An investigation of compulsive interactions and mechanics in incremental idle clickers
Exploring the tension between interactivity and interpassivity

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Abstract

Incremental idle clickers is a genre of games where gameplay revolves around simple interactions like clicking the screen repeatedly to accumulate currency. The clicking action is often automatized by the game. This thesis investigates qualities that make interactions in incremental idle clickers compulsive and motivating. The incremental idle clickers genre adopts mechanics and interactions that were experienced as compelling, motivating and anxiety-inducing. The “idle” mechanic allows the game to run without player interaction and proved to be central in relation to the player experience. Through a user-centered design-process, the compulsive and motivating nature can be suggested to emerge from three major experiences of the genre, “Monotony”, “Intrusive omnipresence” and “Demanding”. The result includes a discovery of the ambiguous tension and balance between interactivity and interpassivity in the genre. Finding this balance may prove beneficial to the player experience. I identified ethical challenges concerning the game depriving players of satisfying gameplay.

Keywords: interaction design, game design, incremental idle clickers, compulsive interactions, interpassivity.
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1 Introduction

An incremental idle clicker is a mobile game genre in which the player repeatedly clicks the screen to accumulate wealth, as can be seen in Figure 1 (Alharthi, Alsaeedi, Toups, Tanenbaum, & Hammer, 2018). This clicking interaction is eventually automatized by the game and an idle function becomes prominent. When the game is idle, the game produces currency without player interaction (Alharthi et al., 2018; Fizek, 2018). In most cases, there is no end-game or final goal, the point of the game is to increase one’s wealth indefinitely (Alharthi et al., 2018).

What are the qualities in interactions and mechanics in incremental idle clickers that make them compulsive and motivating? The term motivating will be used throughout the thesis and will carry the meaning Kleinginna & Kleinginna (1981) described; as something giving an incentive for performing a given action.

This thesis will serve as an exploration of these interactions and mechanics and their ethical implications. If such qualities can be identified, the project will aim to create a set of guidelines and adjustments, in terms of the interactions and design of incremental idle clickers. The guideline should be used as a means to decrease the compulsive nature of the genre, without affecting the motivating nature in a negative way.

![Figure 1. Screenshot of Cookie Clickers, an example of an incremental idle clicker. redBit games. (2013). Cookie Clickers (Version 1.5) [Mobile application software]. Retrieved from http://itunes.apple.com](http://itunes.apple.com)

1.1 Context

Mobile games differ from the desktop and console gaming in the sense that mobile games can be played in many different situations and wherever the players might find themselves. Leaving a game “idle” means letting the game run closed with no player interaction. While the game is idle the game would progress as if it was being played, to some extent (Alharthi et al., 2018; Purkiss & Khaliq, 2016). Because of this, a game idling can go on by itself
while the player is doing other things, for instance watching a movie or waiting for the train.

An ideal incremental idle clicker becomes seamlessly embedded in the player’s everyday life (Keogh & Richardson, 2018). This context becomes an interesting area of design opportunities as the designer faces the challenge of developing a game that is inviting and motivating but also forgiving in that the game incentivizes idling.

The flexible nature of the incremental idle clickers creates an interesting contrast to traditional desktop and console games. Traditional desktop and console games require the player to give constant attention to the game and for extended periods of time in order for the game to progress (Keogh & Richardson, 2018). An ideal incremental idle clicker does not penalize the player for directing attention elsewhere. This type of game is played more often and not rarely over a year as opposed to more casual mobile games only being played a couple of months (Alharthi et al., 2018).

1.2 Research questions

“What makes interactions in idle games compulsive?” is the initial research question for the project. If you try to explain the appeal of incremental clickers to a person unfamiliar with them, it will be difficult because of their seemingly simplistic nature. There is something terribly compulsive about how these games are designed, and I will attempt to shed light on the design and interactions that support this.

One additional subordinate research question is outlined as followed:

- How can the design, mechanics, and interactions be manipulated to develop an incremental game that is less compulsive but still motivating?

1.3 Purpose

The purpose of this thesis is to identify the compulsive interactions, mechanics and nature of incremental clicker idle games. This project will take an analytical approach to how the design, mechanics, and interactions affect the players game experience. The result from the contextual discovery will pave the way for a design phase where I will attempt to figure out the tension between the compulsive and the motivating. I will explore if the compulsive and the motivating can be manipulated to make the game less compulsive but no less motivating. In addition to this, this thesis will to an extent be an outlining of what techniques, mechanics and interactions developers can make use of to design for the user’s attention economy in a mutually beneficial way. The outlining is important for developers of incremental idle clickers if they intend to create a game with ethical considerations. The user base of the genre will find the thesis interesting in that they will be made aware of the techniques used that are affecting their daily gaming life.
1.4 Ethical considerations

I am aware that insights regarding what aspects of an incremental idle clicker is compulsive and motivating can in the wrong hands be used to intensify these aspects. It is not my intention to increase the compulsive and motivating nature of these games, but instead, explore what is compulsive and motivating about them, if it can be decreased and still be enjoyable and worthwhile playing. The information about the user testers and developers will potentially need to be handled with delicacy. This thesis follows the ethical guidelines from the Swedish Research Council (2017).

There is an ongoing debate on whether and how game addiction should be classified as a mental disorder in the diagnostic and statistical manual of mental disorders, also known as DSM-5 (Kardefelt-Winther, 2015). As game addiction is subject to a wide debate this thesis will not be using the term addiction when talking about incremental idle clickers. The word compulsive will be used as a substitute that conveys a milder meaning of motivation and behavior.

It has been established that having a mobile device within reach at all time, at any location can lead to increased psychological stress, alter our mood and distract us (Greenfield, 2012). This is argued to be because of the unavailability of distancing oneself from the device and that these digital devices are deeply embedded in our daily lives (Greenfield, 2012). When designing potential solutions to any opportunities that may have arisen, this will be taken into consideration.

1.5 Limitations

This thesis will approach the research area as a game design process. Incremental idle clickers on mobile platforms are the only ones that will be explored in this thesis. This thesis will not take a psychological approach. I will only use basic theories of psychology to aid my understanding of motivation in relation to the user context. This project will refrain from using terms like “addiction” when talking about motivation and games due to its prementioned controversial standing in the community. Therefore, the aim of this thesis is not to explore addiction in incremental idle clickers.

1.6 Relation to interaction design

Interaction design and incremental idle clickers are linked in the way the user interacts with the game over the course of their daily life, and the way that continuous interaction affects the user. When a user encounters or embraces a new device, their behavior should not need to change (Norman & Draper, 1986). Similarly, and on the topic of incremental idle clickers, Keogh & Richardson (2018) suggests that an ideal incremental idle clicker should become seamlessly embedded in the user’s life. The interaction designer’s challenge lies in embedding the game in the users daily life, in an ethical but also motivating way. This thesis strives to identify the compulsive interactions and mechanics in the genre, and the aspects of the genre that disrupts the seamless embedment of an incremental idle clicker in the users daily life.
1 Background

1.1 The origin of incremental idle clickers

The definitive origin of the genre of incremental idle clickers is uncertain. The origin of the genre could be argued to be artificial-intelligence (AI) agents in various games, commonly known simply as bots. AI agents are programs designed to play a game in a human's place while the human can do other things (Alharthi et al., 2018; Smahel, Blinka, & Ledabyl, 2008). Along with bots, macros have been used for many years in a vast array of games to automate aspects of games that are considered by the player base to be tiresome or “grindy” (Fizek, 2018).

Another origin of the genre as it looks today can be traced back to 2010 when Ian Bogust created Cow Clicker (Tyler, 2015). This game was a deconstructive clicking game, satirizing the contemporary social network game scene (Tyler, 2015). Tyler (2015) goes on to explain that the game consisted of no other major interaction than the clicking on a two-dimensional graphic of a cow and the player was able to click the cow every sixth hour. The only apparent goal of the game was to gather as many clicks as one could endure (Alharthi et al., 2018; Keogh & Richardson, 2018). Other social network games at the time used waiting as a mechanic to incentivize players to invite their friends to decrease the waiting time to they could play again (Tyler, 2015).

Progress quest is a potential candidate for the origin of the genre, and the game progresses completely without human interaction (Deterding, 2016). In the setup of the game, the player writes the character’s name and rolls a digital dice which determines stats that the character will possess throughout the game, such as strength and dexterity (Deterding, 2016).

As Alharthi et al. (2018) suggest, the game Cookie Clicker took the genre to the mainstream gaming scene. Cookie Clicker combined several mechanics of the previously discussed games into one single game and the game could be played actively by clicking and passively by letting the game progress on its own (Alharthi et al., 2018).

In summary, where the origin lies for the genre is inconclusive. In contrast to the claims for a supposed origin, I would argue that the genre did not spawn from a single instance but instead from several trends in the gaming scene over the decades. What is clear, however, is that over the past decades a desire for autonomy in games have existed.

