

The Insight: Conversations – Special Episode with Annie Duke and Howard Marks

Anna S

Hello and welcome to a special edition of *The Insight by Oaktree Capital*. Today, Howard and I are thrilled to be joined by Annie Duke, the former professional poker player, bestselling author, and expert on decision making. Howard's 2020 memo, *You Bet!* was partly inspired by Annie's 2018 book *Thinking in Bets*, and Howard recently highlighted the book in Oaktree's annual book recommendations piece. So today we're going to be talking about ideas from Annie's book, from Howard's memos. We're going to be exploring luck, decision quality, uncertainty, and much more. Let's jump right into it.

Howard and Annie, thank you so much for joining me.

Howard

Thank you, Anna. It's good to be here.

Annie D

Thank you. And I'm happy to see you again, Anna. And you too, Howard.

Howard

Thank you.

Anna S

I think I'm going to begin with you, Annie. I'd like you to explain the main idea behind your book, *Thinking in Bets*.

Annie D

The main idea behind *Thinking in Bets* is that there's a particular thing about decision making that's very hard, particularly trying to figure out why something happened, which is that there's an interference of both luck on how things turn out and hidden information. In other words, when you make decisions, you don't know everything there is to be known because you're not omniscient. And after you make a decision, there is a strong influence of luck on what outcome you actually observe. And this creates a really big problem with trying to look backwards at things because we get an outcome and we don't actually know what the influence of luck was on why we observe that outcome.

So we tend to bind outcome quality and decision quality much too tightly together. So the book's main concept is, look, you're making decisions under uncertainty. We need to embrace that and start to think about how can we improve the quality of our decisions and how can we learn better from the outcomes that we observe given the uncertainty in the environment in which we're deciding.

Anna S

And now Howard, as I mentioned, you cited Annie's book extensively in your memo, *You Bet!* You also blurbed her book when it was originally published. So what initially appealed to you about the book?

Howard

Well, you know, there's an old saying, "He had me at hello." Annie had me at the title. I think it's a terrific title. I think it's the way one should think. You should think about the things that you face that involve uncertainty, like a bet. You bet on things because you think you're going to win, what are the chances, and so forth.

Betting on sports or investing requires you to cope with incomplete knowledge, live with luck, randomness, and hopefully bring some skill to bear. And you have to understand the interaction of those three things.

Annie D

Well, I just want to say that the next time somebody asks me to describe what my book is about, I just want to throw it over to Howard every time because that was a much better description than I gave.

Anna S

Now Annie, as you mentioned, one of the key things that you focus on in the book is decision quality. This idea also features quite prominently in Howard's memo, *You Bet!* Can you explain exactly what you mean when you say decision quality?

Annie D

So basically what we're trying to do when we make a decision is maximize the probability that we are going to gain ground toward whatever goal we set. So your goals might be different than mine, which means that a good quality decision for you might be different than a good quality decision for me because we're trying to gain ground toward our goals. Our goals are informed by us, our values, the things that we value, are informed by us.

So when we think about a term like expected value, which is exactly how we would calculate, are we gaining ground on average toward our goals? Again, that's going to be personal to you and me. A simple way to think about it is if you're trying to make money, we can calculate expected value pretty easily, obviously, because then we've decided what the currency is that we value. So given that that's the situation that we're trying to gain ground toward any goal that we have set, decision quality is going to describe the accuracy with which we select options that will allow us to do that.

Anna S

And how do we separate, when we're thinking about decision quality, the logic behind the decision and the outcome?

Annie D

Well, in the short run you have to ignore outcomes, honestly. In the short run, there's just way too much luck. So as an example, if Howard and I were betting and he said, "I'm going to lay you two to one on a coin flip," a coin being 50/50, I'm going to make 50% on every dollar that I bet there. If I call heads and it lands tails, it means nothing. Now, if we were to do it a thousand times and I kept losing, then I could start to draw some conclusions from the outcome, like maybe Howard isn't using a fair coin.

But in the short run, we have to really try to separate those things out and concentrate much more on what is it that we don't know? How do we model the facts? So two people can look at the same facts and model those very differently. How well are we getting to a perspective outside of our own? Because our own perspective tends to be pretty biased and incorporating that information. So it's a combination of what's the analysis, what's the quant work, how eager are we to get to other people's perspective on the information that we get? And if we do that, then we can assume that decision quality is going up, but it's going to take quite a few outcomes over the long run that's going to get us there.

That's one of the reasons actually why I really emphasize that decisions are bets. Because what "Do you want to bet on that," does is exactly what I'm talking about. It starts to make you think, "Well, how probable do I think this really is? How certain am I? What do they know that I don't know?" If they're willing to bet against me, I have to consider that they have information that I haven't considered or they're modeling this set of facts differently than me." So that allows us to increase decision quality even in a situation where short-term outcomes aren't particularly informative.

