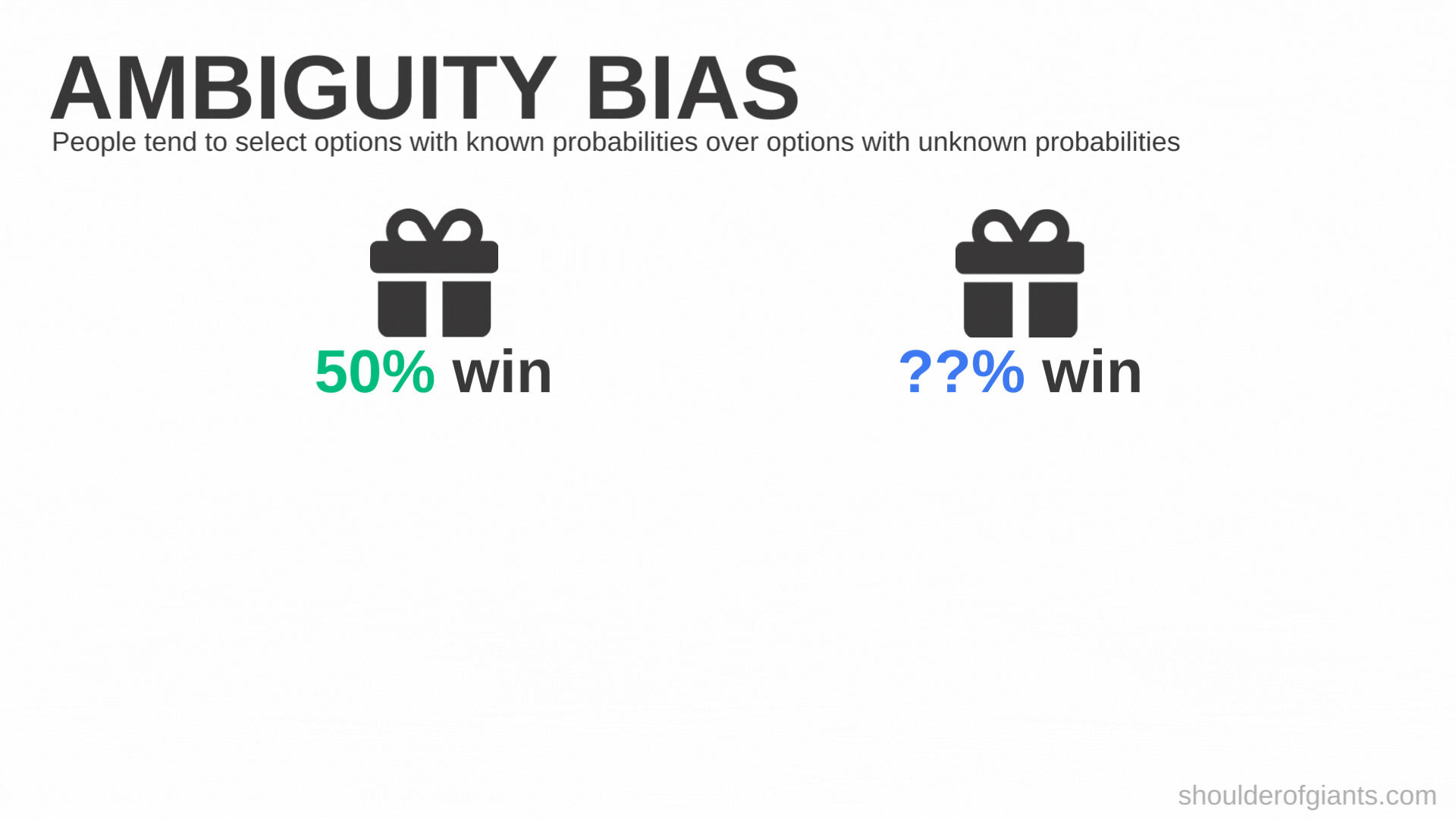
