

SIMPLE GAMBLING OR SOPHISTICATED GAMING?
APPLYING GAME ANALYSIS METHODS TO
MODERN VIDEO SLOT MACHINE GAMES

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Slot machine games have become the most popular form of gambling worldwide. In Finland, their pervasiveness in public spaces and popularity makes them one of the most common form of gaming.

However, in game studies, gambling games are often regarded as borderline games due to the player's lack of control. In this thesis I ask whether modern video slot machine games can be considered as games and if so, what similarities there are between them and contemporary video games. To find out if modern video slot machine games are in fact games, I compare their features with influential definitions of game and play. After this, I utilize an analysis framework derived from the method of close reading to analyze a popular Finnish video slot machine game *Emma*.

The comparison between modern video slot machine games and the various definitions of game and play reveals that modern video slot machine games fit very well into these definitions, and thus they can be considered as games. This notion enables them to be analyzed with game analysis methods. The analysis showed that modern video slot machine games feature many elements that are commonly found in traditional video games, such as contextual aesthetics, narratives, interaction, as well as some form of player control via choices.

Research regarding slot machine games as games is scarce despite their many intriguing elements that cross disciplinary borders. Modern video slot machine games have evolved into a form of complex digital entertainment, which calls for open-minded collaboration of game studies and gambling studies in particular, but many other disciplines as well.

Keywords: gambling, slot machine games, game analysis, video games, close reading

Forewords

First, I would like to thank my employer Veikkaus and Casino Helsinki. I would have never thought of studying slot machine games, if I would not have worked with them and with people who are interested of them. Secondly, I would like to thank my supervisors, researcher Jani Kinnunen and professor Frans Mäyrä for their support and guidance. Especially Jani, with whom we had a short but very fruitful guidance period.

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1 INTRODUCTION

Slot machine games have become the most popular form of gambling in casino floors worldwide. In the United States, slot machine games comprise 70% of casino revenues.¹ In Finland, slot machine games are exclusively operated by state-owned Veikkaus Oy (formerly Raha-automaattiyhdistys, literally slot machine association, henceforth RAY). Scattered throughout the country in various supermarkets, kiosks, restaurants and dedicated clubs and arcades, these games yielded over 86% of the association's annual revenue in 2015.²

The first slot machines were produced in the late 19th century and through the years, they continued to develop and gain popularity among gamblers. The popularity of slot machines as a gambling method and constantly developing technology has influenced the development and evolution of the slot machine cabinets and the games that run on these machines. As technical devices, slot machines have evolved significantly from the all-mechanical “fruit machines” boasting three reels and one payline, to complex, computer controlled and multimedia enriched entertainment machines with multiple high-definition touch screens, high quality audio and, in some cases, even tactile and haptic response or motion sensor technology. In tandem with the technological advancements of the machines, the games themselves have also evolved. The first games featured some symbols, most notably fruits, that had to be aligned to form certain winning patterns on a single, centered payline. Although the core idea has not changed, the symbols, features and peripherals in modern games are vastly more advanced. In addition, the majority of modern games feature background themes as well as stories and even dedicated music to form more complex gameplay experience. Some games do not even have traditional reels anymore, but utilize a grid of symbols and uncommon paylines. These technical developments and advanced game designs have brought slot machine games closer to traditional video games.

¹Cooper, Marc "Sit and Spin - How slot machines give gamblers the business" [www.theatlantic.com](http://www.theatlantic.com/magazine/archive/2005/12/sit-and-spin/304392/), December 2005 issue, <http://www.theatlantic.com/magazine/archive/2005/12/sit-and-spin/304392/> (accessed October 25, 2016)

²Raha-automaattiyhdistys: Tilinpäätös 2015, https://www2.ray.fi/sites/default/files/RAY_Tilinpaaotos_2015_final.pdf (accessed, October 25, 2016)

Can slot machine games be considered as games? Stricter definitions of games do not explicitly include them as games due to the lack of control by the player, however, broader definitions do accept them as such. Considering the history of play and games, humankind has played games of chance for centuries. The purpose of these games has varied between determining the will of gods to simple past-time activity and, of course, gambling. I base my research on the hypothesis that slot machine games are games and can thus be analyzed with video game analysis methods. Although the crucial element of player control is omitted from the majority of slot machine games, or bears very little significance, the design elements of the games are strikingly similar to contemporary video games with elaborate narratives, multiplayer options and aesthetics. The core game, however, is still almost purely based on chance. In recent years, the emergence of skill-based slot machine games has shaken the grounds of slot machine industry by introducing a completely new form of machine gambling. These games are not yet in wider circulation, are considered illegal in some legislations, and are usually rudimentary in nature. However, they pave the way for a new generation of slot machine games and machine gambling as the technology evolves, and provide continuity for studies regarding these particular games and games in general.

The aim of this thesis is to delve into the design elements of RAY's vastly popular slot machine game, *Emma* (2015). *Emma* is part of the *Kulta-Jaska* serie of slot machine games that currently has four games: *Kulta-Jaska*, *Kulta-Jaskan valtaus*, *Emma*, and *Kulta-Jaska 2*. *Emma* is a typical example of modern video slot machine game with multiple reels and paylines and additional bonus features, as well as a dedicated background story featuring elements of Finnish Lapland and nature. The analysis is performed in the light of contemporary game studies and through the analysis method of close reading. By close reading the design elements of these games, it is possible to construct a wider view on how modern slot machine games operate, what the gameplay is like, and how they resemble contemporary video games.

The research topics concerning slot machine games, and gambling in general, revolve heavily around the psychological and economical perspectives. Problem gambling and addiction are by far the most popular research topics in this field. During recent years, however, there have been studies regarding the audiovisual elements of slot machine games and how they influence the players' experience of the game. Studies of design elements of slot machine games have also emerged recently. The appealing and addicting

features of slot machine games are studied and recommendations are given how contemporary game designers could utilize these features in other games. Narrowing the scope to contemporary game studies, there seems to be an absence of studies considering slot machine games as equivalent to traditional video games. The aim of this thesis is to shed light to this area of game studies and create a better understanding of this vastly popular form of gaming by applying existing video game analysis method to a slot machine game. In this thesis, I try to fill this gap by answering the following research questions:

1. Can modern video slot machine games be regarded as games?
2. What similarities are there between modern video slot machine games and contemporary video games and how these similarities are present in a modern video slot machine game?

Additional research questions are:

- How the design elements of modern video slot machine game, such as audiovisuals and narratives, contribute to the gameplay experience?
- What are the possibilities for player control, real or illusory, in the selected game and how are they presented?

The thesis begins with a literature review of studies regarding games of chance, gambling, and slot machine games. Next, in the theoretical background chapter, I present different definitions of game and compare them to modern video slot machine games. With this, I aim to answer the first research question and argue that modern video slot machine games can be considered as games.

If modern video slot machines can be regarded as games, they can therefore be analyzed by game analysis methods. This notion allows me to answer the second research question by utilizing the analysis method of close reading to the selected slot machine game. In the methods chapter I introduce the analysis method of close reading and how it can be utilized in the analysis of slot machine games. In the analysis, I break the game down to its components and analyze them. With this, I aim to demonstrate that a modern slot machine game has several key similarities with contemporary video games.

Lastly, I will summarize the key findings of the research, discuss the limitations of this particular study, and provide insights and suggestions for further research on slot machine games from the game studies point of view.

2 LITERATURE REVIEW

This chapter introduces the key literature regarding games of chance, gambling, and slot machine games. I begin from the games of chance and then move on to gambling studies, and finally to the slot machine games and their history as well as basic operation. In addition, I present several key features that modern slot machines have and discuss skill-based slot machines briefly.

2.1 Games of chance

Games of chance have been played among humans for centuries. According to Gerda Reith, the games of chance were for millennia reserved for divinations and sacred signs from the beyond. It was not until late seventeenth century that the separation from religious context began. Chance became then an indicative of absence of knowledge. In the nineteenth century, chance was secularized into meaningless determinism and by the twentieth century, all that was left was statistical probabilities. (Reith 2005, 13)

Stewart Culin studied the games North American Indians in the early 20th century in his book *The Games of North American Indians* (1907). Culin (1907, 31) divided the games to two main categories: games of chance and games of dexterity. Furthermore, games of chance are divided into two subcategories:

1. Games in which implements of the nature of dice are thrown at random to determine a number or numbers, and the sum of the counts is kept by means of sticks, pebbles, etc. or upon an abacus, or counting board, or circuit.
2. Games in which one or more of the players guess in which of two or more places an odd or particularly marked lot is concealed, success or failure resulting in the gain or loss of counters.

(Culin 1907, 31)

There are multiple similarities in the basic gameplay and mechanics between slot machine games and the games described by Culin. The slot machine games are based on random occurrence of symbols on reels and the outcome is quantified and kept by the means of credits of monetary value. The second category of games by Culin also applies to slot machine games. Often, there are bonus features in slot machine games that utilize hidden

prizes and the player has to guess where these prizes are. In both cases, success is awarded by increase in credits and failure is marked by loss of credits or higher jackpot win. Thus, it is possible to categorize slot machine games as games utilizing Culin's observations of Native Americans. The core functions of these games remain virtually identical, although surrounding elements and the utilities of play change.

2.2 Gambling studies

Gambling studies are heavily psychology-oriented, where the majority of studies concern the addictive elements of gambling games. Gambling addiction and the psychological effects of gambling has been studied in various ways for decades. (See for example Bergler 1957, Wagenaar 1988, Walker 1992, Petry 2005)

In Finland, academic studies of gambling have traditionally been scarce probably due to positivism and "high culture" of academia. However, pervasiveness of gambling in Finnish society and its economic importance, international and national development, social attention, and political as well as economic competition led to the need for more extensive studies regarding gambling. (Raento 2014) In 2010s, gambling studies in Finland were mostly conducted by state-owned research institutes such as National Institute for Health and Welfare (Terveyden ja hyvinvoinninlaitos, THL) as well as universities in Helsinki, Tampere, and Jyväskylä. Particularly in Tampere, collaboration between gambling studies and game studies has been lively. (ibid.)

A survey mapping gambling in Finland is conducted every four years, the most recent being from 2015 by Anne Salonen and Susanna Raisamo. These surveys map the current state of Finnish gambling industry, and most of all, the gambling behavior of Finnish residents. The 2015 survey concluded that over 80% of the age group 15-74 have played a game that involves betting money within the last 12 months, and that the playing has become more common in recent years. According to the survey, approximately 3,3% of players in Finland have a gambling problem of some sort. Attitude towards gambling has also become more positive, which contradicts the results of previous years. Respondents of the survey were also heavily divided when asked about the location of for example slot machine games. One third of the respondents heavily supported the idea that slot machines should be located only in dedicated clubs, one third was heavily against it, and one third had no opinion on the matter. (Salonen & Raisamo 2015, 53-56)

Problematic gambling has been studied also in Finland. Pekka Lund (2010) has interviewed several researchers from multiple disciplines, therapists, and former problem gamblers to shed light on how and why problematic gambling develops and how the games and the gamblers themselves maintain it. Lund begins by asking why people gamble. He argues that gambling reflects the modern society in various ways: It combines individual freedom, pursuit of financial and personal gain, shortsightedness and hunt for a quick reward, demise of traditions, the rise of popular culture, and the rapid expansion of technology and the technicalization of everyday life. (Lund 2010, 15) Lund concludes from the interviews that gambling offers a chance to play and dream and that they offer an escape from the boring or hectic everyday life. In addition, changes in morals and values have loosened the stance on gambling. Traditionally, gambling has been considered as a sin, however, in modern times it is seen more and more as a form of entertainment. The supply and pervasiveness of gambling has also increased over time and people are more and more accustomed to the presence of gambling opportunities in public environments. (Lund 2010, 16-25)

Aki Järvinen and Olli Sotamaa have studied the challenges of gambling in digital media in their 2002 article *Pena - Rahapelaamisen haasteet digitaalisessa mediassa*. Järvinen and Sotamaa argue that gambling is more common than usually assumed. People tend to participate in actions such as raffles, playing cards with each other while betting on it or play guessing games with their peers. Even children tend to bet on each other if one does something better than the other. Usually, the entertainment value and the suspense that these actions create are at least as important as the possible profit from them. The games of chance are played for their added value and zest that they bring, not as a serious investment. (Järvinen & Sotamaa 2002, 27.) This notion is also backed by Mark Dickerson, who argues that players of slot machine games play them to be sociable and for entertainment, and motives concerning excitement and the possibility of winning also feature in the answers of almost half of the players interviewed. (Dickerson 1996, 145)

2.3 Slot machine games

This section expands the games of chance and gambling to the slot machine games. Slot machine games have been around for over 100 years and the properties and functionalities

have greatly evolved. However, the fundamental basis of the games, the raffle, has not changed much.

Before delving deeper into slot machines, some terms have to be defined to avoid misconceptions:

Slot machine is the machine that runs a *slot machine game*. Until the emergence of video slot machine games, the slot machine included the game via physical reels and the game was a part of the hardware. Modern slot machine games, however, are almost without exception software that runs on hardware. The hardware can be comprised of dedicated cabinet with peripheral lights and controls (the slot machine), or they can be run on an online or mobile platforms utilizing the player's personal hardware such as PC, laptop, smart phone or a tablet. *Payline* is a predetermined line across the reels that determines in which way the adjacent symbols will pay a win. Usually, paylines pay from left to right, however, multiple games exist where paylines also pay from right to left. Pays are determined by a *paytable* that shows how many adjacent symbols have to land on the payline and their respective wins.