Anna S

And Howard, I know that that idea of separating outcome from decision quality was something you also mentioned, you cited quite a bit in your memo. So what are some of your thoughts on that?

Howard

Well, I said at the very beginning of the memo that the first book I remember reading when I went to Wharton 60 years ago, September 1963, was *Drilling Decisions Under Uncertainty* by C. Jackson Grayson. The most important lesson I took away, because it made the biggest impression on me, was the statement that you can't tell the quality of a decision from the outcome. Poor decisions end in success often. And we all know people, especially in the investment business, where we say, "Well, he was right for the wrong reasons." That's what that means. Or I always say that our industries full of people who got famous for being right once in a row.

Being right once says nothing about the decision-making ability of an investor. And in fact, another thing I say not so often is that for success, there are three ingredients: aggressiveness, timing, and skill. And if you have enough aggressiveness at the right time, you don't need that much skill. But you also have to understand the difference. There's an old saying in the investment business, "Never confuse brains with a bull market." You do something risky, it works. Smart or dumb, I can't tell you. Maybe smart because you made a lot of money, maybe dumb because you took big risks that really could have subjected you to intolerable outcomes, and yet it worked.

And you tend to pat yourself on the back, as do many others. So if you think that every success is because of your brilliance and every failure is because of your ineptitude, as Annie says, if you reach that conclusion in the short run based on one trial or five trials, it may be the wrong conclusion. But once you do it over many trials and it holds, then you start thinking, "Well, maybe it's reality and not noise."

Annie D

This reminds me of a couple of things. One is I remember many years ago when I still played poker, I've been retired since 2012. There was a new player who had come on the scene who had had been doing amazing for six months. And someone came up to me and said, "Don't you think that so-and-so is the best player in the world right now?" And I said, "I don't know." And I think that they thought that I, as a veteran, was acting out of jealousy or something, envy, I don't know. And so I could see that they thought that I was saying something mean, and I followed it by clarifying, "I don't know, six months isn't enough for me to know." Because to Howard's point of what he just said, in poker, aggression can be enough for a while until people figure out the aggression bit and then they'll start to do things to counteract it.

And what I said to them was, "You need to come back to me in a couple of years. I need that much time to see how they're doing. How do they handle losses? Have people figured them out? If they figure them out, are they adjusting back and figuring them out back? And then let's talk in a few years. But I'm not saying anything mean about them. I'm just saying, after six months when you come and ask me if they're the best player in the world and they've only been playing for six months, I have no idea. And I think that that's very hard for people to get in practice. I think that theoretically, they understand that. But when you see someone winning everything over the course of six months, it's just very hard not to drink their Kool-Aid. And I think that that's what we have to become impervious to.

That's the first thing that what he said reminded me of. The second thing I just want to go back to that he said is this idea of it's filled with people who win once in a row, by the way, I'm just totally going to steal that. I'm just completely admitting to I'm going to steal that. One of the things about winning once in a row, and it's something that I think really deeply about, is that that ability to ride off of that reputation of winning once in a row depends on the market that you're playing in. So let me try to explain. This is a huge problem in venture because in venture, the outcome of the eventual exit is so far from the initial decision that if you get one big winner, you can ride off of that reputation for so long absent any decision quality because you're not getting, say, the speed of feedback loop of an options trader, for example, where an options trader winning once in a row is not going to be particularly helpful for them.

And then I think that we can think about something in between, like a long-short trader to Howard's point, if you're trading in a bull market and you have a bull market that lasts a pretty long time, that becomes a once in a row win. And you don't know until times get bad. And the same way that I would say for that poker player, I want to see what happens when they go on a losing streak. How do they handle that when all of a sudden things turn against them?

Because we can have bull markets that last a long time and it creates that once in a row because you're not getting that feedback of what are you doing when all of a sudden the base rate, what's happening with beta, isn't in your favor. It isn't allowing you to take the kind of risks that you've been taking on that might not have been so smart. So I just wanted to key on those two things because I thought there was a lot to unpack in what Howard said.

Anna S

Something you've both touched on now a few times here is this idea of luck and why people will have a good outcome and not acknowledge that it's luck and then maybe make decisions based on the fact that they don't think it's luck. So I'd like you both to speak about this importance of acknowledging the very large role that luck often plays.

Howard

My 2018 book, *Mastering the Market Cycle*, ended up with a discussion of what I called the Cycle in Success. And I said in there that you learn no lessons from success or maybe bad ones. Success teaches people to say, "I can do this. It's easy. I can do it with more money, I can do it in different areas, I can do it anytime and I can do it without a team. It was me." And those are all terrible lessons. So for us to draw important conclusions, the thing we're testing has to go through a trial. Buffet says, "It's only when the tide goes out that we find out who was swimming naked." If you look at a period in which the tide never went out, that requirement is not satisfied.

