Designing Cards as a Polymorphic Resource for Online Free to Play Trading Card Games

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Abstract

Seasoned players of free to play trading card games or players that invest large amount of money in digital or physical trading card games, end up having superfluous cards that hold no value to them. The purpose of this thesis is to create designs that would counter this problem. We analysed a selection of popular games on the market to get a better understanding about the depth of the problem and existing designs and mechanics to counter said problem. With the knowledge gained from the research, we intended design several systems that would give cards a polymorphic value. To validate those designs we decided to conduct qualitative interviews with highly experienced players of the genre.

We discovered from our research and interviews that the problem with superfluous cards was larger than we had anticipated, and few games had taken steps to counter the problem. The systems we designed gave cards a polymorphic value, and the designs were proven successful through our validation. Our research and interviews suggest that by implementing polymorphic attributes to cards it could lessen or even remove the problem of superfluous cards, and at the same time increase the sales figures on booster packs.

Keywords: Free to play, Trading card game, Collectible card game, Online play, Duplicate cards
1 Introduction

Trading card games have been around for over 100 years, and the first published game to fit what we would today define as a trading card game would be *The Base Ball Game* published by The Allegheny Card Co in 1904.

The concept of the modern trading card game that we are familiar with today was set by *Magic: the Gathering*. Designed by Dr. Richard Garfield and published by *Wizards of the Coast* in 1993, *Magic: the Gathering* was the first modern trading card game.

Since then hundreds of different Trading Card games have been released, both in physical and digital form, and the genre is played by millions of people worldwide.

Different trading card games have different rules and mechanics, but in general they are played using cards that contain specific information on each card, and a set of rules applied to them. In a typical trading card game players compete against other players.

Each player has to build a deck of cards according to the rules of the specific game, and then do combat against another player’s deck. Typically the combat is done in turns that follow a set pattern, where players perform actions using their cards and the outcome is based on statistics on each card.

The player’s life is usually represented by hit points, and the player who first manages to reduce his opponent’s hit points to zero is deemed the winner.

We are both experienced players of trading card games and during our years of commitment to the genre we have discovered what we see as design flaws or, potentially, a lack of design when it comes to certain features/aspects. This holds true for both older and current and digital or analog trading card games.

The flaws that we find have a negative impact on said games is mainly a problem with duplicate cards, and a difficulty for players to compete on equal terms, depending on the amount of money they invest in the game.

We are currently developing a free to play trading card game of our own called *Little Warlock*. Our aim is a design that addresses these flaws and improves the trading card game genre. Our thesis documents this process.
2 Terms

**Android**: Android is a Linux-based operating system designed primarily for touchscreen mobile devices such as smartphones and tablet computers. Commonly the term Android refers to a smartphone that is not an iPhone.

**AppData**: AppData is an application traffic leaderboard hub for the Facebook, iPhone and Android developer community.

**Application**: Application software is all the computer software that causes a computer to perform tasks beyond the running of the computer itself. A specific instance of such software is called a software application, application or app.

**Avatar**: In computing, an avatar is the graphical representation of the user or the user's alter ego or character. It may take either a three-dimensional form, as in some games or virtual worlds, or a two-dimensional form as other types of games, an icon in Internet forums and other online communities.

**Booster Pack**: In collectible card games a booster pack is a sealed package of cards, designed to add to a player's collection. Booster packs generally contain a relatively small number of items, randomly assorted. Booster packs are the smaller, cheaper counterparts of starter packs, though many expansion sets are sold in this way only. While booster packs are cheaper than starter packs, the price per item is typically higher.

**Card**: the main mechanic of trading card games, how they work are game specific.

**Commodity**: Things sold in the game for game or premium currency.

**Co-Op**: Short for cooperative, in games referred to when two or more players team up to achieve a specific goal.

**Dungeon**: A dungeon is specific stage of a game. Each dungeon usually has an associated objective, which may be as simple as walking from point A to point B. When the objective is completed, the player usually moves on to the next dungeon.

**Energy**: Many free to play games use a mechanic that is known as energy. Energy is a special resource that is required to perform many actions in the game. When the player has exhausted his energy he cannot perform those actions until the energy is replenished. This is done by either waiting or spending premium currency. The mechanic is in other words a way for the developers to offer players a game for free but forcing them to pay if they want to play for lengthy amounts of time. The energy is often represented differently in different games but the mechanic is the same.

**Experience**: An experience point (often abbreviated to Exp or XP) is a unit of measurement used in many games to quantify a player character's progression through the game. Experience points are generally awarded for the completion of quests or overcoming obstacles and opponents.

**Expansion Set**: Contains a new set of cards complementary with the game and already existing cards.
**Free to Play:** Free to play refers to a business model for online games or applications in which the game developers do not charge the user or player in order to join the game. Instead, the revenue comes from advertisements or in-game sales, such as payment for upgrades, special abilities, special items, and expansion packs.

**Game Currency:** In a majority of free to play games a user will earn a resource while playing the game that is called different things like, gold, texi or gasoline. Game currency and game coins is a collective name for the in-game currency earned while playing the game.

**HP:** An abbreviation for Hit Points which is a value used to determine how much damage a character can withstand. When a character is attacked, or otherwise hurt, the total damage dealt (which is also represented by a point value) is subtracted from their current Hit Points.

**IPhone:** The IPhone is a line of smartphones designed and marketed by Apple Inc.

**Kongregate:** Kongregate is an online games hosting website owned by Gamestop Corporation, which allows users to upload user-created games. Users can rate the games and search games by its user rating.

**Mana:** A unit of magical power that are used in many tabletop role-playing games, role-playing video games and similar games as an expendable resource that is needed to pay for magic spells and other abilities, such as special attacks.

**MDA Framework:** In game design the Mechanics-Dynamics-Aesthetics (MDA) framework is a tool used to analyze games. It formalizes the consumption of games by breaking them down into three components - Mechanics, Dynamics and Aesthetics. Despite these three words being used informally for many years to describe various aspects of games, the MDA framework borrows them and provides concise definitions:

Mechanics are the base components of the game - its rules, every basic action the player can take in the game, the algorithms and data structures in the game engine etc.

Dynamics are the run-time behavior of the mechanics acting on player input and "cooperating" with other mechanics.

Aesthetics are the desirable emotional responses evoked in the player - joy, frustration, fantasy, fellowship.

From the perspective of the designer - the mechanics generate dynamics which generate aesthetics. This relationship poses a challenge for the game designer as he is only able to influence the mechanics and only through them can he produce meaningful dynamics and aesthetics for the player. The perspective of the player is the other way around. He experiences the game through the aesthetics, which the game dynamics provide, which emerged from the mechanics.

**Meta game:** Meta gaming is a broad term usually used to define any strategy, action or method used in a game which transcends a prescribed rule set, uses external factors to affect the game, or goes beyond the supposed limits or environment set by the game. Another definition refers to the game universe outside of the game itself. In simple terms, it is the use of out-of-game information or resources to affect one's in-game decisions.
**Online Trading Card Game**: An Online Trading Card Game is a game played on a computer or console, using rules that describe the players' objectives and with specifically designed sets of playing cards.

**PvE**: An abbreviation for Player versus Environment which is a game mode where a player or group of players competes against opponents or obstacles that are controlled by a computer.

**PvP**: An abbreviation for Player versus Player which is a game mode where a player or group of players competes against another player or group of players.

**Polymorphic Resource**: A resource that can be converted from its original use, to another use. In *Little Warlock*, this conversion process destroys the original resource.

**Premium Currency**: Most free to play games allow the user to buy a resource with real life currency and a majority of them call those resources different things like, crystals, dragon coins or klintz. Premium currency is a collective name for the game resource purchased with real life currency.

**Rarity**: In trading card games, cards often have different rarity. They usually range from common, uncommon, rare, epic, and legendary. Higher rarity cards are usually more powerful than lower rarity cards. In physical trading card games the rarity of a card and how many copies of the card is printed are directly related, cards of higher rarity are printed in fewer copies and vice versa. And in digital trading card games they can use various techniques to make cards more or less rare; one is to draw random cards with lower percentage of them being of higher rarity. But some apply the exact same technique like physical trading card games, with keeping track of how many digital copies are distributed.

**Starter Pack**: A starter pack is a sealed package of cards, designed to serve as the beginning of a collection in a collectible card game and usually contain a fairly large number of items. In some cases these items are randomly selected, while in others they are pre-determined, or often some combination of the two. In almost all cases, they are designed to provide a set of cards that is sufficient for a new player to play a game according to the rules, if not necessarily with a high probability of winning.
3 Background

The problem with superfluous amounts when it comes to collectible items is not specific to trading card games or even games at all. This holds true for any collections where some items are rarer than other, and where the main way of obtaining said items is to receive them at random.

In the late eighteenth century, tobacco companies placed a random cigarette card in each pack of cigarettes for people to collect. Some of these cards can be bought today for less than five dollars because even today they still exist in huge numbers, while some of the rarest ones have been sold on auction for over two and a half million dollars.

Hockey, baseball or football cards are sold in booster packs and the most famous players have a higher rarity, which means collectors will end up having large amounts of less known players before they manage to collect all the rare ones.

Stamp collecting is a famous hobby that millions of people share. Stamps are not printed in different amounts to create more or less rare stamps, but with time the older stamps have become rarer and more valuable, and there is also the case with stamps that has become very rare because of printing errors, cancellations or other reasons.

Parallels can even be drawn to bird watching; most bird watchers will see countless numbers of common species before seeing a truly rare and elusive one.

When it comes to trading card games, the rarity of a card is very often used as a basis to design or calculate its approximate power or value. This is the case of the majority of trading card games but there are cases where other relationships between rarity and power have been tested. (Ham 2010)

The company Digital Addiction tried balancing their game Sanctum so that rarity equated to specialization of a card instead of power. The more useful a card was the more common the designers made it. And the more specialized the card was the higher rarity it was given, although this design was never widely adapted.

The majority of trading card games offer booster packs as the most common way to obtain new cards. A booster pack contains an amount of random cards spread between different levels of rarity; this however is game dependent.

In the game Magic: the Gathering which is the first modern trading card game created and one of the most played game worldwide today, the boosters and rarity relation is as follows:

Expansion Name: The Dark

Cards per Booster Pack: 8

Rarity Split: 6 common cards

2 cards split, randomly, between two thirds uncommon and one third rare.

Expansion Name: Chronicles
Cards per Booster Pack: 12
Rarity Split: 8 common cards.
  3 uncommon cards
  1 rare card

Expansion Name: *Mirage*

Cards per Booster Pack: 15
Rarity Split: 11 common cards
  3 uncommon cards
  1 rare card

If we look on the spread of rarity in those examples there is a common denominator: the majority of cards in a booster packs are of less valuable rarity. The result of this is that people who play trading card games will be likely to end up with a considerably larger amount of common cards in relation to rare cards.

They will most likely have several duplicate common cards before obtaining all the different rare cards of an expansion and as a result the player will have more common cards than he will need in order to play the game. If a player gets duplicate rare cards he could sell them or trade them with other players, but the common cards have very little value on the market because everyone that buys booster packs will get a large amount of them.

A player that buys booster packs to get the powerful rare cards will eventually have more duplicates of common cards than he is either allowed according to the rules, or wants to utilize in a deck. This will make each new booster pack potentially less valuable because the majority of common cards will just be superfluous for the player.

This is the background and reason for the project; we want to design the cards in our trading card game as a polymorphic resource that will be valuable for players even in superfluous amounts.

However there is another major problem in the trading card games. Players who spend a large amount of money on purchasing booster packs will have more cards and potentially more rare and powerful cards than someone who spends less money. The player with more cards will then also have a preconditioned advantage when it comes to playing the game because he has more cards to choose from to build viable decks.

If for example the selection of units in the game *Chess* was structured like a trading card game, one player might have built a deck (team) containing five queens and four rooks while the opponent only has pawns and the occasional knight.

In competitive play this leads to a situation where it is not only the player’s knowledge about the game and tactical thinking that impacts the outcome, but also how much money a player has spent on cards.
When applied to the free to play model, it can cause such a gap between the players that pay and those who do not, that a non-paying customer has no chance to compete.

This holds especially true for those games that only offers player versus player combat.

Bearing this in mind we want to take special consideration to design our polymorphic card resource system in a way where we can take this problem into consideration as well, giving both paying and non-paying players a meaningful gameplay where they feel they have a fair chance in competing.

We feel that this is of very high importance since by adding a second value to the cards, if the design is such that seasoned or experience players would benefit more from them, it would mean that the gap between paying and non-paying players could be potentially even greater.
4 Problem and Method

Is it possible to design cards as a polymorphic resource for an online free to play trading card game with a player versus player aspect without jeopardizing the balance of the game?

Our method is based on research and analysis of a few of the most popular online games in the genre. The games are chosen based on their popularity, user ratings and active players. We are researching popular games that have a high number of positive reviews and ratings, and a very high number of players to reduce the risk of gathering data that is atypical for the genre.