1.2 Incremental idle clickers today

The incremental idle clicker game genre is a minimalist approach to gaming (Alharthi et al., 2018). Little to no player interaction is what characterizes the genre, and when the player does interact with the game it is usually through a repetitive interaction (Björk & Juul, 2012). Examples can be tapping, clicking or swiping a certain area on the display. This interaction stimulates the main mechanic of the game which is accumulating resources and as the game progresses or in some cases at the very start of the game, the process of
actively interacting with the game can be automated to become idle (Björk & Juul, 2012). When idle the game progresses as if a human player is interacting with it (Björk & Juul, 2012). The majority of incremental idle clickers are not developed by large publishers. Most of the games are created by single creators or independent small teams (Alharthi et al., 2018).

*Kongregate* is one of the largest websites that serve a portal to web-based games (Alharthi et al., 2018). Incremental idle clickers are among the most played genres on the entire website, receiving tens of millions of players each and every month (Fizek, 2018). Incremental idle clickers are however not a genre exclusive to consoles, desktops, and websites. This genre can also be found on any mobile platform and the even the digital game distributor Steam (Fizek, 2018).

Today’s incremental idle clickers are as varied in mechanics as they are numerous. The genre has been the subject of much debate regarding its final definition. A game that encourages leaving the game running by itself for long periods of time is an example of a definition of the incremental idle clicker genre (Purkiss & Khaliq, 2016). At a first or second glance of a description of an incremental idle clicker, they may seem simple and dull. However, many titles of the genre include depth, finely tuned reward curves and complicated economic systems. Lastly, one of the interesting aspects of the genre is that a successful game of the genre strikes a balance between incentivizing the player to leave the game to idle on its own, as well as incentivizes the player to regularly return to the game in an active way (Alharthi et al., 2018).

### 1.3 Mechanics of an incremental idle clicker

#### 1.3.1 Main game loop

The main game loop consists of two major parts, as demonstrated in Figure 2. The first part is accumulating currency, by interactive clicking or passive waiting, the second part contains the upgrade mechanic (Alharthi et al., 2018). This is where the player spends their accumulated currency on upgrades that boost different aspects of the production. Examples of upgrades could be ones that increase the production whilst not playing, and another could be an upgrade that boosts the gains from each individual active click (Alharthi et al., 2018; Tyler, 2015).
1.3.2 Primary currency

The primary currency is what the main game loop revolves around, and it is an in-game currency. What incremental idle clickers have in common is that they revolve around some form of in-game currency that is being accumulated, and this currency can take many shapes that include but are not limited to, dollars, kittens, paperclips, points and clicks (Alharthi et al., 2018).

1.3.3 Idling

Idling is a term referring to the activities in the game taking place while the player is not actively interacting with the game. The game continues to progress (e.g. continued production of in-game currency) as if a player was actively interacting with it (Fizek, 2018). Idling is what separates incremental idle clickers from more traditional games such as first-person shooters and football games. One main aspect of the incremental idle clickers is to not actively play it all of the time (Fizek, 2018).

1.3.4 Dynamic mechanics

Dynamic mechanics denominates the phenomenon of the game having nonlinear mechanics and changing mechanics throughout the gameplay, thus to an extent, changing the goal(s) of the game (Deriglazov, 2018; Tanenbaum, 2018). An example of this can be a game that introduces new ways to accumulate currency as the game progresses. For example, in the beginning of the game, currency can only be accumulated by repeatedly clicking on a button. As the game progresses and the wealth is increased, one can buy buildings that accumulate wealth in the player's stead in different ways (Tanenbaum, 2018).

1.3.5 Prestige

Prestige is a mechanic that is sometimes referred to as “NG+” (Alharthi et al., 2018). In a nutshell, it functions as a positive reset button. When a player “goes prestige” they forfeit all accumulated currency and production speed.
for a fixed boost to overall currency production that persists across future game resets. Going prestige in incremental idle clickers are widely used as an incentive to keep the player interested when the game has become slow progressing (Alharthi et al., 2018).

1.3.6 Premium currency

Premium currency is a secondary currency that developers implement. This currency can either be accumulated through spending large amounts of the primary currency or through the more likely alternative; spending real money (Evans, 2016; Keogh & Richardson, 2018). The players can spend this premium currency on several upgrades, all of which are boosts several times more impactful than upgrades bought with the primary currency. Premium currency is also used as an incentive to gain the player's attention (Evans, 2016). For instance, giving the player a notification at a certain time each day saying that they will be rewarded with a small amount of premium currency if they enter the game (Keogh & Richardson, 2018). This also gives the player a small taste of what can be bought with their real money.

1.3.7 Special events

Special events are temporary boosts in production, and examples of these can be increased clicking power or a fixed amount of currency gained if the player clicks a passing object (Fizek, 2018). The key feature of these special events is however that they are only available temporarily (Alharthi et al., 2018). They can be missed if the player diverts their attention to something else.

2 Methodology

2.1 User-centered design process

A user-centered design process denotes the involvement of users in different stages of the design process and helps to shape the design (Abras, Maloney-Krighmar, & Preece, 2004). Primary users are the ones who end up using the artifact first-hand (Abras et al., 2004). Primary users will be heavily involved in the project. Because this thesis explores the experience of incremental idle clickers, the user’s insight into their experience will be highly valued. Primary users will be heavily involved in the interviewing, observations, workshop and user testing and will, therefore, help shape the outcome of the design process.

A variation of the double diamond model will be used to guide the design process of the project. The iterative nature of the Double Diamond model is one of the main features that will benefit the process of the project, as well as having a general guideline to what one should be doing at what point (Tschimmel, 2012). This project identified a need for a more personalized and contextualized double diamond model, and such a model can be seen in Figure 3.
2.2 Analysis of Idle Games

One of the ways of understanding a game is by playing it (Salen & Zimmerman, 2004). Eight games were selected and analyzed with the framework developed to identify similarities between a large number of incremental idle clicker games (Alharthi et al., 2018). The games were selected based on their popularity on the online platform Kongregate. When selecting games to analyze three were chosen that were described to be click-heavy, three that were idle-heavy and two that had heavy usage of dynamic mechanics. This was done to get a broad understanding of the genre. In the analysis and testing of games, mechanics, interactions and general aspects of the game were written down on post-it notes later to be used in a session of grounded theory along with all the data collected through the other methods.

The games were also subjected to measuring of interactivity by a scale developed by Purkiss & Khaliq (2016). The interactivity level is determined by how much interaction is needed to progress (Purkiss & Khaliq, 2016). This was done so that a comparison could be made between the level of interactivity in incremental idle clickers and the experienced compulsive nature of a game revealed in interviews.

2.3 Field Studies

2.3.1 Semi-structured Interviews

I conducted user experience interviews as a way of mediating data from users to the project (Goodman, Kuniavsky, & Moed, 2012). I will be conducting semi-structured interviews with users that have experience with the genre, be it mobile or desktop. These subjects will be interviewed regularly throughout
the project, participate in a workshop and lastly be part of the user testing with any prototype this project ends up developing. The interviews will be performed in a semi-structured manner in order to be able to dynamically act on the information divulged in the interview. The interviews will take place after the background research have been performed, as this allows me to ask relevant questions in relation to the subject matter (Rabionet, 2011).

2.3.2 Observations

I conducted observations in order to gain insight into how the users cope in different situations, what kinds of interactions the user has with the game, which sequence actions occur and how they generally behave with an incremental idle clicker. Observations can furthermore shed light on design opportunities the user was not aware of, that the designer or observer can identify (Goodman et al., 2012). While observing subjects playing incremental idle clickers, the observer will ask questions continuously in response to any action the user might perform. Users playing games with the ability to speak freely may divulge problems, general flaws and other areas that might need design improvement (Davis, Ph, Steury, & Pagulayan, 2005).

2.3.3 Extended user testing

The subjects participating in the project’s user studies will be asked to download and play a series of incremental idle clickers. They will be asked to write down the time and date of every occasion they pick up the game, the reason for picking it up, what they did in the game and what they were doing before they picked the game up. This will be done to map the frequency of use, the context in which they play the game and how intrusive the games are on their daily lives. In addition to this, it will give me an overall idea of what role the games played in the users’ daily lives.

2.4 Grounded Theory

Grounded theory is an effective method for exploring data, generating concepts that revolve around the data and finding causal relationships between the concepts in order to form a theory (Strauss & Corbin, 1990; Thi Thanh Thai, Choy Chong, & Agrawal, 2012). It will be performed when I have come mid-way through the first diamond, in the double diamond model (Figure 3).

Grounded theory is a form of research and analysis that begins with collecting data from various sources in order to form a theory. Being aware of the complex nature of grounded theory, it will be used as an inspiration, and as a set of guidelines of how to conduct a structured analysis of data as opposed to a strict set of rules for my research and analysis. As Strauss & Corbin (1990) argues, grounded theory should not be regarded as hard and rigid rules, and that they should be used as a set of guidelines. The same authors also argue that when researching new areas or topics, the grounded theory may have to be altered somewhat, to fit the circumstances (Strauss & Corbin, 1990).

