# MAGIC THE GATHERING: A LEARNING GAME DESIGNER'S PERSPECTIVE

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## Introduction

*This article is going to introduce the popular Trading Card Game Magic: The Gathering, and explore how it's structure and relationship to game design offers interesting mappings to educational game design. In particular, the structure of Magic allows for players to factor design considerations as a component of strategy in the game itself, allowing the game to be a bridge to systems thinking and test-driven design strategies. These are fairly unique components of both game design and instructional material, and could be expanded on with new games tilted towards specific design-driven learning objectives.*

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## Who am I?

I am a professional learning game designer. That means I wake up most days, put on some form of pants, go to work, and

hammer on the problems and opportunities of designing games that are about teaching something in particular. I am also a lifelong game player, which while far from interesting, is relevant in the sense that out of all the games I've played, *Magic* has offered something fairly unique as a played experience, and hopefully worth articulating.

**What is Magic the Gathering?**

*Magic: The Gathering* is a card game. There are many variants, but all forms of *Magic* I've played involve taking on the role of magic-wielding heroes called "Planeswalkers". As a Planeswalker, you summon forth giant monsters and deadly spells to do battle with and defeat one or more other Planeswalkers. Conveniently, all your universe-shattering powers take the form of cards. There are an inconceivably large amount of cards, and an even more astounding amount of ways you can arrange these cards to create your own specific deck.

Once you have chosen the cards for your deck, you take turns with your opponent playing and activating your cards for the purpose of destroying them. Some cards are subtle, some cards are direct, and some cards only reveal their power when paired with other cards. Finding and exploiting interesting interactions between cards is one of the joys of the game.

**Why *Magic The Gathering* For Well Played?**

Simply because someone has played a game, even if that game is good, does not mean it's worth reading or hearing about. As a learning game designer, I create and test games about a wide variety of subject matter, which makes my job pleasingly esoteric. That means I also try to play strange things, as well as play as many things as I can, in general. Recently someone in my office found that you could purchase a "core set" of Magic cards, giving you more than enough cards to build a deck and play for under twenty dollars. Myself and about six or seven other staff bought

them to get started. Some were seasoned Magic veterans (the game is twenty years old at this point, with new cards coming out every year), and some were rookies, like myself.

I've played Magic for several months now, including the hosting of some friendly office tournaments. In the world of Magic players, some people have been playing for decades. I'm by no standard of anyone an advanced Magic Player, but even now I feel like I've gotten a lot of benefit from my short time with it. Hopefully the things I've learned are of interest to the broader game development and design community.

**Playing by the Rules and Changing the Rules**

As a designer, there are a lot of things about Magic that are challenging and interesting. Normally when you design a game, you construct a set of rules that the agents inside that game conform to. Monopoly pieces move clockwise, Halo players wait in cover to recharge their shield, etc. Players who seek to master these games must exploit the seams of these rules to triumph. For example, a good medic in the game Team Fortress 2 knows that a full overheal fades in 10 seconds, so they know when to begin and end overhealing cycles on teammates. Esoteric, but it's the kind of small rule that a dedicated player can use to make a difference.

In Magic, however, it's a different story. As the rules for Magic say, "When a Magic card contradicts the rulebook, the card wins." (Laugel, 2013). The Cards you play aren't just agents in the game world – they frequently can undermine or alter the rules of the game itself. For example, certain spells can only be cast on your turn, before or after combat. However, there is a dragon creature that can be summoned, that aside from being a dragon, which is pretty cool, also changes the rules so that all of your spells can instead be cast whenever you like (Figure 1).


*That's just one of the countless shifts in rules that take place over 10,000 different cards, the combinations of which are simply staggering.*

Magic throws two wrenches of boggling complexity in front of the player – not only are there a staggering amount of rules generated over an enormous set of cards, but the relationship between cards and rules are in flux, based not only on the cards you've planned on, but your opponent's cards as well. Every game of magic isn't only just unique due to random cards, but is unique based on the rule permutations that are derived from the combinations of cards in play. For example, your deck might be built on retrieving creatures from your graveyard, while your opponent seeks to "mill" your deck out. The fact that your opponents winning strategy actually compliments your own

winning strategy will change how you decide to use your cards that support building up your graveyard.

Personally, I can understand how this level of fluidity in the rules can seem intimidating – but in another sense, it's liberating. The game is large enough that you can carve your own area of preferences and specialty out of the space. The space of the game lets you apply an entire layer of identity and ownership over a playstyle, color (Magic uses resources of five different colors to determine what abilities can be used), or even just a particular card.

**Build Your Story**

Players are encouraged to "tell a story" with their deck, deciding on a theme and purpose for their deck. Then, through play of Magic against opponents, they can see whether they win and lost, and perhaps more importantly, *how* they won or lost. Based on this feedback, they can alter and improve their deck to "clarify" the story, adding or taking away cards that better focus their goals. They can change their deck's story or enhance it. Like a well-constructed argument, a good magic deck provides both the context and purpose for victory, defining how it will win and why.