And by the way, I was really enjoying what Annie was saying before, the person who makes the big successful bet is the person that gets their picture in the paper or uses the aggressive strategy in a game or in a sport and wins. Or the investor with the highest return gets their picture in the paper. They don't run any articles saying that this person made a great decision that didn't work or this person, their investment results were not good, but it was reasonable for them to expect the actions they took to work out, it just didn't happen this time. Those articles never get written because for those to be written, you have to look deep and you have to say, "What was the truth in what I just went through?" Not what appeared on the surface.

Taleb, in *Foiled by Randomness*, which is an important book for the Annie's and me, talked about alternative histories, which I define as the other things that reasonably probably could have happened, but didn't. And before you assess the quality of any decision, you have to say, "Well, not the outcome. At the time the decision was made, what were the possibilities? What were the probabilities?" And under those circumstances, did the decision maker make a good decision? When I talk about the role of luck versus skill, I say, you invest \$100 and at the end of the year you get back 200. Was it risky? Can't tell. It might've been a risky investment where you got lucky or a sure thing that was brilliantly fashioned. And from one outcome you don't know. That's why you need the long trial that Annie described.

Annie D

Yeah. So I love the discussion of alternative history. Just for full disclosure, it happens to be what I wrote my dissertation on. So what Howard is referring to is something called counterfactuals, which is things that did not occur but could have occurred. And I think that that type of counterfactual thinking is so incredibly important because in order to be a good counterfactual thinker, you have to understand two things.

One is what are the base rates? And the base rates are just what generally happens in the situation that I'm considering. I really highly recommend people read Michael Mauboussin's work. He goes very deep into the importance of base rates. I think that when we're trying to tease out luck from skill, base rates become incredibly important.

But the other thing that counterfactual thinking really makes you go very deep into is what are the causal drivers of the base rates? And I think that this is something that we lose as we're looking back to Howard's point about, okay, well I had \$100, I turned it into \$200. Well, what were the causal drivers of that? Because that's what really matters. If you had some sure thing arbitrage, that's very different than making a huge bet with all of your capital on a very risky investment that happened to work out. So when we take all of these together, let me just give you an example of why this is so important for teasing outlook from skill.

So we all know that in venture a year ago from about six months or a year into the pandemic till last year, there was just a huge bubble that occurred. So now we can think about how we bring this together to start teasing out luck from skill. So there were companies that were getting 40 to 60x multiples. This was very unusual within venture. So we might ask there, is that a reasonable price? Is that a price that we would expect to persist or should we expect that that's going to collapse? Now there's lots of people who might've invested two years before that 60x multiple and thought, "Wow. I'm a genius because look at how it went up." But now we want to ask what's going on there. And essentially the first thing we can do is go and look at the base rates.

So that helps us to level set. And then we ask what's the causal driver? So these companies are being priced really far away from the base rates. It has something changed? Is there a paradigm shift that has occurred that might cause this to have just a higher multiple. A way that people could think about that is, is this a Walmart and Amazon situation, the difference between those two companies in 2001? One has a retail imprint, one has an online imprint. We might say, okay, there was a paradigm shift. So at that time you can then now use that to say, is this a reasonable multiple? Would I be willing to invest at this multiple?

So it helps us to start to tease out what's weird in the world, what's not weird in the world? And it's actually the only way to be a good counterfactual thinker as we think about changing antecedents, changing conditions of what would've happened if? How could the world have unfolded differently? That digs us down into the causal drivers, which is where all the skill lies.

Anna S

And this discussion of alternate histories of the role of luck. It also makes me think of something that you've both touched on here and both written about quite extensively, which is just this idea of accepting uncertainty and accepting that there are things you cannot know. So I'd like you to speak more about why it is so important for people, whether they're a gambler, whether they're an investor, to just accept that there are some things that they don't know?

Annie D

I have a one sentence answer to that because it's a fact. I mean, really that's it. If you're going to make good decisions, you have to have an accurate assessment of what you know and what you don't know because your beliefs are the foundations of the decisions that you make. And it's just a fact that you don't know everything. So if you can't embrace that, your decision quality is going to go down.

Howard

Yeah. In *Mastering the Market Cycle*, I wrote that when you try to think about what's going to happen in the future, what most people do is they spend all this time coming up with a forecast. It's not enough. You need two things. You need a forecast and you need a judgment of the probability that you're right, because there are things which are highly dependable, like tomorrow's weather will be similar to today's.

And then there are things that are absolutely unpredictable like what's going to happen in Ukraine? When will that war end and how? And you have to be rigorous in saying, this is a decision that I think it's reasonable to act on. And this is a decision which probably has no information value. Mark Twain said it best. "It ain't what you don't know that gets you into trouble. It's what you know for certain that just ain't true."

