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CS 4730 Critical Eye on  
*Hearthstone: Heroes of Warcraft* (2014)  
by Blizzard Entertainment



*Hearthstone: Heroes of Warcraft* is a virtual collectable card game akin to *Magic: The Gathering*. Like *Magic*, two players with decks of cards alternate turns playing cards with the goal of reducing the opposing player's health to zero. Cards represent units with health and attack that remain on the board or spells which immediately affect the state of the game. Cards have a cost that expend a pool of resources ("mana") that replenishes each turn. Players start by drawing cards from a deck to form a hand, and at the beginning of every turn a card is drawn. Units on the board can attack, either reducing the health of the opposing player or engaging with other units which deal their attack damage to one another simultaneously. Dead units or spent spells are discarded and removed from the game.

Unlike *Magic*, mana does not grow from playing cards but automatically increases by one each turn. This makes the resource aspect of the game more predictable and frees up space in player's hands for more meaningful cards. *Hearthstone* also adds classes to the game, giving each class a special ability that's always available and restricting certain cards to certain classes. This creates a dynamic where different classes will not be played the same way given the affordances class-specific cards and abilities provide. Along with this, the player's health is given to the hero representing the class, who is put on the board and allowed to attack units if given attack damage from certain spells. This allows players to treat their health as a resource that can be risked to kill enemy units. Players can choose a playstyle that reduces their own health in the hopes of getting an advantage sooner and ending the game more quickly.

Additionally, players only play cards on their own turn, while in other similar games players can play cards anytime in response to their opponent's plays. This was a design choice to make the game easier to play virtually. If one can play a card anytime, the game has to ask the player after every single play if they want to react, or the game must handle players playing cards in real time and synchronize all actions correctly. The first solution ruins the flow of the game, and the second requires a robust server and internet connection to accomplish real-time synchronization, which is not infeasible as it is done in other real-time games. Instead, the client-server model of the game is asynchronous: one player's actions are sent as packets to the other player, and the other player will not react until all the packets have been received and the client knows the first player's turn is over. In the absence of reactive card plays, *Hearthstone* provides a different way for players to affect each other's turns in the form of secrets. A secret is a trap that one player lays for the other player to trigger on their turn. Because the presence of the secret is known but how it is triggered is unknown, the other player will have to alter his play to avoid the secret or discover which secret it is. This dynamic of players interacting through

hidden information is unique for a trading card game and is an effective replacement for reactive card plays.

*Hearthstone*, like other turn-based games, must deal with the problem of balancing the advantage given to the player that goes first. In a game like chess where all the information is visible and available to both players from the beginning of the game, this problem is dealt with by players altering their playstyles depending on if they go first. In *Hearthstone* this is not adequate, because decks are assembled beforehand without a knowledge of whether it will be used to go first. Additionally, the advantage of going first is not only being able to play cards first but being the first to have the greater pool of mana to spend and being the first to draw a card. The first player is always able to play better cards first and will have more cards to choose from unless some balancing is done. The game's solution is to give the second player two advantages: an extra card from their deck and an additional spell that increases their mana pool by one for a single turn. This way, the second player has an initial advantage in hand size and for one turn is able to play the better cards first.

A common complaint with the game is how randomness is used. Many cards have powerful abilities, like dealing direct damage or taking control of an enemy unit, that would be too powerful if they could be used directly and consistently. To balance this, these abilities are applied randomly or even have the chance of hurting the player that played it. The reasoning behind adding randomness is that it adds uncertainty to the game. When a player is unsure of the outcome of a play, it adds tension to the game and makes a positive outcome more thrilling. Adding variance to the game makes it less predictable and allows for new experiences to be had with the same cards. However, random events that hurt the player punish the player for something that is out of their control. Players perceive that they have been "robbed" and consider the randomness unfair. Ideally, randomness should be used to present unexpected challenges to players for them to overcome to demonstrate their mastery of the game. It should not be used to prevent players from demonstrating their mastery of the game (Cook, 2012). It is arguable whether or not *Hearthstone* uses randomness appropriately, but it is easy to see why the developers would want include it to balance out the strong abilities they wanted to put in cards.