For example, my current favorite deck is based on the idea of summoning small, relentless soldiers that attack as quickly as possible. All of my spells are cheap and instant (Figure 2), allowing me to cast them at will, usually to help my soldiers attack with more damage or more quickly. Not one of my creatures is essential, which makes it hard for other players to decide who to kill or when to kill them. I've played with this deck probably thirty or forty times, changing it meaningfully ten times or so and adding modest tweaks another 15 times.

In this way, players of Magic get to participate as game designers in their own right – obviously that design has constraints, but so

does all other good design. Players can conceive of combinations of strategy that can create local revolutions or arms races amongst peer players, and players can even go so far as to create decks to specifically counter other player's decks.

Players will find that the more they play and test their decks, they'll see that their core strategies form a "narrative", or a story that they want the deck to tell. My deck of small relentless soldiers feels, to me, like a raiding army pouring onto the battlefield. My opponents deck might be a dangerous cabal of sorcerors looking for ways to wipe out my units in sudden large attacks. The stories inform deck design, which then informs the narrative again, creating a loop.

This gives players of Magic a "behind the curtain" component of game and even narrative design, letting players take an extremely deep perspective on how to master Magic.


An interesting sub-component of this narrative element is that players can generate ideas that aren't even focused necessarily on winning, but instead attempt to do something purely creative and/or entertaining. Some quick examples are a "Wizard of Oz" deck composed only of lions, tigers and bears (Oh my!) or a whimsical deck I'm currently putting together called "Have a Goat". Decks like these are certainly not necessarily competitive (but conceivably could be), but the creation of them is still an interesting exercise in design and teaches players more about the structure and system of magic while reinforcing their sense of creative agency.

**Different Kinds of Depth**

There are, simply put, a lot of cards in Magic. Looking at the online Magic the Gathering Database, there are well over 10,000

playable cards (cards that aren't frivolous or banned outright). A player is allowed to construct their deck in most forms of play in a deck size of roughly 40-60 cards, usually with a suggested minimum or maximum cap, depending on the type of play. Constraining players into even focusing only on contemporary cards still gives the player a very large possibility pool to choose from (about 1000 cards).

Even so, the *quantity* of cards is matched by the *systemic* complexity of the rules themselves (Harrington, 2013). Each turn in Magic is composed of a complex series of phases. Each phase of the game can be "responded" to, which means that either player can "retort" an action or phase in the game by doing something that would happen before that event. The simplest comparison might be if Magic were a soccer game, one player could say on their turn "I am going to kick a goal in the right side of the net", and the other player could respond with "In response, my goalie will step to the right side of the net".

So in Magic, a player might say "I will cast boros charm, doing 4 damage to you'. The opponent might respond by saying "in response I cast this spell that cancels your boros charm". The first player then might say" In response to your cancel spell, I will cancel your cancel spell!". These cards form a "stack" of actions, which once both players agree that they are done responding, are then executed in the reverse order on which they were declared – working back down the stack, to continue the metaphor. Understanding the stack leads to the most intricate and mind boggling maneuvers in the game, with occasionally players changing and undoing their own actions in order to create new outcomes.

**How Is This Relevant to Learning Games?**

Learning games often have to model a "problem space" that is congruent with system or practice in the real world. Often

though, that problem space is turned into a rule-set with a constrainable (and understandable) outcome. While this makes for a "knowable" (and thus assessable) terrain for players to master, quite often in the real world problems are vastly more messy. Magic is simultaneously gigantic AND intricate, and offers a problem with enough "mess" that players are often pushing the edge of what they think is possible, rather than just fulfilling a rote concept.

Learning game designers should consider that they can make games about things that are often not entirely knowable, and that in some cases, letting players wade into a problem space in a game with an unknown solution to mastery can create deep play and deep thought that would better prepare that player for grappling with the actual problem. Spending time on depth and intricacy is obviously costly and difficult, and has taken Magic many, many years with many mistakes, but learning game designers should at least weigh the benefits of adding depth purely to increase the fidelity of the learning objective, even if at the expense of immediate clarity. Some problems are fun BECAUSE they are obscure!

Similarly, sometimes when designers make learning games they feed the player's need for order by oversimplifying the player's agency. In the real world, sometimes you can change the rules of the game in order to win, or approach a problem from an entirely different angle. Giving the player a second tier of agency that allows them to change the rules of play can allow for thinking that supports multiple layers of systemic thinking, bringing the learning game more into alignment with the types of problems in the real world that we consider non-trivial.

**Play is Expression**

The publishers of Magic develop cards based on a set of assumed playstyles (Rosewater, 2006). These playstyles are diverse, but

essentially boil down into three essential categories of style for players: players who play to experience, players to play to achieve, and players who play to express. The subdivisions of these playstyles inform the development of cards and in turn inform options for players in deck construction in terms of how they play, and how they define mastery.

For complicated learning objectives, such as systems-thinking, argumentation, language arts, etc. it's worth considering whether there are multiple ways for players to consider themselves competent in the learning objective. If so, it might be possible to consider structuring those different type of mastery into playstyles with their own identities, goals and success metrics.