Slot machine games can be played as a gambling-oriented activity or social gaming activity. Gainsbury et al. (2014) divide online games featuring gambling-themed elements into two parent categories depending on the requirement of monetary wager. An outcome of the proposed taxonomy is seven types of gambling-themed games: Tournament or competition, internet gambling, subscription or paid console or mobile game, social casino game, social game or virtual world with casino features, practice game, and stand-alone console, online or mobile game. (Gainsbury et al. 2014)

Slot machine games can be played without monetary consequences as social casino games or practice games offered by gambling operators. An intriguing example of a virtual world with casino features that are real is an online casino service *Casumo*³, where the player creates a Casumo character, which is then guided through an adventure by playing at the casino. This kind of gamification of gambling is an example of blending of categories and blurring of borders between social games and gambling.

³www.casumo.com, accessed 6.10.2017

2.3.1 History of slot machines

The History of slot machines date back to year 1887, when Charles Fey introduced the first slot machine called *Liberty Bell*. The Liberty Bell was functionally similar to modern slot machine boasting three reels and different symbols that triggered payout mechanism if they formed a winning combination in the single payline. Fey's invention did not reach gambling industry until 1907 when Herbert Stephen Mills introduced a slot machine with similar payout principle as Fey's machines. Mills' machine was also the first slot machine that had iconic symbols such as bars, bells and fruits on its reels. (Scarne 1986, 434-458.)

A large step forward in slot machine gaming occurred in mid-twenties when jackpots were introduced. Deriving its name from the game of Draw Poker, early jackpots were physical coins that the machine gathered automatically to a separate visible box. When the jackpot-triggering combination of symbols occurred, the box emptied itself to the winning player. (ibid.) Another major innovation appeared in the late 1950's when the first 4-reel slot machine was introduced being the first machine that had more than three reels in it. In 1960's, a "hold and draw" feature was added to the games. This feature allowed the player to hold one or more reels in place for the next spin and try to form the winning combination. Also in the 1960's, the first slot machine game with more than one payline was introduced. These features can be regarded as the most important design changes for the casino industry after the invention of slot machine, since they allow the player to insert and play more coins in the same time frame thus increasing the profits of the casino. (ibid.)

Until 1960's, slot machines had a secondary position in the gambling industry. Slot machines were intended to keep the wives of gamblers entertained while their husbands gamble at table games, such as Roulette and Black Jack. However, in the mid-1960's, a company called Bally introduced slot machines that could hold more winning combinations than older mechanical machines and could pay out larger wins. The bigger wins and the possibility to choose a three, four or five reel machines drew more and more players to play the slot machines. The computerized slot machines were introduced in the 1970's and during the 1980's, machines that could be linked together to form large jackpots hit the casino floors. The most famous example of linked jackpot is the Megabucks from International Gaming Technology (IGT) that has been available since 1986 to this day. (Ojala 2007, 17-18.)

The leading manufacturer of machine gambling is currently IGT, which took over the position from Bally in the end 1980's (Ernkvist 2005, 235). According to Ernkvist (2005, 239) this change in leadership was due to IGT's ability to take advantage of developing technologies, notably video poker, and commercial innovations as well as player preferences. IGT's dominant position in the industry, however, has declined by the emergence of companies such as WMS Industries and Aristocrat as well as aforementioned Bally Technologies. (Ernkvist 2005, 239)

2.3.2 How modern slot machine games work

Slot machine games operate with a set of reels that spin and stop forming a pattern of symbols on the screen of the machine. The resulting pattern then determines if the player wins or loses. Commonly, the symbol pattern has to include several matching and adjacent symbols on a payline for the player to win. The reel set is loaded with different symbols with different payouts. Payouts are determined by the rarity of the symbol in the reel set and the number of adjacent symbols on the payline. Modern slot machine games operate with weighted reel sets or virtual reel stops that enable some, usually losing or smaller payout, patterns to have greater probability to occur on a payline than higher paying ones. This system enables the manufacturers to vary the outcome of the game better and offer bigger wins to attract players.

The balance between the payout and hold of a slot machine game depends on the *return to player* percentage (RTP). The percentage indicates the amount of money returned to player as winnings from the amount of money wagered on the game. The RTP in a simple mechanical slot machine game is calculated from the amount of stops in the reels (possible outcomes) and the payouts of each possible symbol combination. For example, a 3-reel slot machine game with 10 possible stops per reel has 1000 possible outcomes (10x10x10). If the sum of all the winning outcomes is 932 credits, the RTP of this game is 93,2 percent (932/1000). However, the RTP is calculated from tens of thousands of rounds, thus the RTP of a single play session may vary greatly. (Ojala 2007, 20)

Stripped down from all of the bells and whistles, almost all slot machine games are fundamentally games of pure chance. Basic modern slot machine games operate with random number generators (RNG) that determine the outcome of each round. The RNG continuously cycles through hundreds or thousands of numbers every second, even when the game is not played, and when the player starts the round by pressing a button or pulling

a lever, the RNG stops instantly and gives its current number to the game. The number given by the RNG corresponds to a specific symbol pattern in the reel set or individual stop on one reel. The corresponding symbol pattern is then displayed to the player in various ways including, for example, audio and video feedback. The RNG does not have a memory, thus spins are completely separate and do not affect each other at all. (Ojala 2007, 21.)

The RNG is not truly random, but pseudorandom. The RNG operates under a predictable algorithm, and thus it is complex but not uncertain. However, the constant cycling of numbers and the player's ignorance of the cycle effectively makes the operation appear truly random by introducing uncertainty into the system. (Turner & Horbay 2004)

With modern video slot machine games, the reels can be configured precisely and each stop on each reel can have different weighting so they can occur more often than others can. The reel sets on video slot machine games can also hold much more symbols than physical reel sets in traditional mechanical games. This enables the game to have more possible outcomes and thus the payouts can be configured with greater variance. In video slot machine games, the reel set can also be changed all together. Usually in bonus or free games, the game changes the reel set to a different one to suit to the bonus game and the desired functionality.

Modern video slot machine games usually feature different bonus features that can be triggered via specific symbol patterns in the base game. The most common bonus feature is free games, where the player is awarded free spins that are usually accompanied by different perks, such as, win multipliers or extra wild symbols. In addition to free games, a plethora of different bonus games is implemented into slot machine games. For example, the *Bejeweled* slot machine game by GTECH features a bonus game where the player can move the jewels as if she was playing the popular casual game. (Figure 1.) The bonus games commonly let the player choose, thus enabling the player to have some influence in the outcome. However, the results of some of the apparent choice-based bonus games are decided in advance, and the player has no influence on them.



Figure 1. Bejeweled (GTECH 2014) Screenshot from <https://www.youtube.com/watch?v=jc2fefPYOfs>, accessed 25.11.2016

2.3.3 Skill-based slot machine games and gambling

As of September 2015, Nevada Gaming Commission has allowed the implementation of skill-based features to the slot machine games.⁴ These games differ crucially from traditional slot machine games since they allow the player to have actual control in the game and the outcome of it and might omit the traditional reels altogether. Nevada Gaming Commission approved the new regulations unanimously and referred to the growing demand of arcade-style games in gambling business. However, vast majority of slot machine games still operate with chance and randomness as their core feature.

The taxonomy for online gambling-themed games proposed by Gainsbury et al. (2014) makes a division based on the necessity of skill in gambling-themed game. In their

⁴Morris, J.D. "Gaming Commission approves regulations for skill-based slot machines." VegasInc, <http://vegasinc.com/business/gaming/2015/sep/17/gaming-commission-approves-regulations-for-skill-b/> (accessed April 2, 2016)

taxonomy, skill-requiring games are categorized as tournament or competition games and non-skill games as internet gambling. Skill-based gambling will further challenge this distinction by implementing both skill and chance into a single gambling game.

An example of skill-based gambling game is a game titled *Danger Arena* by New York - based company GameCO. The game lets the player battle against computer-controlled robots, and the payout is determined by how well the player succeeds in defeating the robots. The element of randomness is implemented by randomness of the gaming environment e.g. the difficulty of the level presented to the player varies randomly. The game also features random credit prizes for players with less skill.⁵

Tony Morelli has explored the skill-based gambling in his 2015 article *Presenting a Standard Slot Machine as an Interactive Racing Game*. Morelli identifies several challenges that a skill-based game has over traditional slot machine games. The game itself needs to be suited for newer generation of player who are accustomed with video games. While being similar to video games, a skill-based slot machine game should still be as profitable to the operator as older generation of machines. Morelli presents a crossover game based on popular karting game that features gambling elements during the gameplay. The problems of these games are solved by microtransactions and rewarding of good players by better chances and higher wins. A player study was also conducted where randomly selected players played both the karting game with gambling features and a traditional slot machine game. The study found out that the players spend significantly more time on the karting game while the money wagered was roughly the same in both games. (Morelli 2015)

Since the skill-based games are not yet widely used or available, and are still considered illegal in many countries' gambling legislations, I will not include these games in my thesis further. In the future, however, these games create a fruitful ground for further studies by combining skill, chance and gambling in a unique way.

⁵<http://www.reviewjournal.com/business/casinos-gaming/firm-hopes-be-1st-skill-based-slot-machines> (accessed 1.12.2016)

2.4 Slot machine game research

Slot machine games and gambling have been studied extensively from the economic and psychological points of view. For example, gambling addiction is one of the most studied fields. Research on slot machine games themselves and their properties as games is scarce, however, some studies and scholars of psychology base their research on these elements. For example, Dixon et al. (2014, 2015) and Collins et al. (2011) have studied the impact of sound in modern video slot machine games. Natasha Dow Schüll (2012), in turn, has studied the design features of slot machine games and their influence on gambling addiction. Harrigan et al. (2010) have explored the field by studying structural characteristics that are similar in casual games and slot machine games, and the addictive design elements of slot machine games that induce repeated play.

Regarding the similarities between contemporary video games and slot machine games, perhaps the most interesting feature is the player control. In slot machine games, the player has very little or no control whatsoever over the outcome of the game. However, particularly in the games of luck, players tend to make irrational conclusions of the chances involved or the operational mechanics of the game.

2.4.1 Illusion of control

Traditional slot machine games are games of pure luck, and the player does not have any influence over the outcome. Slot machine game designers, however, have implemented features that create a sense of control to the player, such as possibility to stop the reels instantly when desired or choose which reel stops first. Studies argue that these features create an illusion of control, which enhances the player experience and keeps them hooked to the game (Schüll 2012). Furthermore, studies have shown that the audio and video feedback of paying combination that pays less than the amount wagered can trigger sense of winning in the player. These losses disguised as wins are considered an effective way to prolong the gaming session through player arousal and might be one of the key components of creating addiction in problem gamblers. The players think and psychologically react to losses as wins, which leads to false sense of winning. (Dixon et al. 2014, 2015.)

Psychologist Ellen Langer introduced the concept of illusion of control in her 1975 article *The Illusion of Control*, where she defines the term as “*an expectancy of a personal success probability inappropriately higher than the objective probability would warrant*”. In her article, Langer conducts a series of experiments, where the participants are given a set of choices over different settings. For example, in one experiment, half of the participants were given a choice to choose a lottery ticket. After this, another person approached the participants and asked if they would sell their ticket and for what price. Evidence showed that the participants that chose their own ticket valued their ticket significantly higher than those who did not choose their ticket. (Langer 1975). According to Langer, this implies illusion of control by the participants. The tickets have the same chance to win, however, the tickets chosen personally by a participant is thought to be of higher prevalence. (ibid.)

In another experiment, participants were given a three-digit lottery ticket. For half of the participants, the number of the ticket was given immediately, and the other half in three days’ course, one digit per day. After the initial giveaway, the participants were asked if they wanted to exchange their ticket to one for another lottery with the same prize. The second lottery had objectively higher chance to win. Despite this higher chance, participants that had their lottery ticket given out in parts were more reluctant to exchange their ticket thus valuing their ticket more based on belief not actual chances.

Langer concludes her article by arguing:

...when an individual is actually in the situation, the more similar the chance situation is to a skill situation in outcome-independent ways, the greater will be the illusion control. This illusion may be induced by introducing competition, choice, stimulus or response familiarity, or passive or active involvement into a chance situation. When these factors are present, people are more confident and are more likely to take risks.

(Langer 1975)

Illusion of control in slot machine games is best demonstrated in the choice-based bonus games. The player is given an opportunity to choose and thus influence the outcome of her game, however, the result of the game can be predetermined thus rendering the player’s choice irrelevant. Some games include bonus games where the choices do matter, however, the random element is built in the choice system itself. The game can decide what options it will provide for the player, and the player gets to choose only from them.

Illusion of control is also present in many different actions taken by the player while playing the game. Modern slot machine games provide different ways to make selections regarding the game. The player may choose from different variations in reel configuration or extra features that aid in achieving better odds. In addition, the peripheral controls, such as the levers and buttons, are a way for the player to exert effort and control the game. The players ultimately think that they are able to "beat the system" and win their money back. As noted before in chapter 2.3.2, slot machine games operate with separate random raffles, where there are no predictable patterns that would ensure win at a given moment. Despite this lack of actual control, players exhibit numerous efforts and irrational thought processes while trying to affect the outcome of a gambling game (Reith 1999, 153-177).