I argue that, as a broad framework, the general analysis used in qualitative research does not differ completely from grounded theory. They both
categorize, identify patterns and synthesize data (Muratovski, 2015). The reason I chose to use grounded theory instead of the general analysis of qualitative data is because of the comprehensive data analysis grounded theory provides which includes open-, axial- and selective coding. Open-, axial- and selective coding are stages in grounded theory used for finding items of data and the relationships between those data items (Strauss & Corbin, 1990).

Open coding means interpreting and analyzing data that has been gathered. When performing open coding one is looking for similarities in events actions and interactions to be able to form categories. Axial coding is performed by relating these categories to each other and they are evaluated by their relationships to the data. Lastly, selective coding is the stage when all categories that emerged are combined into a core category. This core category is meant to serve as a symbol of the central phenomenon of the topic (Strauss & Corbin, 1990).

Grounded theory is a somewhat split community with several different variations and theorists claiming it should be done in a certain way (Melia, 1996). I will use the variation of grounded theory that Strauss (Strauss & Corbin, 1990) has presented because it allows the researcher to have an initial research question or hypothesis. It is important to underline that grounded theory will be used as an inspiration and a flexible set of guidelines for my analysis of the data.

Having finished grounded theory, the project should be at the end of the first diamond of the double diamond model (Figure 3). Once the grounded theory has generated data that can be used in ideation, the project can move forward to the final diamond in the model (Figure 3).

2.5 Workshop

The workshop will be the springboard of the ideation process and is used to generate creative solutions to the design opportunities found (Goodman et al., 2012). The participants will rank the perceived positive aspects, interactions, and mechanics of idle games. This will be followed by a discussion among the participants on their motives for their individual rankings. The items in the rankings will then be discussed in an open manner among the participants. Lastly, a brainstorming session will be held where the participants will be ideating on their ideas regarding the data and design opportunities divulged in the project so far.

The participants of the workshops will be the individuals that participated in the interviews. The reason for this is that the content that will be discussed in the workshop is dependent on prior knowledge and experience of idle games and their mechanics. The workshop will take place in the first half of the second diamond, in the double diamond model (Figure 3).

2.6 Brainstorming

Brainstorming is a participatory idea generation method, and is a powerful way in the design process, it is used to discover solutions to the design
opportunities identified in the project (Goodman et al., 2012; Tschimmel, 2012) In brainstorming, participants create a large number of ideas in a short amount of time (Tschimmel, 2012). Tschimmel (2012) goes on to suggest that brainstorming can consist of producing ideas visually, but it can also consist of ranking, organizing and categorizing ideas. Brainstorming will be used in the second phase of the double diamond model, and primarily in the workshop.

2.7 Prototyping

According to Houde & Hill (1997) prototypes are used in a design process to explore the design situation, in terms of role, implementation and look and feel. High-fidelity and low-fidelity prototypes denote the quality of a prototype (Rudd, Stern, & Isensee, 1996). Low-fi prototypes, such as sketches will be created to explore the design situation and high-fi prototypes will be developed to be used in user testing. This project's prototypes will mainly manifest implementation aspect of a prototype. The low-fi prototypes will be made in the form of sketches to explore the visual layout of the game's different areas of play i.e. the look and feel.

The high-fi prototype will be a testable game that will be used in user testing. It is important that the prototype meets the audiences' expectations (Houde & Hill, 1997). The high-fi prototype will be created manifesting a specific aspect, mechanic or interaction that in the project that has been revealed interesting in the contextual discovery phase (Houde & Hill, 1997). Knowing your audience and making sure the prototype meets the audiences' expectations when user testing with prototypes is important (Houde & Hill, 1997), and since the user testing will be conducted with skilled and beginner players, the prototype will have to be relatively high-fidelity in order to be playable. Room will be made for the possibility of only having time to make and test a single high-fi prototype. The prototype will be developed in JavaScript, HTML and CSS code and run on a mobile device.

2.8 User testing

Usability testing describes the process of aiming to improve the usability of an artifact and it revolves around the involvement of target users using the artifact or product with observation or post-interviewing of their experience (Goodman et al., 2012). These experiences will be considered when iterating (Dumas & Redish, 1999; Goodman et al., 2012). Traditional one-on-one user tests would not be the optimal format of user testing for a game prototype of this genre due to the nature of the genre. Gameplay in the genre consists of short interactive windows over longer spans of time (Alharthi et al., 2018). This means that a couple of hours long user testing would not be enough to capture the experience of the game. To subject the user to an experience that is similar to the real-life experience of an incremental idle clicker, the user testing would have to be done in the user's own time and location.

Remote asynchronous expert- and user-testing will be conducted to gain insights regarding the interactions that the prototype manifests. Remote asynchronous expert testing is a form of user testing that can be done by the
user at their own convenient time and location (Andreasen, Nielsen, Schrøder, & Stage, 2007). While the subjects are not necessarily experts in incremental idle clickers, they are veteran users and will not enter the user test as a tabula rasa.

The participants of the user testing will include the subjects that participated in the interviews and workshops. The reason for using the same subjects is because of the importance of the user being able to pick up the game and immediately have fun, or at least experience it as it was designed to be experienced. A player’s initial interaction and experience with a prototype can be critical to ensure that the subject will keep playing the game (Davis et al., 2005). In addition, because the user test will go on for five days the likelihood of the users continued testing of the prototype must be increased.

The participants will be called over the phone, during an idle period to be debriefed on their experiences so far. This is done to get in-situ feedback while it is still fresh in the user’s mind.

The prototype will come with an information page that the user can read to get a basic knowledge of the game and its purpose. In addition to this, the subjects will be asked to take some notes with an array of questions as a frame of reference.

3 Theory

3.1 Interpassivity

Interpassivity, as coined by philosophers Slavoj Žižek and Robert Pfaller describes a phenomenon that revolves around gaining some sort of gratification or sense of accomplishment by having a machine perform an activity in the human’s stead (Fizek, 2018). Fizek (2018) presents an example in which a VCR records a movie, and by recording a movie with a VCR, it is implied that the movie is going to be watched later. However, it is argued that by recording movies, we also tend to watch fewer movies (Fizek, 2018). The VCR does the watching of the movie so that the user can be free to not watch the movie, but still feel a sense of calm or satisfaction (Fizek, 2018). Fizek (2018) goes on to give another example with canned laughter. The canned laughter in a sit-com function as a self-interacting tool, laughing at the jokes made in the show so that the user does not feel obliged to do so.

This theory of interpassivity can be applied to incremental idle games. The user sets up the game so that it can progress on its own so that the user is free to not interact with the game. As user testing in this project revealed, the user still derives pleasure from knowing that the game is being played, and of course, enjoy interacting with the game when actively playing it. Not only does the user not have to interact with the game for it to be played, but the user can also perform other tasks while the game is being played.
3.2 Attention Economy

The 21st century saw an emergence of considerable shifts in the gaming industry (Evans, 2016). Evans (2016) suggests that it has been characterized as a “casual revolution”, suggesting that the simple design of games at the beginning of the industry has been rediscovered and revitalized. This includes a change in how long the players play games each session and how frequently (Evans, 2016). It has been suggested that players in the mobile game community play up to five minutes each session and that they are irregular in their frequency of usage (Evans, 2016). The term attention economy becomes interesting as it highlights a change that has undergone the last decade. Developers, in addition to relying on the exchange of money for services or goods, are now valuing the player’s attention and treats it as a precious commodity (Evans, 2016). Evans (2016) suggests that this phenomenon acts as a colonization of the everyday life of the player. The mobile games are designed to demand attention from the player in a sporadic or asynchronous structure (Evans, 2016; Fizek, 2018). In addition to this, idle games and digital devices, in general, can affect our mood and serve as a distraction. There is almost no place where we cannot be reached by the accessibility of devices and games and this leaves our internal psychological batteries without a moment of breathing space to recharge (Greenfield, 2012).

This is where things get interesting in relation to the topic of this thesis. Rather than monetizing the attention the player is paying to the game, the developers design the games to monetizes the player’s opportunity to increase the limit of the “idle” time or “time away” from the game. For example, in Egg, Inc the player can spend real money to build larger grain silos that can contain larger amounts of the game’s currency, effectively extending the possible idle time (Auxbrain Games, 2015). In other words, the players are incentivized to pay money to be able to stay away from the game for longer periods of time. When designing, one must be aware of the scarcity of the player’s attention. One could also consider designing in an ethical manner, in which the psychological batteries are given plenty of space to recharge. Monetizing the player’s ability to take longer breaks from the game can be argued to be a grave ethical conundrum.