This research is then used as a foundation to design systems that aims to improve the successful features, and addresses the major flaws, in said successful games. We are using the MDA framework when designing our systems, looking at the problems from an aesthetic point of view. Our aim is that the players will experience our systems as a way where every new card obtained has a value, that they have control over the process and that said systems would contribute to a fair and enjoyable game experience regardless if the player spends premium currency or not.

The design is then validated by a qualitative survey where five experienced players of the genre are interviewed about our new system, and asked about how they feel it would fit in a typical game from the genre. The people interviewed all have at least four years’ experience of trading card games with competitive play, some on a professional level. The interviews are conducted over phone or Skype. Before the results are included in this thesis a transcript of the interview are sent to the participant in order to verify that we have not interpreted anything incorrectly.
5 Research

We played each game we analyzed over a four week period and did not spend any money to buy premium currency but played the games as free to play. During our play sessions we took notes about our playing experience and reversed engineered designs that were relevant to our problem formulation.

5.1 Analysis: Urban Rivals

*Urban Rivals* is a PvP trading card game played in the browser or downloaded as an application for Android or IPhone. The game was first released as a browser game in January of 2006 and has a 27 million player base and over 2 billion matches played.

5.1.1 Cards

Each card has a set of properties:

- Attack value
- Damage value
- Evolution stars
- Experience bar
- Ability
- Skill
- Rarity

These properties are individual to each card.
The attack value, damage value, ability and skill are used to determine outcomes in combat and stars represent the current, and maximum, level of a card.

All cards gains experience from participating in combat and when enough experience is gained, the card will gain a level and a star will light up. When a card gains a level, the attack and damage values increase. If the card is at maximum level, all stars are lit and the ability is unlocked.

The rarities on cards ranging from lowest to highest rarity are common, uncommon, rare and legendary.

In general, cards with higher rarity have more stars and a higher maximum level. They also have higher attack and damage values at maximum level.

Cards can be gained by purchasing booster packs from the in-game store. They are purchased using a premium currency and each booster pack contains seven cards.

Cheaper booster packs contain at least one guaranteed rare while the more expensive booster contains at least three rare cards.

There is also an auction house where players can list single cards and sell them to other players for game currency.

Cards can also be rewarded as part of completing or competing in different game modes.

5.1.2  Decks

In order to participate in competitive play, a player must first create a deck consisting of at least eight cards. The cards used in a deck are not exclusively locked to that deck; one specific card can be part of several different decks at the same time and there can be no duplicate cards in a deck.

5.1.3  Combat

The combat in Urban Rivals is played between two players. Each player starts with a specific amount of HP and the player that first reduces his opponent’s HP to zero wins. If no player has zero HP at the end of combat, the one with the most HP will win.

Combat starts out with four cards being randomly selected from each deck by the game and then they are placed on the table for both players to see, the rest of the cards in a deck will not be used for the duration of the combat.

Both players also receive a resource called pillz, that are used in combat to increase the attack value of a selected card by multiplying the base attack value with the amount of pillz the players chooses to use.

In alternate turns one player picks an unused card from the randomly selected cards, and selects how many pillz they are going to use in order to increase the attack value of the card. The opposing player does the same and combat between the selected cards commences.
The pillz used will increase the cards’ attack value by the same base amount it originally has. Therefore, a card with higher attack value will benefit more from each pillz used. The winning card will then deal damage to the opposing player according to the cards’ damage value.

For the remainder of the combat both cards are used and cannot be selected again.

5.1.3.1 PvE

There are two different PvE game modes in Urban Rivals.

1. Solo mode is a single battle against a computer controlled opponent. Winning solo battles will award the player with game coins.

2. Duel mode is a number of consecutive battles against different computer controlled opponents. Each battle will earn the players a small amount of game coins and when all battles are done the player also receives a card.

5.1.3.2 PvP

There are six different PvP modes in Urban Rivals.

1. Classic mode is a single battle against another player. Classic game mode is also split between two ranges, one for players of level 1 to 8 and the other for players of level 9 and higher. In the level 1 to 8 bracket fights are selected randomly by the computer and in the level 9 and higher the player decides who to fight from a list.

2. Tourney mode, each second hour a tournament is started and players will earn points for winning battles. When the tournament ends the players with the highest points will be rewarded with game coins and if scoring first also a premium coin.

3. Training mode is a single battle against another player. Cards receive more experience in this battle mode.

4. Death match mode is a 20 minute tournament where a group of 15 players will battle each other. Each victory award points and the player with the highest points when 20 minutes has past will win.

5. ELO mode is a weekly tournament. Players participating in ELO mode will start with an ELO value of 1000, winning combats will increase the value and losing decrease the value. At the end of the tournament the top 100 players will have a chance to gain cards; also players with high ELO value will be eligible for card lottery. At the end of the tournament, if a player is above 1000 points they will also be awarded with game coins and potentially premium coins.

6. Survivor mode is consecutive battles against other players. The longer a player can keep a consecutive win streak the higher amount of game coins is awarded when he loses.
5.1.4 Experience through playing

First we were mainly playing the PvE modes but also tried a little Classic mode PvP and it felt balanced and our opponents had comparable cards in terms of power. When we reached level 9 and were forced to enter the higher bracket of the classic mode it all changed. Instead of playing versus similar level opponents with fairly equal decks, we had the option to select who we were playing against.

When we challenged other players close to our level, we were still playing on equal terms but when we challenged players around level 20 or higher, our opponents had better cards than us, we rarely stood any chance at all.

With the pace we were gathering game currency, we would have to play for months to be able to afford similar cards as our opponents.

During our play sessions, we earned around 10 game coins per match and a match took between four and eight minutes to play.

The cheapest common card on the marketplace was listed for 100 game coins, rare cards in the in-game marketplace cost between 500 to 20000 game coins while legendary cards ranged from 20000 up to 500000 game coins.

In order to buy the cheapest card listed in the marketplace we had to play for an average of one hour to earn the amount of game currency required. This is the only way to obtain cards without buying booster packs for premium currency, playing the PvE duel mode or placing high in other PvP game modes.

When facing so many problems when playing without spending money, being able to get cards from other game modes like survival or tournament without any restrictions felt impossible.

5.1.5 Cards as Polymorphic Resource

The evolution mechanic of a card can be seen as a polymorphic function, but because it is automatic a player will always end up with the best version of a card. The aesthetics of this design means that a card without its stars filled is sub-optimal. This is also enhanced by the fact that the ability is only unlocked when the card has reached maximum level.

The players can also list cards in the in-game marketplace for a price of their choice.

Cards can also be sold directly back to the game for a fixed price. Generally a card sold to the game did not even yield half of the game currency required to buy the cheapest common card listed in the marketplace.

5.1.6 Summary

Every duplicate card in *Urban Rivals* is only worth game currency because a player cannot use two cards of the same type in a deck, and a player can build several different decks utilizing just one copy of a card.
Due to the fact that a player can only utilize one copy of each card for combat, a player will experience the problem with superfluous cards the instant he attains one duplicate card. The duplicate copy still has a game currency value, but the market to trade them is more likely to be saturated the lower the rarity of the specific card.

The dynamics between the pillz mechanic in combat and the evolution mechanic enhance the aesthetics that cards are sub optimal in combat until they are in their final evolutionary state.

A non-paying player earns enough game currency to buy a couple of common or uncommon and some rare cards in a couple of hours. However looking at the higher price ranges of rare cards or legendary cards there is a huge difference.

When calculated how much time it would take to play the game and earn enough game coins to buy a mid-valued rare card for 25000 game coins, the numbers are self-explanatory. 25000 coins divided by 10 earned coins per match, multiplied with the average match time of 6 minutes, means that a player would have to spend 250 hours to earn enough game coins to buy just one mid-priced rare card from the marketplace.

A player could also earn powerful cards from being placed in the top in the various PvP modes, but to be able to do so a player would have to already have a strong suit of cards as there are no limitations that diminish the gap between seasoned and new players.

While *Urban Rivals* is a free to play game a player would not realistically be able to play on a competitive level without spending premium coins.

This splits the player base in non-paying and paying players, because of the sheer amount of hours a non-paying player needs to play (if it is even possible) to be able to obtain the same amount or quality of cards.
5.2 Analysis: Clash of the Dragons

*Clash of the Dragons* is a browser based trading card game that offers PvE and PvP combat. It is one of the most popular card games on the game portal Kongregate, with over 17 million plays according to that portal’s own statistics.

In *Clash of the Dragons* the player is represented by an avatar and the avatar has several base properties.

These base statistics are strength, agility, intellect and wisdom. The avatar also has a resource called stamina that is used as what we have defined as an energy bar, and is regenerated in a rate of one stamina point per minute.

The avatar earns experience when winning combats and when enough experience is earned, the player/avatar gains a level and a skill point. Skill points can also be purchased from in-game store for premium currency. The skill points can be used to purchase a variety of skills.

The avatar can also be equipped with various items that can be gained by winning combats or purchased from the in-game store.

This equipment affects the avatar’s base properties.

5.2.1 Cards

Each card has a set of properties:

- **Attack Value**
- **Defense Value**
- **Card Type**
- **Rarity**
- **Effect**

These properties are individual to each card.
The properties of the player avatar affect the cards properties as follows: Strength increase a cards’ weapon damage and absorption value. Agility increases a cards’ weapon damage and critical strike chance. Intellect increases a cards’ magic damage and critical strike chance. Wisdom increases a cards’ magic damage and absorption value.

Every card belongs to one of four card type categories: attack cards, magic cards, potion cards and non-player character cards.

The attack value, a defense value and effect is used to calculate results in combats.

The different rarity levels are common, uncommon, rare, epic and legendary and, in general, cards of higher rarity have higher values in attack and defense.

Cards can be gained in three ways:

1. Buying booster packs.
2. Winning a combat and buying booster packs might also award the player a collection item, and when a player has a specific set of collection items they can be turned in for a card.
3. Performing well and being placed at the top of leaderboards or in tournaments can also reward the player with new cards.

The cheapest booster pack bought with game coins contains five common cards while the most expensive contain common and uncommon cards with the occasional rare.

The cheapest booster pack bought for premium currency contains at least two out of five rare cards, and the most expensive booster pack contains five rare cards with a chance of them being legendary.

5.2.2 Decks

When building decks, the player is restricted to the following limitations:

A deck can only have one duplicate card and a maximum amount of twenty one cards.

The number of duplicate cards, as well the upper limit of cards in a deck, can be increased by spending skill points on specific skills.

Cards are not exclusive to decks so one copy of a card can be used in all decks.

5.2.3 Combat

The combat in Clash of the Dragons is played between two players or one player and a computer controlled opponent.

Combat starts with both players drawing three cards from their deck, then on alternate turns, the player plays one cards’ and then draws another card.

A card deals damage according to its attack value.
If the card played is of the type: Magic, the player’s magic attribute is added to the attack value.

If the card played is of the type: weapon, the player’s weapon attribute is added to the attack value.

The total damage is then decreased by the opponent’s absorb value and for each point of damage that remains the opponent discards one card from his deck.

The amount of cards in each player’s deck also represents their life. In order to defeat an opponent in combat, a player needs to deplete their opponent’s deck.

5.2.3.1 PvE

In the PvE aspect of game, the player is presented with a map containing several locations. Inside each location the player must dispose of various non-player enemies, attacking said enemies requires the player to have enough stamina.

Play continues linearly until the final non-player enemy on the map is defeated. When that happens, a new region on the map is revealed and available for play.

5.2.3.2 Co-Op PvE

Cooperative battles are called brawls. This is where several players fight against a single non-player enemy. Because there are many players, the enemy is harder to defeat than the usual non-player enemies.

5.2.3.3 PvP

There are three different PvP modes.

1. Bracketed duels. They are separated by players level 1 or higher (i.e. all the players); or level 100 and higher.

2. Tournament with four players of level 75 or higher

3. Draft. In a draft match, all participating players need to own six unopened booster packs to be able to join. Of those six, three can be bought with game currency but three must be purchased with premium currency.

5.2.4 Experience through playing

Every quest in PvE requires a different amount of stamina to perform, but the constant algorithm is that every point of stamina spent will reward the player with 11 game coins.

Brawls awarded an equal amount of game coins but, more importantly, we also received between one to three cards for each brawl we participated in.
We played the game for roughly two hours per day, split between two sessions a day, for one week. During this time we managed to reach level 13.

As we were below level 75 we could only enter the all level duels bracket and every time we did we were fighting against someone above level 300. We started with a base deck of 21 cards limit and all opponents we met had over 50 cards.

In the first turn we did between 3 to 5 points of damage, forcing our opponent to discard that many cards from his deck and when he attacked us back, he did between 25 and 35 points of damage depleting our entire deck in the first round, making us lose the battle with no experience or gold gained.

A level 300 or higher opponents has managed to get enough skill points by gaining levels to increase his maximum deck size to such an extent, that if he would play with equally strong cards as someone below level 100 (like us) he would still win just on preconditions that he has more cards in his deck.