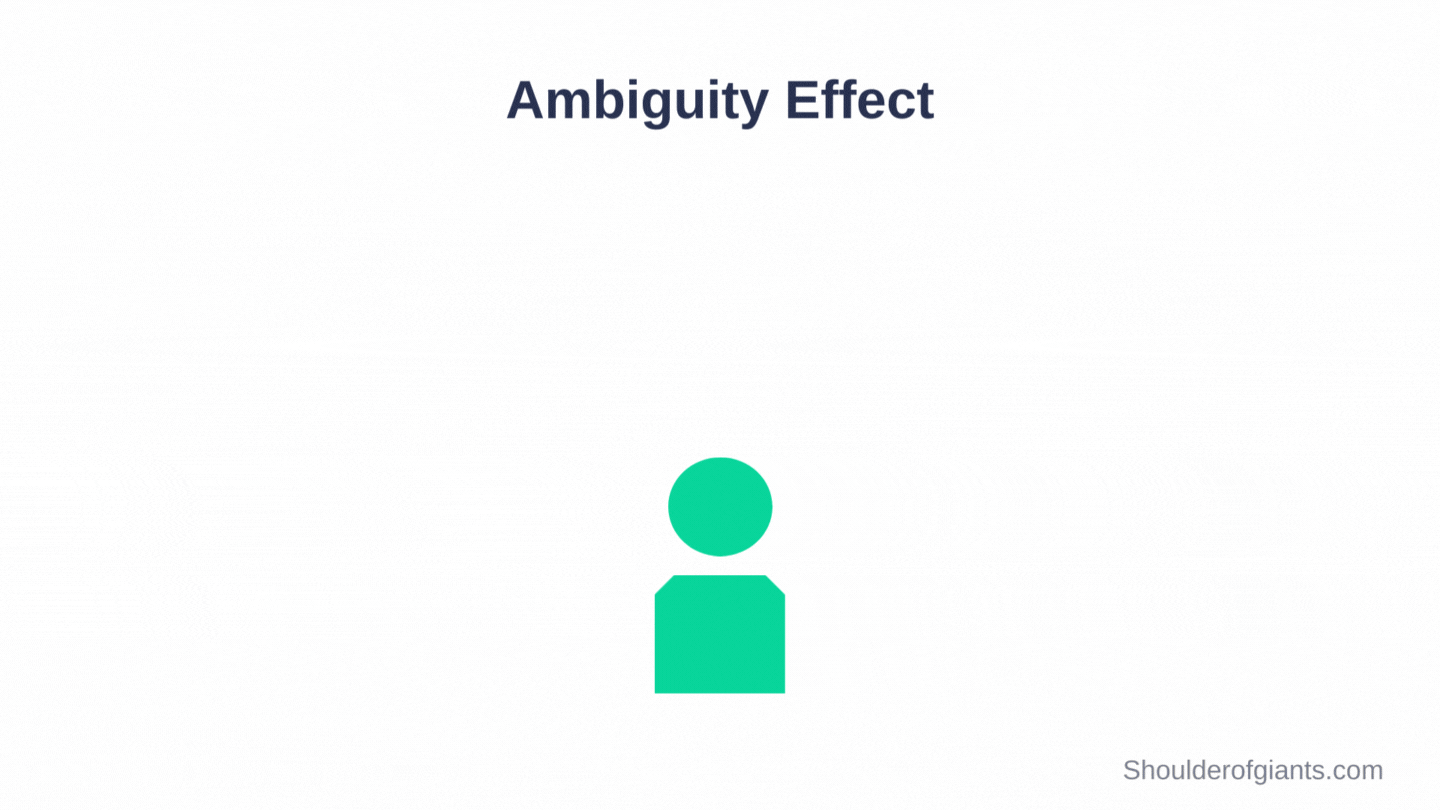
## Introduction