3.3 Delay of Gratification

Delay of gratification denotes a process in which a subject resists a smaller reward that is given instantly, and instead waits and receives a greater reward in the future (Carducci, 2009). An example of this can be presenting a cookie to children that they would be given immediately or have them wait and receive three cookies in fifteen minutes. Carducci (2009) argues that presenting the immediate reward visually to the subject makes the delay of gratification more difficult. An Incremental idle clicker is a genre which can be played mobile and with the possibility of starting the game whenever and wherever. This makes the visual presentation of the rewards of idling ever accessible for the player and is only limited by the player’s own self-control.
3.4 Self-Determination Theory & Self-Actualization
Self-determination theory proposes that there are three major psychological needs that humans need to feel fulfilled in their lives (Ryan, Rigby, & Przybylski, 2006). It serves as a manifestation that is part of the bigger topic of self-actualization. The theory proposes three psychological needs that include competence, autonomy, and relatedness (Ryan et al., 2006). In relation to the compulsive nature of incremental idle clickers, competence and autonomy will be most relevant. The player has a need to feel competent in relation to the results of his actions in the game (Ryan et al., 2006).

4 Contextual discovery

4.1 Analysis of eight incremental idle clickers
Altogether eight games were analyzed. Alharthi et al. (2018) created a framework for analyzing and deconstructing an idle game that was used. The framework works like a taxonomy and will identify, game name, general play description, game mechanics, rewards, interface type, interactivity level, progress rate, advertisement dependency/frequency, interactions and give an overall rundown. This is followed by a short discussion of the game. Out of the eight games analyzed, only two will be presented that went on to become central in the project.

4.1.1 Analyzing Egg, Inc.
Figure 4 is an illustration of the data that was gathered from the analysis of Egg, Inc. The words in capital letters were identified as codes to be used in a session of grounded theory later in the project. Egg, Inc. is a game that revolves around managing an egg farm (Auxbrain Games, 2015).
### Game name
Egg, Inc.

### Play description
MULTI-FINGER CLICK to create chickens that run in to hen housing. The chickens lay eggs which are sold and shipped and sold for CURRENCY. UPGRADE hen housing, shipping capabilities as well as several miscellaneous upgrades to gameplay. TAP passing drones (SPECIAL EVENT) to gain a high number of currency.

### Game Mechanics
CLICK or HOLD big red button to gain chickens. TAP passing drones to gain huge amount of currency. MANAGE number of hen housing, shipping capabilities. Upgrade miscellaneous aspects of the gameplay such as egg laying rate and egg value.

### Rewards
In form of currency. Main currency is egg dollars. Second currency is a PREMIUM CURRENCY named golden eggs. Player is rewarded greatly by active interaction, few rewards from idling.

### Interface
GRAPHICAL

### Interactivity level
8

### Progress rate
2

### Advertisement frequency
Non-existent

### Interactions
Holding and tapping to CREATE chickens on a small red cube or a wide rectangle means for several finger tapping. TAP passing drones.

### Overview
Single player game which has a varying level of automation depending on upgrade CHOICES. Different STRATEGIES can be employed based on upgrade choices. Good VARIATION of upgrades that affect the production speed. The game has a prestige function. The game is highly dependent on active interaction due to the large reward the player receives from taking down passing drones (special events). The idle progress rate is slow due to the game limiting idle production to two hours.

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**Figure 4. Illustration of the analysis of Egg, Inc.**

The game Egg, Inc. (Auxbrain Games, 2015) encourages several finger tapping to create chickens and the tapping zone can be enlarged to make this easier.

The game is heavily dependent on managing resources that affect currency production to advance progress (Auxbrain Games, 2015). The player must manage hen housing size in relation to the chicken population and the shipping capabilities in relation to the egg-laying rate (Auxbrain Games, 2015). There are upgrades that effect currency production in different ways. Examples of these are: Increase egg value and increase egg-laying rate (Auxbrain Games, 2015). When choosing which upgrades to invest in the player determines which playstyle they will have to adopt. The variation of playstyles is however dramatically diminished because of the low capacity of currency accumulation when idle, making drone tapping (a special event) the most efficient playstyle (Auxbrain Games, 2015).

Going prestige means forfeiting all currency, progress, and upgrades and starting the game over again, this time with a faster base-production than last time. This means that the game will progress faster through different levels. This was suggested in extended user testing (participant #2, personal communication, March 26, 2019) to be an enjoyable part of the game, even though at first impression it might seem detrimental to the players' sense of progress. The same interview subject (participant #2, personal communication, March 26, 2019) stated that he very much enjoyed plowing through the levels that before going prestige, caused him annoyance for being long and tiresome.
The game utilizes a premium currency which, along with drones (a special event), makes up a very big part of the player's ability to affect the game's progression. The game will spawn drones that pass by and when tapped they are destroyed, and a very valuable reward is given to the player (Auxbrain Games, 2015). The figure below (Figure 5) shows a screenshot of a drone passing by.

![Figure 5. Screenshot of Egg, Inc. that displays a drone (special event) passing by. It can be seen just beneath the brown hen house in the middle of the screen. Auxbrain, Inc. (2019). Egg, Inc. (Version 1.8) [Mobile application software]. Retrieved from http://itunes.apple.com](image)

As revealed by a user observation subject (participant #2, personal communication, March 26, 2019), when the player reaches the ninth or tenth prestige level, progress by idling and tapping is deemed futile and impossibly slow if the player does not invest in premium currency or stays active with the game and takes down drones. The subject (participant #2, personal communication, March 26, 2019) also showed signs of anxiety and the feeling of lost opportunity when he missed taking down the passing drones, and that he did not want to play the game if it only consisted of clicking special events. The importance of taking down drones to progress was suggested to be a crucial flaw in the game design and that he considered deleting the game.

In summary, when a game utilizes special events that are too valuable a demanding playstyle is inevitably the best option for the player. This demanding playstyle was not experienced as satisfying.

### 4.1.2 Analyzing Realm Grinder

Realm Grinder is an idle clicker that can be played in many ways (Divine Games, 2015). As can be seen to the absolute bottom left in Figure 6, there are eight factions to choose from, all of which results in different playstyles...
for the player. For instance, playing the “Elven” faction enhances the interactive part of the game by boosting active clicking rewards (Divine Games, 2015). Playing the “Undead” faction boosts the idle aspect of the game, encouraging the player to turn off the game and leave it for long periods of time without repercussions (Divine Games, 2015). These are only two of the more straightforward factions that fundamentally change the level of interaction and passive gameplay.

![Image](image-url)

**Figure 6. Different factions can be seen on the left side of the screen in the form of circles with a logo.** Divine Games. (2019). Realm Grinder (Version 3.5.0.0) [Mobile application software]. Retrieved from http://itunes.apple.com

The game has several currencies that the player can manipulate to reach a wide array of goals (Divine Games, 2015). The game adopts many dynamic mechanics, such as introducing new currencies and playstyles as the game progresses. Coins are a currency used to buy buildings that improve coin production (Divine Games, 2015). Mana is a currency used to cast spells that improve different aspects of the game such as clicking power and overall coin production speed (Divine Games, 2015). Rubies are the game’s premium currency which can increase production as well as other boosts (Divine Games, 2015).

Watching an advertisement video can boost three aspects of the game, mana regeneration, coin production, and lastly a set number of gained faction coins (Divine Games, 2015). The Faction coins are used to decrease the number of clicks the user must perform to set up a new game after each time the player goes prestige (Divine Games, 2015). The value of watching advertisements diminishes in relation to the much more profitable miscellaneous upgrades, building upgrades and the using of spells. The advertisement watching was not deemed a negative aspect due to its limited influence (participant #4, personal communication, March 17, 2019).
At certain parts of the game, the player is required to gain certain achievements to be able to progress further (Divine Games, 2015). Most achievements are only attainable using specific factions. Realm Grinder’s prestige mechanic does not only function as a base boost of production but also as a dynamic mechanic in terms of how the player must choose a new faction and play accordingly to its playstyle. This means that the playstyle of the player changes continuously, and the player must continuously adapt to new challenges and new mechanics.

One of the spells the user can employ makes the game click several times each second and this is visualized on the screen as if they were manual clicks. This was in a user observation and interview (participant #4, personal communication, March 17, 2019) deemed very satisfying and one of the enjoyable aspects of the game. Other aspects that were deemed satisfying were being able to upgrade several times at once (participant #4, personal communication, March 17, 2019). The major benefit of leaving the game passive and closed was described as very enjoyable in an interview. The interview subject stated that knowing the game is working for you in the background was a very good feeling to have during one’s daily life (participant #4, personal communication, March 17, 2019). This same subject stated that whatever he does, he is moving in the right direction when playing this game. This was explained to be due to the fact one cannot lose currency or progress, one can only be slowed down.

“...whatever I do, I’m moving in the right direction, I’m earning money, it may not be the most efficient production, but it is still producing for me and that gives me comfort.” (participant #4, personal communication, March 17, 2019).

As previously stated, Realm Grinder employs several currencies. User testing (participant #4, personal communication, March 17, 2019) revealed that he feels more at ease when there is not one single currency they need to max out and have several paths to go down.