To be able to reach level 300 and compete on potentially equal terms we would need to play for several months, we use the word potentially because two level 300 players can still be on unequal terms if one of the players has spent premium currency to gain more skills points and equipment.

5.2.5 Cards as Polymorphic Resource

There is one polymorphic function for the cards in Clash of the Dragons. It is a crafting system called the Nexus.

The Nexus has six slots. In every slot a player can choose to place a card and select the amount of that specific card. When a player has finished adding cards to slots, they can try to combine them.

There are two possible outcomes:

1. Failed - the cards are returned to the player

2. Success - the cards put in the Nexus are consumed and a new card is created. The only schematic that tells the player what can be crafted is to turn 50 cards of the same rarity into a higher quality card.

This allows common cards to be converted to uncommon cards, and uncommon cards to rare cards. The player can also combine 25 common, uncommon or rare cards into a new random card of equal rarity as the cards used.

All other existing schematics are hidden to encourage player experimentation. The aesthetic to experiment is supported by the design that cards are returned if a combination fails, because if cards were consumed a player would be reluctant to possibly sacrifice cards for nothing.
5.2.6 Summary

The mechanics of the Nexus where a player can turn superfluous amounts of cards into a potentially more valuable card gives the game the dynamic that cards have a polymorphic value as resources for other cards. This provides aesthetics that when a player buys a booster pack and receives cards he has no use for in play; it still has a value in the Nexus.

The mechanic with hidden schematics in the Nexus provides dynamics for the player to find the successful combinations and increases the values of cards to the player because they can potentially be an ingredient for a different card. This mechanic suffers from the amount of cards to hidden schematic ratio which is over 950 different cards in contrast to 58 different hidden recipes. Since a Nexus craft can utilize up to 6 different cards in the crafting the number of permutations of 6 different cards from over 950 is $6.38054865e+12$. The chance of finding 1 of 58 working combinations in over 600 million billions is nigh impossible. In reality a player needs to use alternative sources like searching the internet in order to find working combinations, and this counter-effects the aesthetics of exploration.

One way to improve the Nexus is to have visible schematics instead, because it removes the need for players to search the internet for answers and a player can see a direct value relation between what will be combined and what will be rewarded.

If the algorithm of 11 coins per stamina is consistent, it would take $7\frac{1}{2}$ hours of regenerated stamina to gather enough currency to buy one booster pack. One booster pack contains 5 cards, in order to gather 25 cards it $22\frac{1}{2}$ hours of regenerated stamina. Gathering 50 cards would then take them twice the amount of time, for a total of 45 hours of regenerated stamina.

This is if the player regularly logs in to the game and spends the accumulated stamina so that it can keep regenerating, We had a maximum of 180 stamina when we played, which mean that we have to log in every three hours to keep a consistent game coin income.

For a non-paying player to be able to use the Nexus he will have to play Clash of the Dragons several hours each day. A player that spends premium currency on booster packs will gain cards in a much more rapid pace so he is more likely to get rid of superfluous cards by using the Nexus in hope for a better card.

The gap between paying and non-paying players in PvP was obvious. Even if our cards would deal an equal amount of damage as my opponent’s, it would make no difference when they had almost three times as much HP as us. The mechanic to buy skill points splits the player base into paying and non-paying players because premium currency can not only buy the player more cards but it can increase his maximum deck size and number of duplicate cards allowed in a deck. A player can also buy equipment to raise their strength further and the dynamics of all these systems enhances the aesthetics that paying players have an unfair advantage in comparison with players who do not spend premium currency.
5.3 Analysis: *Rage of Bahamut*

*Rage of Bahamut* is a trading card game for smartphones released in April 2012. The game has over 6000 five star ratings and was top grossing on Android play store for six consecutive weeks. According to data from appdata.com it remained on the top grossing charts for several months. On the IPhone it has over 12000 ratings with an average of four stars to date.

When starting the game the player gets the option to choose between three different factions and the selected choice will give him a starting card of that faction. A player has several properties that can be raised by skill points gained from gaining levels.

They are:

Stamina which is an energy bar, it is used to perform player versus environment quests.

Attack power is another energy bar, it is used when participating in player versus player battles.

Defensive power which is yet another energy bar, it is used up when someone else attacks the player.
Each card has a set of properties:

- **Attack**
- **Defense**
- **Skill**
- **Power Required**
- **Experience** (called Maturity in the game)
- **Level**
- **Evolution State**
- **Rarity**
- **Effect**
These properties are individual to each card.

Attack, defense, skill and effect properties are used in combat to calculate the outcome.

The power required property that represents how much attack power or defensive power is spent from the player when the card is used in combat.

Experience and level represent what current state the card is in. A player can pay a specific amount of game coins and sacrifice a card to add experience to another card. When a card gains enough experience the level, attack, and defense values is increased.

The evolution state is similar to experience and leveling but instead a user must sacrifice a duplicate card to increase the evolution state one step. When a card evolves a step, it inherits a portion of attack and defense values of the sacrificed card.

The rarity property ranges from most frequent to less frequent in the following order; normal, high normal, rare, high rare, S rare, SS rare, legend and S legend. The maximum level of a card is based on the rarity; a higher rarity card will have a higher maximum level. A card of higher rarity and level will also have a higher attack and defense requirement.

Cards can be gained in 5 ways:

1. Buying booster packs for premium currency from the in-game store.
2. Completing quests.
3. Defeating raid bosses.
4. Participating in special events.
5. Bought or traded with other players through the in-game marketplace.

All booster packs contain one random card, and in general, the more expensive booster packs have a higher percentage chance of containing a higher rarity card. There are booster packs that can be bought with friendship points (a special currency that a player receives for social actions, like sending another players’ messages) but they never contain higher rarity cards than rare.

5.3.2 Decks

A Deck in *Rage of Bahamut* consists of five slots; the accumulated power requirement cost of the selected cards cannot be higher than the player’s attack power. A deck needs to have at least one card to be functional for use and there are no limitations when it comes to using duplicate cards or utilizing the same cards in different decks.
5.3.3 Combat

5.3.3.1 PvE - Quests

The player versus environment combat comes in two different forms. The first one is queasting where the player selects a quest and spends stamina points to progress; the player receives experience and game currency and occasional lower rarity cards from progressing through quests and completing them.

5.3.3.2 PvE – Raid Bosses

The second player versus environment consists of raid bosses. A raid boss is an opponent that players beat cooperatively with friends. Friends can be invited to join the same fight against a raid boss and each player can spend a certain amount of stamina to remove a set number of life points from the raid boss. When the life points of a boss reaches zero it is defeated. Defeating raid bosses awards all participating players with experience, game currency and potentially cards and items.

5.3.3.3 PvP

The PvP combat in Rage of Bahamut is fully automatic, the player selects an opponent from a list of enemies and battle commences. The skills on each card are activated, card types are evaluated and then a tally of gathered attack strength is shown to the player and the side with the highest collective attack strength wins the combat.

Winning a combat will award the player with game currency, experience and occasional items. Items in Rage of Bahamut can either be consumables that will replenish the player’s stamina or attack power or they are part of a collection and when the collection is complete can be turned in for a card.

Players decide which opponent he wants to attack from a list of randomly selected enemies that are close to the players’ own level. There are also options to find and challenge the top ranking players.

5.3.4 Experience trough playing

We managed to gather enough friendship points in about an hour to buy a new card and we also gained roughly ten cards every time we spent all our stamina on quests. All cards we gained through these means over several days were of normal or high normal rarity. We leveled up and evolved two of our high normal cards and always had enough the game currency required for the process.

On our third day we received an SS rare from an in-game event, and the stats of that card were far superior to all our previous cards so for the remaining time we played the game we constantly sacrificed all our normal and high normal cards to the SS rare card.
We calculated that the single SS rare card had more attack and defense value than an entire squad of high normal cards at max level and max evolution. Our SS rare card also had a higher attack requirement but it was just half the amount of what five high normal cards required in total so we could actually manage to get two SS rare cards in a squad for the same cost as five high normal cards.

The PvP limited us to play against players close to our own level so the battles were always somewhat equal. We had the choice to risk challenging something a little above our levels for a greater reward or take on someone that was lower level than us for a higher chance of winning.

5.3.5 Cards as Polymorphic Resource

Cards have a mechanic allowing players to raise the level of a card by feeding it other cards, consuming the cards used for the feeding. Higher level cards or cards with higher rarity provide a higher amount of feeding value. This mechanic provides the dynamic that a player can consider cards to have a polymorphic value of being resources to upgrade other cards.

There is also a mechanic to evolve cards and all cards start in state one and can be evolved up to state four. To evolve a card to the next state it must consume a duplicate copy. The evolved card will also retain five percent of the statistics from the consumed card or ten percent of the statistics if the consumed card is max level. Consuming cards to level up or evolve a card cost game currency to perform.

The marketplace provides mechanics for the player to buy, sell and trade cards with other players using game currency, cards or items. A player can also sell cards directly to the game for a fixed amount of game currency.

There are also special time limited events that has further utilized the feeding mechanics of the cards, for example, during an event called dragons awakening a player could feed certain cards to a dragon and by doing so getting different rewards.

5.3.6 Summary

The strength of a card stands in direct relation to their rarity; normal cards have worse statistics than legendary cards even when taking into consideration that rarer cards will require the player to have more attack power to be able to use them. The ratio of attack power required to statistics on cards is still in favor for cards of higher rarity.

The mechanic to feed cards to other cards to increase their level or to consume in special events raises the value of the cards as a polymorphic resource. This dynamics gives the player the option to sacrifice less powerful, superfluous or what he considers useless cards to increase the value of other cards or gain rewards from the special events.

The mechanic to level up and evolve cards in relation to the fact that lower level cards have a lower maximum level, enhances the aesthetics that higher rarity cards are more powerful and valuable than lower rarity cards.
The power difference between low and high rarity cards is so huge that it actually decreases the perceived value of lower rarity cards to a point where they are simply considered experience for better cards or events and thus losing their value as individual cards.

The marketplace provides the mechanics that a player can trade cards for other cards or other types or resources which gives the player the dynamics to value cards differently in terms of items or game currency.

A fully evolved S legend card has four to five times higher attack and defense values in comparison to a normal rarity card, the respective mechanics provide more value to each card but in relation to the difference of power between lower versus higher rarity cards the lower tiered rarity cards lose their individual value as cards and more or less become just a resource to level up cards of higher rarity with.
5.4 Analysis: Defender of Texel

Defender of Texel is a free to play mobile role playing game for Android and IPhone. It is not a card game but it shares similar mechanics and has designs that increase the polymorphic value of their heroes. To be able to analyze it and put it in relation to a card game we will link certain aspects of the game to what their equivalent would be in a trading card game.

To perform various actions in Defender of Texel the player must be able to spend one of two resources called energy or battle points, every player has a maximum of hundred energy points and three battle points. Energy is replenished at a rate of one per three minutes and one battle point is replenished every fifteen minutes. Both resources are what we define as energy bars.

5.4.1 Cards (Heroes)

A single hero in Defender of Texel is the equivalent of a single card in a trading card game.

Each hero has a set of properties:

HP
These properties are individual to each hero.

The properties: Attack, defense, agility, wisdom, HP, skill and proc rate are used in combat to calculate the outcome.

The level and experience represents the current state of the card. Experience can be gained by sacrificing other heroes and if enough experience is gained, the hero will gain one level and the properties used in combat will also be increased.

The self fusion property symbolizes if the hero can be evolved to a higher rarity and what step in the progress it is currently on. There are two tiers of heroes, tier 1 heroes start as common rarity and can be evolved up to rare rarity, tier 2 start as uncommon rarity and can be evolved up to epic rarity.

The rarity ranges from low to high in the following order: common, uncommon, rare and epic. In general, a hero with a higher rarity value will have higher statistics and thus be more powerful than lower rarity heroes.

A player occasionally receives game coins called Doxites and Voxites after combat. These resources can be spent to buy new heroes from a limited selection of random heroes in the in-game store. Heroes received from spending these resources range from common to epic.

A player can also buy random heroes with premium currency. Heroes gained by this means can be a unique kind of hero that can only be obtained by spending premium currency. These are generally of rare or epic quality.

When a player starts the game he will be able to select a starting hero of rare quality.
5.4.2 Decks (Squad)

The squad in Defender of Texel is the equivalent of a deck in a trading card game. A hero squad consists of up to nine heroes on a three times three square grid. A working squad must always have at least one hero on it.

5.4.3 Combat

Before taking part of PvE a player needs to customize his hero squad to contain at least one hero. The combat in Defender of Texel is between the player’s squad of up to nine heroes and enemy heroes.

When a combat begins, the player starts by selecting three different rows from the three versus three squared grid. Then a sequence will start and the first selected row will start attacking the enemy heroes who will return the attack. Then the second row and third row will do the same thing and the sequence ends.

If neither the enemies nor all the player heroes have been killed, the sequence will start from the beginning. It will keep repeating the sequence until either all opponents or player heroes are defeated and the one who has any heroes left alive will win the combat.