Similarly, Mark Dickerson (1996) notes that slot players tend to lose control while playing slot machine games; the players might spend more time or money than they initially intended. In the event of a loss streak, the players tend to think that the machine is bound to pay out eventually. This results in repeated play as the player makes irrational assumptions regarding the functions of the machine. Past successful events in similar situations also contribute to the false belief that the machine has recurring operating patterns. Even one successful event may have significant effect on the player's gaming behavior and perception of the game. This kind of behavior seems not to be tied to certain personalities, but appears to be all-encompassing feature in players regardless of the amount of playtime. However, there is not enough research to verify this notion. (Dickerson 1996)

2.4.2 Losses disguised as wins and near-miss events

Losses disguised as wins and near-miss events are frequent events in slot machine gaming. A loss disguised as win is defined as an event where the player "wins" less money from a round than she wagered. The game still treats this event as a win by flashing lights, playing sounds and showing animations. This arouses the sense of winning in the player and masks the reality that she actually lost money in that round. Physiological tests showed that these events triggered similar levels of arousal in the players as a regular win. (Dixon et al. 2010) Losses disguised as wins are more apparent in slot machine games featuring multiple paylines. As the number of lines bet increases, so does the probability of a loss disguised as win. (ibid.)

A near-miss event happens when the game produces an outcome that just slightly missed a potentially large win. According to Harrigan et al. (2010), this event arouses the player to engage in repeated play when she irrationally thinks that a big win was so close that it is bound to happen soon. Modern slot machine games, however, implement the virtual reel mapping technique to increase the odds for the near-miss outcome to happen. (See chapter 2.3.2) By doing this, the designers of the slot machine deliberately entice the players to try their luck again thus increasing the amount of spins.

2.4.3 Impact of sound in slot machine games

Dixon et al. (2014, 2015) have studied the impact of sound in modern multiline video slot machine games. The studies concluded that sounds alter the players' perception of the game and leads them to overestimate winnings and underestimate losses. This is done via sound effects related to the outcome of the game. For example, if a round with smaller win than the initial bet occurs, the sound effects still mark the game as somewhat victorious. Although the player has lost money in total, she is led to think that the round was successful.

The sound effects and music in slot machine games can have a plethora of purposes. Bramley and Gainsbury identified several different purposes for sound in casual slot machine games in their 2015 article *The Role of Auditory Features Within Slot-Themed Casino Games and Online Slot Machine Games*. These purposes include setting the scene for the game, creating an image, demarcating space, interacting with visual features of the games, prompting players to act, communicating achievements to players, providing reinforcement and heightening player emotions. (Bramley & Gainsbury 2015)

The sound effects usually consist of cheering bells or sounds imitating coins dropping. In more modern games, it may be a cheerful fanfare or jingle in major key. If the round is a complete loss, the game usually does not play any sound. In rare occasions, a dull, minor key jingle or sound effect is played to signal loss. Modern games can include themed music and sound effects that cater the overall theme of the game. For example, if the game is Egyptian-themed, the music and sound effects are also themed accordingly. Sound thus plays an important role in tandem with the graphics of the game to create the overall mood and atmosphere for the player.

2.4.4 Slot machine games and casual games

Casual games are defined as "games that generally involve less complicated game controls and overall complexity in terms of gameplay or investment required to get through game." (Wallace & Robbins 2006, 6)

Harrigan et al. discuss in their 2010 article *Addictive Gameplay: What Casual Game Designers Can Learn from Slot Machine Research* the structural similarities between casual games and slot machine games and provide insights how casual game designers might utilize the features of slot machine games to enhance and uphold repeated play.

Harrigan et al. (2010) begin their article by examining the similarities between contemporary video slot machine games and casual games. The chosen games are *Tetris* and *Lucky Larry's Lobstermania*. Authors note that the games do not have complex gameplay and the player does not need to invest considerable amount of time to learn and understand the game controls. As an example, authors point the controls of Lucky Larry's Lobstermania slot machine game.

According to Harrigan et al., slot machine design is becoming increasingly similar to that of video games. The designers in slot machine game industry and in video game industry work interchangeably in both industries and thus ideas are shared with each other. Slot machine games attract players like casual games because they:

- require little or no training or previous experience;
- require little time commitment although players can continue to play for hours;
- are quick and easy to play – slots are considered a continuous form of gambling as you spin every 5-6 seconds
- offer instant rewards for play in terms of feedback (whether financial, through points, or audio and video rewards).

(Harrigan et al. 2010)

Sue Fisher and Mark Griffiths identify characteristics that video games and slot machine games share:

- Incremental rewards that reinforce 'correct' behavior;
- Scores;
- Opportunities for peer approval;
- Attention or recognition through competition

(Fisher & Griffiths 1995)

Harrigan et al. conclude that the rewards offered in both video games and slot machine games are similar and provide the same value for the player. Skill and competition also play a key role in both video games and slot machine games. It does not matter if the skill involved is real or illusory, the player's perception of control and skill is critical. Some randomness or loss of control is also important. Competition is also relevant to keep players motivated. Competing against the machine or other players maintains the interest of otherwise repetitive game.

Jani Kinnunen has studied how game developers balance between the two seemingly contradicting aspects of games that include the use of real money: How do you create a good game that is, at the same time, good, interesting, and addictive while still being responsible? (Kinnunen 2016) Kinnunen interviewed several game developers that work in free-to-play and gambling games industry on how they view their development process and the challenges induced by regulations and expectations. The developers of gambling games are usually bound by the regulations when developing the features concerning the use of money, however, they can utilize creativeness while developing the theme, audiovisual elements and the target group of the game. Free-to-play game developers do not face the same regulations, however, they share many ethical guidelines with the developers of gambling games. A game that enforces monetary gain as the main objective is not a good game. The game should be addictive but fair. It should not try to deceive or encourage players to use excessive amounts of money to play or complete it, however, at the same time, it should be addictive enough to keep the players playing. (Kinnunen 2016)

Both free-to-play and gambling games contain addictive features and thus they can cause addictive behavior and problematic playing. The developers view, however, that the responsibility regarding the social issues arisen from problematic gaming is not theirs. In their opinion, the developer's responsibility is to create a good and entertaining game that is also addictive. The player herself is primarily responsible for her own gaming. The developers can provide tools to restrict or limit gaming, however, the use of these tools is left to the discretion of the player. Regardless of personal responsibility, the developers do agree that the games should be developed ethically, and they should not specifically target vulnerable groups such as children or gaming addicts although it would be technically legal and permitted to do so. According to the developers, this is the boundary

between ethical and unethical, fair and unfair, and responsible and irresponsible game regardless of genre. The game should inform the player comprehensively about the in-game decisions and purchases. When the player is informed well, she is responsible for her actions in the game. (Kinnunen 2016)

As noted by Harrigan et al. (2010), Kinnunen (2016), and Fisher & Griffiths (1995), slot machine games and contemporary video games do have several similarities. Moreover, the emergence of casual games as a highly popular past time entertainment reveal the recurring pattern of play style in slot machine games: Playing the game does not require great skills, extensive gear or commitment, it offers instantaneous feedback and rewards, and is quick to start and end.

3 THEORETICAL BACKGROUND

Now that we have a basic understanding what slot machine games are and how they operate, we can move on to reflect them to the multiple definitions of play and games. This chapter provides the theoretical background for answering the first research question: can modern video slot machine games be understood as games? The chapter begins with different approaches to the definition of game and play and moves on to show how these definitions fit to the concept of modern video slot machine games. In the end of this chapter, I utilize the definitions to argue that modern video slot machine games can be considered as games and discuss the different notions around the issue.

3.1 Definitions of game and play

Johan Huizinga defines play in his 1938 book *Homo Ludens* as follows:

Summing up the formal characteristics of play we might call it a free activity standing quite consciously outside "ordinary" life as being "not serious", but at the same time absorbing the player intensely and utterly. It is an activity connected with no material interest, and no profit can be gained by it. It proceeds within its own proper boundaries of time and space according to fixed rules and in an orderly manner. It promotes the formation of social groupings which tend to surround themselves with secrecy and to stress their difference from the common world by disguise or other means. (Huizinga 1938, 13)

Roger Caillois tackles Huizinga's definition in his book *Man, Play and Games* (1958) and provides his definition of play. According to Caillois, play is an activity that is essentially:

1. **Free:** playing is not obligatory, but optional.
2. **Separate:** bound within limits of space and time and is fixed and defined in advance.
3. **Uncertain:** the result cannot be determined or attained beforehand and some latitude is left to the player's initiative.
4. **Unproductive:** playing does not create goods, wealth or elements of any kind except for the exchange of property among players, ending in a situation identical to that prevailing at the beginning of the game.
5. **Governed by rules:** a new set of rules or legislation is established and followed.

6. **Make-believe:** the player is aware of a second reality or free unreality. as opposed to real life

(Caillois 1958, 9-10)

Moreover, Caillois divides games into four fundamental categories, *agôn*, *alea*, *mimicry* and *ilinx*, according to their dominant features of competition, chance, simulation and vertigo, respectively (Caillois 1958, 12). From these categories, slot machine games fall clearly to the category of *alea*, chance, since the outcome of the game is almost purely based on chance. Roger Caillois borrowed the term *alea* from Latin name for the game of dice. Caillois describes *alea* as:

"...all games that are based on a decision independent of the player, an outcome over which he has no control, and in which winning is the result of fate rather than triumphing over an adversary."

(Caillois 1958, 17)

Furthermore, Caillois presents examples of *alea*, including the game of dice, roulette, heads or tails, baccarat and lotteries (ibid.). Caillois furthermore classifies the four categories on *ludus-paidia* continuum based on how the play is organized. *Paidia* is a play activity that is purely improvisations without constraints and *ludus* is a play activity with a set of limitations and constraints that are enforced on the play.

In his essay published in 1994 and later revised in 2002, Greg Costikyan defines games as a form of art in which participants, termed players, make decisions in order to manage resources through game tokens in the pursuit of a goal.⁶ Later in the revised version, Costikyan defines game as an interactive structure of endogenous meaning that requires players to struggle toward a goal (Costikyan 2002, 24). In his definition, Costikyan emphasizes interaction and players' ability to control the outcome by decision-making.

Katie Salen and Eric Zimmerman have defined a game as a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome. The key elements of this definition are the fact that a game is a system, players interact

⁶Costikyan, Greg "I Have No Words & I Must Design", Interactive Fantasy #2, 1994, www.costik.com/nowords.html (accessed, April 25, 2016)

with the system, a game is an instance of conflict, the conflict in games is artificial, rules limit player behavior and define the game, and every game has a quantifiable outcome or goal. (Salen & Zimmerman 2003, 83.)

Salen & Zimmerman's and Costikyan's definitions emphasize player interaction with the game system and the pursuit of a goal of some sort. Viewed in this perspective, these definitions seem to exclude the games of chance that Roger Caillois included in his definition. However, games of chance could be included in them. In Costikyan's definition, the player makes decisions and manages game tokens in the pursuit of a goal. In games of chance, players manage their game tokens and try to increase or decrease the amount by participating in a controlled activity. Costikyan's definition does not inherently exclude randomness from games thus leaving space for the games of chance. This is further backed by Costikyan's initial listing of games that includes gambling. Costikyan also states that games are inherently interactive as the players make decisions and the game responds differently to each decision. (Costikyan 2002, 11) Salen & Zimmerman's definition follows the same pattern in different words. Players of games of chance engage in an artificial conflict (the organized raffle) that is defined by rules (i.e. how betting works, how wins and losses are formed) and the result is most definitely quantifiable (wins and losses of game tokens i.e. credits).

Bernard Suits provides another definition in his article *What Is a Game?* (1967). Suits defines playing a game as follows:

To play a game is to engage in activity directed toward bringing about a specific state of affairs, using only means permitted by specific rules, where the means permitted by the rules are more limited in scope than they would be in the absence of the rules, and where the sole reason for accepting such limitation is to make possible such activity.

(Suits 1967)

This definition of playing a game clearly demonstrates the unique nature of games comparing to other actions such as work. As an example, Suits points out the efficiency of the means to an end. In a technical activity, such as work, people tend to do distinct actions to reach an end, however, in games, the means are further limited and altered. The limitations purposefully hinder the activity and make the task at hand more difficult to achieve. These limitations are the rules that the game has. A game is where the activity is done via prescribed set of limitations.

Suits goes on to declare that the game rules are not ultimately binding (Suits 1967). This in turn is not the case in contemporary video games. In Suits' time, video games were not yet invented and the games were more or less activities done in real life. Contemporary video games create a different world where the hard-coded rules bind the game world. The player cannot change the rules without altering the whole system and she has to abide by them or abandon the game all together. The same hard-coded limitations are present with slot machine games. Even more so, slot machine games enforce the rules stricter than video games in general, as they do not have any cheat codes or possibilities for players or unqualified persons to alter the program code or the physical machine. Slot machine games also always feature a statement that nulls the effects of machine malfunction or errors in the program code: "Malfunction voids all pays and plays." This way, the player cannot have any advantage over the machine's intended performance. Suits' definition fits well with slot machine games. The player accepts the rules of the game by playing it, and the reason of playing is to engage in an organized raffle with monetary consequences.