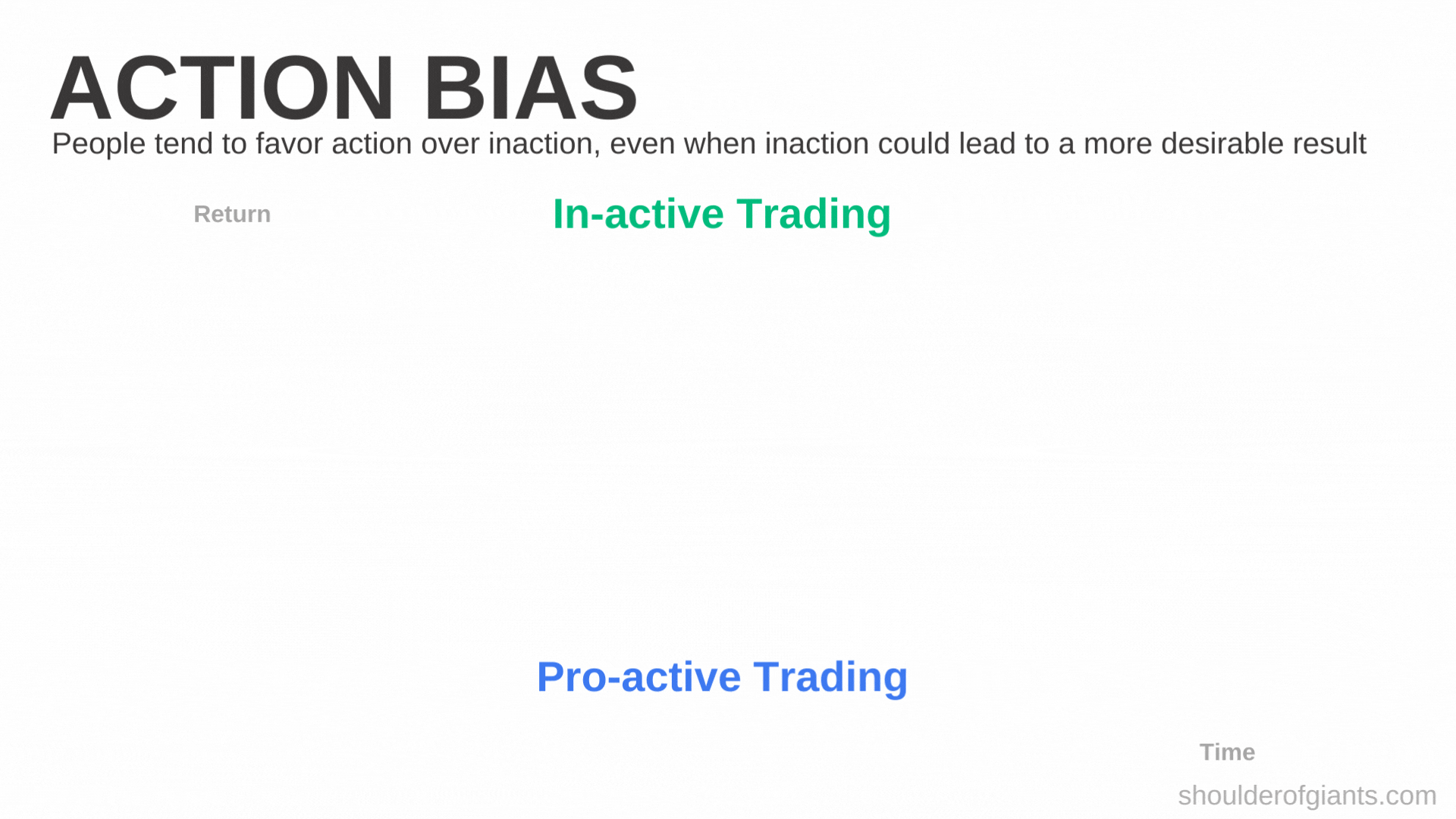
* **Concept Definition:** The ambiguity effect is a cognitive bias where people tend to select options with known probabilities over options with unknown probabilities.
* **Concept Founder:**The ambiguity effect was popularized by the paper “Risk, Ambiguity, and the Savage Axioms”, published by Harvard Professor [Daniel Ellsberg](https://en.wikipedia.org/wiki/Daniel_Ellsberg) in 1961.
* **Concept Benefit:**Understand that people tend to prefer choices with quantifiable risks over those with unknown, incalculable risks, even if the expected return of two choices is the same. Be able to identify risks and weigh them against utility to maximize the return of any decisions.