5.4.3.1 PvE

To be able to participate in the PvE combat, a player must have customized his squad with at least one hero. A player selects a dungeon to enter, then he will spend energy points to progress through the dungeon and occasional encounters with enemy forces will occur. The encounters are either three computer controlled heroes, or a single raid boss specific for that dungeon.

The only difference between a raid boss and three computer played heroes is that the raid boss has equal statistics as the three heroes combined.

5.4.3.2 PvP

PvP encounters can happen when a player moves through the normal PvE dungeons. The player will have the option to select between three by the computer randomly picked players to fight.

In PvP combat the enemies are a randomly selected row of heroes from the selected players’ three versus three squared grid. The opponents in PvP combat is not actually played by another player but the computer, there is no interactive PvP in Defender of Texel where two players actually play against each other at the same time.

Consecutive wins are counted when doing PvP battles and the higher amount of consecutive wins a player has, the higher level opponents he must select from.
5.4.4 Experience through playing

After spending all energy on PvE combat we usually managed to gain between ten and twenty different resources to buy new heroes and we could spend a full energy bar twice a day with the replenishment rates.

There were several different special events during the time I played and every event had extra rewards that gave more resources to buy heroes. There were also heroes as rewards for earning special points. These points were earned by spending energy the usual way, so these resources did not require any extra effort from the player.

The PvP battles felt balanced and we managed a couple of consecutive wins in the beginning, it did not feel unjust when we lost because we were battling opponents of much higher level than us.

During our time playing we managed to get eight out of nine heroes in our squad of rare quality and had also managed to get one epic quality hero, we got some higher rarity heroes from buying booster packs for game currency and some from evolving a lot of lower rarity heroes.

At the end of our time playing the game we could manage a lot more consecutive wins before losing and we were still making progress in evolving and leveling our heroes. It felt like we were playing against seasoned players or players who spent premium currency and still had a fighting chance.

5.4.5 Cards (Heroes) as Polymorphic Resource

There is a mechanic to increase the level of a hero by feeding other heroes to it. The heroes used as food will be consumed and turned into experience for the selected hero. If enough experience is gained the hero’s level and statistics will increase.

Another mechanic is that if a player sacrifices a duplicate copy to a hero, the maximum level of the hero will increase. And if a total of five duplicate copies are sacrifices to a hero it will evolve into a higher rarity hero.

*Defender of Texel* also has two specific heroes that have all their statistics set to one. They are of no use to a player in combat, but are specifically designed to be food for other heroes because they yield a considerable large amount of experience. These specific fodder heroes are obtained just like other heroes and in general there is a higher chance to get the fodder heroes than any other hero.

5.4.6 Summary

As higher rarity heroes are more powerful than lower rarity ones the aesthetic outcome would be that lower rarity heroes lose their values as individual heroes and only become food for leveling higher rarity ones.
This is not the case because the dynamics of the evolution function counteracts it, because it gives the heroes another value. A common hero could also be seen as one fifth of an uncommon hero, that uncommon hero would then have the value of one fifth of a rare hero and so on.

This results in, instead of common heroes only being valued as experience for higher rarity heroes they still has a value as part of a higher rarity hero.

The evolution mechanic also provides the dynamic that a player can select what heroes to use based on his personal preferences, he can then focus on upgrading those by sacrificing heroes he does not find appealing.
6 Design

Our experience and research suggests that many games in this genre suffers from mainly two issues; that players will eventually have a large amount of duplicate cards that they have no use for and that the gap between players that spend premium currency and those that do not gets so large that there is no fair competing between the two groups.

Therefor our design aims to create a way for the players to use surplus cards for other mechanics than to play in combat, creating an aesthetics where the player feel that every single card he obtains is in fact valuable and can be put to use.

Furthermore we feel that it is very important to address the issue where players can enjoy the game regardless if they chose to spend premium currency or not.

Our aesthetic goals are:

Players should feel that every single card they obtain has a value and can be used in a meaningful way.

Players should feel they have meaningful choices and control over the polymorphic functions; the process should not be automatic.

The game should offer a fair and enjoyable experience regardless if the player spends premium currency or not.
6.1 *Little Warlock*

*Little Warlock* is the free to play trading card game that we are currently developing. It features real time grid based combat. There is both a PvE campaign and a PvP arena where the player can compete versus other players. As a player wins battles he gains experience, game currency, and occasionally other rewards like premium currency or cards.

6.1.1 Cards

Each card has a set of properties:

- Mana cost
- Rune cost
- Rarity
- Name
- Card type
- Color of card

These properties are individual to each card.

Cards in *Little Warlock* are divided into different categories. First there are four different colors, colorless and multicolored.
The different card types for cards can be are spells, creatures or buildings, and furthermore these are divided into subtypes such as offensive (spells that targets an enemy building or creature) and defensive (spells that target a friendly building or creature) spells.

Depending on card type the cards also have another set of properties. Creature cards have HP, attack speed, damage, and movement speed. Building cards have HP, construction time, skill, production time (the time it takes for the skill to be ready) effect. Spell cards have properties for what other kinds of cards it affects and what the effect is.

Cards come in three different rarities, common, uncommon and rare. Higher rarity cards are generally more powerful than lower rarity cards.

### 6.1.2 Decks

When a new player creates an account in *Little Warlock* he will be given the choice between four different starting decks, each consisting of only one color. These decks are predetermined, contain only common and uncommon cards and are balanced to fit a beginner player. The player will also be given three custom deck slots where he can create and save his own decks. These custom decks have to consist of 21 cards with no more than four duplicates of any card.

### 6.1.3 Combat

The combat in *Little Warlock* is played in real time on different sized grid systems and can be played against either a computer controlled opponent or another player. Each player has mana and HP, HP is represented as an orb on one side of the grid. To win a combat a player must reduce his opponents’ HP to zero. Both players mana is regenerated at a pace of one mana per second.

When a combat starts the player draws four cards to his hand. The players can draw new cards during the combat but when they do there is a timer of ten seconds before yet another card can be drawn. If the player runs out of cards in his deck he can pay five hit points to reshuffle his cards and put them back in the deck.

If a player has enough mana to use a card he can do that to attack the opponent or defend himself. Creature cards place a creature on the players side of the grid, those creatures are then automatic, they walk towards the opponents orb and attack anything it meets. If it reaches the orb it starts attacking the other player (orb).

On certain cells in the grid a player can use building cards to place a building for construction, when a building is placed it automatically starts constructing itself, when the construction is done it starts producer the specific skill for that building.

Spell cards when used apply their specific effect to their specific targets.

The player can never regain any hit points during combat.
PvE

Each player begins the fight with an amount of hit points and mana depending on his level.

The PvE in *Little Warlock* is played between the player and a computer controlled opponent. Each level of the game is visualized by a map with different locations that the player has to progress through in a linear way. Once an opponent has been defeated the player gets access to the next opponent. The final location on each map is a boss that is significantly harder to defeat than the other locations, and once defeated it unlocks the next map.

There are also some special locations outside the linear progression. These generally have special conditions applied to them, such as a restriction to use certain cards, and are associated with special rewards or achievements. Some of these special locations require players to pay premium currency to get access to.

PvP

Each player begins the fight with an equal set of hit points and mana regardless of their level.

The PvP in *Little Warlock* is played between two players. It requires the player to have created a custom deck in order to participate. The player can then decide to either join a queue to get matched with a random opponent or to host or join a specific game. The actual combat is played the same way as combat in PvE.

6.1.4 Experience trough playing

Non-paying players have access to the same content as paying players with the exception of some special enemies that require premium currency to unlock. Since players are given a balanced starting deck at character creation they will be able to play, both versus the computer and other players, without spending any premium currency.

By defeating opponents, the player earns game currency that can be used to gain new cards.

A player that chooses to spend premium currency however, will gain cards at a much greater rate than a player that does not.

A player that owns a great amount of cards can customize his own decks and rebuild them to counter other player’s strategies, giving him an advantage in competitive play. There are also rare cards that are not present in the starting decks; the player can gain these rare cards from booster packs. Booster packs can be bought using both game and premium currency, the booster packs that are bought by premium currency has a higher percentage of containing rare cards.

The booster pack that is available to buy without spending premium currency costs 2500 game coins, a player earns 100 game coins from winning over an equal level PvE opponent, or a lower amount dependent on how close to victory he was. PvE combat times are estimated to an average of 6 minutes. This means a player could be able to buy a new booster pack every one and a half hour of playing. *Little Warlock* does not rely on any energy bar design unlike most free to play games so a player could play for as long sessions he likes. This gives players the option to spend time to progress whenever they want since they are not limited to waiting on the energy replenishment in order to play.
6.1.5 Cards as polymorphic resource

The players can sell cards to the game for game currency.

6.1.6 Summary

Higher rarity cards are in general more powerful than lower rarity cards and a deck is limited to four duplicates of the same card. A player can create three different decks and the only restriction when building decks is no more than four cards of a kind are allowed.

So if a player would like to use a specific card at max amount in all his decks, he could utilize twelve in total, which means that every duplicate card over twelve is useless to the player.

If a player spends premium currency or have played the game a long time, he will experience the issue of superfluous amounts of common cards at some points.

When a player starts getting superfluous amount of cards or useless duplicates the value of buying booster packs will diminish, this is because as the player’s card collection grows it also raises the odds of getting useless duplicates.

Every player regardless of spending premium currency or not can acquire any card in the game. This creates the potential that any player spending enough time with the game, could have an equally strong collection of cards as a player spending large amounts of premium currency.

A player will need to play the game for approximately two hours to gather enough game coins to buy a booster pack. A player needs 21 cards to create a complete deck, which means that it would take a player roughly eight hours of playing to gather enough game coins to be able to buy 4 booster packs giving him 20 new cards.

A player could then spend an hour every other day and still earn enough game currency to buy a few booster packs each week.

There is no separation of players when it comes to PvP which could result in unfair matchups; however the problem is diminished because all players start combat with a set amount of HP and mana that is the same for every player regardless of their level.
6.2 Design: Sell system

Analysis

Defender of Texel, Rage of Bahamut and Urban Rivals all have the possibility to list cards for trade in a marketplace, but it does not remove the fact that the collective amount of cards between all players will still make cards with lower rarity superfluous. The supply will be higher than the demand and will eventually come to a point where the market for lesser rarity cards becomes stagnant.

Urban Rivals is the only game that gives cards another polymorphic value in a way that cards can be sold for set price to the game. This mechanic is a valid way to increase the potential value of cards to a player, the design of Urban Rivals sell system unfortunately is hampered by the fact that the only thing game currency can be used for is to buy cards from the market.

Furthermore the marketplace in Urban Rivals is so saturated with lower rarity cards so in order to be able to actually buy a higher rarity card a player will have to sell several thousands of lower rarity cards to the game.

Design

We implemented two mechanics when it comes to selling cards, the first one being selling the card in the store for a set amount of game currency decided by us developers, the second one being a mechanic where players can list cards at a price of their own choosing at an game marketplace.

Result

The player is given the dynamics to sell unwanted cards for game currency. In Little Warlock it can be used to buy new commodities and unlike Urban Rivals also new booster packs. When selling cards to the game the amount awarded for each card must be balanced so that a player will not be able to buy a booster pack and make profit by selling the cards back to the game, if this would be the case the complete internal economy would be destroyed.

The second mechanic to be able to sell cards to other players provides the dynamic of a market where supply and demand rule. While this can certainly have a place in the game it will have very little impact on the original problem statement for this thesis, since the market for very common cards will be saturated and they will be hard if not impossible to sell.
6.3 Design: Buff system

Analysis

None of the games analyzed had any buff system connected to their cards. Defender of Texel, Rage of Bahamut and Clash of the Dragons did have items as a complete separate system and the items that were available to the player replenished the energy bars.

Design

We designed a mechanic where cards can be converted into a temporary buff that benefits the player in combat. The buff that the player will receive is dependent on the properties of the card and the card is consumed in this process.

Possible examples of buffs gained:

Winter card: Temporary boost to mana regeneration during combat.

Spring: Temporary gives player creatures health regeneration during combat.

Summer: Temporary boost to warlock hit points during combat.

Autumn: Temporary boost to the damage of the player’s creatures during combat.

Colorless: Temporary boost to experience gained after combat.

Multicolored: Temporary boost to gold gained after combat.

Results

The dynamic provided by the buff mechanic gives players a choice to consume unwanted cards for buffs and provides another polymorphic value to cards. Since the cards used in the process are consumed it will counteract that players will end up with superfluous amounts of cards.

By having each buff connected to a color and the buff provided having similar effects like cards of that color will give the player an aesthetic feeling of logic but the buff mechanic also has a potential to create an aesthetic of injustice because it could make the competitive play unbalanced.

A player who can afford to spend premium currency to buy cards will have the possibility to always have beneficial effects applied to him in combat and depending on the way the system is designed there could even be multiple beneficial effects while a new or non-paying player might have no extra cards to turn into buffs.
A possible solution to this is to limit the mechanic to player versus environment combat only thus completely removing the aesthetic risk of injustice in the player versus player combat. However a mechanic that has a limited use also has the risk of making it feel less desirable to the player.