Jesper Juul comprises different definitions of games in his 2003 keynote speech (Juul 2003). Juul proposes six features that a game has:

1. **Rules:** Games are rule-based
2. **Variable, quantifiable outcome:** Games have variable, quantifiable outcomes.
3. **Value assigned to possible outcomes:** That the different potential outcomes of the game are assigned different values, some being positive, some being negative.
4. **Player effort:** That the player invests effort in order to influence the outcome. (I.e. games are challenging.)
5. **Player attached to outcome:** That the players are attached to the outcomes of the game in the sense that a player will be the winner and "happy" if a positive outcome happens, and loser and "unhappy" if a negative outcome happens.
6. **Negotiable consequences:** The same game (set of rules) can be played with or without real-life consequences.

(Juul 2003)

Juul visualizes his definition as diagram that shows the relationship of the features with games by pointing the absence of features in borderline games. (Figure 2.)

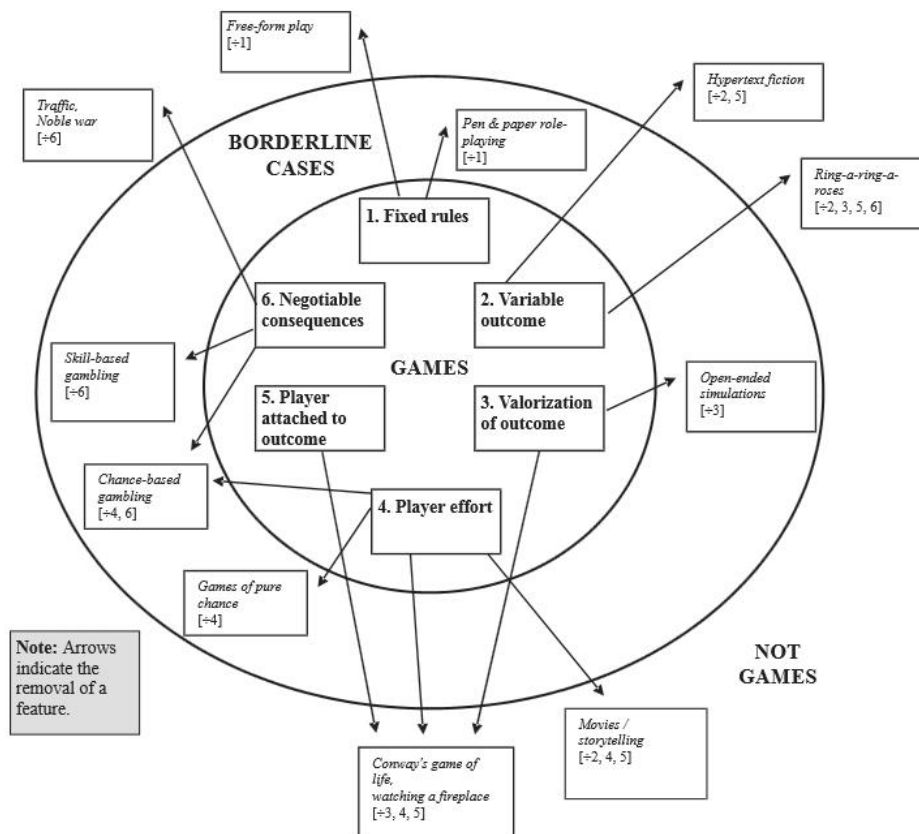


Figure 2. Game Diagram (Juul 2003)

Moreover, Juul discusses how the classic game model relates to video games. In video games, the computer upholds the rules. A variable outcome is not necessarily met, for example, in online role-playing games. Open-ended simulation games do not have clear goals. The games are not entirely bound by a certain location or time. And lastly, implementation of cheat codes enables the player to modify the rules effectively turning the game into a playground or 'a sandbox'.

As these examples of definitions show, there have been many attempts to define what games are. The definitions may differ by nuances, however, they all feature same basic elements. To summarize all these definitions, a game is rule-based interactive action that is taken voluntarily by an active agent, and may include exchanging of tokens. In addition, the outcome of a game varies and may or may not depend on the active player.

3.2 Slot machine games as games?

Slot machine games differ from traditional video games in several crucial elements. The player's ability to control the game and influence the outcome is usually very limited or non-existent. Slot machine games feature rather simple forms of control and the player is usually left only with the suspense of outcome whether she will win or lose. This lack of control is one of the key factors that would exclude slot machine games from being games in their strict sense. However, games of chance have been a part of human activity for years and the slot machine games are one of the modern versions of these games.

Following the definition of play by Roger Caillois, slot machine games are an interesting form of games. Caillois' six essential properties of play do apply to slot machine games, although with a little customization:

1. **Free:** Slot machine games are optional and played voluntarily.
2. **Separate:** Slot machine games are bound by space and time and the games are defined in advance.
3. **Uncertain:** The results are not predetermined, only odds of different results are. Player's actions in game, such as betting, choices in bonus features etc. constitute the latitude of players' initiative.
4. **Unproductive:** This is the only property that does not fit well with slot machine games at first hand. However, playing slot machine games does not create goods or wealth. It merely divides (or exchanges) it again with the participants.
5. **Governed by rules:** Slot machine games feature their own rules and they are strictly followed.
6. **Make-believe:** Slot machine games are a separate reality. The themes and other aesthetics featured in the slot machine games make the player aware of a second reality.

Katie Salen & Eric Zimmerman's and Greg Costikyan's definitions of game seem to exclude games of chance from them. These definitions rely heavily on player interaction with the game system and control that affects the outcome that is then quantifiable. In slot machine games, and games of chance all together, the player has minimal amount of control in this sense. However, in modern slot machine games, the player faces choices and conflict through the peripheral game-like features that resemble an "actual" game. Modern slot machine games could then be understood as games of chance that feature game-like environments to broaden and enhance the play experience with graphics, sounds and various feedback elements.

Jesper Juul excludes the slot machines from the core circle of his game diagram (see figure 2.). He argues that the chance-based gambling games lack the player effort and the negotiable outcomes. This would seem to situate slot machine games as borderline games and not actual games. However, the player of a slot machine does exert effort while playing, although the efforts may be in vain. The player experiences an illusion of control (Langer 1975) that obscures the fact that she has very limited or non-existent possibilities to influence the game. The effort may as well be betting strategies, different playing patterns or superstitious conjuring to somehow alter the machine and its results. Player studies also show that slot machine players tend to anthropomorphize the machines and think irrationally while playing. By doing this, the players believe they can influence the outcome to be in favor to them. (Walker 1992, Griffiths 1994, Ladouceur & Sévigny 2005, Riva et al. 2015, Schüll 2012) In his definition, Juul is simply stating that if the player exerts effort, she can also influence the outcome of the game. What Juul does not take into account, is the effort that is put even if there is no impact or consequence whatsoever. The player effort is still there and it is very real to the player as studies show.

Juul argues that a game can optionally be assigned real-life consequences and the actual assignments vary and can be negotiable. As an example, Juul presents that any game can be played with additional bet on the outcome, however one cannot play in a casino without betting money (real-life consequence) (Juul 2003, 38). While playing slot machine games might not be possible in casinos without real-life consequences (excluding the optional tournaments and demo games), it is very possible in modern software slot machine games. In fact, on Facebook, there are free slot machine games, which have millions of players worldwide, for example *Slotomania*, *MyVegas Slots* and

*House of Fun – Slot Machines.*⁷ These games are designed to be casual games that do not necessarily require money to play nor can one win money from them.

The lack of negotiable outcome is true for the old generation of slot machine games, where the game was a physical part of the machine, and they could only be played in licensed places. However, modern slot machine games are software that can be played for free and with any kind of personal device, such as PC or mobile phone. Many physical slot machines also have a demo game built in to them, so they can be played without real money for testing or tournament purposes. This enables the player to play the game with or without monetary investment, which effectively removes the constraints of the real-life consequences. The game does not change its rules and retains almost all of the same functions whether it is played with real money or not. Progressive jackpots are the only feature that the game does not retain, however, it may set the jackpots to fixed amounts thus retaining the feature.

As argued above, modern slot machine games can be fitted entirely inside the core circle of Juul's game diagram:

1. **Rules:** Slot machine games are governed by rules that differ from game to game.
2. **Variable, quantifiable outcome:** The outcome of slot machine game varies and the money/credits are most definitely quantifiable.
3. **Value assigned to possible outcomes:** The potential outcome of a slot machine game is either win or loss of money/credits. Positive outcome is the winning, and negative outcome is the loss. In slot machine games, an intriguing element of a loss disguised as win is further implemented to arouse the sense of winning in the player.

⁷<https://apps.facebook.com/slotomania/>
<https://apps.facebook.com/playmyvegas/>
<https://www.facebook.com/houseoffungames/>

4. **Player effort:** The player might not have actual influence on slot machine games, however, the player exerts effort to try to influence the outcome. The effort is present, although it does not affect the outcome. Players can also game the game by creating challenges, for example, to get all of the bonus games. This section is further confirmed without a doubt when the skill-based slot machine games become more popular
5. **Player attached to outcome:** The player of a slot machine game is attached to the outcome of the game. Winning in the game results in increase of credits or real money, while losing means the opposite. The player is happy if she wins money, and unhappy if she loses all of the money. This notion is further complicated by the concept of losses disguised as wins, where the player might feel the sense of winning, although she lost a portion of her wager.
6. **Negotiable consequences:** Modern video slot machine games can be played without real money in online and mobile platforms while retaining the same rules. Some physical cabinets and games also feature trial or tournament modes that enable the player to play the game without inserting real money.

The notion that gambling games fit entirely into the core circle of Juul's diagram is also backed by Jani Kinnunen (2010), who argues that Juul treats gambling games as mere gambling and not playful or game-like activity, and moreover, gambling games should be studied as games that have differentiating features from the other games. (Kinnunen 2010) Kinnunen argues that the negotiable consequences in gambling games are rooted into the money that is used as tokens, or in-game credits. According to Gerda Reith, money may lose its monetary value and become a form of play money (Reith 1999, 145-150). Thus, the outcomes of gambling are negotiable since the meaning of money may depend on the context. (Kinnunen 2010)

Kinnunen also argues that any game can be modified into having gambling elements by introducing monetary consequences into it. It is also relevant to examine the playful and game-like elements in gambling games in order to understand the player experience aroused by them better. (Kinnunen 2010)

3.3 Summary

As we can see from the different definitions of games and play, it is possible to fit modern video slot machine games entirely in them. Some definitions initially exclude games of chance from them and imply that the player must have some control within the game system to influence the outcome and that the game must have negotiable consequences (Juul 2003). However, some definitions argue that the games of chance, which include slot machine games, are games in very natural and culturally relevant way.

As argued in this chapter, Roger Caillois' (1958) definition suits well for the games of chance and thus slot machine games. This is also true for the definitions by Bernard Suits (1967), Greg Costikyan (1994, 2002), and Katie Salen and Eric Zimmerman (2003).

Jesper Juul (2003) argues that the games of chance do not have player control or negotiable consequences and therefore they cannot be situated in the core circle of games. The lack of negotiable outcomes is no longer an issue among slot machine games. As shown, modern video slot machine games can be played with or without real-life consequences. This is possible via different tournament and practice games as well as social casino games that have emerged in different social media platforms and mobile applications. Studies have also shown that money may lose its monetary value during play and become merely an in-game credit system that the player uses in order to play the game.

The lack of control, though, seems to be the most debatable feature of slot machine games when examining them through the definitions of game. As shown in the literature review, the games rarely offer the player a chance to influence the outcome as games usually do. However, the lack of control is contested by the features of modern slot machine games that elicit the illusion of control. As shown, slot machine games have multiple features that may be considered as controllable. The player must make several choices in the course of play. This is evident especially in different bonus games where the player faces choices that affect the outcome of the game. Moreover, slot machine game players tend to irrationally think that they can influence the game outcome by different actions such as pressing the buttons in correct order or by playing the game repeatedly due to the thought that it is "due to pay out eventually". While slot machine games do not offer the

players as complete control over the outcome as traditional games, the players still strive to have the control to themselves by aforementioned means.

The lack of control will be further contested and eventually overcome by the emergence of skill-based slot machine games. In these games, the player will have a distinct control over the game, however, chance still plays a role by introduction of random hindrances that complicate the game.

Now that I have answered the first research question, and shown that the slot machine games can be considered as games, it is possible to answer the second research question by utilizing game analysis methods to a slot machine game.

4 RESEARCH METHODS

This chapter aims to provide the method for answering the second research question of this thesis: What similarities are there between modern video slot machine games and contemporary video games and how these similarities are present in a modern video slot machine game. Additionally, I ask how different elements in modern video slot machine games contribute to the gameplay experience and what the possibilities of player control, real or illusory, are in the selected game.

To answer these questions, I have chosen close reading as the analysis method of the selected slot machine game. This chapter introduces the method and how it can be applied to video games and further to video slot machine games. First, I introduce the background and history of the close reading method from the perspective of literary studies. Second, I present how close reading techniques can be applied to video game analysis through Jim Bizzocchi and Joshua Tanenbaum's 2011 article *Well Read: Applying Close Reading Techniques to Gameplay Experiences* as well as analysis methods provided by Espen Aarseth and Lars Konzack.