Let's see, if I want to drive up to Albany today, I will get a map, ask directions, turn on the GPS, drive slowly so I don't rocket past my exit. But if I think I know the way, I won't ask directions. I won't get a map. I won't turn on the GPS and I'll go as fast as I can and it'll probably take me about three or four times longer to get there. No sentence that starts with, "I could be wrong, but" or "I don't know, but" ever got anybody into trouble. The ones that do are the ones that start with, "I'm absolutely certain that such and such" because there's no room in our world for certainty. And when you think you have it, you might tend to bet too much. And if it turns out you were wrong and you get a negative outcome, instead you could be out of the game.

Annie D

Yeah. So what Howard pointed out so eloquently is this difference between your certainty for very short-term outcomes versus your certainty for very long-term outcomes. Because as we think about luck, the influences of luck that are going to cause that future to branch in different ways obviously gets greater, you create many more branches as you go toward the future. But what we have to remember I think that's so important is that even if I'm predicting something that's going to happen an hour from now, we still have to embrace the uncertainty.

So if we take the weather, what the weather is going to be like in six months on that particular day, it's hard for me to predict. I have some good base rates, I'll have some pretty good ranges on the temperature and things like that, but I'm not going to know that much. But what the weather's going to be like in an hour, I'm going to have a lot of certainty around. But we've all gotten caught in an unexpected rainstorm.

So even in the short run, there's quite a bit of uncertainty. And I think one of the problems that we have is that not just that we're overconfident in the forecast that we make, but I think on a meta level, we're also really overconfident that we're going to notice in the future the signals that tell us that our forecast was wrong. And we're actually quite bad at that.

So when we think about what is one of the reasons that when we have good outcomes, we're downplaying the role of luck? Well, it's because we want to feel good about ourselves. We want to think that we get to have ownership over that good outcome, that that's because we're great decision makers, that we're good at what we do. So now we make some forecast that's a long-term forecast. We're probably overconfident in that forecast in the first place. But then we have the second layer of overconfidence that we say, "Well, obviously if conditions change in the future, I will change my mind," but we won't because we get into the same problem of, well, that means that I have to admit that I made a mistake because we don't really understand the word mistake.

So if we can get off the confidence of the initial forecast and say, "This is what I believe for now, but obviously if these things changed in the future, I would change my forecast," we would be a lot better off. One of the things that I think about is I knew of a lot of people who invested in Bitcoin because they believed that it would be dis-correlated with market chaos, that it would help be a hedge against inflation. And at the time, I mean I didn't invest in Bitcoin, I didn't feel like I knew enough about it, but these were smart people. It didn't seem like a totally unreasonable thing to say. I wasn't really going to argue with them. I didn't feel like educating myself enough to have an argument with them.

But then when it turned out it was actually quite correlated with market chaos and it was not a good hedge against inflation, I didn't see those people selling. What I saw is them having thesis creep. So I think that this is a good example, I think we all experienced this with a lot of people is that we're overconfident in our long-term forecast, but then we're also overconfident that we'll change our mind when the world goes against what caused us to forecast that in the first place. You have to say, "This is my best educated guess for now, and I'm trying to educate the guess as much as I can and make good decisions based on those educated guesses," but they're educated guesses and that's okay.

Anna S

This reminds me of something I was recently reading where there were some people who had said that inflation would be transitory, and then they're now saying, "Well, by transitory I actually meant maybe four years."

Howard

And that just goes to bear out the old adage that being too far ahead of your time is indistinguishable from being wrong.

Annie D

Yeah. One of the interesting things about forecasts, Anna, that brings up is that people like language that has a broad target area, let's put it that way. So we love to say that things are likely or probable or will happen more often than not because it just allows us to completely get out of that problem. Well, by transitory, I meant something totally different than what you said. I think it's interesting because one of the ways to embrace uncertainty that might be a little bit counterintuitive is to actually make real point forecasts and don't say likely.

Say this is 63%, do that across a lot of different forecasts, and you can find out like when I say 63%, how close to 63% of the time does this thing occur? So we, it's like when we say something like likely it's a way for us to say, well, I know it's uncertain, but I also don't want to be wrong, and I don't really want to communicate what I'm saying precisely because I'm afraid that I'll be wrong.

It's understanding that there's some uncertainty, but trying to get out of that bind. Whereas it's much better to say, I believe that there's a 63% chance that inflation will resolve by November of 2024, and this is the way that great forecasters speak. And then they update their forecast as they go along. And it sounds weird because it sounds very certain, but it's not because you're saying there's some percentage of the time that I believe this is going to occur. Obviously, we can create upper bound and lower bounds to that. I mean, there's all sorts of things we can do to incorporate into those types of forecasts. What you do and don't know.