In summary, if advertisement watching is used for a specific purpose, for example initiating a new prestige, then it is not detrimental to the game experience. Several currencies can be beneficial to reduce the anxiety caused by wanting to maximize production in one single currency. The idle production mechanic is greatly valued.

### 4.2 Mapping play frequency and context

Data from the users play patterns was used to map the frequency and contextual circumstances that revolve around using incremental idle clickers. The results of the four users were relatively similar to each other. Figure 7 illustrates the frequency of use for one user during a regular work week. Each time stamp represents an occasion where the game was picked up and used. In the case of one subject, in five days, the game was picked up 26 times.

Roughly 60% of the pickups were deemed as non-voluntary, and roughly 40% were pickups due to general downtime and intentional pickups. A pattern
emerged that revealed a habit of pickups when the user wakes up and goes to bed. Additionally, a clear pattern of intrusiveness emerged from the mapping. Along with the user writing down the time of the pickup, they were also instructed to write what they were doing before the pickup and what they did in the game. These notes revealed that the games regularly interrupted the users work or study flows. The idle periods in the two games tested (Egg, Inc. and Realm Grinder) proved to be just short enough to interrupt the user regularly without giving the user the impression that a substantial accumulation of currency had been collected. This was demonstrated by a hypothetical example given by one of the users that underwent testing with Egg, Inc.

Figure 7. Mapping of the frequency of play during a work week.

“It’s like when you’re collecting water from a leak in the roof. You don’t want to go and empty the bucket if only a centimeter of water has been collected, that seems like such a waste of time.” (participant #2, personal communication, March 26, 2019).

In summary, if the user is to be interrupted, it must have something of worth to offer the user. The user was later explicit in his assertion that an interruption that was worthwhile, was not an intrinsically bad interruption. Non-voluntary pickups due to interrupts occur frequently during the day.
4.3 Compulsive aspects of incremental idle clickers

It is in the idle aspect that the compulsive nature can be argued to arise. A player who leaves the game loses opportunities to increase the accumulation of currency and progress in the game (Alharthi et al., 2018). As presented by the user interviews the player has expressed ambivalent feelings toward the aspect of idling (participant #3, personal communication, March 21, 2019). On one hand, they enjoy the game being able to self-play. At the other hand, the user has an explicit, continual feeling of unease when the game is idling (Keogh & Richardson, 2018). This is explained by the users to be determined by their knowledge of always being able to enter the game to upgrade and maximize production (participant #3, personal communication, March 21, 2019). Most of the time, incremental idle clickers are not in the focus of the players daily life. They are placed in the background of the user’s mind. It is when the game makes itself that the idle game could be argued to become compulsive. It is an inflexible type of passivity that the incremental idle clickers offer (Keogh & Richardson, 2018).

Users of games in this genre are adapting to rigid behavior in their daily life that the game demands (Keogh & Richardson, 2018). This same behavior change was expressed in the interviews as well (participants #1, personal communication, March 17, 2019). Keogh & Richardson (2018) suggests that users will have the game open when home and at work, constantly checking progress and upgrade availability. This could be argued to be a defeat of the purpose of the idle mechanic.

In addition, self-determination theory works well in comparison to the compulsive nature of incremental idle clickers. The users have an intrinsic need to feel competent in the actions they perform in their lives (Wang & Sun, 2011). This does not exclude leisure actives such as games (Ryan et al., 2006). Autonomy, being a part of the self-determination theory (Ryan et al., 2006), can be related to the topic of idle games. Autonomy, in this case, relates to the player's attempts to achieve freedom in their playing behavior. As presented above, the player paradoxically feels confinement in the constant availability of interaction.

Greenfield (2012) argues that an element of compulsion does not only involve frequent interactive use, but also the aspect of withdrawal from the compulsive content. The withdrawal allows an intensified state of psychological arousal and discomfort to take place in the user (Greenfield, 2012). This can be compared to the idle aspect of the incremental idle clickers. Not only is withdrawal possible when interacting with games of this genre, but it is an effect of an integral mechanic of the game. It has also been established that humans have a tendency to move toward the completion of tasks (Greenfield, 2012). In a game, that does not have a fixed number of tasks or even an end, the human tendency to complete tasks means that the game and interactions are endless.
4.4 Summary of contextual discovery

As revealed in interviews, subjects enjoyed the gameplay of the incremental idle clicker named Egg, Inc. until they reached a sort of slowly traversed trench in terms of further progression. They had progressed to a point and now the progress had diminished several times in terms of speed. They found this jarring and tiresome. The only viable option for them was interactive play, looking for special events spawns and this was described to be monotonous. This resulted in the strategy of having to sit focused and tap on spawning special events. Users went on to say that they felt anxiety when looking away for a moment because they feared that they would miss any special events. This took up too much of the user’s time and this is when the frequency of use started to diminish greatly. When users ended an idle session, they would upgrade and spends their currency wherever they saw fit and then starts another idle session. One subject went on to state that if he wanted to gain a certain achievement or reach a personal goal, they would adapt their strategy, suggesting that it is not inherently bad that the game demands active interacting at various stages of gameplay. However, when the game demanded too much of the user’s time it was deemed tedious and demanding.

The low idle accumulation capacity the idle games allowed the player was brought up as negative in interviews. The games gave them a notification regularly informing them that the production had met its idle capacity. Interviews revealed that they felt compelled to start the game and receive the idle production currency to reset the capacity. This part of the idling became increasingly demanding on their everyday life because once the game had been opened to reset the capacity, they were likely to continue playing the game and actively look for special events. Some subjects were however clear to state that they did not think that the game grabbing their attention and diverging focus away from their everyday life into the game as an intrinsically bad thing. If it could be made less intrusive or merely “suggestive” in some way. One subject stated that he very much enjoyed the game playing for him in the background of his life so that he could do other things in the meanwhile.

“I like waking up in the morning to find a pile of money under my pillow” (participant #1, personal communication, March 17, 2019).

“...whatever I do in idle clicker games, I’m headed in the right direction, there is no such thing as losing currency or progress” (participants #1, personal communication, March 17, 2019).

An interview revealed that there is value in the anticipation that the user experiences when the game is idling. This hints at a correlation between not playing a game and pleasure derived from not having to play that game, as demonstrated by the prementioned theory of interpassivity. One interviewee went on to explain that it is not the monetary value the idle session that he deems significant, it is rather the knowledge that someone is working towards something in your stead. However, while the users enjoyed the idle aspect of the games, they expressed explicit uneasiness at the intrusive manner in which the game made itself known and was ever-present. Additionally, not
only how it made itself known, but in the unpredictable situations that could be interrupted by the game’s incursions.

A session of observation-interview was held with each subject. During these sessions on several occasions, the subject interrupted themselves midsentence to tend to the game’s needs, even if only for a second. Even when the user decided not to act on the intrusion, the user felt irritated by the knowledge of the lost opportunity to progress. When asked about their reasoning for having acted on the interruptions, they attributed it to that being the most efficient way to progress. One stated that if he wanted to progress, he needed to take all the opportunities he got for progress, be it a special event or just normal upgrading when hitting the accumulation capacity. This is on par with self-determination theory and self-actualization. The player shows clear signs of a desire to maximize their efficiency and the production in the game.

In conclusion, user interviews and observations revealed that incremental idle clickers can bring the user a lot of enjoyment. Be it through idling or actively playing. Despite this, however, light has been shed on room for improvement on the user experience with incremental idle clickers. Special events were often described as being too critical, in terms of progress as well as intrusiveness. In addition to this, when the game did intrude on the player's everyday life, it was stated to always be in an unpredictable manner. The game would pop into the consciousness of the user and interrupt their activity, be it physically or emotionally. The active gameplay was described as monotonous and demanding.

4.5 Grounded Theory

Open coding began by the detailed examination of all the data gathered in the project so far. This includes manuscripts of the interview and observation sessions which were boiled down to key phrases and words that were stated by the subjects. This was done line-by-line and paragraph-by-paragraph with each of the interviews and observations. The data gathered from academic papers and books were analyzed in the very same way. This resulted in 63 codes that were of significance to the topic. These were all stripped and evaluated individually on their relation to what the user studies and academic papers had deemed compulsive or annoying features of the game. When evaluating the codes constant comparison was done to maintain a close connection between the codes. After the evaluation and trimming down, the remaining 22 codes as seen in figure 8, were the ones that ended up generating categories in the next step.
The focus of my axial coding was to explore how codes relate to each other in order to develop categories of codes with similar elements. Rather than looking at all possible variations of complex relationships, I looked for six significant elements (Strauss & Corbin, 1997):

- Causal conditions - What influences the element?
- Phenomena – What is the central phenomenon?
- Context - When and where is this happening?
- Intervening Conditions - What must be done before something can be achieved?
- Strategies - What are they trying in order to reach their goal?
- Consequences - What are the consequences of this?