Finally, utilizing areas of analysis by Clara Fernández-Vara's book *Introduction to Game Analysis* (2015), I compile a three-tier analyze framework for modern video slot machine games.

4.1 Close reading in literary theory

Close reading has its roots in literary studies, and specifically, new criticism movement that began at 1920's. The new critics focused almost solely on interpretation of poetry and strived to read poems as independent works whose interpretations cannot be based on historical or cultural situations or author's intentions or biographical phases. Instead, literary scholars should focus on close reading of a text and its multiple levels, such as tensions, multi-mindedness, paradoxes and imagery, and how these elements indicate the internal integrity of a poem. Ultimately, a good poem fuses its irregular elements into a concordant work. (Korsisaari 2001, 292-293.) The new critics consider literature as work-autonomous, and the meaning of the work is found from the text itself. However, the integrity of a poem also denotes that the poem reflects reality in some sense. (ibid.)

According to Korsisaari, the principles of new criticism were first formulated by Ivor Armstrong Richards in his 1924 work *Principles of Literary Criticism*. In this study, Richards focuses on the special attributes of literature, and concludes that the language of literature is emotive and thus meant to evoke thoughts or attitudes. (Korsisaari 2001, 293) Another influential character for new criticism was British-American author and critic Thomas Stearns Eliot. Eliot contradicted Richards' thoughts on emotive language of literature. According to Eliot, emotions are told indirectly through objective correlate, for example, picture or action. American scholars William Wimsatt and Monroe Beardsley also affected the evolution of new criticism. Wimsatt and Beardsley criticized literary studies for illusion of affection and separate their thinking from Richards' by proposing that instead of the affection evoked by the text, analysis must be focused on the text itself. (Korsisaari 2001, 293-294.) In literary studies, the method of close reading is still considered essential. However, the notion that the works are independent objects that can be studied without taking into account the surrounding world, has yielded in favor of modern literary studies that also observe the influence of surrounding elements on texts. (Korsisaari 2001, 294.)

4.2 Close reading video games

Game analysis allows us to understand games better, providing insight into the player-game relationship, the construction of the game, and its socio-cultural relevance. As the field of game studies grows, videogame writing is evolving from the mere evaluation of gameplay, graphics, sound, and replayability to more reflective writing that manages to convey the complexity of a game and the way it is played in a cultural context. (Fernández-Vara 2015, I)

Clara Fernández-Vara begins her 2015 book *Introduction to Game Analysis* with the latter statement. The statement reflects the idea of games being cultural artifacts that convey complex meanings and bear significance in cultural context. Therefore, games must be understood and analyzed more thoroughly and pervasively than before.

Clara Fernández-Vara has argued in her book *Introduction to Game Analysis* (2015, 5-7) that games can be considered as texts and therefore can be analyzed with textual analysis methods. Anchoring her line of thinking to Roland Barthes' book *Mythologies* and other articles, Fernández-Vara considers games to be approachable by the methods of textual

analysis due to the broad understanding of the term text. Games contain meanings and are interpretable cultural productions:

The cultural significance of games can derive from the context of play: who plays games, why and how, how does the practice of playing relate to other socio-cultural activities and practices. Meaningful play also results from the player interacting with the systems and representations of the game. Thus, when we analyze games, we study meaning within the game (meaningful play) and around it (cultural significance). The text is not limited to the work itself, but also to where the text is interpreted and by whom.

(Fernández-Vara 2015, 6)

Jim Bizzocchi and Joshua Tanenbaum argue that close reading is a humanist methodology focused on detailed examination, deconstruction, and analysis of a media text. Close reading technique exposes the faults and inconsistencies in a media artifact, however, at the same time, it also reveals how media texts can create meanings in several ways. (Bizzocchi & Tanenbaum 2011, 289).

Through the act of close interrogation and explication, a theorist may use close reading to excavate previously hidden qualities of a media artifact.

...close reading methodologies are used to reveal insights into the design of games, and also into the variety of pleasures afforded by game experience, such as imagination, emotion, kinesthetic engagement, narrative immersion, and ludic flow.

(Bizzocchi & Tanenbaum 2011, 289.)

Bizzocchi and Tanenbaum argue that close reading may be cumbersome due to careful attention to fine details and interpretative process. Video games, in particular, may be challenging to close read due to their inherently multimodal communication, interactivity, audiovisual elements, and sheer size. (Bizzocchi & Tanenbaum 2011, 298-299.) The game creator

Readers of games have to struggle with variety of media experiences that are often comprised of many hours of playtime. During close reading, a vast amount of data is gathered and to make sense of it, it is often necessary to focus on specific aspects of the play. By focusing on isolated phenomena, the amount of data and claims made from the close reading can be limited. Game analysis can therefore be performed only on selected elements in the game. By limiting the areas of analysis, it is possible to study the selected

areas more thoroughly when attempting to catalogue the entirety of a game would be an enormous task. (Bizzocchi & Tanenbaum 2011, 305.)

Similarly, as in modern close reading in literary studies, close reading video games regards the context in which the game is played as an important element of study. Diane Carr (2009) argues that instead of analyzing the textual elements of a game as they are presented, the analysis must be made from how the game is played. Carr also notes that the use of practice driven model of textuality blurs the lines between analyzing games as texts and games as played. (Carr 2009, 2) The importance of context in which the game is played is further backed by Bizzocchi and Tanenbaum. They argue that close reading is a process-driven practice rather than product-driven one. This notion implies that different readings of the same text reveal different results depending on the context. In addition, the context in which the text was written also plays integral part in the analysis. (Bizzocchi & Tanenbaum 2011, 294) Clara Fernández-Vara emphasizes the meaning of context further by incorporating it as a major area of analysis in her three-tiered analysis framework. Fernández-Vara notes that *"the context of the game comprises the circumstances in which the game is produced and played, as well as other texts and communities that may relate to it."* (Fernández-Vara 2015, 14)

Espen Aarseth discusses game analysis methodology and the phenomena around it in his article *Playing Research: Methodological approaches to game analysis* (2004). Aarseth argues that the aesthetic properties of games became subjects of study only in recent times together with the rise of computer and video games. Video games differ from traditional games and sports by incorporating non-ephemeral properties, such as images, sound, and text. These properties enable aesthetic study as the properties remain constant. (Aarseth 2004) As a new field, video games are more or less studied with the methodology derived from classical media studies. Aarseth argues that this can leave relevant information out if the researcher has not properly familiarized herself with the idiosyncratic properties of video games.

Aarseth proposes three distinct types of game research perspectives:

- Gameplay: sociological, ethnological, psychological, etc.
- Game-rules: Game design, business, law, computer science/AI
- Game-world: Art, aesthetics, history, cultural/media studies, economics

Aarseth goes on to introduce three main ways of acquiring knowledge about any kind of game. First, studying the design, rules and mechanics of the game, provided that these are available. Second, observing the players and reading their reviews and reports about the game. Third, playing the game. Aarseth argues that the third method, playing the game, is the best way to study a game more so if combined or reinforced with the other two (Aarseth 2004). According to Aarseth, the analysis depends on the needs of the one who is conducting the research, whether it is a scholar, a gamer, a critic, or a developer. This renders the formulation of common standards challenging yet plausible. (ibid.)

Regarding the need for theoretical approach, Aarseth argues that a well-argued and analytically groundbreaking analysis is more important than a theoretical approach with existing, well-grounded theories from other disciplines. Applying and importing theories for other fields of study might not tell anything new about the game. When gathering information about a game, as many sources as possible should be used and the researcher should always reflect the actions taken through different sources and beware of generalization made from too few examples. (Aarseth 2004)

Lars Konzack presents a seven-layer analysis method in his 2002 article *Computer Game Criticism: A Method for Computer Game Analysis*. The layers are hardware, program code, functionality, gameplay, meaning, referentiality, and socio-culture. The layers can be analyzed separately, however, to conduct a thorough analysis of a game, every layer has to be analyzed. By doing this and describing the game before analysis, a thorough understanding of the game and how it works can be achieved. (Konzack 2002)

The first layer, hardware, consists of the physical elements needed in order to play the game, for example the gaming device and controllers. The second layer, program code, describes what the computer does when the game runs. However, program code is usually not accessible, and if it would be, it might be incomprehensible without detailed knowledge about programming. Third layer, functionality, covers the reactions by the computer to the user input i.e. what the application does when the player interacts with it. Fourth layer, gameplay, describes what the player does in the game, and how the game and the players interact. Fifth layer, meaning, describes the game's semantic meaning through narratives, symbolic representations and signs in the game. Sixth layer, referentiality, describes how the game is related to other media and other games. For example, the genre of the game relates it to the other games within the same genre by

having similar features. Seventh and final layer, socio-culture, refers to the culture around the game. The analysis of this layer may consist of player analysis and the relation of social factors to the playing of the game. (Konzack 2002)

Konzack concludes that the presented analysis method may yield a better understanding of how games work and thus possibly lead to better game designs. The presented layers can be analyzed individually or in groups, however, all of the layers still exist and contribute to the game. (Konzack 2002)

Since video games can be understood as texts, they can be analyzed through close reading method. Close reading analyzes different elements in the text and this can be utilized also in video games analysis. Elements, such as narratives and aesthetics, create a coherent and integral whole in games as well as in traditional texts.

4.3 Close reading slot machine games

As mentioned above, close reading techniques help to reveal how different parts of a text, or video game, compile a coherent, functional entity. With the method of close reading, it is possible to analyze separate building blocks of a slot machine game and form a conclusion how they work together and how they resemble a conventional video game. Close reading can be applied to many different parts of modern slot machine games, however, the games are usually not as complex as contemporary video games. Because of this simpler structure, slot machine games can be close read more pervasively and thoroughly.

Based on areas of game analysis by Clara Fernandez-Vara (2015) and backed by Aarseth's and Konzack's notions of video game analysis, I utilize a three-tiered analysis framework with subcategories that suit the analysis of slot machine games.

1. Context

- Game genre
- Socio-historical and technological context
- Audience

2. Game Overview

- Rules and Goals

- Game mechanics and gameplay
- Narratives

3. Formal Elements

- Audiovisual elements
- Mediation and feedback
- Controls and peripherals

Close reading these three areas and their subcategories from a slot machine game will reveal how different elements work together to create the play experience for the player and to provide evidence that modern slot machine games resemble traditional video games in a plethora of ways.

The areas of analysis and their subcategories may seem to overlap and interrelate with each other. However, according to Fernández-Vara, this may provide a connection between the analysis areas and thus it is possible to analyze a game with larger set of areas. (Fernández-Vara 2015, 13)

4.3.1 Context

The context of the game comprises the circumstances in which the game is produced and played, as well as other texts and communities that may relate to it. (Fernández-Vara 2015, 14)

Providing the context helps us situate the game historically, culturally, socially, and economically. Videogames are the product of their time, therefore learning about the socio-cultural and industrial environment in which they were produced is crucial to understand them. (Fernández-Vara 2015, 56)

Context analysis frames the discussion. It provides information about the purpose of the game and its content. (Fernández-Vara 2015, 57) The context of slot machine game can be, for example, the country in which it is produced, where it is played and by whom. The context analysis can provide deeper understanding of the surrounding factors that influence the design choices made in the game.

Fernández-Vara provides eight elements to analyze context: context inside the game, production team, game genre, technological context, socio-historical context, economic context, audience, and relations to other media. (Fernández-Vara 2015, 59-60) From these elements, I have chosen four to delve in deeper. I also discuss the other elements briefly.

The four elements for deeper analysis are game genre, socio-historical and technological context, and audience.

Game genre

The genre of a game indicates certain features and cultural assumptions in it, and thus provides further context. The genre can be defined by commercial interests, industrial practices, academic definitions, or journalistic articles, however, defining a precise genre for a media artifact is still a challenging task. The genre can also be defined by analyzing features and formal characteristics of a game. Most games are based on pre-existing mechanics and rules that may be utilized to define the genre. (Fernández-Vara 2015, 67)

Socio-historical and technological context

Socio-historical context of the game can be analyzed by examining the time and culture in which the game was produced and how they are present in the game. The cultural aspects may also reveal valuable information for other contextual elements such as audience of the game. (Fernández-Vara 2015, 74-75)

Technological context examines on what platform the game is released. The platform refers to not only the hardware, but also the software that the game runs on. Mentioning the platform of a game is a fundamental requirement in any game analysis. It helps to provide information about the distribution of the game, what is required to play the game, and the limitations of the hardware regarding the game. (Fernández-Vara 2015, 70-73)

Audience

The analysis of audience may reveal who is the game made and marketed for and what elements may appeal to specific audiences. The target audience of the game can be analyzed through paratexts of the game such as advertising, age rating systems or distribution channels. It may also be analyzed through formal elements of the game, such as interface and difficulty level of the game. (Fernández-Vara 2015, 77-79)

4.3.2 Game Overview

Game overview analyzes the content and the basic features of the game, as well as how it has been treated differently by its audience. Analyzing these elements may provide a summary that provides insights on what the game is about and who plays it. Game

overview also takes into account the player's position in the game and what she can and cannot do in the game. The design of a game usually affords the player certain interactions, affordances that dictate the possible actions. (Fernández-Vara 2015, 14-15)

The goal of game overview is to identify and distinguish the game from others, as well as, provide a description of the game for readers who are not familiar with the game. The game overview may be misunderstood as a synopsis of the story of the game. While the story and the narrative elements might have major relevance in the game and its gameplay, some games do not utilize them as such. Some elements of game overview may overlap with formal elements, however, they are most likely general features that are present in most games so they are described in game overview. (Fernández-Vara 2015, 86-88)

Fernández-Vara identifies eight elements to comprise a game overview. These elements are number of players, rules and goal of the game/game modes, game mechanics, and spaces of the game, fictional world of the game, story, gameplay experience, and game communities. (Fernández-Vara 2015, 88)

As with the context, I have chosen some elements to analyze deeper. These elements are rules and goals, game mechanics and gameplay, and narratives. Other elements will also be discussed briefly in applicable categories, for example, narrative will include an analysis of the fictional world and the story of the game.