Anna, if you have a dog, I could say, "I'm guessing your dog is 45 pounds, but I am going to put a lower bound of 10 pounds and an upper bound of 90 pounds on that." So this is a way for me now to express with some precision what my certainty is. I'm telling you what I know and what I don't know. I'm telling you that I know a lot about dogs, I know a lot about what they're likely to weigh, but I don't know exactly what your dog weighs. And I think that this is a very helpful way to speak, much better than it's transitory or it's likely or it's going to happen in the near future. I don't even know what the near future means.

Howard

There's another very interesting topic under this heading, but if you think about it, the only forecast that can be said to be wrong are 0% probability and 100% probability. The weatherman says, "I think there's an 80% chance of rain tomorrow," it rains. Does that mean he was right? No, that only means that it rained. The probability yesterday of rain today could have been almost anything. And yet-

Annie D

It could have been 1%.

Howard

Exactly, and yet it rained. But if he says zero, then I know where to look. But if I say somethings going to happen and it happens, maybe I was lucky. If I say it's not going to happen and it happens, that doesn't mean I was wrong. It's very, very important to understand both sides. And by the way, Annie's title of Thinking in Bets makes you think about both sides. What if things go the way I think they will? What if they don't?

Best statement I've ever heard on this was Super Bowl morning, about eight or nine years ago, Carolina was playing at Denver. They had a former player on. They said, "Who do you think is going to win?" He said, "Eight out of 10 Carolina wins. This could be one of the two." That's a brilliant statement. Most people when they hear something's 80% likely to happen, they say, "Well, why even play the game? The outcome is preordained," and probability exists to tell you that that's not the case.

Annie D

Yeah, I always, I say decision quality could be defined as holding payoffs constant, reducing the probability that you get an outcome that's undesirable, but you can make a decision where it's 5% that you're going to get an undesirable outcome, and guess what? You're going to observe that 5% of the time.

Howard

Or as a buddy of mine says in backgammon, "Improbable things happen and probable things fail to happen all the time, especially in the short run."

Annie D

Especially in the short run.

Anna S

We've discussed many of the problems that people run into when they're trying to make decisions. And I'd like you to speak both more on what are some of the specific things that people can do, whether the investment world or outside of the investment world to become better decision makers?

Annie D

So I think that there's two things in the investment world which I would love to see happen, well actually, I have seen happen with people that I work with. But I think number one, Howard said something before at the beginning of the conversation that I think speaks to what I'm about to say, which is when we were talking about people who have won once in a row, who have very high opinions of themselves. They don't think they need a team. And I think everybody needs a team. Because if you're going to be a good decision maker, you need to get a 360 view of the decision, right? You need to have all sorts of different perspectives.

Because first of all, Howard is going to have knowledge that I don't have that's going to be helpful because he can help fill in my knowledge gaps, I can help fill in his knowledge gaps. But then also the other thing is that Howard is going to model the facts on the ground differently than I am. I want to expose that dispersion because I want all of what Howard and I talk about to be digging into the places that we disagree, assuming we're smart people who have different perspectives on the problem. So one of the best things you can do to improve your decision quality is to make sure that you are actually getting other people's opinions.

Now, that seems weird, right? Shouldn't I just say to Howard, "What's your opinion?" Well, it depends. It depends on how I elicit Howard's opinion. Are we eliciting it in a group setting where we're all talking together and Howard has heard my opinion before he gives his opinion, or Howard has given his opinion before other people in the room have had a chance to speak? In that case, I'm not really getting Howard's opinion.

So one of the best things you can do to improve decision quality is when you are eliciting people's opinions, meaning what is your forecast, what do you think we should do here, what's the appropriate decision, what options, should we invest, should we not invest, so on so forth, elicit those opinions independently outside of the group discussion. So this is taking a team or a group and turning it into what we would term as a nominal group. A nominal group is a group that is offering information up independently, generally asynchronously.

Then, having gotten everybody's opinion. So Howard has given his opinion independently, Anna, you've given your opinion independently, I've given my opinion independently, we now come together to discuss that and we particularly ignore the places we agree because we already got that signal and we talk about the places where we disagree. That right there is the number one thing that you can do, in my opinion, to improve the quality of the decisions that you make.

The number two thing you can do is to think about what are the things that could occur in the future that would tell me that I should update my opinion, I should update my forecast, I should put risk on, I should take risk off, so on so forth, I should hedge whatever. Write those things down in advance. Don't rely on yourself to react rationally to those when they occur. Write them down, share those with the team, create them with the team independently, asynchronously, and write down for every signal that you see what your action is going to be if you see it. And I think if people did those two things, particularly in the investing world, the quality of their decisions would soar.