Another possibility is to make several PvP modes, similar to the duel brackets in *Clash of the Dragons*, for example one mode where buffs and similar things are prohibited and one where everything is legal. The upside with this solution is that players have full freedom to decide if they want a competitive play where they (and their opponents) can buy advantages or not, and the downside is the risk of long queues if the player-base is split into several brackets.
6.4 Design: Transmute system

Analysis

*Clash of the Dragons* is the only game analyzed that provides a mechanic to merge cards into completely new cards and it gives cards in *Clash of the Dragons* another polymorphic value. There are no schematics available to the player in *Clash of the Dragons*, and the numbers of permutations completely remove the realistic odds that a player can find out correct combinations on his own. A player must instead search alternative sources for information, for example a Wikipedia page.

Design

We designed a mechanic where cards can be combined in specific ways to create new cards but in order to do so the player needs schematics for each specific transmutation. These schematics could be sold in the store, gained in combat or awarded for certain achievements for example. The schematics in the game will also be aesthetically logical for example a skeleton card and shadow bolt card could be combined into a shadow skeleton card, the shadow skeleton card would then have stats, power and cost, card art created specifically for that transmute.

Result

This transmute mechanic provides the dynamic that a player can choose to turn a selected set of cards into a completely new card and also increases the polymorphic value of cards. Because this system uses schematics that can be found in the game we remove the risk of players having to go outside the game to find information about working combinations, but schematic also limits which cards have a polymorphic value from the transmute mechanic because only cards that are connected to an actual transmute benefits from the system.

Creating specific cards for each transmute provides an aesthetic feeling of logic for the merging of cards but will also require more work from us the developers, we discussed the option to just let combined cards form a completely random card but since the result would be unpredictable it risks generating results that does not feel logical to the player and causes a huge issue regarding suitable card art.

6.4.1 Transmute Iteration

Analysis

In our initial design for transmuting of cards, our idea was to decide exactly what cards was needed in order to gain the new cards, create blueprints for those transmutes so that players knew exactly what to use and the result for said transmutations. This was designed way in order to be able to balance the powers of the cards, and to have suitable card art for each new card. The flaw of the design was that only cards that had schematics gained a polymorphic value as a resource for transmute schematics.
Design

In this iteration to the transmute we change the mechanics so that schematics are hidden again and we instead let the player combine two cards as he wishes, and for certain combinations there are specific outcomes. The system will be designed in such a way that there are several possible outcomes for different card combinations.

The system will reward the player with cards that can be gained from other sources such as buying booster packs, but there will also be special cards that cannot be gotten from any other source than a successful card combination. A transmute that does not have any schematic for the two cards selected will award the player with a new random card of the same quality as the lowest quality card used in the transmutation.

Complementary to the design there will also be hints to all working combinations. A player will gain these hints when buying booster packs and winning combats.

Result

The new iterated mechanic will create a gambling aesthetics where the player can take part in a meta game of gambling, especially because of the special cards that can only be gotten through transmutes.

Since schematics will utilize card types and colors we will also give more cards a polymorphic value as a resource for the transmutes than the previous iteration that used fewer schematics.

A player can also use the transmute system to transmute two cards of the same quality to another random card of equal quality, this gives yet another polymorphic value to a card since it is also 50% resource of a random card of equal quality. In other words, a player can use this mechanics to transmute two cards he has no use for into a new card and hope that that card has a higher value to him.

By changing it to hidden schematics again we still run the risk eventually as the game grows and new cards are produced, that the permutations will be so much larger than the combinations, which will force people to search for schematics on alternative places like a Wikipedia for the game. The in-game hints to what the working combinations could potentially remove that risk.
6.5 Design: Upgrade system

Analysis

In *Rage of Bahamut* a player can upgrade two duplicate cards to an improved variant of that card, in *Defender of Texel* heroes can be upgraded to different heroes of higher rarity and in *Urban Rivals* cards get upgraded by just using them in play. *Urban Rivals* fail to give cards a polymorphic value with their system because it is automatic and all cards will eventually be in their final state. *Rage of Bahamut*’s system give cards a new polymorphic value but the system is flawed because lower rarity cards are always worse than higher rarity cards in base variances or in upgraded variances so the system will only truly give a new polymorphic value to higher rarity cards. *Defender of Texel* does not suffer from the same problem even though they both have the same relation between cards and power, *Defender of Texel* solves this in the way that the heroes are actually transmuted into a new hero with a higher rarity.

Design

Our upgrade system uses a mechanic where any card can be upgraded to a more powerful version of said card. To be able to upgrade a card a player must combine a number of identical cards which are consumed in the process and the upgraded card can then be upgraded in the same way to create an even more powerful card up to a set limit. Our design will use five cards to become a plus one card, five plus one cards become a plus two card and five plus two cards will become a plus three card with plus three being our limit.

Result

The upgrade mechanic will give cards a new polymorphic value and also give players the dynamics that when he attains a superfluous amount of cards of a specific type he can consume them to create an enhanced version of the card, it will also provide the aesthetic that it is a beneficial thing for the player to upgrade cards he is keen on using for his deck because the deck building mechanics restricts the player to only allow four cards of the same type per deck so once that number is reached further cards will be redundant for deck building. If this tactic is used however, players can save up on excess cards and once he has enough of them, use them to get a better card. We will keep the restriction in deck building that only four cards of the same type is allowed in a deck but will increase the restriction that it will be regardless of a card’s upgrade status so that a situation where a player makes a deck using four duplicate cards of each upgrade and the possibility to fill a deck with sixteen cards of the same type does not arise.

The balance issue in competitive play is complex in this case, if someone has spent a great amount of resources to gain many upgraded cards, his cards will be more powerful than an opponent who has spent little or no resources. However given the complex nature of the game itself, some cards are stronger versus other types of cards or combinations of cards so the effect of upgraded cards could range greatly in impact they have on the game.

From an injustice aesthetic point of view we feel that it is safest to go with the same route taken up in the result part of the buff design so that the players can choose between different combat modes. That system will still suffer from the same issue of dividing the player base in brackets. An alternative approach to the problem is to value each card in a deck depending on upgrade and then duels can be dependent of deck value.
6.6 Design: Salvage System

Analysis

Our upgrade system gives polymorphic value to duplicate cards; our iterated transmute gives polymorphic value to all cards and the buff system gives a polymorphic value to a card’s specific color in the form of a buff. The three systems all provide polymorphic values to certain cards, card types or colors but we want to even further enhance the polymorphic value for all cards.

Design

With the salvage mechanic a player has the option to turn any card into a certain number of resources that we have split into card seasons and card types. These resources are called tokens. For example a Sturdy Skeleton card is a winter creature card and will be salvaged into materials that represent that card’s color and card type, which in this case would be winter and creature tokens.

Result

The salvage system itself does nothing more that provides a dynamic for the players to salvage cards into resources. We developers can also utilize the salvage system as a base when we further iterate our designs to create polymorphic values for cards.

6.7 Iteration: Sell System using Salvage System

Analysis

A developer now has the option to integrate salvaged material with the sell mechanics to give a player the dynamics to sell salvageable goods to the game for a set amount of game currencies or to sell salvaged material in the auction house.

Design

With the new salvage system we implement the mechanic that salvaged card materials can be sold to the game for a set amount of game currency per token or sold to other players at the marketplace.

Result

With the dynamic that a player will be able to sell salvaged materials to the game, if the system is unbalanced and the accumulated value of salvaged materials is higher than selling a card, then the mechanic to sell cards directly for game coins to the system becomes redundant and might as well be removed.

Another alternative is to set the total value of a salvaged material lower then selling a card directly for game currency but a with potential chance when performing the salvage to gain salvaged materials worth more than a directly sold card then the mechanic would also create an aesthetic of gambling for the player.
6.8  Iteration: Buff System using Salvage System

Analysis

The design of the buff system was initially based on using only cards as a resource but when introducing the salvage system the cards can be turned into salvaged materials. If we were to keep the buff system using cards, then cards would only have a polymorphic value for the buff system as long as they are cards. Because if a card is turned to salvageable material it can no longer be turned back into a card to use in the buff system, so instead we change the resources being used from cards to salvage material.

Design

The mechanic is changed to use salvaged materials as a resource.

Examples of possible buffs and costs:

Winter token: Temporary boost to mana regeneration during combat.

Spring token: Temporary gives player creatures health regeneration during combat.

Summer token: Temporary boost to warlock hit points during combat.

Autumn token: Temporary boost to the damage of the player’s creatures during combat.

Creature token: Increases creatures hit points for the next combat

Spell token: Increases spell damage for the next combat.

Building token: Increases building hit points for the next combat.

Result

The aesthetic result of this is that a player does not have to wait and keep cards as cards just because he might want to use them for buffs. Instead he can salvage them for salvageable material and still have the option to use the salvaged material for buffs.

Instead of giving the players the possibility to trade a card for a certain buff, the players will be given the possibility to create buffs from salvaged materials. Since the salvage mechanic produces tokens from colors and card types the schematic designs for what material is used does not need to be modified any further than changing for example a winter card to a winter token.
6.9 Iteration: Transmute System using Salvage System

Analysis

*Clash of the Dragons’* Nexus utilizes cards as a possible part of the resource for transmuting and the recipes for creating cards are hidden. We have already iterated the transmute mechanic from using specific cards to using two cards chosen at will, and in our first design we removed hidden schematics only to implement it again to add the aesthetic of gamble.

The salvage system is specifically made to reduce the number of potential different resources. Previously when using cards the amount of different resources would increase as the amount of unique cards increased, with the salvage system it is static at eight different tokens instead. This also reduces the amount of combinations possible, if we were to directly translate the transmute mechanic to be using tokens instead of cards it would result in a maximum of eight times eight which is sixty-four possible combinations. When the maximum number is reached either the salvage system needs to be extended with new tokens or the transmute mechanic needs to utilize more than two slots.

A single card is salvaged to several tokens and to keep it balanced the transmute needs to correlate to that but if we add the mechanic that a player can choose how many of each tokens in a transmute utilize we will be facing the same trouble as *Clash of the Dragons* did with their Nexus, that the permutations would reach such a high number that the gamble aesthetic would fall away because a player cannot realistically find working combinations by chance.

Design

Because we want to either increase the amount of different tokens used but also the amount of each token used the number of permutations will increase so much that the gambling aesthetic will be lost so therefor we will bring back visible schematics instead. A single schematic will be using a maximum of four different tokens with a set amount required of each token.

Result

Because the schematics are visible in the game a player does not have to search for information elsewhere how find correct combinations, the amount of permutations available is no longer a disadvantage to the design because if schematics are visible the more permutations is the more optional schematics we as developers can create.

With the design that the schematics are based on tokens it provides the aesthetics that a player can focus his effort to try and gather resources for specific schematics in contrast to the previous iteration when a player had to guess what resources he would need.
6.10 Iteration: Upgrade System using Salvage System

Analysis

Our upgrade system uses duplicate cards to upgrade themselves and this gives all cards a polymorphic value for their own upgrade but there is a chance that a player who find a specific card unappealing will also do so if it is upgraded, this is the reason why we will utilize the salvage system as a base for the upgrade mechanic.

Design

Every card will require two different tokens to upgrade and they are dependent on color and type, a winter creature card for example will require winter tokens and creature tokens. The formula for calculating the amount of tokens will be dependent on what value the card is upgrading to and what rarity the card is.

Result

The new mechanic of upgrading will provide a higher polymorphic value of cards for several reasons, a player will no longer need several duplicates of a card to upgrade it because for example a blue creature card will generate creature tokens and blue tokens when salvaged. The creature tokens can then be used as a resource to upgrade any other creature card of any color and the winter token can be used to not just upgrade winter creature cards but as a part to upgrade winter building cards or winter spell cards.

This new dynamics will provide the aesthetic that a player can focus to upgrading specific cards, with the previous system to be able to upgrade a card to plus three a player would need to buy booster packs or try to buy duplicate cards from the marketplace.

With the new design a player will have an easier time to find resources to upgrade a specific card. The player can still buy booster packs to get cards that will yield the needed materials or buy any card from the marketplace that would yield both or either of the materials required to upgrade the card or even buying the specific tokens directly.
7 Qualitative survey

To validate our problem formulation and designs we took contact with people that have spent several years or even decades playing trading card games. We believe that their knowledge and experience from years of collecting and playing could give credible validity not only to our design, but also the problems we are addressing.

The criteria would be that they would have played a trading card game, either physical or digital, for at least 4 years. We believe our design in theory is applicable to any previous, current or future trading card game in either physical or digital format.

It does not matter if they have not played free to play games because the difference between a player not paying money and a player paying in a free to play game is equal to a for example physical paying trading card game where a player has spent little money and another has spent a lot.

We chose both non-professional and professional players that played different trading card games to give us a diverse feedback

The survey was conducted following loose guidelines of topics only. First we asked the participants to introduce themselves and talk about their experience with card games.