Rules and goals

Fernández-Vara discusses the rule systems in four different areas:

1. *Rules of goals of the game/game modes, also including game mechanics.*

Rules in digital games are not easy to identify, however, they can be figured out from the summary of game mechanics and the goals of the game. Instructions of the game also disclose the game mechanics and how the game is meant to be played. (Fernández-Vara 2015, 94-95)

2. *Rules of the world*

Rules of the world include what the player can do in the fictional world of the game and how the world responds to the player interaction. The rules of the world also depict the

design decisions of the game by enabling and disabling actions. (Fernández-Vara 2015, 122-123)

3. *Relationship between rules and the fictional world*

The fictional world can imply certain rules that the player has to follow in the game. The relationship between rules and the fictional world can be analyzed by describing the degree of nuances in the game and how the possibilities for interaction are controlled by the fictional world. (Fernández-Vara 2015, 128-129)

4. *Rule-driven vs. goal-driven games*

Rules describe which actions and events are possible in the game and the mechanics instruct the player to play the game in certain ways. To define how the events and outcomes of the player interactions with the game system are generated, Fernández-Vara uses the term *emergence*. Emergence is the source for the variability of the game and refers to the aspects of the game that relate to the player making decisions. The counterpart of emergence is *progression*, which refers to the goals of the game and how player can progress in the game by achieving certain goals.

Game mechanics and gameplay

Game mechanics dictate what the player actually does in the game. Game mechanics are related to the rules as they actuate the rules into possible actions in the game: rules dictate how the game works, and the mechanics establish how the player participates in the game.

Analysis may focus solely on core mechanics of the game. Fernández-Vara quotes Katie Salen's and Eric Zimmerman's (2004, 316) definition of core mechanic:

A core mechanic is the essential play activity players perform again and again in the game. Sometimes the core mechanic is a single action. [...] However, in many games the core mechanic is a compound activity composed of suite of actions.

Game mechanics and gameplay may be analyzed by describing what the player does in the game, what are the verbs that describe the basic actions, what are the core mechanics, what actions are less frequent, and how does the player perform actions in the game. (Fernández-Vara 2015, 99)

Narratives

Fernández-Vara argues that analyzing the fictional world of a game, one can identify the theme of the game, what happens in that world, and what conventions and stories the world evokes in the player. Different fictional worlds have different agents, events, and actions thus the expectations of the player are set up by explaining the basic functions of the fictional world. (Fernández-Vara 2015, 104-105) The fictional worlds and the rules of the game are interdependent, meaning that the fictional world dictates the possible actions in it. (ibid.) A summary of the story premise helps to introduce the fictional world of the game and its starting point. (Fernández-Vara 2015, 106-107)

4.3.3 Formal Elements

Formal elements refer to the system of the game and its components, such as rules and control schemes, as well as how the system is presented to the player via interface and visual imagery (Fernández-Vara 2015, 16)

Formal elements may be used to describe the game in detail, however, a mere description of elements is not sufficient. The formal elements have to be analyzed in detail and their relation to the game and the player has to be explained. Analysis of formal elements and how they come together may provide insight how the game works and how it is played, as well as how players interact with the game. (Fernández-Vara 2015, 117-118) Analysis of formal elements in games is two-fold. First, the formal elements that help to generate new knowledge are identified. Second, relationships between the identified elements and other areas of analysis are established. (Fernández-Vara 2015, 120)

Audiovisual elements

Fernández-Vara names this area of analysis *representation* and incorporates visual design, sound design, and music in it. The audiovisual elements help to create a mood, express themes, as well as contribute to the narrative of the game. (Fernández-Vara 2015, 149) The audiovisual elements give the player cues about the current state of the game by creating moods and providing feedback to the player in different situations. Audiovisual elements and user interface elements can also overlap and create hybrid elements that at

the same time represent the fictional world as well as function as a way to manipulate the said world. (Fernández-Vara 2015, 149-150)

Mediation and feedback

Fernández-Vara utilizes the term *mediation* to explain the formal elements that allow the player to interact with the game. This includes the user interface. The mediating elements situate the player between the software program and the fictional world. (Fernández-Vara 2015, 140) The first aspect of mediation is the point of view and how it is presented to the player. The point of view designates the role of the player in the fictional world. For example, if the point of view is presented in first person, it implies that the identity of the player is defined by a specific, physical point of view. (ibid.) Another important aspect of the mediation is the user interface. The difference between direct and indirect manipulation can help to understand the basic ways in which the player intervenes in the world. (Fernández-Vara 2015, 141)

Interface design specifies where all the controls are situated and how they are intended to be used to play the game. By close reading interface design, it is possible to recognize how they adapt and integrate to the gameworld and how the actual controlling is done conjointly with the game progression.

Feedback elements are the actions the game responds with to the player's actions. Feedback elements, such as touch screen responses, create a sense of control and interaction to the player. While the player does have very little, or nonexistent, control over the outcome of the game, the feedback elements help to create an illusion of control. The feedback elements also incorporate the ways in which the game indicates its current status and current events to the player.

The feedback elements relate heavily to the visual elements and the user interface elements presented earlier, however, they are not static elements as they appear only when the player interacts with the game and when she needs to be informed about the in-game events such as wins or triggering of a bonus game.

There is no definitive counterpart in the Fernández-Vara's areas of analysis, however, the feedback can be placed under several areas, notably mediation and representation. The

game utilizes these areas to inform the player what happens in the game and provides support for the player to understand the possible further actions.

Controls and peripherals

Controls and peripherals describe how the related hardware allows the player to participate in the game and how the game utilizes it. Hardware is also part of the player space, and as such, it dictates how the physical space is used. A touch screen operated mobile game may be played, for example, during commuting, however, a game that requires a TV-set or game-specific hardware may only be played in spaces that incorporate them.

5 ANALYSIS

In this chapter, I utilize close reading and the analysis framework formulated in the previous chapter to the slot machine game *Emma*. First, I introduce the background of the game and then move on to dissect the game into its elements in the light of the analysis framework. By examining the different elements of the game, it is possible to delve into their respective contributions to the game as a whole as well as bring forth the similarities that contemporary video games and modern video slot machines games share.

5.1 Background

Emma is a slot machine game developed and released by RAY (currently, Veikkaus Oy) in 2015.⁸ According to the developer's description, Emma is a multiline slot machine game where a female character named *Emma* ventures in the Finnish Lapland. The character is known from the earlier game of the series, *Kulta-Jaska*. The game features doubling, different bonus games, and free games.⁹

The game is available in two different physical slot machines types, as well as a flash or mobile version in Veikkaus' online casino. The versions differ from each other mainly in bonus games, where each version has their own unique bonus game. The base game and the free games feature remain the same.

⁸ <http://suomalainentyo.fi/2015/10/29/suomalainen-kadenjalki-nakyy-rayn-uudessa-pelissa/> (accessed 20.2.17)

⁹ <https://www.ray.fi/emma> (accessed 20.2.17)



Figure 3. The opening and loading screen of the flash version of Emma.

5.2 Context

5.2.1 Game genre

The genre of Emma is gambling in the form of a slot machine game. As a form of gambling, the game initially involves the use of real money. However, the game may be played online as a trial version, where money is not required. Playing on a physical slot machine requires the use of real money. The commercial interest of a slot machine game is to profit the game provider, which is evident from the theoretical return to player percentage (RTP) of the game. (See 2.3.2) The average RTP of Emma varies from 91,5% to 92,4% and is calculated from hundreds of thousands to millions of rounds, thus it can vary greatly over one play session.¹⁰

Common to majority of slot machine games, Emma features spinning reels with different symbols. The player initiates the round by placing a wager and starting the reels. The reels then stop automatically and form a result. If there are symbol patterns corresponding

¹⁰ <https://www.ray.fi/emma> (accessed 20.2.17)

to the payable of the game on paylines, player receives the reward stated in the payable. Rewards may be money prizes, free spins or a bonus game initiation. In this sense, Emma is an example of very common modern slot machine game.

5.2.2 Socio-historical and technological context

Emma is developed, released, and distributed in Finland. The slot machines boasting the game and the online versions are only available in Finland. The description of the game notes that the events of the game are situated in the Finnish Lapland, which is evident straight from the opening screen showing Finnish nature with fells in the background. (Figure 3.) The main character, Emma, is also portrayed as a blonde-haired woman with blue eyes, a common stereotype of a Finnish woman.

The game is released as a multiplatform game. It is available to play in two different physical slot machine cabinets, online flash version, and as a mobile version for smartphones and tablets. The slot machine cabinets, *Valtti* and *Voitto*, feature their own controls for manipulating the game. The cabinets are also equipped with touch screens for advanced operation. Player has to use the touch screen as the primary method to control the game, since all the features of the game are not accessible via physical controls.

The flash version of the game requires a personal computer, and the game is controlled via mouse. The mobile version is controlled via the touch screen of the device. Both versions require an internet connection and are only available at the online casino run by Veikkaus, which requires registration via strong identification. Playing the flash version on the internet casino requires the Adobe Flash Player plug-in to be installed. The cabinet version cannot be played in any other machine than the dedicated slot machines that incorporate them.

5.2.3 Audience

Emma is targeted to Finnish players as a casual game. A Finnish player may easily identify with the Lapland-oriented theme. The cabinets containing the game are widely distributed throughout Finland in local kiosks, shops, restaurants, and dedicated arcades and clubs.

The online version and the mobile version can be accessed with the required hardware and internet connection, however, players need to have an account on Veikkaus' online casino. As noted in the terms and conditions of the online service¹¹, registration requires a strong identification, permanent residence in Finland, and a Finnish bank account, which excludes majority of foreign players from the audience. The online service can be accessed from abroad, however, some games or services might be disabled.

The target audience is Finnish adults over 18 years of age. In Finland, gambling is prohibited for people under 18 years of age. This is also notified in the physical machines as well as the online versions where playing requires a registration. The employees in the locations of the slot machines are also required to verify the age of the players if in doubt, and the games can be stopped by the employees with a remote controller if needed.

5.3 Game overview

5.3.1 Rules and goals

Rules include the ways the game wants the player to play it. Rules include how the game works and what the player needs to do in order to play the game. Rules in slot machine games include, for example, the betting system including payline selection, paytables and different bonus feature rules, such as the amount of choices in the feature, and what the player can and cannot do in the game. The rules also include the situations when the player has a possibility to influence the outcome of the game, such as selections in the bonus games.

The rules of Emma are described in two ways, payable and the information pop-up screen. The payable (figure 4.) shows the possible winning combinations and their payouts as well as the combinations required for the bonus feature or free games. In addition, the payable shows the function of the wild-symbol and the paylines.

The payable also informs the number of losses disguised as wins possible. In Emma, there are only two possible symbol combinations that yield a loss disguised as win: two

¹¹ <https://www.veikkaus.fi/fi/sopimusehdot> (accessed 14.5.2017)

compasses, and two *diamond bags* on a payline. These combinations award less money than the minimum bet, but as argued in chapter 2.4.2, the game treats these events as wins by showing winning animations and playing winning sounds.



Figure 4. The paytable

The objective of the game is described as follows:

Emma is a slot machine game with five reels and 10 lines, where the aim is to get a winning combination of symbols on a payline.

Emma is thus a goal-oriented game where the goal is to gain as much credits as possible. The player cannot interact with the gameworld in the base game and the goal must be achieved by spinning the reels.

5.3.2 Game mechanics and gameplay

After the loading screen, the base game opens immediately. In order to play the game, the player needs to select a desired bet and then press play-button. After pressing spin, the reels start to spin and then automatically stop one by one from left to right. After the spin, possible wins are shown, bonus game activated or free games awarded. After winning or non-winning round, bonus feature, or free games, the games resets to the base game and the player may spin the reels again. In the mobile version, the player initiates the round by touching a symbol or dragging the reels up or down on the touch screen.

The developer describes the basic gameplay as such:

The wheels are spun by clicking the **Play** [sic] button.

The total bet can be selected by clicking on the **Bet** button at the bottom of the game window.

All 10 paylines are automatically selected.

If a winning combination is formed on a payline, you can transfer the winnings to your balance by pressing the **Collect** button. Alternatively, you can try to increase your winning sum by pressing the **Double** button.

The initial base game screen (figure 5.) features all of the controls needed to start the game or to view further information of the game. The available buttons for operating the base game are *paytable*, *bet*, and *spin*. The buttons are further highlighted to the player by blinking. The player may open up a pop-up window containing detailed information about the game by pressing the *i*-button in the lower left corner.