Howard

I think that people also, it's very important that they consider, that they practice intellectually humility, which means practice saying, "What if I'm wrong? The other person could be right, I could be wrong." And what if things don't go the way I expect? What would the consequences be?

Most people model an outcome, an outlook and think about the consequences that it goes that way. They may even assign a probability to it, but they're not as rigorous in saying what are the other ways things can go? What are the probabilities of those? What are the likely consequences?

And I think that you have to have a sense for whether there are outcomes that you can't survive. Annie mentioned the importance of expected value and calculating the expected value of something is one of the first decision tools we learn. You multiply each outcome by its probability and then you get a weighted outcome, which is considered the expected outcome.

But first of all, the expected outcome, ironically, because of the averaging process, can be something that's impossible to be achieved. The expected outcome may not be within a set of actual possible outcomes. And what do you do if the expected outcome is very good, but the possible outcome, under some adverse cases, is not survivable? Then what do you do? You know, I always say that I don't want to be the skydiver who was successful 98% of the time. That skydiver has a very, very high expected value, but it's not a role for me. So what if I'm wrong, really, is a big help.

Annie D

Yeah. Well, I want to say that there is no skydive for me. That would be positive expectancy because I'm terrified of heights. So to just follow on what Howard said, it is rare that the expected value is in the set of possible outcomes because it is a weighted average. So if Howard and I bet, and he's laying me two to one on a coin flip, I'm making 50 cents on the dollar, but I'll either win \$2 or lose a dollar. Winning 50 cents isn't even in the set of outcomes. So that's looking over the long run. So obviously, what we have to think in there, and this is something that poker players think very deeply about, is how do I make sure that I have money to bet to realize that expected value?

So that's where you're thinking about what could go wrong here. That's where you get into these very detailed questions about bet sizing. Not just bet sizing on a particular hand, but when I sit down in a game of poker, what percentage of the total dollars that I have am I willing to risk in this game? Because you can't realize your expected value if you're debt. So we need to combine those two things together with obviously a good risk management strategy, understanding, is this a low volatility bet, are there tails that are really disastrous in here, and obviously, be thinking about that very clearly. And I agree, not to be self-serving given the title of my book, but that's where thinking about what's the bet, would I bet against somebody else on this becomes really important because that's where risk of ruin starts to really get into your head.

Howard

And I've been thinking about, Annie, what you said before about bets. I've got this thesis now of a sea change, and I think it calls for a big change in asset allocation in portfolios. But so far nobody has said to me, "No, you're right, we're going to do it." And in fact, some people say, "Well, it's possible, but it also could fail to happen." So what I think to myself, I don't want to be confrontational. What I think to myself is, would you bet me \$100 that it won't happen? I think it'll happen, you think it may not. Will you bet me \$100? You might say, "You know what? I'll only make the bet if you give me two to one."

Annie D

Right.

Howard

In which case you're saying you don't think your side is as likely to happen, you think you've got the short side. So if you can reduce opinions, guesses, hunches, to bets and specify them, it's very important. I took a look at the memo, *You Bet!* that I wrote, inspired by Annie's book and by having lunch with her downtown as we did-

Annie D

I think it was three days before lockdown.

Howard

I was going to say it was the last memo before lockdown. What I said in the memo was, it's easy to predict what you think is going to happen. It may not happen, but most of us, in most cases, can figure out the thing that is most likely to happen, which is different from saying how likely it is. But we all think that Amazon's going to outperform Macy's, both fundamentally and as a stock.

And we all think, I don't know, you would know better than me right now, Annie, but we all think that the, who is it, Philadelphia is going to win the Super Bowl. But that's not the hard part. The hard part is not figuring out the likely outcome. For every game that's played, there's broad consensus about who is the favorite. And for every industry, there's broad consensus about which company will dominate. The hard part is assessing what I call, and I didn't make up the word, the proposition.

So in other words, would you like to bet on Philadelphia or would you like to bet on some team, which is way, way worse than Philadelphia, but where you can get 100 to one payoff if you bet on that out of the money play team and you're right, two times out of 100, you get fabulously rich. You only have to be right two times out of 100. Whereas if you bet on the favorite, usually because of the shape of the proposition, you have to be right almost all the time to come out ahead. And so likely event and the odds, the payoff, the payoff table, which is enforced, this is something else you have to think about.

Annie D

And I think going back to that two things, one is if you're taking that 100, going back to what you said, Howard, don't bet your last dollar on that. Because again, now your risk management strategy is going to be different. You need to realize the two out of 100. You've got to get to that one in 50, which I think is so important.