Three categories emerged which includes “Intruding omnipresence”, “Demanding” and “Monotony”. Figure 9 is a picture from the grounded theory session and demonstrates what open codes let to which of the categories.

An illustration that explains the flow and relationships between the six elements can be seen in figure 10.
The category of “Monotony” can be recognized in the lack of variety that is typical in incremental idle clickers. As previously stated, the games revolve around a repetitive interaction that often does not see much change or dynamic mechanics that creates new purposes for the same interaction. Open codes that led to the emerging of this category include but are not limited to, “slow progress”, “progress trench”, “single resource” and “repetitive interaction”.

Intruding omnipresence was a category that emerged from the reoccurring confirmation that the incremental idle games are always in the back of the user’s mind, be it in a positive or negative way. This category seems closely related to the compulsive nature of the genre. The players enjoyed the thought of the game playing itself in their stead but not the idea that the game is always there, available for further upgrades and maximizations that will increase their progress. The last meaning of this category is that incremental idle games are deemed intruding on the player’s daily lives, again, be it wanted or unwanted. Open codes that contributed to the emerging of this category include but are not limited to, “game in the periphery”, “always active” and “penalization for long idles”.

Demanding was a category that emerged from the experience of actively interacting with the game. Demanding also showed a close relationship to the word compulsive. The demanding playstyles that many games require the player to adopt is dependent on several open codes that include but are not limited to, “low idle capacity”, “intense clicking sessions” and “too powerful special events”.

Having generated a lot of useful open codes and developed categories the analysis could go forward to the next stage of the double diamond model (Figure 3). The purpose of this stage was to explore the relationships between the categories, how they affect, relate and depend on each other. Monotony
and demanding categories rely on each other in a broad sense. As shown in the interviews with a subject, the game Egg, Inc. can at times ask of the player to spend a large amount of time looking at the screen waiting for a special event to spawn if the player was to progress. The game implored the player to continue the monotonous interaction of looking for and tapping drones when they appeared, to receive the reward they gave.

One possible origin of the compulsive nature became apparent in an example of a bond between “demanding” and “intruding omnipresence”. It is the function that grabs the user’s attention in the form of notifications. This keeps the user aware of the idea that they need to regularly check in on the game to upgrade and improve production sources with the accumulated currency they have been generating whilst idle if they want to progress further in the game. The more often the user checks in, the faster the progress.

Some codes did not end up being compatible with the categories that emerged. It is important to highlight that these codes were not scrapped or forgotten. They were still valuable pieces of data as they emerged from the field studies and the contextual discovery. They were presented at the upcoming workshop and used in the ranking and discussion activities there.

The relationships between these three categories and the six elements that were searched for can easily become confusing when described in text. To clarify and make the context more concrete, a Coding Paradigm was created (Figure 10). A coding paradigm is a theoretical model that visualizes the interrelationships of the categories and the previously mentioned six elements (Strauss & Corbin, 1990). From this Coding Paradigm, a story around the phenomena could be built to generate a wider understanding of the context.

Figure 10. Sketch of the coding paradigm
Selective coding is the process of integrating categories to build a theory and core category on the phenomenon (Strauss & Corbin, 1990; Thi Thanh Thai et al., 2012). I attempted to relate the categories generated in previous stages to a core category which represents the main phenomenon, and in turn a design opportunity. The core category that emerged to represent the phenomenon is “Idle games are demanding and omnipresent”. As can be seen, this is a combination of the categories “Demanding” and “Intruding omnipresence”. This does not exclude the category “Monotonous” completely. This core category was chosen because close relationships can be drawn between the core category and the majority of previous codes and categories. This is where I decided that no new insights or ideas can be generated, and no new angles could be found to approach this phenomenon. This is a signal that sometimes referred to as saturation (Goodman et al., 2012).

This process could come off as linear, however, it’s important to emphasize that this grounded theory inspired process was a highly iterative one. It was necessary to go back and forth between the different coding stages many times over in order to develop clear and refined categories and relationships between categories.

4.6 Generating a how-might-we question

What follows is a summary of the design problems identified. It appears that idle games should have a stable progression of production without too long “slow trenches” that could remove the sense of progression in the idle game and make the gameplay monotonous. It was suggested that the special events are a fun part of the interaction with the game, but they should not diminish the idle production aspect of the game. It was also established that the accumulation capacity should not be set too low so that the game will intrude upon the user’s daily life too much. Demanding idle games can be regarded as fun by the users, but not when coupled with intrusive incursions. If interruptions are to take place, they shall be worthwhile for the player. Implementing several currencies was identified as less stressful and demanding. The idle aspect of the idle genre was described as the most valuable aspect when done in a non-intrusive and balanced demanding way. The game being constantly accessible and omnipresence was identified as an issue for the seamless game experience.

With the core category “Idle games are demanding and omnipresent” identified and the design problems identified, a design opportunity could be approached.

“How might incremental idle clickers balance omnipresence with demanding playstyles in a way that is not intruding nor burdening on the player?”
5 Design Phase

5.1 Ideation workshop

Having reached the beginning of the second diamond on the double diamond model (see Figure 3), a workshop was planned with the aim of ideating around what solutions can be applied to the design opportunities identified in the analysis of data.

The participants of the workshops were made up of individuals that participated in the interviews. The reason for this is that the content that will be discussed in the workshop is dependent on prior knowledge and experience of idle games and their mechanics.

The workshop served as a springboard of the ideation process and began by the participants being introduced to the design problems identified so far. The participants then ranked problems by their significance. This was followed by a discussion among the participants on their motive for their individual rankings. As seen in Figure 11, a brainstorming session was held where the participants will be finding solutions for the problems they ranked as most important.

![Figure 11. Picture from the workshop at a café in Malmö on April 4th.](image)

The workshop resulted in five different solutions that relate to the howmight-we question that was identified in the prior stage of the project. The solutions that were proposed are listed here:

- An exponential increase in production if no interactions are registered after a short amount of time. This would incentivize idling instead of enforcing it.
- A simple pause-button. Giving the player control over the production and chance of taking a break by pausing of the game.
• Introducing a mandatory idle period that is to be controlled and determined by the developer. For instance, between the hours 09:00 and 16:00, no interactions are available for the player and the game is idling.
• Setting up the game allows the player to set a strategy, determining how the player most efficiently will produce income (e.g. powerful idling, powerful clicking or a moderate balance between the two). Giving the player the ability to change their strategy that currently suits their daily life routine.
• High usage of dynamic mechanics. Shift the focus of the game to another goal, for instance, a new and different currency that can be used to affect the overall gameplay in some way. This would, however, solve the problem of monotony more so than the problem of intrusiveness.

In summary, the workshop highlighted an opportunity to basically finding a balance between interactivity and interpassivity.

5.2 Ideation
The ideation phase began with a session of brainstorming. A large number of ideas were written down on small paper-notes. At this stage of the ideation phase, problems were grouped and categorized to give a better overview of the situation. After this, potential solutions were written down on similar paper-notes without any limitations or evaluations, every idea that was thought of was written down. This was followed by individual evaluation of each paper-note as well as evaluation of the ideas that were proposed in the workshop.

The idea of introducing a mandatory idle period was deemed as the best candidate to develop and test with users. This particular idea was chosen because of its close relationship to the problems of the demanding and intrusive circumstances in incremental idle clickers. This idea, as compared to the “exponentially increased production"-idea would not depend on the player's self-control and ability to let the game idle untouched. Instead, the mandatory idle sessions would to an extent ensure that the player does not break the idle session due to the compulsive notion of upgrading and maximizing production.

5.3 Developing a prototype
The game was developed by programming in the languages JavaScript, JQuery, HTML, and CSS. It was optimized for a mobile device due to the nature of the genre. The graphics of an idle game can be made rather straightforward.
The different areas of the game can be seen in the figure above (Figure 12). In Figure 12, to the left, the game's main area is shown. This is where clicking and displaying of numbers take place. In the middle of the same figure, the shop area can be seen, where the player upgrades clicking and idle power. In the same figure to the right, the idle game area is visible. The clicking object shown in the figure to the left (Figure 12) will disappear and be replaced by something symbolic of the idle state. While this prototype does not have to be a complete game, it is important that the prototype gives the user the experience of being an idle clicker. For that reason, the basics that need to be implemented are clicking to accumulate currency, a shop to spend currency on upgrades, a prestige function, and passable graphics so that the user does not simply experience a webpage with increasing numbers and a button.

I created a mock-up narrative and the clicking function was designed to be a cartoon character, taking a step for each click the user performed. To strengthen the feedback of clicking, not only did the numbers increase but the cartoon character moves in the direction of each click.

The game was programmed to be idle almost the entire day. 17:00–21:00 was chosen to be the window of interaction. The reason for these particular hours was due to avoid normative working hours for the majority of people. This interaction and idle schedule eliminated the possibility of interacting with the game at hours commonly associated with work. When the game is idle, the clicking area will instead display the cartoon character sitting upon a horse, symbolizing that he currently has another form of transportation than user clicking.

