Episode 21: Anchors Away!

Show Notes

How do we figure out how much something should cost or what the value of a thing should be? One decision-making heuristic process for this is anchoring and adjustment. Discover how this is used not only in game playing but in everyday life as well.

Game References

Modern Art, Power Grid, Wits and Wagers

Research References

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

Transcript

Hello! This is Episode 21 of the Cognitive Gamer podcast. I am your host, Steve Blessing. In this episode we are going to discuss the third of the trio of heuristics that Tverksy and Kahneman covered in their original ground-breaking work on decision making. In Episode 14 we discussed our first one, Availability. We followed up with the representativeness heuristic in Episode 17, and now we are going to finish this initial set of discussions by examining the Anchoring and Adjustment heuristic.

Before delving into anchoring and adjustment specifically, remember that all three of these decision-making heuristics come into play when we want to decide which choice in front of us will have the better outcome. These sorts of choices happen almost continuously when playing a game, but they happen with great frequency in everyday life as well. In order to make deciding easier, we use these heuristics, or rules or thumb. To quickly recap the other two, the availability heuristic is all about doing a quick count of how many past instances come to mind, or don't come to mind, in order to help us make a decision. If I'm trying to decide to make a particular move in a game, and I can think of lots of instances in which making that type of move has been beneficial, then I'm likely to take that move. If little to no instances come to mind, then I'm less likely to make that move. We use the second heuristic that we discussed, representativeness, when we base the probability of an event happening off of the resemblance it has to the typical member of that category. If I really like word games, and I see in the game store a new game that has the typical features of what I expect in a word game, then I'm more likely to have a favorable opinion of that game, before even playing it, because it's representative of the type of game I like. Both of these decision making heuristics apply in a wide variety of different circumstances, both in game playing and in everyday life.

That brings us now to the third of the heuristics that Tversky and Khaneman discussed in their Science article, anchoring and adjustment. Like the other two, this is another that really pervades our decision making, particularly when we need to come up with a specific value. The name for

this one is pretty informative as to what happens. Say you want to come up with a price for a computer system that you want to buy. You know roughly how much this type of computer system should be. That price is going to be your anchor, your starting point. You will then adjust the price based on what features this particular computer system may have. Maybe it has a really nice monitor, so the price gets adjusted up a bit, but then maybe it does not have quite the hard drive space one would expect, so the price gets adjusted down for that. I'm sure we can all come up with instances where we have done exactly that in trying to place a value on something. Whenever you do that, you are using anchoring and adjustment. As we'll see in a little bit, many games I'm sure are affected by anchoring and adjustment, like Modern Art, Wits and Wagers, and Power Grid.

Before talking about those games, though, let me tell you just how pervasive our use of anchoring and adjustment can be. This strategy is so useful and effective, that we sometimes use it even when we're not consciously aware of it, and furthermore, we use it even when it makes no sense to do so. I'll give you a couple of examples, both from Tversky and Khaneman's original paper. First, imagine you were asked to quickly estimate how much 1 x 2 x 3 x 4 x 5 x 6 x 7 x 8 is. You don't have a calculator, and time is of the essence. So, what do you say? In one experiment, Tverksy & Khaneman got an average of 512 for participants estimating the answer. Now then, imagine that you were then asked to estimate what 8 x 7 x 6 x 5 x 4 x 3 x 2 x 1 is. It's the same problem, just the numbers reversed. Again though, time is of the essence and you have no calculator. What do you say now? For this problem, Tverksy & Khaneman's participants estimated 2,250. Both of these are far off the right answer of 40,320 but note the disparity between the two quickly estimated answers, 512 v. 2250. The order of the numbers should make no difference, but in having the participants make quick judgements, the way they approached coming up with answer was to probably look at the first two or three numbers, do that math, and then use that as the anchor. They then adjusted from there. With the ascending sequence, you have a smaller anchor, so a smaller estimate.

Here's another example of anchoring and adjustment that makes even less sense why it gets used in the situation. Say I ask you to estimate what percentage of countries in the United Nations are situated on the continent of Africa. Unless you are up on the both the UN and how many nations are in Africa, you'll need to do an estimate. For this experiment, before I have you state your estimate of percentage of African nations, I give you a number to consider. This number is from a wheel that I spin in front of you, that has the numbers 0-100 on it. We get this random number, and I then have you state if you think the percentage of African countries is bigger or smaller than this random number. I then have you give me your estimate of African nations. There is obviously no relation between the random number, it truly is random after all, and the percentage of African nations, but yet the data show that if the random number is low, your estimate will be lower than if you happened to have gotten a higher random number to consider before making your estimate of African nations. For no rational reason we latch on to this random number and use it as an anchor.

