Episode 06: Cognitive Gamer Cognalysis: Pandemic

Show Notes

I consider the popular board game Pandemic from a number of different angles. What makes it an interesting game, cognitively speaking? I touch on decision making, attention, cooperation, and also the Legacy and iPad versions.

Game References

Burgle Bros, Mechs and Minions, Pandemic, Pandemic Legacy

Research References

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Transcript

Hello! This is Episode 6 of the Cognitive Gamer podcast. I am your host, Steve Blessing. This is going to be slightly different than the previous episodes. In those, I took a topic from psychology, and chose games to illustrate the points I was making. In a Cognitive Gamer Cognalysis, this whole podcast will be about one game, and we'll explore it from many different angles. These won't be reviews; assume that I like the game, or else I wouldn't devote a whole podcast to it! Rather, this will be a discussion of what makes the game interesting, from a psychological perspective.

For my first cognalysis, I am going to talk about the board game Pandemic, designed by Matt Leacock. This is a cooperative board game, in which the players are trying to cure four different diseases that are ravaging the Earth before any of the lose game conditions come up, like too many outbreaks of diseases or no more player cards to be drawn. Each player controls a character, and on each turn can do a number of different actions, such as move to a new city, treat a disease, or find a cure. Each character has a unique ability that can also come into play, like the medic character can treat more disease than the other characters. It's a fun and exhilarating game, with lots of expansions and variants at this point. I'm going to concentrate on the base game, but will talk a little about Pandemic Legacy and also the mobile app version of the game.

First, we should talk about the virtual elephant in the room. Pandemic is a cooperative game, which sets it apart from most other games out there. Most games are played competitively, where each player is trying to win against the other players in the game. In a cooperative game, all the players are on the same team, trying to beat the game itself. These two types of games, competitive and cooperative, obviously set a very different stage at the outset of playing them. Me versus everyone else is very different than us versus it. There are a number of different cooperative games out there besides Pandemic, such as Mechs v. Minions, Burgle Bros, and Forbidden Desert, another one from Matt Leacock. All of these have this feel, that the players need to cooperate together, pool resources, in order to win against the game itself. And in many of these, the deck is stacked quite a bit against the players. Depending on the game and setup, it can be quite challenging to win these games, even when the humans have banded together against the evil game board.

There is a classic social psychology experiment that examines what it takes to have people join together, and these cooperative games do that by their very nature. The famous Robbers Cave study done by Muzafer Sherif way back in 1954 examined what happened to pre-teen boys in a summer camp setting over the course of a couple of weeks. The boys were spilt up into two groups, the Rattlers and the Eagles. The boys didn't know each other prior to the experiment, but quickly took this arbitrary labeling to heart, and there was rivalry between these two groups, the Rattlers and Eagles. Eventually, however, Sherif introduced a number of challenges to the camp, such as needing to fix a water supply, that could only be solved if the two groups worked together. By introducing these challenges, the boys learned to all get along and to solve problems cooperatively. Sherif called this the contact hypothesis, and as you move from thinking about playing games competitively to thinking about playing them cooperatively, this contact hypothesis is at the heart of it. A mutual foe or problem that you all must face will serve to tie all members of the group together, eliminating the sense of competition between the players.

Let's talk about some of the cognitive phenomena at play in Pandemic, particularly in light of some of the aspects that we've talked about in the first few podcasts. Each turn in Pandemic you have a number of decisions to make. Where do I move my character pawn? Do I treat two disease cubes or maybe just one? Should I do the share knowledge action with this other player? There are a ton of decisions, and you probably never have all the information you need in order to make the absolute best one. So, to use the term from the last podcast, you are satisficing, making the decision that you feel is good enough to help you and the other players win the game. Is it the optimal one? Probably not, but hopefully it is good enough. As my wife and I have played more games of Pandemic, we have gotten better about considering more of the information available on the board. Players can look at the cards in the infection and player discards, to see what cards are still in the deck; you can consider how many turns it has been since an epidemic card has been pulled; all this information is available to you, which can help you to make a better decision.