The game was made publicly available to user testers through online hosting. Several save files on different devices was possible due to a “localStorage” function that operates locally on each phone.

The high-fi prototype can be broken down into three main areas. Figure 13 shows the three major areas of the high-fi prototype. To the left in Figure 13, the shop area can be seen where the user can upgrade and improve their production. In the middle of the same figure, the main clicking and viewing area is shown. To the right of the figure, the idle state can be seen. The clicking
and menu areas are removed and replaced by the cartoon character sitting on a horse, telling the user to do something else in a speech bubble.

Figure 13. Three major areas of the game in the high-fi prototype.

As can be seen in Figure 13, to the left and in the middle, a prestige function was implemented to increase the playability for longer user tests.

5.4 User testing

There were four participants in user testing. Each participant was given a link to a website. The website hosts the prototype and an icon was downloaded on the user’s phones home screen connected to the website to mimic the nature of an ordinary game app.

Each user test lasted for five days, two of which were on the weekend. At random during the active hours of the game, a subject was called up and asked a series of questions in relation to his experience of the prototype. At the beginning of each interview, the user notes were handed over to the user test supervisor.

User testing results with participant #1

The user notes data helped create a map of usage. As expected, the user had not entered the game at idling hours. This was explained by the interviewee to be due to the fact that there was nothing to be gained from entering the game at idle hours. Not even for checking the numbers and how much they had increased. This points to the notion that the game had successfully been removed from the player’s periphery. Contrary to this, the user stated that he knew the game was working for him in the background. He stated that it did, however, not compel him to play because there were no meaningful interactions that could be performed in the game at that time. In addition to this, there were no notifications reminding him of the game.

“It feels nice not having to do it now when I’ve got other things to do, it’s like a liberating type of confinement.” – (participant #1, personal communication, April 11, 2019).
The user also described a kind of futility in relation to the idle periods. He stated that while the idle period was relaxing, it also felt predictable. He expressed a desire to have more exciting things happen when the game is idle.

**User testing results with participant #2**

The mapping of use showed a similar result as the previous user test, there was no usage of the game when the idle period was active. When the game was interactive, notable clicking sessions were discovered in the user notes. When the idle period had ended, the player upgraded and went prestige. After this, the player had a sporadic clicking session. This was explained to have happened because he wanted to feel just how much his clicking was affecting the production with the new upgrades. The idle period was deemed nonintrusive and even relaxing. The user brought up the problem of demanding play. He described a desire to have more demanding interactive periods when the game was active.

**User testing results with participant #3**

Figure 14 shows the subject testing the prototype. The obligatory idle sessions were met with mixed responses. The user stated that he wanted control over when he could interact with the game. His daily life allowed him to play basically whenever he wanted, and he would like to game to allow him this playstyle. The user also stated that an incremental idle clicker is not uncommonly picked up at times of boredom or down-time, the mandatory idle periods prohibited this. The user also stated that the interactive periods were lacking in sophistication. He suggested adding general complexity to the game such as special events.

*Figure 14. Participant #3 testing the prototype in their home on April 24th.*
User testing results with participant #4

The idle sessions were experienced as both relaxing and annoying. Relaxing in the sense that it allowed him room to breathe in his already hectic daily life. Annoying in the sense that when he got rare moments of down-time, sometimes just for a minute or two, he could not enjoy the game because of the strict hours that had been set. Being an avid idle clicker gamer, he added that the enjoyment of these type of games often comes from being able to pick them up during the workday, not necessarily when being home.

5.5 Iterations

Two design opportunities were identified in user testing.

• There is a need for more activity or excitement in the idle session
• There is a need for personalized schedules of idle sessions

The second round of ideation commenced in order to make use of the insights gathered in the user testing.

Approach #1

An approach relating to the desire for more activity and excitement was identified. This approach revolved around staggering/exponential growth that could be implemented in the idle production. For every hour the game is idle the production would multiply itself by 1.25. This could potentially make every consecutive idle hour more valuable and exciting. In this approach, the activity is basically kept the same as before because at the end of the idle period it is still just an amount of currency rewarded. It is however made to be experienced as more eventful because of the staggering production rate. Each consecutive hour has more individual meaning for the production.

Approach #2

The design opportunity revolving around personalized schedules or idle sessions could be tried by letting the users individually pick out their own hours of idle sessions. For example, giving the users four hours to place around the day as they see fit.

Approach #3

An approach touching on both prementioned design opportunities is having the game always available for interaction with a staggering/exponential growth of production for every consecutive hour spent idle. However, if the game is interacted with, this “idle streak” is broken and the production is returned to its original speed. This would, however, affect the compulsive nature of the game. The user would once again be able to interact with the game as often as they wanted to or was compelled to. For this approach to work, one would have to make the staggering/exponential growth worthwhile as not to tempt the player to break the idle streak in vain.

The approach was chosen by its proximity to the how-might-we question (“How might incremental idle clickers balance omnipresence with demanding playstyles in a way that is not intruding nor burdening on the
player?”) outlined at the end of the contextual discovery, as well as by the likelihood of the outcome of the user-testing being usable.

In order to explore the relationship between interpassivity and interactivity, the first approach was deemed the most suitable to move forward with and prototype. It held the closest relationship to the how-might-we question. It was the safer route to go down in order to increase the likelihood of this being a user test of not only interpassivity or interactivity but the combination and tension of the two. The approach being very provocative, in terms of limiting gameplay to certain hours also contributed to it being picked.

The first approach was developed in the same way as the original prototype, namely through programming in Javascript, CSS, HTML, and jQuery. When compared to the first prototype which was made in rather high fidelity in terms of programming, this one was more quickly put together because of the approaching deadline. The graphics were identical to the original prototype. The prototype was distributed to the user testers and the testing could begin.

5.5.1 Findings from user testing of the first iteration

The subjects experienced the prototype’s idle session as being emotionally rewarding, but only on a basic level. They enjoyed the thought of the game multiplying the profits for every hour spent idling. However, since the game was locked in idle session, it felt like a shallow reward. The mandatory idle period was calming up until the point the reward was given, which did not feel parallel to the idle session.

One subject brought up the problem of mandatory idle sessions. Having previously enjoyed the experience of mandatory idle sessions he now revised this statement. The gameplay had over the course of days become monotonous, even with the staggering idle growth. He expressed a yearning for control over his active opportunities even though it occasionally caused him stress due to over-accessibility to his attention. The subject did not suggest removing the mandatory sessions completely, but that one should ideate and prototype the idea further, to find a moderate balance between mandatory idle sessions and active gameplay. It simply did not work having the game active for four hours in the evening. The subject suggested that it had to be more fluid or dynamic.

In summary, the first iterations user testing resulted in the insights that the mandatory idle sessions with exponential production growth were experienced as calm and emotionally rewarding as opposed to the experience of an idle clicker with constant accessibility. The actual rewards after an idle session were however deemed shallow and not on par with the idle session that produced it. At the same time, the mandatory idle sessions were deemed too rigid for long-term sustainability of using the game.

5.5.2 Findings from user testing of the second iteration

This led to the development of a second iteration. This approach was originally introduced in the first ideation session as approach number three. This iteration touched upon both design opportunities found after the first user testing:
• There is a need for more activity or excitement in the idle session
• There is a need for personalized schedules of idle sessions

This approach consisted of having increased production growth for each consecutive hour spent idling without any interaction. However, if the player interacts with the game, the incremental production streak bonus is removed. This iteration was designed to answer the player's desire for control for interaction, but also their desire for being able to leave the game to idle without it demanding attention from the user. This iteration, however, leaves room for the possibility of the user giving in to the compulsion of constant accessibility of the game.

This iteration was introduced in user testing and the results were varied. The control of interaction was appreciated more now as the game implicitly convinced the player to stay idle if production speed was to be maintained. With the player having control over the interaction in the game the idle sessions were experienced as more rewarding. What remained was the issue of over-accessibility. The user testing revealed that the players had let the game idle almost half a day at a time, as opposed to repeated upgrading and maximizing every other hour as evident in the mapping of use in Figure 7. The exception to this was the times when the game was brought up because of downtime.

The game had not left the users periphery as well as the mandatory idle sessions-prototype had, as revealed by several subjects. This was however not deemed intrinsically bad; having given the users responsibility of their idle sessions the users also expressed a more rewarding experience in relation to the currency gained after a session of idling.

In summary, there is a contradiction in the player's desire for control in incremental idle clickers. What may be experienced as monotonous or demanding playstyles when testing different types of idle sessions differs greatly from player to player. Not only do they differ from player to player, but they also differ seemingly haphazardly for the same player during different times of user testing. This points to a contradictory feeling inside each player in relation to idle and interactive gameplay that may depend on several and various personal factors. It is however clear that the idle and passive gameplay aspect of incremental idle clickers are aspects of the game that are highly valued.