We then explained our hypothesis about superfluous cards and asked them about their experience buying and owning cards.

After that we explained each of our design which they after gave us their thoughts and ideas based on their experience as trading card game players.

We concluded the interview with questions regarding imbalance between seasoned and new players, and paying versus nonpaying players.

The interviews were conducted over Skype or phone and recorded. Some interviews were translated from Swedish to English. The interviews were summarized and sent back to the participant who would validate its content before they were accepted into this thesis.

7.1 Survey Summary

7.1.1 Booster Packs

All of the interviewed participants think that booster packs is a good way for new players to acquire a diversity of new cards. New players start with no cards so the odds of getting duplicates or worthless cards is low, therefor every card is of value to a new player.

When it comes to experienced players that have accumulated a large collection of cards the participants strongly feel that booster packs are not a viable option to obtain new cards. This is because the price per item is high and lower rarity cards are considered worthless, useless or even as Kristoffer expressed it “Not even toilet paper”. Therefor they would welcome a mechanic where the cards were given a polymorphic value.
Several participants stopped buying booster packs because they consider them expensive and it is much cheaper and also faster to buy the cards they were looking for from the second hand market or trading them.

The majority of the participants still enjoy the gambling aesthetics of opening booster packs, hoping for something really rare and valuable, but since most cards in a pack are considered useless or undesirable they are reluctant to spend money on them.

They feel that our salvage design would be a very good option to add a second value to all cards in a booster pack; it could make it worthwhile to spend money buying them and to experience that gambling aesthetics again.

Several of the participants also mentioned that the value of common cards on the second hand market is very low. The second hand market for lower rarity cards in some games is saturated to the extent that some of our participants have thrown away several thousand cards because they had no value in either play or trade. Since all cards can be salvaged and are worth tokens they thought all cards would have a value on the second hand market.

7.1.2 Transmute design

All of the participants felt that the transmute system is a good design that would give a new value to cards that were considered useless. Of our designs the transmute design got the most positive feedback and every person we interviewed seemed to think that it would be an attractive mechanic to be able to collect large amounts of tokens and turn them in for new cards.

One of the participants pointed out that he would only use the system if he could chose the reward, he felt that random card reward probably just generate a new card he would salvage to tokens.

Another participant also mentioned certain cards were monopolized by a small number of players in the game he was playing, and he believes that our salvage system in combination with the design to transmute tokens to a specific card will reduce that problem.

7.1.3 Buff design

All except one of the participants felt that our buff design would increase the value of cards and add an interesting mechanic to the game, but they also stressed that it would be very important to balance it well or divide the players in brackets to avoid unfairness between players.

One participant did not enjoy the idea at all, since he felt that it would be counter effective to spend the tokens on temporary improvements, unless they were very cheap. And if they were cheap everyone would have them at all times so then it would be more of a necessity than an option and therefore be pointless.
7.1.4 Upgrade design

The participants felt that this design would work and would add a second value to the cards; however a majority was concerned that this system could lead to large gaps and injustice between players.

An endgame player will eventually be able to play with entire decks of upgraded cards while a beginner only will have the same option if he spends large amounts of premium currency. One participant expressed his strong belief that in trading card games it should always come down to the cards and any deck should be able to beat any deck even if it takes ninety-nine losses before it happens.

One participant thought it was a good way to make use of replaced cards when upgrading his decks, by salvaging the cards that were replaced. He could use the tokens to upgrade the new cards and in that sense make use of the replaced cards instantly.

7.1.5 Injustice

When it comes to balance and injustice between players several participants did not consider it to be unjust if people could spend money to buy more cards and by that have an advantage in the sense that they could make better decks.

Most participants would accept playing against and be impressed by an opponent who had better decks than themselves if the opponent had earned the cards to build such a deck by playing the game. They would also accept facing an opponent with a better deck that was obtained by spending premium currency but would in a sense look down upon him, considering him to have taken a shortcut or that he had more wallet than passion.

One participant did not care how an opponent earned their cards because he focused on his own experience. But he also said he thinks it is fun playing free to play games without paying to be able to see how far he could go when competing against players who spent money on the game.

When it comes to injustice and our designs no participants thought that the transmute design would affect the game in any negative way. This was because they think the salvage with the transmute design only turned cards into other cards and made no bigger difference than someone buying a couple of more booster packs.

The buff design was considered by several to be a possible threat to the balance and that it would probably widen the gap between new and seasoned players. They also believed it would widen the gap between nonpaying and paying players. A few participants thought the idea was interesting and if it could be designed in such a way that it did not break the balance of the game or made it unjust it would be really interesting.

Our upgrade design was under the same scrutiny as the buff design. Several participants believed that it would benefit long time players or the ones with big wallets more than free to play players or new players. Overall the upgrade design was considered to have the highest risk of leading to injustice between players.
7.1.6 Balance and Matchmaking

Several participants touched the subject that the essence of trading card games should be that it is fun to play for both players. If a player is always dominating and wins every battle, the games will become bland and unsatisfying. And if it is the opposite that a player gets dominated all the time he would not enjoy his experience and could consider quitting the game.

Some participants actually played with worse decks than their capability to be able to play on equal terms with friends so that the games would be fun.

The wish to have some sort of matchmaking or different game modes so that players could choose to play against opponents of equal strengths were expressed several times by all participants. The game modes could also have restricting rules so that players would be forced to build decks for different modes adding more versatility to the game.

Some even expressed that matchmaking or several game modes in online competitive games where money can buy advantages are a vital element for the games survival.

One participant wanted all players to be able to play against all players because he thought that it could be very meaningful for new players to play against experienced players with a lot of cards and really good decks. The new player could then see tactics and combinations of cards that the more experienced player was using and in such a way learn from him.

Another participant also wanted players to be able to choose if they wanted to try and fight more seasoned players if there were bigger rewards attached to a higher risk of losing.

One participant liked to separate players in brackets or ladders. Then the players would be able aim to become better and to reach the top of those brackets and ladders.

If a player would join a tournament and there would be advantages, one participant thought that it would be perfectly okay, because players would then have joined that tournament by choice and should have been aware that advantages or disadvantages could exist.
8 Discussion

Before starting working this thesis we believed that the longer a player would play a trading card game, the less value the majority of cards would have. This was not just proven by our interviewed participants but fact is that it was even worse than we anticipated.

Not only did the participants consider lower rarity cards less valuable, they actually thought of them so useless for both play and for trading that several of them had thrown their common cards away.

It also directly affected that the majority of them did not buy booster packs to any greater extent anymore, instead they relied on the second hand market where they thought it was both easier and cheaper to get ahold of the specific cards they were looking for.

This is truly unfortunate since a majority of interviewed participants would like to buy and open booster packs for a chance of getting those special valuable rare cards, but are reluctant to do so when they know they might as well throw away two thirds of all cards in those booster packs.

The aesthetics of gambling and the feeling of winning a jackpot when getting a very rare and valuable card is something that players enjoy, but with the problems of superfluous cards the desire to buy booster packs is greatly decreased.

By just introducing our salvage and transmute designs all interview participants believed that it would increase the value of cards in general. It would not remove the fact that lower rarity cards would be less useful for playing, but it would add a new value to them as a second currency that could be transmuted into other useful cards. It would also make all cards desirable in trade because they have a polymorphic value not only as cards but as tokens as well.

Everyone who we interviewed also believed that with the added polymorphic value in cards, they would be more willing to buy booster packs. This is because every card in the booster packs would then be of some value to them. They liked the salvage and transmute designs so much that they would welcome them if they were implemented in the trading card games they were currently playing.

The buff design was not as well perceived as the transmute design. Even though our interview participants thought that the buff design would increase the value of all cards they saw two flaws in the design, one being the risk of widening the gap between paying and non-paying player, the other the feeling that it would be a waste to destroy cards for something temporary.

This tie together with the fact that participants thought that in order for them to want to spend resources on something temporary, they would want the effect to be truly worthwhile, which would mean a greater risk of injustice between paying and non-paying players. On the other hand, if the buffs were balanced in such a way that they would not mean any major differences for paying and non-paying players they would probably not be worthwhile to spend currency on.
We believe that in its current state, it is unadvisable to implement our buff design into a trading card game. For it to not make a negative impact on competitive play, other design choices would need to be tied together with it. One idea would be to limit the buff design to affect only PvP content if the trading card game includes that feature. Another idea would be to limit the amount of buffs a single player can have at the same time or possibly to restrict the buff design to certain specific competitive game modes. These restrictions however would most likely make the mechanic less attractive since the players would pay for something that had limited uses, or would risk lengthen the queues in things like PvP matches. Further studies and analysis would be advisable before implementing this design in a trading card game in a successful way.

When it comes to the upgrade design our participants felt it had some positive aspects, it would raise the value of cards and as players progressed and got better decks they could salvage old cards to make the new ones better. However the upgrade design was considered to have similar problems like the buff design, it would risk widening the gap between non-paying or new players and seasoned players or players spending real money. A player spending premium currency could potentially spend enough money when he starts the game to get a powerful deck and also upgrade all cards to maximum level.

In order to implement the upgrade design without risking the perceived justice in the game it would need to be restricted or tied to other designs. One idea is to limit the upgraded cards to PvP if the game contains such. Another idea is to give each rarity and upgrade a designated value and do matchmaking and brackets dependent on how much accumulated value a deck has. Or the upgrade design could be limited to be used in certain competitive game modes. But to reliably get data on what the best supplemental designs or restrictions would be further study needs to be made.

We believe that we proved, at least on a smaller scale, that the trading card genre suffers greatly from a problem with superfluous cards and that these problems has a negative impact on players desire to buy booster packs.

We think that our work to come up with a design to lessen the problem with superfluous cards were a success. Some parts of our design still need iterations and additional research before being ready to be implemented into a game but our salvage and transmute designs is proven to be a success in our survey and could be implemented into a digital trading card game.

While theoretically all designs could be applied to both physical and digital games, in reality the salvage system would only work in a digital setting, since in reality there would be no reason for a shopkeeper to collect cards, rip them apart and reward the players with plastic tokens they could trade in for other cards.

A player with a larger collection of cards will always have a preconditioned advantage because he is able to build more versatile decks. There is also evidence that in trading card games there are problems where players that spend no or little money cannot compete against players that spend a lot.

When it comes to the issue with injustice, we feel that we have not manage to solve the problem, but at least our transmute design would be a method where cards could be allowed to have a polymorphic value without causing a major impact on the difference between paying and non-paying players.
A player that spends large amounts of premium currency will have access to more card to salvage and therefore more resource to transmute into cards, but since the outcome of the transmute system is just more cards, it will not add a second layer of beneficial effects like the buff and upgrade system would do.
9 Conclusion

Our initial belief that there was an issue with superfluous cards in trading card games was not only confirmed, but the problem existed to a far greater extent than we imagined.

We were successful in creating polymorphic values for cards with our designs. The participants of our survey believed that with our designs, cards that they previously considered useless would now have a value to them. They also believed our designs would make them more likely to buy booster packs if a game they played had these underlying designs.

We did not manage to solve the problem with great gaps between paying and non-paying players, but the designs we managed to get to an acceptable state confirmed by our survey, did at least not contribute to making the problem worse.

The designs that we felt were not currently acceptable for implementation in a trading card game were labeled that way because they in their current state will risk impacting the power balance between paying and nonpaying players in a negative way. These designs could probably be redesigned or tied together with other designs to remove those issues and after further research and analysis be suitable for implementation in trading card games.

Final words

We think developers of digital trading card games both present and future should be aware of the problem with superfluous amounts of lower rarity cards the genre suffers from.

Our research suggests that designing polymorphic attributes to cards could lessen these problems.

Our analysis also suggests that implementing these mechanics could increase the sales figures on booster packs, as each card has some value.
10 References

Literature


Web


Games

The Allegheny Card Co 1904, The Base Ball Game

Wizards of the Coast 1993, Magic: the Gathering

Decipher Inc 1995, Star Wars: Customizable Card Game

Media Factory 1996, Pokémon Trading Card Game

Bandai 1997, Digimon Collectable Card Game

Digital Addiction 1998, Sanctum

Konami 1999, Yu-Gi-Oh! Trading Card Game
Boostr 2006, *Urban Rivals*

5th Planet Games 2011, *Clash of the Dragons*

Cygames, Mobage 2012, *Rage of Bahamut*

DeNa, Mobage 2012, *Blood Brothers*

DeNA, Mobage 2013, *Defender of Texel*

Storm Potion 2013, *Little Warlock*
Appendices

A – Transcript of interview with Jens Thorén

Participant: Jens Thorén, 33 years old

Background: Jens started playing trading card games in 1993 when he discovered Magic: the Gathering and was playing it with friends for several years. He started playing professionally and attended tournaments locally and nationally. Between 2000 and 2004 he played professionally on an international level. In 2002 he won the Magic Invitational and as a winner was allowed to design a card for the expansion Mirrodin.