In most games, the more you play the better decisions you will make; the better you will be able to satisfice. But, in a cooperative game, that means that some players will probably be able to make better decisions than others (or, at least think they can make better decisions than others). This can lead to some players trying to satisfice for all the other players on their turns, a problem in cooperative board games called quarterbacking or being an alpha gamer. Pandemic is

susceptible to this. My wife and I have been chastised by our children for doing this to them when playing, and I was very aware of this when we recently played with another couple who had never played Pandemic before. I wanted to make sure they understood the game and their options, but not let them feel like they weren't actually playing. I think I was successful, but this is an issue in these games. Some solutions that other games have adopted are to instill a bit of a time limit in drawing cards, like in Mechs vs. Minions, or to have a bit more randomness like in Burgle Bros. Adding in randomness takes away some of the feeling that you could almost optimize a move, and definitely makes it much more like satisficing.

Attention is another big issue that comes up in Pandemic. There are a lot of things to attend to while playing the game! There are the locations of all the disease cubes, how many outbreaks there have been, how many cards in the infection and player card decks, what city cards each player has; a ton of information! And, particularly as a new player, it's very hard or at least time consuming to pay attention to all of it. My strong suspicion, like we talked about in Episode 3, is that you won't be able to. There's just too much! I know that when I've played, we will be concentrating on one section of the board, maybe the red disease, thinking we're making some good progress, but then in the span of a couple of turns, another hot spot has sprung up, taking us by surprise. Some of that is luck of the draw, but much of it is due to us being too focused on the one area of the board, to the detriment of taking action in another part of the board.

I briefly mentioned it in Episode 3, but one metaphor that is used to describe attention is that attention is the glue that holds individual features together. This is the big idea behind Anne Triesman's Feature Integration Theory. I will go into more detail into this idea in a later episode, but I think of this idea when considering these sorts of issues. Triesman in her theory is really dealing with much smaller time scales, fractions of a second, as opposed to the dozens of seconds and minutes that game decisions are made, but the general idea still works I believe. Features Integration Theory posits two main stages to attention. The first stage is referred to as the Preattentive stage, and this is where all features that are perceived by the visual system reside, but have not necessarily been combined into coherent objects yet. That combining happens in the Focused attention stage, which, as the name implies, requires your attention. So, as you look at the board, you have the sense that you know everything that is going on, but unless you focus your attention on a particular area, you really don't. If you remember from Episode 3, what you can focus on, and take in all the information, is precious little, only like a city or two on the board. It's probably obvious advice, but until you get more expert at the game and are able to process the board's information more easily, it's to your advantage to slow things down a bit so that you can fully process and attend to all the information on the board.

I would like to also say just a little bit about Pandemic Legacy. Don't worry, I won't have any spoilers here. This is a wonderful, marvelous game, and if you have played Pandemic but haven't played the Legacy version, I would recommend it. If you haven't played Pandemic at all, you could start with the Legacy version no problem. Indeed, the game is set up so that you can play regular Pandemic a few times at the beginning before starting the legacy version. At this point there are a few legacy and legacy-style games out there. In addition to Pandemic Legacy, there's Risk Legacy and Seafall, both by Rob Daviau, who helped design Pandemic Legacy. Mechs vs. Minions has some legacy type components to it, and my family has recently started playing Fabled Fruit, which also has some legacy aspects to it. In a legacy game, the game changes at

each play of the game. New components and rules are added or modified; the board might be physically written on, or cards torn up entirely. At the very least, the game keeps you on your toes, because the rules are evolving, and the next game will play differently than the last. Cognitively and psychologically, this is wonderful for a number of reasons.

In Pandemic Legacy, you play though the months of one year, with each month represented by 1 or 2 games, depending on how well you do. Our family has just played through April. We have won 4 games and lost 2. Our seventh game will be quite a bit different than our first game. We have new components and new rules. We have put stickers on the board and have written on our character cards. This has obvious implications for what we talked about above, with regards to decision making and attention. Just when you think you understand the game, and know how to satisfice in a better fashion and attend to things more expertly, the rules change and you need to account for that.