6 Discussion

Sleiman (2015) presents the idea “ideology of Starbucks”; a consumer of coffee choosing to buy coffee at Starbucks because of their supposed ethically produced coffee. The consumer receives a message from Starbucks that the coffee just purchased is made from an ethical standpoint and that a percentage of the profits is donated to charity (Sleiman, 2015). This leaves the consumer satisfied with the idea of having chosen the ethical alternative and
contributed to charity. This is suggested to scratch the itch the consumer has for donating to charity, with little knowledge of how they have, or if they have at all, contributed to charity (Sleiman, 2015). In the same way, we can discuss the idea of interpassivity in incremental idle clickers. To an extent, the game plays itself, so the user is free not to play the game. Continuing this line of reasoning, the interpassivity in the incremental idle clickers can be argued to give a false sense of productivity, affecting the likelihood of the user being truly productive in other activities. The game scratches the users itch to be productive.

Western philosophy starts from the ego, after which it continues out into the world, to the Other (Ernesto Coelho & Claudio Figueiredo, 2003). The other becomes a reflection of the ego, or something that can be solved like a puzzle and there’s a negative connotation to this Other (Ernesto Coelho & Claudio Figueiredo, 2003). Fizek (2018) discusses this problem of transferring pleasurable activities. Fizek (2018) goes on to suggest that the pleasure the player derives from having an incremental idle clicker be idle in the background may be misperceived as being the player’s own pleasure and not the Other’s (i.e. the game). From this, it may be argued that the player does indeed experience the pleasure as their own, but there is a risk of extending and transferring the pleasurable activity to something other than oneself. I consider it to be ethical to design games in such a way that allows the player to derive pleasure from the gameplay firsthand.

Considering the contradictory feelings that the users expressed during the project, it could be worth taking note of the designer’s role in relation to the user’s feedback. When ideating and developing prototypes with data divulged from user interviews and workshops, this possible contradiction should be taken into account. Had the development of the prototype followed the user’s desires to the letter, the outcome would have been vastly different. This project’s user studies suggested that sometimes the user desires need to be analyzed with a critical lens and the designer needs to look at the whole situation instead of as isolated statements.

As our technological society moves in the direction of machine autonomy, with self-driving cars and smart homes, the role of the user becomes increasingly vague. For example, is a chauffeur of a self-driving taxi really a chauffeur? There is potential societal value in analyzing games with the theory of interpassivity and self-determination in mind. It could not only further the research and knowledge of the player’s interactive role in game settings, but also the role of the user in general digital device settings. The emergence of a game genre that revolves around the notion of passive play, and the player striving for more autonomy and more passivity in their game experience may be an indication of a rebellion against too much interaction.

It may be the case, that the moderate balance between interactivity and interpassivity in idle games lies in the player’s opportunity for ending an idle session but abstaining from it and enjoying the thought that the game is playing in your stead and that you, the player, can control that fact. Perhaps, to be enjoyable gameplay, the player must have the opportunity for control and access. The constant accessibility of an idle game could be exemplified in having a bag of sweets in the pantry but deciding not to eat it right now and
save it for later. This prolongs the satisfying idea that at any moment I wish, I could eat a bag of sweets. This can be related to the theory "deferral of gratification". In incremental idle clickers, players always have that bag of candy in the pantry. As long as the player does not pick up the game and receive the production rewards, the player can enjoy the feeling of always picking the larger future reward. This can, however, become detrimental. If the reward increases in size over time with no limit, the game gives the player no incentive or motivation for entering the game. This suggests, as discussed before, having a moderate capacity of idle production. Having the capacity too small makes the game demanding and intrusive, having the capacity too large makes the game self-defeating in that there are fewer reasons to enter and play the game.

The elements demanding, monotony and intruding omnipresence has been identified as compulsive and negative aspects of the genre. They have however also, to a small extent, at times been appreciated in user tests. This suggests that when designing incremental idle clickers, one cannot simply remove the aspects that fall under these three elements. This points to the value of finding a balance of these three elements.

Designers have a responsibility in terms of the knowledge they uncover. Interacting with technological devices can change our behavior (Robertson, 2006) and ethical dilemmas can be uncovered in design work that could potentially have a negative effect on the users. The designer should be responsible for the publication of that knowledge for the good of society and the specific user group.

7 Self-Critique

A misstep in the design process occurred and could have been avoided if I had chosen another iteration proposal. After the first round of user testing, I decided on a second iteration. At the end of the project, it became apparent that this iteration was an unnecessary one in terms of insights yielded, and as much could have been expected if the iteration had been given more time and thought.

Some participants in the user testing experienced the prototype as not fun enough to test over a longer period of time. This was explained to be due to its relatively low functionality in comparison to finished games. While prototypes do not need to be high fidelity to be able to explore the design situation, it is important to know your audience and prepare that audience for the prototype they are about to test (Houde & Hill, 1997). In hindsight, this importance became very clear. If the user test subjects had been better prepared for the user testing the results could have possibly been more fruitful.
8 Future work

To thoroughly test the long-term effects of an idle clicker with different types of idle sessions, several week-long test periods would be beneficial. This would give a better insight into how the game embeds itself in the daily lives with the tested idle session variation. In order to be able to test an idle clicker long-term, the prototype would have to be of considerable high-fidelity. This is to ensure that the prototype does not become dull or predictable after a few days of testing, as was experienced in this project’s user testing.

Finding a moderate balance of interactivity and interpassivity may prove useful to decrease the anxiety users have expressed in experience to incremental idle clickers. This is however only one part of the game experience. An ideal incremental idle clicker is not only free of anxiety, but it is genuinely fun to play. While future work could revolve around finding a balance between interactivity and interpassivity, it should also consist of finding a way to include an enjoyable gameplay experience interplaying with that balance.

To explore the user’s contradictory and dynamic attitude toward passive and interactive gameplay one would have to have in-depth testing with users accompanied by regular and comprehensive interviews. Data from these interviews would be able to help develop a template of different users and their individual needs. This would then be used to generalize the different types of individual players in order to develop templates of playstyles that fit larger sections of the user base.

9 Conclusion

This project resulted in a number of insights that may be of use to work done in the area of passivity and interaction. The findings serve as a contribution to a set of guidelines that can be considered when designing incremental idle clickers. In addition to this, the project disclosed several ethical dilemmas to consider when designing interactivity and interpassivity.

Three major elements that should be considered when designing an incremental idle clicker became apparent. During the process of this thesis, it became increasingly clear that these three elements jointly contributed to the compulsive nature of the genre. Incremental idle clickers tend to become monotonous, demanding and have an intruding omnipresence at various stages of the gameplay.

The design phase resulted in potential solutions or guidelines for avoiding these negatively perceived characteristics. Designing dynamic mechanics affect the gameplay in that it becomes less monotonous, albeit at the risk of becoming more demanding. Omnipresent and intruding mechanics and playstyles should be avoided, preferably by removing game notifications completely. If intrusions must occur, then they must be of considerable value
to the player. The most complicated of the three points is the issue of demanding gameplay. This is where the balance of interactivity and interpassivity becomes of significant value. The balance, however, proved itself to be difficult to find. What became clear, however, was that the idle aspect of the game was the most appreciated aspect, as opposed to the interactive aspect. One way of decreasing the demanding nature of an incremental idle clicker is to lessen the value of special events and make sure they do not occur often enough to constantly keep the user's attention to the game.

As may be expected in the balance between interaction and passivity, no answer that fits all users could be successfully identified. While the majority of users enjoyed passivity being a substantial part of the gameplay, when this passive gameplay should occur is varied. Personal daily life routines and personal playstyle preference were identified as key determinants. It became clear that the player has a desire for control over the passive aspects of the game. Furthermore, users expressed contradictory desires in relation to the passive and interactive parts of the game. That which was at one time experienced as a satisfactory balance between interaction and passivity was at other times not appreciated by the same users. This haphazardly changing of attitude suggests that the context is more complex than being able to find one single moderate balance of interaction and passivity.

Incremental idle clickers need personalized playstyles and a variation of passivity. Players frequently expressed a desire for more passivity and idle sessions, but when their sporadic daily life allowed it, they wanted the opposite; full accessibility without restrictions in terms of idle production. This suggests that demanding playstyles are not intrinsically detrimental to an idle game experience if accompanied by personalized playstyles and player-controlled idle sessions. However, implementing player-controller idle sessions does give the user full accessibility which has been shown in this project, to cause anxiety in the user.

There are important ethical considerations to be mindful of when designing with idling as a mechanic. As idling in a game can be viewed as a way of discarding and automating the grinding activities in a game. This leads to the notion of the game taking over the responsibility, and to an extent the pleasure of playing the game. At the end of this argument, the game is intentionally depriving the player of gameplay that could potentially be experienced as enjoyable. This is done in an apparently beneficial way, as the users often describe these grinding interactions as tedious. However, players have different needs in terms of interpassivity and interactivity in their gameplay, and so the issue of the game potentially depriving players of satisfying gameplay arises.
10 References