## How to Demonstrate it?



* The Ambiguity effect is demonstrated through the [Ellsberg paradox](https://en.wikipedia.org/wiki/Ellsberg_paradox). Here is a simple version of the experiment.
* Two different boxes are presented to the audience. Box A has 50 red balls and 50 black balls. Box B has an unknown amount of black and red balls.
* If a person picks a red ball from box A or B, the person would win 100 dollars.
* If a person picks a black ball from box A or B, the person would win nothing.
* The result is that most people would pick from box A over box B.
* In theory, box B could have 100 red balls or 0 red balls, or also 50 red balls. Even if the amount of red balls is unknown, the chance of drawing the red ball is not less than A, but also not more than A. In some sense, A and B can be considered the same.
* Hence, both outcomes hold regardless of risk aversion, because box A bears 50% risk and both B also bears the risk that could be higher than 50%, lower than 50%, or equal to 50%.
* Both outcomes hold regardless of the utility function because 100 Dollars is given to any balls drawn from A or B. The utility is exactly the same for both choices.
* Hence, the only difference is the certainty vs uncertainty question, which is exactly demonstrated in this example.

## Where can it be found?



* **Ambiguity in Finance:** Looking over a long period of historical time (about 10 years), a stock return is [most of the time higher than bonds](https://www.investopedia.com/articles/basics/08/stocks-bonds-performance.asp#:~:text=Stocks%20have%20historically%20delivered%20higher,the%20principal%20of%20their%20lending).) or central bank interest rates. A rational investor who is looking for a long-term return should prefer stocks over bonds. This also means taking calculated risks of the volatility inherent in the stock market.
* **Ambiguity in Berkshire Hathaway:** Warren Buffet is famous for [investing only in things he understands himself](https://hbr.org/1996/01/what-i-learned-from-warren-buffett). This famous investing philosophy has made him one of the most successful investors in history. But he also missed the chance to buy Apple and Microsoft at an early age. Not because these stocks are bad, but only because Warren did not fully understand them. He was biased towards the knowledge certainty that he himself understood. This case shows that the Ambiguity Effect can also act as a principle that produces positive outcomes.
* **Ambiguity in URL Shortener:** A good analogy here can be seen when looking at URL shorteners. [Research performed](http://www.singulariteam.com/theembiguity%20effect.html) by Buddy Media (now part of Salesforce) has shown that despite the popularity of URL shorteners, engagement was 3 times higher for full-length URLs! While most people find long strings of text boring and prefer shortened versions when available, full-length URLs provide more information about what is behind the link. Some people would choose <https://www.shoulderofgiants.com/concept/ambiguity-effect> over [https://fly.gl/PjwSmX,](https://goo.gl/PjwSmX,) simply because one URL is readable and provides more certainty.

## Why does it exist?

* **Follow-Up Action Value:** One possible explanation for this phenomenon is that utility of certainty itself is added value and can bring the decision maker more utility. Certainty leads to the predictability of the future. It reduces complexity and allows planning ahead which could potentially bring more returns. On the other hand, uncertainty always has multiple outcomes which makes planning ahead harder and more complex. In light of the ambiguity in the probabilities of the outcomes, the agent is unable to evaluate a precise expected utility. Consequently, a choice based on maximizing the expected utility is also impossible. One might need to invest more time or another resource to create the best follow-up action, after taking the uncertain action. For example: If winning 1 Million Dollars, one could quit the job and invest the money into a house. But if the outcome is not sure, then it is also questionable if one should quit the job now, or wait until a later point. The decision maker should then be prepared for both cases.
* **Deceit Aversion:** Another possible reason is that this type of decision triggers a deceit aversion mechanism. Many people naturally assume in real-world situations that if they are not told the probability of a certain event, it is to deceive them. For example: If a partner is going out with someone without telling his/her partner, the partner would automatically assume a negative action is being hidden. A transparent and honest choice would not need to hide any of its details.
* **Ancient Survival Game:** A third possible reason is that human nature prefers certainty over uncertainty, even if the expected return of an uncertain choice is bigger than the certain choice. These ancient instincts to survive could be part of evolution, where humans seek ways to survive on a daily basis in the short run and don’t calculate what happens in the future. Here, certainty means shelter for a short time, while uncertainty could mean a big bad surprise.
* **Modern Profit Game:** In today’s world, most ancient instincts have lost their meaning and are no longer applicable to modern life. Especially in first-world countries, the basics of survival including food, insurance, and a place to live are provided by society. In these environments, it is less about surviving, and more about profit and life quality maximizing. From a mathematical and statistical point of view, maximizing the expected return over the long run is the best choice in these environments, even if it sometimes means choosing uncertainty over certainty.

## How do I benefit from it?

* **Do:** When providing a choice, product, or option for any decision maker, try to be transparent and honest. Provide as much real information as possible to convince the decision-maker that you have nothing to hide. Be brave to admit some disadvantages, this also creates transparency and certainty for your option. Try to give realistic promises to even increase the outcome certainty to the decision-maker. When making a critical decision, try to evaluate the risk when making a decision, sometimes taking a calculated risk is better than taking no risk at all. Try to take time to gather an equal amount of information for all available options to compare them on the same level.
* **Don't:** Do not try to conceal information as it can be interpreted as uncertain and negative. Do not always blindly pick the most certain choice, go beyond your safe zone and accept controlled uncertainty in life. Do not immediately make critical decisions by always trusting your instincts, sometimes the environment is better suited for rational decisions.
* **Taking Advantage:** When presenting two options to the decision maker, one could drive the decision maker towards the desired option by providing him with more information about the option and hiding information about the undesired option. Example: A car salesperson wants to sell his old Mercedes to a client because the BMW has already received many buyers’ interest. During the conversation with a potential client, the salesperson intentionally explains more details about the Mercedes (the car owner, what material is the interior made of, how often it got repaired, etc.), and explains only general information about the BMW. This informational gap will make the client more likely to prefer the Mercedes because he has known more about it.