But, even more importantly psychologically, is the thread of the story that ties together each month you play. By the creators' own admission, it's thin: just a couple of sentences per month, plus the new rules and components that you get. But, it's enough to make for a very memorable game. That's because humans love a story; we want to know how all the dots connect together. We do that in the absence of any information; people come up will all kinds of explanations as to how two events might be connected. That's how we end up with superstitious behaviors and beliefs, sometimes silly things like that using this pencil will help us on the test, or more seriously, that our friend doesn't like us anymore because she was late meeting us at the coffee shop. But, here in Pandemic Legacy, we are provided with that information, and we run with it. That narrative helps to connect together the 18 or so games that a group will get out of the experience. It makes for such memorable sessions. Playing regular Pandemic, I don't necessarily remember any one specific game, at least not in any detail. But, with Pandemic Legacy, I remember particular story beats and how that impacted us and how it affected the game. A famous cognitive psychologist, Roger Schank, wrote a book called Tell Me Story, whose major thesis is that we use narrative to learn and understand the world. Pandemic Legacy's story, that simple narrative, connecting the whole experience together is wonderful, and I highly recommend giving it a go.

If you want to know more about how Pandemic Legacy was designed, also in a non-spoilery way, I recommend watching a talk that Matt Leacock and Rob Daviau did at this year's Game Developer Conference. I'll put the link the show notes.

As a final cognalysis note about Pandemic, I would like to say a little bit about the app version of it, in comparison to the board game. I recently picked up the iOS version of it for my iPad. It's a great rendition of the board game, and is very faithful to how the board game plays. However, just like what I had to say about the board game above wasn't a review of the game, this is not meant to be a review of the app either. Suffice it to say that if you like the game, you will probably like the app as well. Rather, I'm interested in how the game presents itself to the player in the board game vs. the app, and how THAT affects how you play the game. As I said, the app is a pretty faithful rendition of the game, but the fact that it's on an electronic device affects how you play the game. A cognitive psychologist might say that the affordances are different. As an easy example, the app takes care of all the shuffling and setup. That's a big time saver, but you

miss the tactile nature of the board game that way. The physical touching of the pieces and the manipulation of the cards is a different process by which you process the game, and that might lead to different ways of thinking and playing. Also, while you can play it with other people, either by passing the iPad around after turns or perhaps like we did once by using AirPlay on our AppleTV so that we could all see the board, it's easy to play as a solo game. But, one mind usually isn't nearly as good as two or three or four minds all sharing the same problem space, trying to figure out the best sequence of moves.

Because the player is absolved from shuffling and moving physical components, but rather can just point and tap on screen buttons and locations, moves can be made much more quickly. This lessens some of the cognitive burden while playing the game. Also, the game makes sure you don't violate any of the rules, which means that again, you don't have to expend as much effort remembering them and following the order of play; the app handles all of it. On the surface, this offloading seems like a good thing; less cognitive resources being devoted to those mundane tasks mean more cognitive resources devoted to other tasks. But, because the cost of making moves has been lessened, my hunch is that people are not as careful about making moves in the app version as they are in the board game. At least, I don't feel like I'm as careful when deciding what to do next, and I think it is due to the more ephemeral nature of the experience. That is, since the game makes it so easy, I don't put in as much effort. I also think it's harder to fully access all the knowledge one should have in making moves. I don't want it to sound like I'm calling it a bad interface. On the contrary, I think they did a great job. But, the resolution of your table is higher than the resolution of the iPad screen. In other words, it's easier to get more information more quickly by looking at your table than by using the iPad's interface, where it will probably take a few taps to get at the information you need. At any rate, it is a slightly different experience. And, different experiences require different cognitions. I recommend giving the app version of Pandemic a try, and see what you think.

That ends our first cognalysis of a game. I hope you enjoyed it, and if you haven't tried Pandemic, I hope you will soon. Keep an eye out for Pandemic Legacy Season 2, which is releasing later this year. Next time we will explore an aspect of memory that goes by the wonderful name of chunking. As always, I welcome any comments or questions you may have, so please email me, steve@cognitivegamer.com and also visit my website, cognitivegamer.com. Also, you can like me on Facebook, Cognitive Gamer, or follow me on Twitter, @cognitive_gamer. Until next time, remember to think about what you play, and have fun doing it.