The other thing is that what I had said before about, don't say it's likely. Please put an actual probability on it. In Howard's conversations, talking about I believe there's a sea change and people saying, "Well, I don't think that's true." "Okay, well would you bet me 100?" And they're saying, "Well, you'd have to lay me two to one." What that's doing is forcing them to put a probability on it, which in this case would be a third. So they're saying it's 33 and a third. So now that's what that betting thing does, is it forces a proposition on you that allows you to actually identify with what probability you believe is something, is a fair market. If I say you have to lay me two to one, I'm saying I believe things are going to stay the same, 33% of the time and change 66% of the time ish.

And I think that that's why this kind of language is so important. It's why it's really important to actually put a number to things so that you can recognize what the probability is of something. Because otherwise, if you don't have the pricing right, you're going to make a lot of really bad bets. And you can bet on all sorts of really likely things to happen and end up losing because you've got the pricing wrong. You can also get fooled by getting laid 50 to 1, right? Well, I'm going to bet a dollar and I could make \$50 on this dollar that I bet. Well, that in and of itself doesn't make it a good bet because what that means is that the probability still has to be higher than 1 in 50. It has to be higher than 2% for that to be a reasonable bet for you to take.

Howard

And in fact, that leads to what I call, we call, lottery ticket thinking. Bitcoin going to 500,000. Well, it only has to have a 2% probability of that happening for my bet to be a great bet. So people are often induced by low required probabilities for success. But the actual probability of Bitcoin going to 500,000 might be zero or it could be half a percent. So if you bet on the assumption that it'll happen 2% of the time, you're going to be very unsuccessful. I'm going to throw a monkey wrench into this discussion just for the sake of devil's advocacy. What we've been talking about here is quantifying subjective notions, guesses, hunches, et cetera. If we call it a guess or hunch, it doesn't sound so scientific.

But number one, putting a number on something doesn't mean we have quantified it in the sense of measuring it. And one of the things I've written about is you can't quantify risk in the future. Risk is just a possibility. And you can put a number, and I was looking before we spoke for my favorite memo from Peter Bernstein, can we reduce risk to a number. And we can't.

One of my favorite quotes is from that great investor, Albert Einstein, who said, "Not everything that counts can be counted and not everything that can be counted, counts." And a lot of the time we have to go with the subjective. We can have a sense for likelihood or il-likelihood, but we can't necessarily put a number on it, nor should we have to. We use numbers, like Annie said, 63%, as a way to express our feelings. But it's not the specific number, which is important, if Annie says to me, "I think something is 63% likely to happen," I'd say, "Well, what is she saying?"

She's saying a good chance. It's not certain. It's not overwhelmingly possible, but it's also not a long shot. It's more likely than any other one possible outcome. It's worth a shot. Numbers, in this case, are words for communication. You can't necessarily model them out. As I said, you can't measure the probability of something happening.

There's one other thing I want to throw in here. That is the concept of the worst case. I was on a thinking group for one of my clients. They charged the investment staff with coming up with a portfolio with a high return that could not go down more than 30% in a crisis. They came up with one portfolio, which had a chance of declining 29.6% and another 30.4%. They, of course, opted for the first one because it satisfied the criteria, but the probability that the 29.6% potential decliner is riskier than the 30.4% probability decliner is quite high.

Secondly, when you say the worst that can happen in a crisis, how do you specify how bad a crisis is? You might say, "If we have a crisis of the parameters of the last crisis or all the crises of the 20th century, I don't want to be able to lose more than 30%," you can probably do that assuming the relationships hold. But if I just say, "In a crisis," well, what if the next crisis is twice as bad as the Global Financial Crisis? You just can't specify, and people can't say, "Well, at worst I could this or that." It's hard to be cavalier about the worst case.

Annie D

Coming back to the quantification, I love the clarification that you gave is that what you're trying to do is quantify your subjective judgment. We need to understand that this isn't something that you did on a calculator. What we're trying to do is express with enough precision what my subjective judgment is such that I can find out that you and I disagree. This is what we're trying to do is find out when there's a gap in our judgment. I think it's 63%. You think it's 42%. Obviously, this is a subjective judgment. This isn't objective. It's not objectively 42%. It's not objectively 63%, but it's allowing us to see that we have a gap. We need to talk about why we believe that that gap occurs.

The reason why I want people to do this is because when you make a decision, that judgment is included in the decision that you have made. So if I choose one investment over another, it means that I think that there's a higher probability that investment A is going to help me gain ground toward my goals, given risk considerations, but we'll assume we're only talking about expected value here, is going to help me gain more ground toward my goals than investment B. What that means is that I think that the range of possible outcomes, the probability with which they occur, the payoffs of each of those outcomes and so on and so forth, is in my favor in comparison to B.

