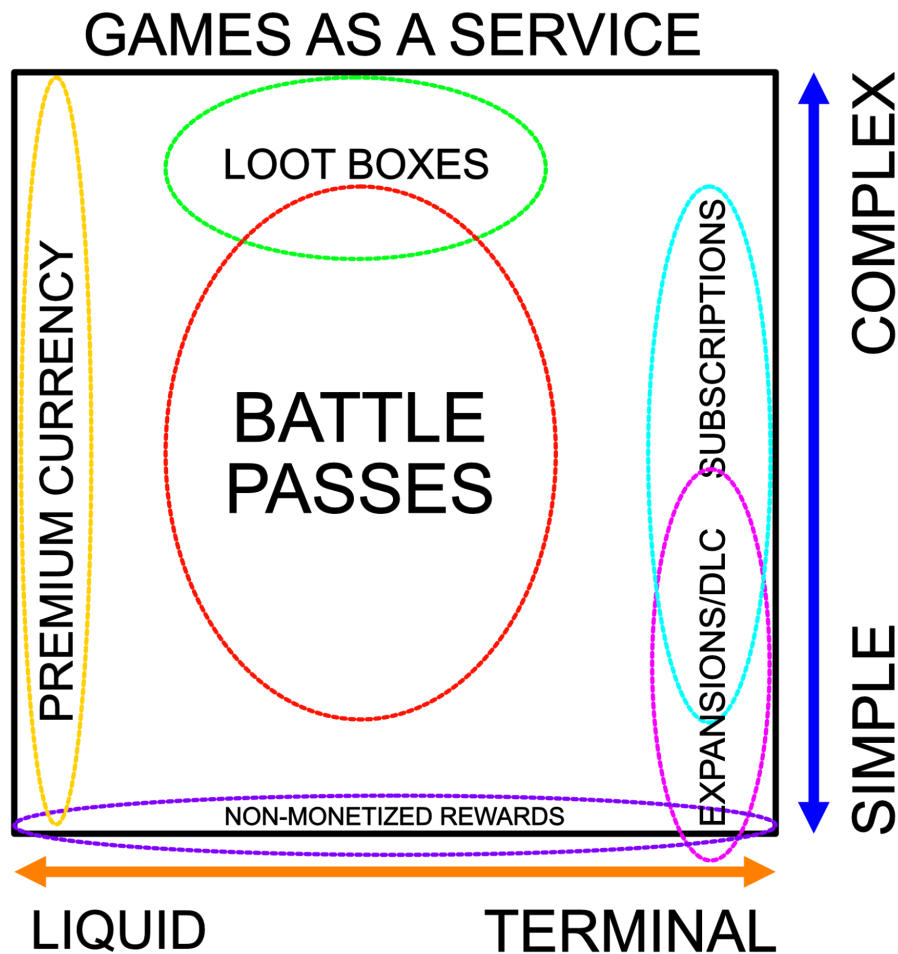
Figure 9. A graph of various patterns in games, graphed with regard to terminality and psychological complexity in the context of games as a service

The graph shown above places the various, previously-discussed monetization strategies within 2D space. This is done with respect to liquid-terminal and simple-complex relationships that were explored earlier in this chapter. To reiterate: liquid systems are easily transformed or paid into other systems, at some sort of loss; terminal systems are immutable, or mutable at a severe loss; simple systems are straightforward, psychologically speaking, relying on the simple exchange of currency, goods, and services; and complex systems rely on manipulating sensitive aspects of human psychology in order to drive engagement. Almost

all of these systems are in the context of games as a service, as most monetization strategies are only effective when a player's participation can be verified by a publisher, and modern games achieve this via callback to a publisher's servers.

All patterns occupy one of three columns on the graph. Premium currency is the most liquid of the patterns, by design. The function of premium currency is to act as a currency for other items. It serves no function unless it is transformed into something else. Thus, it must be the most liquid.

Loot boxes and battle passes occupy the middle ground of liquid and terminal patterns. Both of these systems act as containers for a pre-set group of rewards. Depending on the game, these can contain anything from cosmetics, to premium currency, to expansion content. As such, their liquidity/terminality is dependent on their contents. However, where loot boxes and battle passes mainly differ is in their psychological tactics. Battle passes follow a track of items that is made clear when the battle pass is purchased. They also often include FOMO tactics and compel players to play longer than they would without the various attached psychological tactics, as detailed in the previous chapter. However, loot boxes often make use of all of these tactics, in addition to variable-ratio operant conditioning.

Expansions, DLC, and subscriptions exist as the most terminal rewards. These monetization strategies represent a raw exchange of money for content or access to content. As such, the goods/services provided by these patterns tend to be terminal. The most apparent difference between expansion/DLC and subscriptions is that subscription models have to entice players to pay on a recurring schedule. This is often a harder sell than a single payment, and thus, subscription models tend to require the inclusion of more complex psychological tactics in order to entice players to engage with them.

Legacy implementations of expansion content, as well as non-monetized content, can exist outside of the games as a service model. Since these phenomena can exist without server-side verification, they don't require a games as a service model to function.

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CHAPTER 5

Conclusion

This paper provides an abridged history of games to provide context for the development and form of current monetization models. This paper goes on to describe battle passes, loot boxes, premium currency, expansion content, and subscription services. The psychology of these various patterns are examined, as well as their fairness to consumers. Games as a service is also examined, focusing on how it enables current monetization models, as well as its impact on consumers. This paper concludes with a discussion on how these different patterns relate to each other, through a faucets and sinks model, and the patterns are then arranged in 2D space on a graph. The composition of this graph shows how different patterns relate to each other based on the complexity of their psychological tactics and the liquidity/terminality of their rewards. These contributions will allow game designers to make informed decisions by providing an in-depth analysis of common monetization strategies. Additionally, this research will provide computational media, psychology, and business researchers to build off of this work by providing an analysis of the aforementioned patterns, as well as a library of cited work for each pattern. Hopefully, this will lead to the development of more ethical approaches to monetization as future work.

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