

Episode 14: Are You Available?

Show Notes

There are a number of heuristics that people use when they make decision. In this episode, we discuss the availability heuristic and how we use it when playing games.

Game References

Battlefield, Celeste, Deception: Murder in Hong Kong, Doom, Dungeons and Dragons, Fog of Love, Gorogoa, Inis, Modern Art, Rising Sun, Secret Hitler, Sleuth, The Witness

Research References

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 185(4157), 1124-1131.

Transcript

Hello! This is Episode 14 of the Cognitive Gamer podcast. I am your host, Steve Blessing. Apologies for taking a while since the last podcast, but we're in the throes of our spring semester at the University, which is naturally a busier time, and also, somehow I agreed to review submissions for not just one, but two academic conferences. So, between reviewing, teaching, doing my museum study, and all my other professorial duties, I've been hard pressed to find time for even playing games, let alone doing a podcast about them! But, in desperation comes inspiration, so I'm going to do a mini-cast today, to shed light on an important aspect of decision making. I was wondering how best to talk about all the different issues that comprise decision making, and so sprinkling a few smaller segments in between the longer ones might be the right way to do it. Each is an important and interesting facet of decision making, so highlighting one in a shorter segment I think will work great.

If you remember, back in Episode 5 we discussed the fact that humans don't always make the most optimal of decisions. I'm sure we can all look back over the decisions we've made in our last several games that we've played, and can recount decisions we wish we could re-do, like when I agreed to pay \$32,000 for a Carvahlo painting in Modern Art. Or when I thought for sure I had done everything possible in this one scene in the iOS game Gorogoa. Or, when I bet my police badge that it was the razor blade with the lottery ticket in Deception: Murder in Hong Kong. The term we used back in that episode for what humans do was *satisficing*: we find maybe not the best choice, but the choice that satisfies all our constraints at the time we make it. That term was introduced by the economics nobel prize winning psychologist Herb Simon.

There are a number of mental shortcuts that allow us to satisfice. Cognitive psychologists refer to these shortcuts as heuristics. Usually they allow us to make decent decisions given the constraints that we have, such as time and money, and also cognitive constraints like attention and memory.

Two famous researchers really made a name for themselves by studying these decision making heuristics. In 1974 Amos Tversky and Daniel Kahneman published a very influential paper in the journal *Science*. Both were cognitive psychologists, and Kahneman ultimately won the Nobel prize in economics in 2002 for this line of research. Unfortunately Tversky had passed away in 1996, and the Nobel prize is not given posthumously.

Throughout their time working together, Tversky and Kahneman researched a number of different heuristics, logical fallacies, and other decision making theories. The three main ones were discussed in that original 1974 paper, and I'm going to talk about one of those today, the availability heuristic.

When we use the availability heuristic, we base our decision off the number of items that come easily to mind, or perhaps the lack of things don't come to mind. The classic example mentioned in the paper in *Science* is asking which of these two sets are bigger, the set of words that begin with the letter r, or the set of words that have r as the third letter. A clear majority of people answer that the set of words with r as the first letter is the bigger set. When making that decision, people can readily bring to mind words that begin with r, and tend to think of fewer that have r as the third letter. So, given that availability, they erroneously believe that there are more words that start with r. It's actually really not all that close. In the online word list I used, I found 6800 words that begin with r, and just over 11,000 words that have r as their third letter.

One of the examples I use in class is little more sobering. Which is greater, the lifetime risk of a woman getting breast cancer or a man getting prostate cancer? Most of my students believe it is more likely for a woman to get breast cancer over her lifetime. If you look at the numbers, though, the average man is more likely to get prostate cancer. It's close, 12% of women v. 16% of men, but most people believe it would be women by a large margin. I would argue that it's mostly the availability heuristic going on here; people are thinking about all the pink that gets worn and all the advertisements they see, particularly around the month of October. That all comes easily to mind, and so people naturally assume breast cancer is the bigger risk.