What makes card games like this one fun and easy to learn while at the same time complex and challenging is the information model of the game. Other strategy games like chess can present the player with too much information to process, creating an "analysis paralysis" that frustrates the player. *Hearthstone*, on the other hand, only requires the player to be aware of a few layers of information. The first is what is known to both players: the units in play, the classes of both players, and the number of cards and mana of each player. The next is what each player only knows themselves: their hand and what cards remain in the deck. The last is the layer of meta-information about the game: what cards exist in the game, what cards each class could have, and what strategies classes tend to use. There are few enough known pieces of information that they can be comprehended easily. There are a large enough unknown pieces of information that players can safely refuse to analyze such a large space of possibility and rely on instinct and experience to inform them on what to do. Complexity comes from deepened

understanding of the possible unknowns, but a new player can initially ignore this and focus on the small number of knowns. This is how the game can be both initially approachable and deep over time.

There is also much to be said about the metagame and social aspects of *Hearthstone*. In this regard, it shares a lot of commonalities with Blizzard's other MMOs. Advanced cards are gained from card packs which are earned or bought (with real world money or in-game gold), and packs have random chances of rewarding rare cards. This is an application of Skinner Box-style operant conditioning that encourages players to keep playing and buying packs. The game also notifies you when your friends find the rarest cards in packs, influencing players to think rare cards are more likely to drop in their own packs because of how often they hear of it (Madigan, 2012). The game also provides daily quests for players to earn gold. Quests give gold much more quickly than playing without quests. They are given only once every 24 hours, and only 3 can be held at one time. Players, wanting to earn gold in the most efficient manner, are more likely to play the game for a little while once a day. Thus the game becomes part of players' daily routines, and they are less likely to burn out by overplaying it (Portnow, 2012).

Balancing the metagame of *Hearthstone* is difficult because both a player's skill and deck value determine how likely a player is to succeed in a match. Ideally, the game would like to pit players of equal likelihood to succeed against one another, but the question is how to determine this efficiently when matchmaking. One way to do this is by implementing an experience system that measures how much a player has played in total. Matchmaking then would try to pit players of similar experience against each other. However, this breaks down because there could be a large discrepancy in deck value. One player could have spent a lot of real-world money buying packs and getting rare drops and the other could have not. This would create a system where you "pay to win" the game, which is a complaint people have levied against the game. The opposite approach would be to pit decks of equal value against each other. This would be fair, but part of the fun of getting a rare card is using to dominate less valuable decks. If all your opponents scaled equally with you, there would not be the positive feedback of victory for getting better cards.

*Hearthstone* addresses balancing by providing three different play modes. One is a casual mode where, as the name implies, player's are encouraged not to worry about the fairness of the matchmaking. Although there may be an experience or deck value based matchmaking algorithm behind this mode, this is hidden from the player, and in practice players will play decks a lot worse and a lot better than their own. The next mode is ranked. This solves the balancing issue by giving players a rank that pertains only to this mode. Wins improve your rank, losses hurt it. The idea is that the system will balance itself out asymptotically. If you play a better deck than yours, the better deck goes on to play better opponents and you are more likely to play decks at your level. Eventually, players will remain at a single rank when they will win half the time, which is when the game is fair. However, *Hearthstone*'s rank mode deviates from this ideal by resetting everyone's ranks periodically. This creates a metagame where players "climb the ladder" and go for the glory of being a top ranked player each season, but the system does

not have time to become asymptotically fair. The last mode is arena mode, which addresses the fairness problem by having players draft decks from random sets of cards. You can play with the deck until you have three losses with it. Similarly to the ranked system, you face better decks as you accrue more wins and worse decks as you lose more, so later matches tend to be fairer. However, your first match cannot be guaranteed to be fair, since all good and bad decks have to play a match with 0 wins and losses. On top of this, arena decks also vary in value, as not all will have the same number of rare cards. Similarly to the equal deck value problem discussed earlier, part of the fun of rare cards is using them to beat worse cards, so it makes sense that randomized deck value was included in arena mode.

The core of the game is the decision making process that a player makes every turn: given the current state of the game, deciding what cards should be played and what units should attack. The primary procedure is playing cards, which involves the mechanics of drawing cards, spending mana, and putting cards on the board. These mechanics come together to create the dynamic of a decision-making puzzle about using the resources at hand to approach victory. In this way, challenge is the primary aesthetic of the game. Given the social aspect of the metagame, one could argue that fellowship is another important aesthetic to the game, but most matches being played are against strangers who represent a challenge to be overcome and not a friend to be made. I would argue that submission is the secondary aesthetic. *Hearthstone* has a casual feel to it, inviting players to “pull up a chair by the hearth” when they launch the game. It works the player’s mind, but in a refreshing way that allows the player to solve problems at a laid-back pace. It’s become my pastime de jure, partially because it is relaxing to play and partially due to the psychologically addictive metagame discussed earlier.

#### Works Cited

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