**Play is Prototyping**

When working on learning games that address scientific or engineering concepts, it's often difficulty to conceive of how to create an authentic experiment-driven gameplay cycle for players. But in Magic, it's a natural, healthy and creative part of play.

As you play Magic against opponents, you're learning about play at two levels at once. At one level, you're learning and analyzing the game you're playing right at that moment, considering when and how to play your cards for maximum benefit. Additionally, you're analyzing your deck's strengths and weaknesses for the next game. Is a card too expensive to play reliably? Are there cards in your hand that are too specialized, or don't complement everything else? Does your deck have an obvious weakness that can be exploited by opponents?

Most games of Magic end with a spirited discussion between the two players about the expected and unexpected elements of play that occurred in the match, along with comparisons of the observations on play. Tactical errors will be reviewed, of course, but also macro-level strategy is discussed, to see either deck

might be improved ("Your deck is too low on mana, pull out some of those fliers to make room") or whether it was simply a mismatch of strategy that led to the outcome ("don't feel bad, my deck is designed to chew slow decks like yours").

Magic doesn't just teach you to be a better player of Magic (although it certainly does), it teaches you to be a better designer of Magic in future games. Players improve in the micro (tactics of play) and the macro (design of decks) through every play session and observing the expected and unexpected interplay of cards.

If your learning objectives demand reflection, iteration, testing or hypotheses, engineering a testing/playing structure like Magic may help you integrate those objectives authentically into your gameplay model without being overly prescriptive or reductive to the player's process.

**Play is Debate**

With ever-shifting rules and complicated sequences of events that run in ways that can sometimes seem backwards, players will inevitably come to a disagreement on how a rule actually works. This means returning to the rules and actually participating in what looks suspiciously like municipal laws to determine the finest-grained details of how the combination of rules might work together at the same time.

This feels like bureaucracy in one way, but in another sense the game gives the player the unique thrill of being entirely technically correct. Many of the most ingenious combinations of cards rely on both a grasp of the big picture of the game along with the focused close-up detail of a single card's intricacies. This level of distance between the scopes of understanding in Magic is fairly unique, and it's always entertaining to have a player gleefully explain how in this particular instance of the game why they are winning in a way you had never considered possible.

It's worth noting that at the GLS presentation I gave on this topic, I was approached by a professional Magic player who pointed out that at a certain level of competency, debate is very rarely part of play, as both players are skilled enough in the rules to have very few, if any points of contention. But I'd say that as a component of scaffolding in Magic, debate is an important part of the mastery trajectory, and in many situations even a fun element of the play cycle.

In a learning game, encouraging discussion and debate of the game's structure and objectives can only be viewed as a healthy sign that you've created a rich and interesting game environment. If players argue about the best way to conduct a population survey inside your ecological science game, you have strong evidence you've made a learning-conducive environment. It's also a sign that you've added enough depth into your play structure that players are able to craft and inhabit a meaningful identity in the game – one worth fighting about.

**Play is Experimentation**

The same amount of creative freedom that makes room for decks like"Lions, Tigers and Bears" could also be bent towards creative problem solving spaces with learning objectives. Spaces like design thinking, systems creation or collaboration benefit from play structures that focus less on fixed "victory" or "loss" conditions as the only measurement of success. If you can create learning-objective-parallel systems of creation and experimentation in your game, you'll have made a compelling "safe space" for deep systems learning. For example, if you've made an engineering game that let's players create unique machines to solve problems, testing to make sure that players are able to make widely varied machines that solve the problem in different ways will help ensure that the problem space is large enough for players to think of themselves as legitimate problem solving engineers.

**How Can These Design Goals be Actionable?**

Designers can approach systemic depth through two fundamental types of measurement – the number of parts, and the number of relations between those parts. The game of Go for example has very few relationship and rules, but many, many permutations of ways that the game board can be arranged. Understanding Go by memorizing orders of movement is very ineffective (especially when compared to Chess), and effective play is marked by excellent pattern recognition and switching between multiple viewpoints of board analysis. The game of Chess has far fewer board combinations, making it very memorizable or searchable through brute force computing – good chess players are expected to memorize "known" sequences of chess moves to create optimal board position in the beginning and end of the game.

When considering your learning objectives, analyze the type of problem the game embodies, and determine if it's a problem that is expressed through difficulty through the number of parts ("player will be able to identify the bones of the human skeleton") and/or through the number of relations ("player will be able to understand and describe the relationship of creatures shown in a food web"). Consider tailoring your games system to be congruent with the objective's problem space.

Additionally, ask yourself if there is room for creative or subversive play with the objective. What types of unorthodox decisions would a player want to have while solving the problem you've given them? What parts of the rules would players want agency over bending or breaking? What parts of the learning objective are murkiest, and might benefit from the player manipulating them by themselves? Creative subversion is a perspective that empowers learners to understand and master systems, which is a powerful learning theme that games have a fairly unique capability to harness. Creating a game with enough

depth to give players the freedom to subvert inside the rules creates a whole new tier of agency and empowerment.

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