He finished in the top four in pro tours in San Diego and Osaka in the 2001-2002 season. During that season he also finished second in the Player of the Year race. He won the Masters tournament in Houston the following season.

When he stopped playing 2004 Jens sold all his cards and played online poker for a while. Now he plays the occasional Magic: the Gathering Sealed Deck or Booster Drafts, he also enjoys digital trading card games on the IPhone, amongst them Rage of Bahamut.

At the peak of his Magic: the Gathering career Jens estimates he had roughly 15.000 cards, all of being uncommon or rare quality. Jens explains that he has probably thrown away over 10.000 common cards over the years. This is because he felt that common cards had no value to him.

Question: What are the positive and negative aspects of obtaining cards from booster packs according to you?

Answer: It is really good for the people selling booster packs with the element of chance in it, because people like to get new cards and it probably makes people buy more cards in general. Personally though I have never been interested in opening booster packs, it is just when drafting them to play with them”

Question: If you are not interested in opening booster packs would you like to see any different way of doing it?

Answer: I am not that interesting in spending money on booster packs because I am more interested in the second hand market where you can sell, buy or trade cards with other players. I believe that in trading card games the player is always aiming to be as good as possible and it is faster to get the cards you would like by buying or trading with other people. It is also healthier for the economy with a second hand market but you need to know what you are looking for. Players value certain cards differently so that also opens up for the potential to be able to trade cards cheaply, I like that charm with the second hand market.

Information: We explain our salvage design and give an example on how it can be used with the transmute system to turn any card into tokens. The tokens could then be used as a currency to buy new random or specific cards.

Question: What are your opinions are on a system where cards can be turned into tokens and tokens can be turned into new random cards or specific cards?
**Answer:** I think that it is a good idea because you will be able to use all the cards you get when buying booster packs instead of thinking common are useless and I think it will prolong how long people play the game in general. In the game *Rage of Bahamut* they have done a similar thing where you can use and destroy bad cards make good cards even better.

**Information:** We explain our buff design.

**Question:** What are your opinions on a system where a player can spend tokens to get temporary boosts in combat?

**Answer:** I think all things utilizing the tokens would be good, the more things they can be used for the better. Then you could use tokens to buff yourself when you play against friends or in tournaments. I cannot really see anything negative about it.

**Information:** We explain the upgrade design.

**Question:** What are your opinions on a system where a player could upgrade a card permanently to an enhanced version of that card with tokens?

**Answer:** Generally I think it is a good idea, I think that is what in my opinion is the design that has made *Rage of Bahamut* so genius. The ability to evolve cards in different ways using other cards. I think it provides depth to trading card games with things like evolves and cards of different levels.

**Question:** What is your opinion about being able to spend money in order to get advantages like buffs, upgraded cards or more cards to choose from in free to play online competitive trading card games?

**Answer:** I do not see it as something negative, if you spend money you should earn some time it takes to reach a certain point in the trading card game. I play online trading card games without paying money and I am trying to beat the ones using real money without using real money myself. I think it is fun to see how far you can go playing for free and trying to beat people who spend money.

**Question:** In a free to play game would you feel differently playing against someone that has advantages against you if that player has gained those advantages from playing several months or bought them all for real money?

**Answer:** I would not really feel different if someone else got their cards from playing a lot or buying them with real money. I am playing for my own reason so I don’t really focus on how other people have obtained them.

**Question:** Have you been in an unfair position with a little amount of cards playing against someone with a lot of cards or vice versa?

**Answer:** Yes that happens a lot both ways, in *Magic: the Gathering* for example when drafting it is randomly depending on what you get in the booster packs. In *Rage of Bahamut* you often run into people with really good decks but the punishment for loosing is not really noteworthy so then it does not really matter. It is nothing I think of to a greater extent that I try to avoid playing against people with decks far better than mine.
**Question:** Would you like to see the issue of unfair or underdog position addressed in games you play by some mechanic like brackets or matchmaking?

**Answer:** Different leagues or brackets I think is better, because then you can strive to reach higher brackets and leagues. It also depends if it is a trading card game based on skill or based on stats of the cards, if the trading card game is more skill based, you can learn from playing against better opponents. If it is more a “my card if better than your card” type of game it is better if it’s a separation between the two.

**Question:** Would you like to see a similar system like our salvage design implemented into other trading card games so that you could take use of cards the player finds useless or are superfluous?

**Answer:** Absolutely.
Participant: Anders Sandberg, 25 years old

Background: Anders first contact with a trading card game was between 1998 and 1999, the game was *Magic: the Gathering* and he was eleven years old and still in mid school. Even though the rules were unclear due to lack of knowledge of the English language he and his friends played the game to the best of their abilities, making up their own rules. During this time he also followed two anime series called *Pokémon* and *Digimon* and this triggered him to start collecting cards from the series respective trading card game.

At roughly fifteen years of age he picked up a new trading card game based on another famous anime called *Yu Gi Oh!* and he played that trading card game for three years; accumulating roughly two thousand cards and what he considers a good enough deck to compete on tournament levels. He stopped playing *Yu Gi Oh!* in 2004 because the lack of a large Swedish and European community and because some friends of him started playing *Magic: the Gathering*. He searched out his old *Magic: the Gathering* decks tucked away in the attic and started playing again and have been doing so to current date.

During his so far nine years of playing he has spent what he describes as a huge amount of money on cards, and with every expansion he buys booster packs or single cards to keep his decks up to date.

Question: What are the positive and negative aspects of obtaining cards from booster packs according to you?

Answer: Positive is that you feel like a kid on Christmas when opening booster packs, I did some selling of cards on a hobby level at a time where I bought displays. One display contains 36 booster packs and to sit an hour just opening booster packs is amazing. I like the feeling when you don’t know what is in them especially if you have looked up what cards are in the specific expansion.

Negative side is economy; it is expensive to play trading card games. You can buy a lot of booster packs and not get the card you really wanted. I played *Yu-Gi-Oh!* and I wanted a specific rare card and I bought between twenty and twenty five booster packs to get it and still didn’t manage to. The expansion in question only had roughly twenty five new cards as well. And I don’t believe I have got that card to this day or maybe I bought it on eBay for a fraction of the total amount I spend on twenty five booster packs.

Anders also mentions how he thinks booster packs is a good way for less dedicated players to get an array of different cards of various properties and rarities. On the other hand he believes that booster packs contains many useless cards for more dedicated players, usually common cards are not used when building decks unless it is in limited tournaments, booster drafts or sealed decks. Anders also tells us that he has experienced the problems with an abundance of common cards and has wondered what he should do with all the common cards he owns.

Question: From your experience, do all cards have the same value on a second hand market or if there is a possibility to trade a bunch of common cards for rare cards?
**Answer:** Absolutely not, common cards are useless and have an average value of two to three Swedish crowns while rare cards range from ten crowns to, well in *Magic: the Gathering* the most expensive card is thirty thousand Swedish crowns. To be able to trade common cards for a rare card that specific rare card has to be a low valued one or if you are trading with a friend, if you want to get the more sought after rare cards in a trade you have to bring something of value to the table.

**Information:** We explain our salvage design and give an example on how it can be used with the transmute system to turn any card into tokens. The tokens could then be used as a currency to buy new random or specific cards.

**Question:** What are your opinions are on a system where cards can be turned into tokens and tokens can be turned into new random cards or specific cards?

**Answer:** First thoughts are just positive; it makes it more valuable to buy booster packs. Because common cards will not be useless since they can be used as a currency in a completely different way. So when you reach the point where you start gaining useless cards what are you going to do? You salvage them of course.

**Information:** We explain our buff design.

**Question:** What are your opinions on a system where a player can spend tokens to get temporary boosts in combat?

**Answer:** This is good because there will always be people who are completionist, I am one of them. I will always get the latest cards whenever expansions come out but what happens after that, should I continue buying booster packs if I already have all the cards I want? I like the thought that I could use tokens to buff myself because it gives a new alternative to what I can use tokens for.

**Information:** We explain the upgrade design.

**Question:** What are your opinions on a system where a player could upgrade a card permanently to an enhanced version of that card with tokens?

**Answer:** I can see a fragment of injustice but it is hard to say because it is about economy, tokens can be gained in higher amount by spending money. So I am thinking the person with the most money will have the most upgraded cards. I believe it will work as long as there is some matchmaking system, so when a new player enters the game he will not be battling someone who have cards that are upgraded five times as much because that would be unjust conditions to play under.

**Question:** What is your opinion about being able to spend money in order to get advantages like buffs, upgraded cards or more cards to choose from in free to play online competitive trading card games?

**Answer:** I think that option can exist but then there has to be separate competitive options for paying and non-paying players. You need to be able to separate them into two categories in free to play games. I believe matchmaking is vital in online competitive games and it needs to be balanced because if it is not some players will have an economic advantage.
Anders continues to talk about how he believes that in trading card games it should always come down to the cards and any deck should be able to beat any deck even if it takes ninety-nine losses before it happens. He also points out that he does not consider it unfair if the advantage is to buy more cards for real money to have a bigger selection of cards to build decks from. He also clarifies that if players can buy buffs that will gain them an advantage in the game separate from the cards he sees that as a reason to separate the players in brackets.

**Question:** In a free to play game would you feel differently playing against someone that has advantages against you if that player has gained those advantages from playing several months or bought them all for real money?

**Answer:** Absolutely difference, I have more respect for someone who does things dedicated with their heart and not their wallet. I can accept that players choose to spend a lot of money but I give more respect to people with knowledge and skill versus someone with a big wallet.

**Question:** Have you been in an unfair position with a little amount of cards playing against someone with a lot of cards or vice versa?

**Answer:** I am smiling a bit because that’s how I started playing *Magic: the Gathering* again in 2004 when I began playing for real, I had my old cards and bought a starter deck and that was mediocre deck. I could play with friends at the kitchen table and won and loss fifty-fifty.

Then I contacted a guy I knew who sold *Magic: the Gathering* cards and he had a selection of thirty thousand cards, no kidding. So I played him with my little deck and he beat me every time, I had no chance and he basically played with me. I thought my deck was pretty good but I had nothing to put up against his decks. That was when I made the choice to spend more money on the game because I liked it and wanted a better deck.

So I have definitely been an underdog but several thousand Swedish crowns spent and nine years of actively playing has brought experience and skill. It has also put me in the position of being top dog and not only being able to easily beat people but also teach them several things.

**Question:** Would you like to see this issue of unfair or underdog position addressed in games you play by some mechanic like brackets or matchmaking?

**Answer:** No is my spontaneous thought, I don’t think you should separate players. I believe it removes the possibility for new players to learn from more experience players that has spent more time or more money getting cards. It splits the community and I want to see big trading card game communities and a close bond between the players, I like the idea that everyone should be able to play versus anyone.
Participant: Joshua Talmayan, 16 years old

Background: Joshua plays trading card games for fun; he enjoys trading card games because he thinks the genre has unique strategy elements when it comes to creating decks. Mostly he enjoys playing digital trading card games over physical ones.

Joshua played *Magic: the Gathering* for two years where he owned around four thousand cards. He played *Magic: the Gathering* with his friends mostly but also attended local tournaments.

He has played the digital trading card game *Urban Rivals* for the past four years and is currently still playing *Urban Rivals* where he spends a little money each month on new booster packs. Joshua is a very experienced *Urban Rivals* player, with over twelve thousand battles under his belt and ranked in the top thousand players in the world.

**Question:** What are the positive and negative aspects of obtaining cards from booster packs according to you?

**Answer:** The positive thing with booster packs is that you get new cards to use in your decks but also the chance to get one of those rare cards that have a quadruple the value of a booster pack. The negative is getting bad luck a getting nothing good, that always happens to me in *Urban Rivals*. I spend twenty dollars on booster packs and only get ten dollars worth of cards back in value.

When we keep discussing booster packs and the perceived card value Joshua mentions that he thinks the value of a card overshadows the actual card in the sense that you can sell if for game currency on the marketplace and buy the cards you really want. He also talks about that he knows that there are people stocking up on certain types of cards (some have up to fifty thousand copies of the same card), waiting for the Meta game to change in an expansion making them increase in value. The reoccurring mantra is that cards are seen more as a potential value measured in game currency than just a card. This mostly because in tournaments a player can only utilize one copy of a card in a deck so it makes all duplicate cards only valuable as currency on second hand market.

**Question:** What are your opinions on the second hand market of trading, selling and buying cards?

**Answer:** I like the seconds hand market a lot, it is beneficial to traders, buyers and sellers. But in my opinion buying cards is not the way to go when building decks thou I think it is better to luck out buying booster packs.”

**Information:** We explain our salvage design and how the tokens could be used as a currency to create new random or specific cards using our transmute system.

**Question:** What are your opinions on a system where cards can be turned into tokens and tokens can be turned into new random cards or specific cards?
**Answer:** Yea that would definitely increase the value of cards in general since they can be used to make other cards. Eventually there is going to be a lot of cards between all players and the salvage will keep the amount of cards in the game from over fluctuating. For example in *Urban Rivals* someone is trying to sell fifty-two thousand cards of the same type right now. I like the idea a lot and it would also prevent people from being able to monopolize cards on the market.