The availability heuristic also comes into play when we make decisions while playing games. The Blessing family played *Modern Art* last night, which is why I mentioned it earlier. In trying to decide what pieces of art to buy and for how much, I'm sure I thought back to previous rounds and games to help me figure out what I should do in certain instances. Gee, those Thaler paintings sure worked out well last time, maybe they will this time as well. Let's use my bidding strategy from last time in this game. In deciding on any choices, such as a strategy in the board games *Inis*, *Rising Sun*, *Fog of Love*, or the video games *Battlefield*, *Celeste*, or *Doom*, you will think back to instances that have been successful in the past, and decide to pursue a similar strategy this time around, such as where to place your resources or what weapon to use. Or, if the last times were failures, you might decide to do something different.

We use heuristics because more oftentimes than not, they help us out. Psychologists often look at the edge cases, when those strategies lead us astray, but it's important to remember that they do tend to help. So, when you use them to help you play *Modern Art* or *Celeste*, they will help you out more than they will lead you down a bad path. If you have had instances of success in the

past with a particular drafting and play strategy with Inis, there's a fair chance that strategy, retrieved via the availability heuristic, will be useful in this play of the game as well.

However, as illustrated in some of the examples above, because it is a heuristic, using availability of past instances won't always work. Indeed, there are a couple of specific ways that psychologists have studied that might lead us astray: illusory correlations and confirmation bias. Illusory correlations are how superstitious behaviors get started, when you assign success or blame to instances not because of what really happened, but because of features that were merely correlated with the event (as all good statistics students and scientists know, correlation does not imply causation). How many of you dungeons and dragons and other role players out there have a lucky die that you roll because it's brought you luck in the past? You remember only the good instances, not the bad instances. For students, the example I use is on multiple choice tests, and believing that you should never change an answer. When I hand back such a test, I invariably hear a student state they had the right answer, but then changed it, and vow to never change an answer again. Students remember all the times they changed an answer that was correct to an incorrect answer, but forget all the times that they change an incorrect answer to the correct one. The data actually show that if you believe you should change an answer, you probably should. These are all examples of illusory correlations, a not-so-good by product of the availability heuristic.

The availability heuristic also comes into play in something called confirmation bias, which is when you remember all the instances that confirm your current hypothesis, and disregard all the evidence or instances that would disconfirm your hypothesis. Scientists are guilty of doing this one as well, as we tend to construct our experiments to confirm hypotheses, as opposed to disconfirming them. In gamers, you might see it when they play a deduction game like Sleuth or a hidden role game like Secret Hitler, or maybe a problem solving video game like Jonathan Blow's The Witness, when they recall items that fit their current way thinking, but they don't seem to remember all the instances that don't quite fit their current reasoning.

One last note on the availability heuristic. Remember, it's all about calling specific past instances to mind, and this sheds light on a particular observation about our mathematical reasoning. Humans find it much easier to think in terms of frequencies than in proportions. Telling someone that you've won 3 out of the last 5 games that you played feels more concrete and relatable than saying you've won 60% of your last few games. That reflects how we are wired, and points to the power of the availability heuristic, which is ultimately tied to counting past examples than it is working with anything that looks like a proportion or a percentage. Ultimately they convey the same information, but one is much more meaningful to us. This observation will come back when we talk about other heuristics and fallacies, such as base rate neglect. But, that's a topic for another time.

I hope you have enjoyed this opening discussion on decision-making heuristics. We'll be talking about additional heuristics and fallacies on future podcasts, probably in this mini-podcast format. My spring break is coming up, and I'll assess what the next topic will be at that time. So for now, it's going to be a surprise to both you and me! 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.

If you haven't done so already, I'd appreciate it if you took the time to give this podcast a rating and a few kind remarks on iTunes or wherever you listen to Cognitive Gamer. This will make it easier for other people to discover the podcast. I appreciate those 5-star reviews! Until next time, remember to think about what you play, and have fun doing it.