Figure 5. The base game

The core mechanic of the game is the spinning of the reels. The objective of the game is to get specific symbols patterns to appear on the paylines or in case of bonus or free games symbols, on any position. This is done by spinning the reels. The player may alter the bet,

however, it does not affect the gameplay, only the cost of one round and the amount of winnings.

Wild symbol

The Siberian jay portrayed in the left tree may randomly fly off its nest to cover one randomly selected reel with wild symbol. (Figure 6.) The wild symbol substitutes for any other symbol in the game excluding the bonus game and the free games symbols.



Figure 6. The wild symbol

Bonus games

There are four different bonus games in Emma depending on the version. In cabinet version, there are two different bonus games, and the flash version and the mobile version have their own unique bonus game. Three bonus symbols appearing on the three middle reels in any position triggers the bonus game. (Figure 7.)



Figure 7. The bonus symbols on the middle reels.

In the cabinet version, the player's choice determines the bonus game. (Figure 8.) The player chooses from 12 similar symbols by touching the screen. A money prize or a bonus game symbol is revealed behind the symbol and when two similar bonus game symbols are revealed, the corresponding game will start.



Figure 8. Cabinet version's bonus selection <https://www.ray.fi/emma> (accessed 24.2.2017)

The two bonus games in cabinet version are *Siipien säihke* (lit. The glitter of the wings) and *Nuotion loimu* (lit. The glow of the campfire). *Siipien säihke* is a simple slot machine game with three reels, where the player does not contribute in any way. *Nuotion loimu*, however, is similar to the bonus selection. The player chooses from the rising embers to reveal money prizes. (Figure 9.) After three choices, a multiplier will appear on the sky and multiply the collected winnings.



Figure 9. Nuotion loimu bonus game. <https://www.ray.fi/emma> (accessed 24.2.2017)

The bonus game of the flash version, *Kotopuun kulta* (lit. The gold of the home tree), lets the player choose from nine leaf stacks to reveal different species of birds. (Figure 10.) The payable for each species of birds, as well as total sum of the bonus are displayed on the right. The bonus game ends when the player reveals the bird of prey. The birds have different money prizes and the selection of birds varies in each bonus game. The less worthy birds are more likely to appear than the ones with higher prize.



Figure 10. Kotopuun kulta bonus game.

The bonus game of the mobile version, *Tukkijoen timantit* (lit. The diamonds of the log river) features two different choice situations. First, the player chooses from three treasure chests to reveal a money prize, then Emma continues to the edge of islet, and the player has to choose a log. Depending on the chosen log, Emma will continue to the next islet and the next set of treasure chests or fall into the river, which ends the bonus game. (Figure 11.)



Figure 11. Mobile version's bonus game Tukkijoen timantit

Free games

Four or five free games symbols anywhere on the reels award 10 or 20 free games, respectively. (Figure 12.) During the free games, all winnings are doubled, excluding bonus game wins, and if the Siberian Jay -wild appears, it will stay still for the rest of the free games. The free games can be retriggered with the free games symbols, and the player can win the bonus game during the free games.

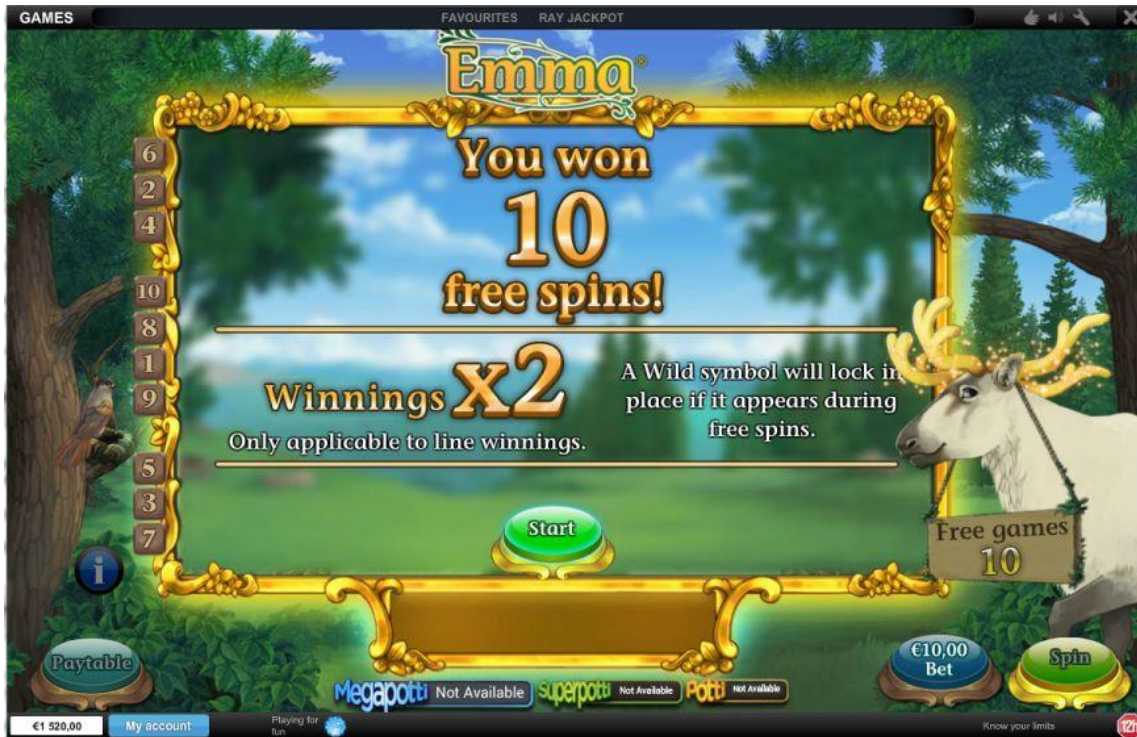


Figure 12. Introduction to the free games

The free games are distinguished from the base game by different background and frames around the reels. A total sum of the winnings in the free games is displayed on the upper right corner. The remaining free games are shown in the plaque carried by the golden-horned reindeer portrayed instead of Emma. The game also informs the player that the wild symbol is locked in place for the remainder of the free games. (Figure 13.)



Figure 13. Free games and the wild symbol

Doubling

The player can try to double all winnings in the game, including winnings from a bonus games or free games. In the doubling, the player chooses from 15 dandelions by touching or clicking the desired dandelion. (Figure 14.) Either $2x$ or $0x$ appears and doubles or negates the initial win respectively. If the player doubles her winnings, she can try to double it again up to the amount of four times the maximum win.



Figure 14. Doubling

Player contribution and illusion of control

The player controls the base game by determining when to start it and with what bet. In addition, the player chooses when to stop playing by collecting the money from the physical money or quitting the gaming software. As in Langer's study (see 2.4.1), the player controls the raffle process by initiating it when desired. This results in similar situation described in the study: the player values her own choice more than the one she cannot initiate. The game, however, sets the limits and thus ultimately decides how much the player can win. As in Langer's conclusion, the illusion of control is greater when the player faces skill-like situation such as choice or active involvement. In the bonus games and doubling of Emma, the player is the active part and gets to choose.

In the bonus games and in the doubling, the game lets the player choose and thus affect the outcome. However, the game upholds the randomness in the available selection of symbols. In Nuotion loimu and Kotopuun kulta, the game reveals the hidden prizes at the end to show what was available. This reveals that the available prizes can vary and the player gets to choose only from those, which the game selects. In mobile version's bonus game, Tukkijoen timantit, the player faces multiple steps and gets to choose from three choices in every step. A wrong choice in the log jumping ends the bonus game. As before,

the game determines the hidden prizes behind the treasure chests as a way to control the outcome. Likewise, in the log jumping, the player cannot know which log will grant a passage to the next islet.

In the bonus games, the player seems to have an influence over the result of the game. This is somewhat true, since the player's choice does determine the outcome, however, the game chooses what options it gives to the player thus setting the cap on the winnings.

In the doubling, there are eight 0x symbols and seven 2x symbols, which results in 46,7 percent chance of a double win and 53,3 percent chance of losing the winnings. As in the bonus games, the player gets to choose, although the chance of doubling the winnings is lower than losing them. The player exerts effort to choose from the dandelions thus contributing to the illusion of control, however, she cannot know which symbol is beneath which dandelion. This negates the player's actual chance to influence the outcome.

5.3.3 Narratives

The game's narrative revolves around the adventures of Emma. There is no clearly defined timeline in the narrative, however, Emma can be seen in various stages of her adventure during the game. The bonus games in different versions portray Emma's journey through the wilderness. In the bonus choice of the cabinet version, Emma is portrayed in a scenic landscape viewpoint watching the scenery through binoculars (figure 8.) and in one of the two available bonus games she is spending night on a campsite. (Figure 9.) In the flash version's bonus game, Emma is bird watching and in the mobile version, she is seen crossing a river. (Figures 10. and 11.). These elements together create a narrative for adventurous woman who tackles the wilderness of Finnish Lapland while also engaging in appreciation of nature's scenic offerings.

5.4 Formal elements

5.4.1 Audiovisual elements

Audiovisual elements in slot machine games are probably the largest element to study in slot machine games. Visual representations are an important part of any game and so is the case with slot machine games. Graphical elements bring the narratives, characters and story to life and present them to the player. By studying graphical elements, it is possible

identify how the game creates meaning by representations and what the designers have intended to achieve. Sound effects and music are also integral part of slot machine games. Sounds create atmospheres that entice players to keep playing. Carefully placed sound effects also induce different feelings to the players, such as feeling of accomplishment when a big win is awarded and the bells are going off and prolonged fanfares are played.

Graphics

The graphics in slot machine games mediate the theme of the game. Background graphics, character design, and reel and symbol design contribute to the intended theme. Emma is marketed as an adventure themed slot machine game, where a character named Emma travels through the wilderness of Finnish Lapland. This theme is evident from the opening screen that portrays a scenery of Finnish Nature as well as the base game screen with the same background graphics. The theme is continued in the free games and bonus games with different background graphics that all contribute to the theme of the game.

Character design follows the same theme. Emma is portrayed as a Finnish blonde-haired woman with blue eyes carrying a backpack. During the free games, a reindeer appears instead of Emma.

The symbol design in Emma relies on both adventure and Finnish nature. The symbols of lesser value portray common berries found in Finnish forests: cloudberry, lingonberry, and blueberry. Higher value symbols portray adventure and treasure hunting: Backpack, compass, bag of diamonds, and a lantern with gold nuggets. (See figure 4.) The design of the symbol frames also mediates their worth. Highest paying symbols, lantern and diamonds, have elaborately decorated frames, middle symbols have simple frames, and the lowest paying symbols do not have frames. The bonus and free games symbols also mediate both Finnish nature and adventure with a reindeer and binoculars.

Mediating symbol value with the design is also present in the bonus game Kotopuun kulta. Different species of the birds have different value and the two most valuable birds are significantly different from the less valuable birds.

Music

Emma has several different sound effects and background music. Starting the game plays a cheerful jingle and the upbeat music is continued while spinning the reels. An upbeat

fanfare plays after a win in the screen where player can try to either double her winnings or collect them. After a losing round, the volume of the background music gets quieter until the player initiates a new round. A different tune is played in the doubling screen. The tune has some ominous elements to highlight the win-lose -situation further. The free games feature and bonus games also have their own themes. The different musical themes for different events of the game inform the player of the status of the game. A sound effect is also played in transition between events, usually when the player hits bonus game or free games.

Sound effects

Emma incorporates a plethora of sound effects to highlight certain situations. The pressing of the control buttons yields different sounds to separate them from each other. When the reels stop, they make a small bumping sound. If a special symbol (free games or bonus) lands on the screen, it makes a distinct sound. If bonus symbols appear on reels two and three, a drum roll is played to enhance the anticipation until the fourth reel stops. The drum roll also plays if five of a kind is bound to happen.

The Emma character, portrayed on the right of the base game screen, also reacts to the events of the game with audible reaction. After a winning game, Emma lets out a small cheer. If a bonus game chance realizes, Emma lets out a similar cheer, however, if the chance fails, Emma responds with an annoyed grunt.

The most well known sound effect in slot machine games is arguably the sound of coins dropping in to the coin tray of the machine. In Emma, a similar sound effect is present when the winnings are first calculated to the center of the screen and again when they are transferred to the player's balance.

5.4.2 Mediation and feedback

Emma uses a great variety of ways to inform the current game status to the player. In the base game screen, the game highlights available actions by blinking them. After a winning round, the total sum of the winnings is presented in the middle of the screen. In addition, the winning symbol combinations and their paylines with individual wins are highlighted with animations. The character Emma also celebrates the win by quickly raising her hands and letting out a cheer. (Figure 15.) A small screen below the reels also acts as an

information board that tells the player what is going on in the game and what are the possible actions.



Figure 15. Winning combination

In the base game, the balance and the current bet are always shown, and in the bonus games and free games, the total sum of the winnings is shown.

During a chance of a five of a kind, bonus game or free games, the game highlights the corresponding symbols and the required stopping places to inform the player that there is a possibility for a good outcome. In addition, the Emma character reacts to the chance by raising her hands and rooting for the right symbol to come. (Figure 16.) The game also delays the stopping of the reels to induce enticement in tandem with the drum roll sound effect. In Emma, this element is the clearest example of near-miss effect discussed in chapter 2.4.2, where the game heightens the player's anticipation by audiovisual effects.