**Information:** We explain our buff design.

**Question:** What are your opinions on a system where a player can spend tokens to get temporary boosts in combat?

**Answer:** I think there is a danger with such a system because if a game continuous to run for three years a player could gather millions of tokens. That would just be completely unfair to new players that have no tokens to use for buffs in battles. I do not like the idea of the system because I do not think it will be fair in my opinion. I think the system is okay if it was separated into a specific game mode so people can choose to play with the buff system and is not forced to do it in normal play.

**Information:** We explain the upgrade cards design.

**Question:** What are your opinions on a system where a player could upgrade a card permanently to an enhanced version of that card with tokens?

**Answer:** I like the idea of it, it lets you focus on certain types of decks but it would not be really fair because it would be an advantage to veteran players in the same way the buff design was. I think the game should be kept on a normal level of the cards if players wanted to. I think it would increase the value of cards in general because people would try to get a hold of cheap cards from the market just to salvage and that would make no card worthless. It will also make it possible to play with a deck and when you have gained a bunch of cards to replace that deck you can salvage the old deck to upgrade the new deck.

During the course of the interview Joshua has mentioned unfairness in regards to our ideas or to the experience he has had with trading card games. Several times he mentions a wish that games should have different game modes so that players should not be forced to play on unequal terms.

**Question:** What is your opinion about being able to spend money in order to get advantages like buffs, upgraded cards or more cards to choose from in free to play online competitive trading card games?

**Answer:** If players want to spend money to gain more cards or buffs I think it is a good thing because they do not have to spend hours playing to get to top of their collection of cards. But I think it is unfair to players who do not spend money that players can spend money to gain advantages.

**Question:** In a free to play game would you feel differently playing against someone that has advantages against you if that player has gained those advantages from playing several months or bought them all for real money?
**Answer:** I would not see that big of a difference, if I have a beginner deck and face someone who has a tournament ready deck it would feel unfair for me. But it would not really be unfair because that player has either spend money on the game or played a lot. Either you are going to grind to those cards or you are going to shortcut and buy those cards.

**Question:** Would you like to see this issue of unfair or underdog position addressed in games you play by some mechanic like brackets or matchmaking?

**Answer:** I always feel like there is an unfair advantage when I play versus someone who has not spent any money buying cards. It is because they do not have any type of card that is going to be good enough to beat any card I have, they basically have no chance of winning against me. It becomes really bland when playing such matches, sometimes I do not even play correctly and I am still winning.

**Question:** Would you like to see this issue of unfair or underdog position addressed in games you play by some mechanic like brackets or matchmaking?

**Answer:** Yea I would like to have different types of modes, if would give versatility to the game. I think I would have more fun playing the game and I could also build different decks for different modes.
D – Transcript of interview with Greger Eneqvist

**Participant:** Greger Eneqvist, 39 years old

**Background:** Greger first came in contact with trading card games 1997 in his mid-teens when a friend of him showed him some *Magic: the Gathering* cards and suggested he should start playing. His initial thoughts was that it was quite expensive to buy booster packs that contained only a few cards at a high price, but his friend gave him some cards so he had enough cards to start playing and building different decks.

Greger made a couple of decks and played with his friends but he got beaten all the time which made him start purchasing some booster packs to get the edge against his friends. The problem was that they did the same so he was still struggling. Then he took a decision to be the best *Magic: the Gathering* player amongst his friends and spent a considerable amount on booster packs and the occasional single cards. Eventually his decks were of a higher standard and he started dominating when playing with his friends. Greger is still playing *Magic: the Gathering* and has to date played for roughly sixteen years.

**Question:** What are the positive and negative aspects of obtaining cards from booster packs according to you?

**Answer:** When you start playing a trading card game it is a good way to get new cards because every card had a value. Not a value in the sense of selling them but a value to myself for playing with them and using them in decks. But now when I have up to thirty-forty thousand cards all junk cards like common cards end up in a box I never use because I just never use common cards in the decks I build. I think it is a thrill to open booster packs in hope of that super special card but now you just hurry through all the common cards to look at the uncommon and rare cards you get in a booster pack.

“If you are trying to get the cards you really want buying booster packs it is really bad, than I rather go to the second hand market because you rarely get the cards you really want from buying the occasional booster pack. I also think prices of booster packs during the later years have become quite expensive.

**Question:** What are your opinions on the second hand market of trading, selling and buying cards?

**Answer:** I like the second hand market and I buy and sell cards on a somewhat regular basis, I have actually made some money during the years by selling and buying cards. It is an easier and often cheaper way to get the specific cards you are looking for.

**Information:** We explain our salvage design and give an example on how it can be used with the transmute system to turn any card into tokens. The tokens could then be used as a currency to buy new random or specific cards.

**Question:** What are your opinions are on a system where cards can be turned into tokens and tokens can be turned into new random cards or specific cards?
**Answer:** I think it sounds really interesting, to trade hundred cards I do not want for a card I do want or something similar would definitely work and also be something I would like to do. It would suddenly bring a new value to common cards in the form of tokens, so when I buy booster packs I could collect those bad common cards until I have enough tokens to trade for something I need. It gives bad cards a new value in the sense that I can trade them for something better.

**Information:** We explain our buff design.

**Question:** What are your opinions on a system where a player can spend tokens to get temporary boosts in combat?

**Answer:** The idea is really interesting but I can see a danger with it if it players can spend a huge amount of tokens to become close to immortal or something similar. If it is well balanced so that the bonuses do not destroy the fairness of the game it could be something that would get your heart going before a fight. You could be thinking things like: hope he has not paid a lot of tokens now or have any bonuses that are good against my deck. Since trading tokens for buffs will make player start with possible unequal terms it could be really bad if the buffs are not balanced good enough.

**Information:** We explain our upgrade design.

**Question:** What are your opinions on a system where a player could upgrade a card permanently to an enhanced version of that card with tokens?

**Answer:** I would say why not. It sounds like a nice idea to upgrade cards before your playing. If it would be possible to upgrade cards while playing I think it needs to be balanced so that a player cannot upgrade a card so the game can be won by just spending tokens.

**Question:** What is your opinion about being able to spend money in order to get advantages like buffs, upgraded cards or more cards to choose from in free to play online competitive trading card games?

**Answer:** I think that if you will get better permanently by just spending real money it is a bad thing but if you can spend money to buy some of the time it takes to become better it is ok.

I am currently playing a game called *Blood Brothers* and when you play it you earn money and can buy random characters from a pool that only contain common, uncommon and rare characters. If you spend real money you can buy characters from another pool of characters that also has legendary characters in it.

So if you play the game without spending money you will never be able to get those legendary characters and I sometime end up in fights with other people that has these legendary characters that are much better than my characters. I think that is quite okay, I can still play the game and if I play more I will get better characters and will get closer and closer to beating the people who spend real money.

**Question:** In a free to play game, would you feel differently playing against someone that has advantages against you if that player has gained those advantages from playing several months or bought them all for real money?
**Answer:** I think it is a big difference, playing against someone who has bought a lot of cards and advantages with real money would not feel good but if I played against someone who obviously earned all his advantages from playing it would feel better. I think it also depends on how long you have played the game, if you just started I think it would be less accepted that a player has bought advantages than if it comes to players who are really experienced with the game.

**Question:** Have you been in an unfair position with a little amount of cards playing against someone with a lot of cards or vice versa?

**Answer:** Both, when I started playing I had worse card than my friends and later when I lured several others into the game I played with the best deck I had all the time. Eventually they asked me to play with a bit worse cards, so I think it is important that the game is fun to play. You do not really want to be on either side of the unfairness at least when playing casually. I have been crushed in tournaments and I mean you feel frustrated but that is the way the game works. I do think it is less of an issue if someone is superiors in a tournament because then everyone entering has agreed and understood the rules.

**Question:** Would you like to see this issue of unfair or underdog position addressed in games you play by some mechanic like brackets or matchmaking?

**Answer:** It should be some system that makes sure that players do not end up fighting against players that are on a much higher level. So that a new player will not be crushed three times in a row by someone with extremely powerful cards and end up not playing the game anymore because of that. I would require a lot of balancing but I’d like to see a balanced matchmaking system of some kind ensuring that both players will have fun and play on similar terms.
Participant: Kristoffer Hedlund 34 years.

Background: Kristoffer started playing trading card games in 1994 when he was roughly seventeen years old; starting with Magic: The Gathering. First he just played with friends but later on he started to attend all the local Magic: the Gathering tournaments. In general he think he did quite good but noticed fast that if he wanted to continue playing on a high level he would need to spend a lot of money to keep his decks up to date every expansion.

Because of this he stopped playing Magic: the Gathering and sold off the estimated two thousand cards he had. Now he regrets that he stopped playing because during one year he was considered to be amongst the top ten players locally and five of those people who continued playing ended up traveling the world, competing on an international level.

Kristoffer also played Star Wars Collectable Card Game published by Decipher, Inc. (not to be confused with the modern Star Wars Trading Card Game published by Wizards of the Coast.) parallel to Magic: the Gathering but he continued to play Star Wars Collectable Card Game fairly regular after he stopped playing Magic: the Gathering.

When Decipher stopped developing Star Wars Collectable Card Game in 2001, the operation and oversight of the game was then taken over by a Decipher created volunteer group called the Star Wars Customizable Card Game Players Committee. To date, the Players Committee still runs the game and creates new cards known as "virtual cards" that are released online in PDF (Portable Document Format) file format, which can be printed and used for play.

Kristoffer guesses he has around twenty thousand Star Wars Collectable Card Game cards and also estimates he has thrown away the same amount of common or duplicate cards. Even though it is hard to find people who plays Star Wars Collectable Card Game cards he still attends the odd tournaments and travels long distance to play in bigger events twice a year.

Question: What are the positive and negative aspects of obtaining cards from booster packs according to you?

Answer: I do not buy booster packs anymore because mostly you never get the cards you really want and what you do actually get is not even worth toilet paper. I know some trading card games started selling displays with I think thirtyish booster packs in them which contained one of each rare for that specific expansion. I liked that because then you would get one of every rare without getting to many duplicate or crap cards. But I do think booster packs is a good way for new people to get cards when they have none.

Question: What are your opinions on the second hand market of trading, selling and buying cards?

Answer: I like the second hand market more than purchasing booster packs and it has become a hundred times easier to be able to buy and sell cards with the web.

Information: We explain our salvage design and give an example on how it can be used with the transmute system to turn any card into tokens. The tokens could then be used as a currency to buy new random or specific cards.
**Question**: What are your opinions on a system where cards can be turned into tokens and tokens can be turned into new random cards or specific cards?

**Answer**: As long as it is balanced so that a player would feel it is affordable I think it would be nice. I would never use the system to change cards for a new random card because then it might as well be a new card you did not want and random that card away again, but to change common cards for a specific card I find appealing. The random part could be a fun option if you don’t play as frequently so that you do not already own all cards.

**Information**: We explain our buff design.

**Question**: What are your opinions on a system where a player can spend tokens to get temporary boosts in combat?

**Answer**: Spontaneously I do not like it because then it will be more impulsive thing especially for younger players who in the spur of the moment might spend their tokens for a temporary boost only. I do not know if I would use it, if it cheap enough to make a boost I would use it but on the other hand if it is to cheap everyone would have boosts all the time and then it feels pointless. I am not in love with the idea at least.

**Information**: We explain the upgrade design.

**Question**: What are your opinions on a system where a player could upgrade a card permanently to an enhanced version of that card with tokens?

**Answer**: It could work but it feels similar to the buff system, players who want to play and want to win but are not that good at playing and then they can spend a lot of money to upgrade cards to a point where a less skilled player will beat a more skilled player just because he has spent money. When I think on it I think it is that why I do not find it appealing. Similar feeling to the buff mechanic the difference is permanent so it does not feel as wasted as the buffs.

**Question**: What is your opinion about being able to spend money in order to get advantages like buffs, upgraded cards or more cards to choose from in free to play online competitive trading card games?

**Answer**: I think it is ok as long as you have an option to play with people that are on the same level.

**Question**: In a free to play game would you feel differently playing against someone that has advantages against you if that player has gained those advantages from playing several months or bought them all for real money?

**Answer**: It would feel better to play and loose against someone who has played longer than someone who has played shorter and bought all his cards. The one who gained all his cards from playing is a pro like an athlete dedicated with training versus someone who just has a fat wallet.

**Question**: Would you like to see this issue of unfair or underdog position addressed in games you play by some mechanic like brackets or matchmaking?
**Answer:** None wants to start the game facing off with players that are much better or has really good cards. So I think some matchmaking is good but then again for example in *Magic: the Gathering* a deck with worse cards can beat a deck with better cards just because it is also very skill based. If there would be brackets and depending on time spent in the game or money spent on the game for example. I think it would be a good idea to so that the underdog would get a greater reward from winning. Then people can decide and risk meeting harder opponents if they wanted to jump up in a more difficult bracket.