Anchoring and adjustment is so useful, and seemingly quite pervasive, such that we use it even when we shouldn't. If we were part of that experiment, we would know that there's no relation to the random number and what our estimate of African nations should be, but yet we will probably

unconsciously use that random number to influence what answer we give as to the percent of African nations is in the UN.

Given its pervasiveness, I imagine that players use anchoring and adjustment quite a bit while playing games. Think about auction games. A number thrown out at the right time, perhaps even off-handedly, might serve to boost an auction price higher or lower. I really like Reiner Knizia's Modern Art, but we can't play it in the Blessing household without fights breaking out. In general, this is a great game for thinking about decision making, because you have to think about how much you are bidding and paying now for this piece of art and how much might it be worth later. Quintin Smith of Shut up and Sit Down referred to it as "a class in mathematics taught by Machiavelli." I'm sure that some people who play Modern Art are indeed carefully computing expected values and bidding based on that kind of rational analysis, but most of us are more nonchalantly flying by the seat of our pants, and bidding based more on these heuristics as to what a good price might be for the current painting. At least part of the process in deciding how much to bid and how to set bid prices will be governed by the anchoring and adjustment heuristic. Any other auction game I'm sure also has this feature. You set the price that you think the thing is worth, and then adjust based on the vagaries of the current game state and what the other players do. Any numbers given out during the bidding will adjust people's expectations as to what their final bid should be.

Another game where I'm sure people go through anchoring and adjustment on many rounds of it is Wits and Wagers. In this game players are asked trivia questions that have numeric answers, but you are not expected to know the precise answer. Instead, you write down your best guess, as do all the other players, and then everyone's guess is placed in order for everyone to see, there's a round of bidding, and the answer that is closest to the right answer without going over wins. This would be a great place to also talk about the wisdom of crowds, which we will discuss on another podcast, but in this case those individual guesses in many instances I'm sure were arrived at by anchoring and adjustment. Again, you're not supposed to know how many cities were serviced by Southwest Airlines in 2005, but most people have a rough idea of how many major US cities have airports, or at least assume a couple for each state on average, and can adjust from there up or down to arrive at their answer. And again, I imagine a nicely timed number dropped into the conversation at the right moment could reset someone's anchor in order to influence their answer or change how they might adjust their initial anchor.

Let me provide another real-world case of the anchoring and adjustment heuristic in action. This is one that smart shopkeepers can use to have their patrons pay just a little bit more when they shop in their store. You've probably shopped in a wine store, or a sunglass shop, or some other store where on display is an extremely expensive item for sale, and you think I would never pay $200 or whatever for that bottle of wine. And indeed, almost no one does, and the shopkeeper knows that. But, by having that $200 bottle of wine or $500 sunglasses, the shopkeeper has perhaps moved your anchor and adjustment point up from maybe buying a $15 bottle of wine to an $18 bottle of wine. That's the true purpose of that really expensive item, not that anyone might actually buy it, but to subtly manipulate people to maybe spending a couple bucks more than they would otherwise. That $200 bottle of wine has paid for itself many times over, even if it never gets sold. There are lots of examples of how prices can be manipulated so that

consumers will spend just a little bit more than they might otherwise, and many of those methods have roots in the anchoring and adjustment heuristic.

In terms of a game, I think about this with regards to the future market versus the current market in the game of Power Grid. If a couple of high priced power plants have come out early in the game, I wonder if that affects how players select and bid on the power plants in the current market. Just seeing those higher priced plants in the futures market might bump up ever so slightly what people may be willing pay for the lower priced plants that are in the current market.

But, as I said above, given the ubiquity of the anchoring and adjustment heuristic, these effects will happen whenever prices and value need to be figured out in a game, and obviously there are a fair number of games in which this happens. The next time you play such a game, think about what's influencing your decisions in terms of setting a price or placing a value.

I hope you have enjoyed this trio of discussions on decision-making heuristics. If you missed the first two, be sure to check out Episodes 14 and 17. There are many other decision making heuristics and fallacies to discuss, and we'll cover those on future podcasts. 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.

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