These actions inform the player that something good has happened or is bound to happen. Interestingly, in a losing situation, there is no feedback from the game whatsoever, excluding the little grunt made by Emma if a bonus chance fails to realize. This is also shown in the doubling (see 5.3.2 doubling) where Emma celebrates if the player successfully doubles the winnings and remains silent if the player loses.

In the bonus games and doubling, the available interactive elements in the screen are distinguished by animation and raised graphics. In addition, a text below the main screen provides additional guidance on what the player can do. The player is constantly informed about what she can do in the game, what is currently happening, and what is the state of the game e.g. balance.



Figure 16. A chance for a five of a kind.

5.4.3 Controls and peripherals

Emma can be played on a personal computer, mobile device or physical slot machine. The game does not require any dedicated controlling hardware aside the mouse of a personal computer. On a physical slot machine cabinet, there are some physical button controllers, however, controlling can be done via touch screen only. On a mobile version, the touch screen of the device acts as a controller.

The control scheme and button layout is similar in all three versions. Controls for the operation of the base game, such as spin and bet, are situated in the lower corners of the screen. The game informs the player which controls are active and advises what to do in different events of the game. The bonus games that feature choices are controlled via the touch screen. Controls for these are separate from the base game controls and are tailored to the specific bonus game.

Three different versions provide the player a chance to play the game in any situation. Mobile version is playable anywhere when there is a wireless internet connection available. The flash version requires a laptop or a desktop computer, which limits the player space to stationary place. The dedicated slot machine can only be played where the slot machine is physically located. Playing this version limits the player space most. However, physical slot machines that run Emma are extensively available throughout Finland in various shops, kiosks, gas stations, and arcades.

6 RESULTS AND DISCUSSION

In this chapter, I compile the results of the analysis. First, I compare Emma to the different definitions of game presented in chapter 3 to argue that Emma fully complies with these definitions. Next, I will tie the analysis of features in Emma to the presented literature and theory and try to elaborate how this game in particular mirrors the features of modern video games.

The research question for the analysis chapter asked what similarities there are between modern video slot machine games and contemporary video games and how these similarities are present in a modern video slot machine game. Additional questions asked how these elements contribute to the gameplay experience and how the player is involved in the game by choices or control. The chapter 6.2 will answer these questions.

6.1 Emma as a game

As discussed in chapter 3, modern video slot machine games, including Emma, can be considered as games. This enables them to be analyzed with game analysis methods.

Following Greg Costikyan's definition discussed in chapter 3.1, players make decisions in Emma in order to manage game resources in pursuit of a goal. Later revision of Costikyan's definition integrates the interaction, which is also evident in Emma in the form of several choices and mediation features. Katie Salen's and Eric Zimmerman's definition introduced in the same chapter is also applicable to Emma. Players of Emma engage in artificial conflict that is defined by rules and the outcome is quantifiable. The conflict is the arrangement of the symbols in the reels or the choices made in the bonus games or the doubling. This conflict is governed by the rules stated in the payable and the rules provided by the manufacturer as well as the game code. The outcome of Emma is most definitely quantifiable, since the outcome is money credits displayed with numerical value.

Examining Emma through Jesper Juul's six features of a game introduced in chapter 3.1 and elaborated in chapter 3.2, a similar conclusion can be made that Emma is equivalent to a game by definition despite being gambling in nature. Emma complies with every feature in Juul's diagram. The fourth and sixth features by Juul, player effort and

negotiable outcomes, respectively, pose the most challenging aspects to slot machine games.

Studies show that the player exerts effort to try to influence the game. While this is essentially ineffective, the effort is real to the player and she thinks that the efforts will prove useful. In Emma, player effort is further exacerbated by multitude of choices in different stages of the game. Notably, in bonus games, the player gets to choose variable things that result in different outcomes. After a win, player may try to double the outcome, which is again determined by a choice-based feature. The game contributes to these choices by mediating the outcome in various ways. If player chooses successfully, the game rewards her with not only monetary prize, but sensory rewards, such as audiovisuals, also. The character Emma also plays a key part in the mediation by reacting to the game events, thus bringing human element to the game.

Emma also covers Juul's sixth feature, negotiable outcome. Two versions of the game, flash and mobile, are available for free playing in the online casino of Veikkaus, albeit requiring a registration and player meeting the terms of the gambling regulations in Finland. In these versions, the game may be played with or without real-life consequences (fake or real money) with the same set of rules.

6.2 Similarities with video games

By analyzing Emma through close reading of its components, it is evident that the game shares many similarities with contemporary video games. Emma features a dedicated narrative and a background story supported by applicable visuals, audio, and characters as well as clear a gameplay with an array of choices to be made by the player.

Emma clearly features every aspect from Fernández-Vara's analysis areas:

Context

Emma is played in the context of gambling and slot machine gaming, which dictate the basic slot machine game design choices, such as reels, betting and symbol patterns. The choice of theme and audience are reflected from the imagery and they position the game in its socio-historical context. The game can be played on three different platforms, which

indicates that the game is intended for wider audiences and being as easy to come by and play as possible.

The pervasiveness of slot machine games in Finnish everyday life also adds its own component to the context of Emma. Due to Finnish gambling regulations, Emma is available, and thus targeted, to adult population residing in Finland. This geographical restriction is also reflected in the theme and symbol choices in Emma.

Game overview

Emma has clear rules that the player must follow. The rules are hard-coded into the game system, and there is no way for the player to alter them or break them. Game mechanics and gameplay in Emma are simple and consist of choices made by player in the course of a round. Active player participation to the in-game events in Emma is scarce, and this is only shown in the Tukkijoen timantit -bonus game, where the player guides Emma character through the river by making choices.

Despite the lack of direct control of the game character, Emma features narrative elements that can be deduced from the base game and the bonus games. The player sees Emma going through different phases of her adventure.

Formal elements

Emma utilizes graphics and sound to mediate the game status to the player as would a regular video game. Sound effects in Emma are used to inform the player about important in-game events, such as winnings, a chance for 5-of-a-kind or bonus games, and player actions. Music in Emma creates atmospheres and moods for the game and reflects the overall theme of adventuring in wilderness.

Graphical elements provide context and place by introducing background scenery, symbols backing the narrative, and a human aspect via the Emma character. Graphical elements are also used to mediate the game status to the player.

Gameplay

Gameplay in Emma is a never-ending loop that always returns to the point where the player initiates a round in the base game. Despite being a simple and quick, the base game itself features multiple choices such as betting, timing of the initiation and stopping the

play session by collecting the money. The base game also offers a chance to win different bonus games where the player can make more decisions. Choice is also offered in doubling of the winnings. Gameplay in Emma is constructed via these in-game choices as well as extra-game choices, such as the choice of platform.

The game interacts with the player by responding to different game events and player actions. For example, Emma's annoyed grunt when bonus chance fails to realize serves dual purpose. It mediates the outcome of the event while also providing support for the player.

Gameplay experience is further enhanced by the formal elements. These elements introduce the context in which the player plays the game. If Emma were to be played without the extensive formal elements, the gameplay would resemble that of old mechanical slot machine. With the formal elements providing background and context for the in-game choices, the player may experience more holistic gameplay experience.

Player control

Actual player control in Emma is negligible, however, several in-game choices affect the outcome greatly. Without knowing the program code of Emma, it is impossible to tell whether the player actually has a chance for successful outcome by choosing right for example in the doubling or the bonus games. The game suggests this possibility for control by showing what is hidden behind the selections. (E.g. figures 11. and 15.) This possibility is further supported by the randomization of the birds in Kotopuun kulta and the smaller probability of doubling the winnings than losing everything. Yet, without knowing the program code, the possibility of actual player control remains unclear.

6.3 Discussion

Analysis shows that Emma is a viable example of modern slot machine game and a game per se. The game has a clearly defined theme of Lapland and Finnish nature that is coherent throughout the game features. The theme is also tied to the cultural environment where the game is offered as well as to the audience that is its target group. Emma features a wide range of choices by the player, which tie the gameplay together with the aesthetic elements to provide a complete gaming experience.

Close reading games is usually reserved to textual analysis of the games. In this thesis, however, the selected genre of games is not textually driven at all which posed some difficulties in the analysis. Close reading had to be modified and supported by video game analysis methods to suit the selected game genre. By presenting the different features in Emma, it was indeed possible to construct a view on how the game operates and what the player does when playing the game. Additionally, features revealed how the player manipulates the games and what choices she makes from start to end.

Modern video slot machine games are still relatively simple games in nature that can be played repeatedly over the course of time. While they do not have the eloquent features of so-called triple-A games, they bear many similarities with casual games such as simple core mechanics and gameplay. The gambling feature implemented in them differentiates them from other casual games, however, this division has already blurred by cross-over games and possibility for free slot machine gaming. Challenges in studying these kinds of games lie in their ability to fit into many different categories. Thus, studies regarding modern slot machine games in the light of game studies require multidisciplinary approach and adaptation of different methodologies and tools for research.

While still being mostly simple and repetitive in terms of gameplay, modern slot machine games continue to evolve with the technological environment and gaming culture. The gambling industry needs to attract younger players, which effectively means that the games must reflect the current trends of gaming. This means that in addition to gambling, modern video slot machine games are becoming a form of digital entertainment. This convergence emphasizes the need for discourse between game studies, gambling studies, and other applicable disciplines. Even now, modern video slot machine games may be studied from game studies point of view, as is shown in this thesis. Further studies may include anything from, for example, study of gender and racial representations to player interviews on how they perceive the modern games. The designers of conventional video games may also benefit from the study of modern slot machine games by mapping out elements that encourage repeated play and utilizing them on the game design processes.

The major limitation of this study is arguably the choice of only one game to be analyzed. Choosing only one game poses a danger of overgeneralization of the findings. Emma is by no means a perfect example of a cutting-edge video slot machine game. Other contemporary games may feature for example progressive storylines and minigame-like

features. However, Emma can be regarded as a "golden mean" of slot machine gaming, since it features a base game, bonus games and free spins and all of these are tied to the main narrative and theme of the game. Further research may include other games and for example comparative study between different slot machine games or a slot machine game and a video game. Moreover, skill-based gambling will arguably bring the research methods and subjects of both game studies and gambling studies even closer to each other. Thus, it is now relevant to understand the evolvement and basis of these games thoroughly.

7 CONCLUSIONS

This thesis has delved into the realm of modern video slot machine games and their features. I have attempted to shed light on an area yet to be widely explored by contemporary research. Slot machine games in general are an intriguing subject to study, because they compile many different areas of play and games as well as psychology and social sciences.

In this thesis, I asked if modern video slot machine games could be considered as games, and if so, what the similarities between them and contemporary video games are. An all-encompassing definition of play and games is yet to be formulated, however, several scholars have made attempts. In some definitions, gambling games are considered as borderline games that do not feature all of the necessary features of games. However, some scholars do argue, that gambling is a form of gaming. This dichotomy is further exacerbated by the unique nature of slot machine games comparing to other gambling games. On one hand, they are a simple form of gambling due to their chance-based operation, and on the other hand, they can be complex gaming experiences featuring multiple similarities with contemporary video games. I have argued that modern video slot machine games can be considered as games when examined through various definitions of game. The basic features of modern slot machine games fit well into the definitions provided. This notion was also backed by the analysis of the slot machine game Emma. Emma consistently exhibited every aspect of the different definitions.

The second research question asked what the similarities between contemporary video games and modern video slot machine games are. To answer this question, I analyzed the different elements of Emma through close reading. The analysis showed that Emma features distinctive gameplay and elaborate formal elements. These formal elements, such as audiovisual elements, in video slot machine games have evolved to resemble contemporary video games greatly. As argued in this thesis, a modern slot machine game may include clearly defined characters, gameworld, soundtrack and auxiliary imagery. As in traditional video games, these elements create a balanced whole that is interconnected with the context and the gameplay of the given game. As the analysis showed, this was also true in Emma. Actual player control in majority of the slot machine games, including Emma, is still negligible. However, implementation of different bonus

games provides the player an opportunity to choose, thus affecting the player's perception of control.

In the title of this thesis, I asked are modern video slot machine games just simple gambling or could they be a form of sophisticated gaming. The answer to this question is yes on both accounts. Modern video slot machine games are simple gambling when examining their most fundamental functions. However, implementation of contextual aesthetics and narratives, game mechanics, and other features commonly found on conventional video games, creates a hybrid that makes the gambling and gaming worlds collide with each other.

It is evident that more research is needed in this area. Slot machine games have become the most popular form of gambling, and their development from simple mechanical devices into complex computer-driven entertainment devices have been incredibly fast. In addition, slot machine games have increasingly broken the chains of gambling, and expanded to the realm of online casual gaming. Furthermore, the advent of skill-based gambling introduces a completely new aspect of gambling and gaming. In the future, the boundaries between gambling, money games, and video gaming will blur even more as the elements from each genre intertwine. This convergence will provide a fruitful ground for further multidisciplinary research utilizing components from game studies, social sciences, psychology, economics, humanities, and engineering just to name a few. This thesis only scratches the surface of modern slot machine game research in the light of game studies and game analysis, and aims to provide its readers a glimpse of the vast sea of information still, sadly, partially ignored by contemporary research.

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