I can say, and you hear this with people, "Well, it's my gut. My gut is telling me that this is the right thing to do. It's the right option to choose." The problem is that there's no way to examine the decision both proactively in terms of on the way into the investment, I haven't created some sort of object that we can examine, which is what are the probabilities that I assign to these things? What's my best guess of what I think that the payoffs are going to be? What is my rationale for those things, which is included in the decision anyway. It's just implicit unless I choose to make it explicit. That's very helpful proactively.

But then the other thing that it's incredibly helpful with is retrospectively. It's incredibly helpful. As I'm trying to tease through, well, okay, this went against me or it went for me, what was the quality of the decision I made? It went for me. Was it a good decision or a bad decision? It went against me. Was it a good decision or a bad decision? By now having made these subjective judgments explicit, and I can see all the different subjective judgments of the team, and I can see the conversation that we had and what drove that decision, I can now go look back and say, "Did we miss something we should have known? What were our discussions about bet sizing? What were our discussions about the alternatives?" Now I actually have a way to understand what the quality of the decision is absent the outcome because I can look back at it.

I think there's so many things that are important about doing this, but to Howard's point, we don't want to think that if I say I'm going to quantify my subjective judgment and make it explicit, and I'm going to say, "I think this is 63% to happen," that we don't want to get into the over precision problem that I'm saying something that is the truth, as if I just added two plus two together. I am just quantifying in a precise way what my subjective judgment is, along with some sort of rationale for that quantification that then allows me to see if other people on the team are out of my range.

Howard

Importantly, at the end of that process when you end up with a number, which is that such and such is X-percent probability to happen, this stock is likely to give me a gain of Y, and you should bet Z, never forget the imprecision of the process.

Annie D

Yes.

Howard

What you're trying to do is take a process which is based on hunches and guesses and intuition and deal with those inputs rigorously, but never forget the nature of the inputs. I mentioned Peter Bernstein before. The accurate title of the article that I tried for is, "Can we measure risk with a number?" Clearly, his answer was no. But I'm going to give you a great quote from that memo, which I think will sum up a lot of what we're talking about here.

This is from a writer named G.K. Chesterton. "The real trouble with this world of ours is not that it is an unreasonable world, or even that it is a reasonable one. The commonest kind of trouble is that it is nearly reasonable, but not quite. Life is not an illogicality, yet it is a trap for logicians. It looks just a little more mathematical and regular than it is. Its exactitude is obvious, but its inexactitude is hidden. Its wildness lies in wait. Most of the time, things go as they always have and perhaps as they should. Occasionally, there's variation. We have to be aware of that. Once in a while, you get a crazy tail event or things that were beyond the tails and things just go mad. It's very hard for us to predict the extremes that one event can reach."

Annie D

I think that's exactly right. I think the thing that I would say in summary is I think it's really hard to make decisions in a world that's probabilistic where most outcomes settle to one or zero. I think that's really tough. There's some sort of win probability of a football game, but in the end, one team wins and the other doesn't. It settles to one or zero. You can predict that there's a 30% chance of rain in a coverage area. It either rains or it doesn't.

Outcomes tend to be very binary in nature. They either happen or they don't. It's hard to know that prospectively those things are probabilistically, but then once it settles to one or zero, it's really hard to remember that it was probabilistic retrospectively and not deterministic. I think that we just are such deterministic thinkers, and you either win or you don't. Then how do you deal with that and go back and construct the probability in the first place? How many times have we said, "The weather forecast was wrong?" What we really mean by that is it settled the other way of whatever the probability was that the weather set.

I remember in 2016, it was all of the people who predicted who was going to win the election said they were wrong. The last I had checked, I think that Donald Trump was 35% or 40%. What I said to people was, "Okay, that's like Monday, Tuesday, and half of Wednesday in a week." Or, "If you had a 10-chamber gun and you put four bullets in it, are you playing Russian roulette?" But it's so hard for them to hold on to the probability retrospectively. We're okay at it prospectively, but retrospectively it's almost impossible.

Howard

There was a professor at the London Business School named Elroy Dimson. And he said one of the greatest things about risk that I have ever heard. He said, "Risk means more things can happen than will happen. It is from the diversity of the possible outcomes that the risk arises." I turned that around in my risk memo to say that even though several things can happen, only one will.

Annie D

That's right.

Howard

What Annie's saying here takes it a step further. Even though several things could have happened, one did, only one, but it brings us back to really where we started the conversation, what were the other things that could have happened? Was I intelligent to think they would, or they wouldn't, and so forth? This whole conversation that we've had over the last hour, it really is mind-bending, but that's the fun of it. Trying to derive wisdom from some subjective guesses is a lot of fun.

Anna S

Well, I think that that's an excellent place to end this excellent discussion. Annie, Howard, thank you so much.

Howard

Thanks so much, Annie.

Annie D

Thank you, Howard. Thank you, Anna. This was such a fun conversation.