

# The Black Swan

## Takeaways

- “Black Swans” are highly consequential but unlikely events that are easily explainable – but only in retrospect.
- These events have shaped the history of technology, science, business, and culture.
- As the world gets more connected, these events are becoming more disruptive and impactful.
- The human mind is subject to numerous blind spots, illusions, and biases.
- You can exploit these black swans, but it’s not easy.
- While most standard statistical tools like “bell curve” ignore black swans, there are other tools such as “power-law distribution” which are far better at modeling many important phenomena.

## Background

The reason the term black swan is used in this context dates back to the 17th century. Then, all European schools taught that there were only white swans. It was only when Dutch explorer Willem de Vlamingh landed in Australia and observed it with his own eyes that there were also black swans. This forced Europeans to revise their concept of “swan” forever.

This pattern of missing unlikely events because they lie in the unknown or the future, and keeping them in the “ordinary” once they happen is common in human nature. The extraordinary becomes the ordinary, and so-called experts such as policy pundits and market prognosticators kick themselves they didn’t predict these (now seemingly) obvious occurrences.

WW1, WW2, dotcom bubble, and 2008 financial crisis, to name a few.

The human mind simplifies and dumbs down the virtually infinite amount of data it encounters. This allows the human mind to concentrate on the task at hand and not get overwhelmed with possibilities. But this simplification mechanism is not without the cost. Take these stories for example.

## Fallacies

Looking at the biography of a successful businessman and the humble beginning he comes from, people only see hard work, drive, resilience, and other traits. Now look from a different perspective.

What if that businessman got extremely lucky? At the right place at the right time. This businessman (like many who read his story) falls victim to flawed thinking through the *self-sampling bias*.<sup>1</sup> He looks at himself, a sample of one, and draws a sweeping conclusion, such as, “If I can do it, anyone can!” Notice that the same reasoning would apply had he merely bought a winning lottery ticket. “I’m a genius for picking 3293927! Those long odds didn’t mean a darn thing. I mean, after all, I won didn’t I!”

Not every success is luck, but the luck factor is heavily underestimated in many fields and dominates that domain in reality. You look at Steve Jobs’s story and think it’s inspirational, but where are all the other Steve Jobs? Surely, he’s not the only hard-working, smart entrepreneur in the world. Where are all the similarly situated people who started like him and had the same attributes? Where are these disproving cases (or evidence) that point to luck being a crucial factor?

### The evidence is silent, lost in the graveyard of history.

Once people have theories, they seek confirming evidence; this is called *confirmation bias*.<sup>2</sup> They fall victim to “epistemic arrogance,” becoming overconfident about their ideas and failing to account for randomness.

People usually ignore many factors and cherry-pick specific data points to confirm the pattern they partially think is the underlying cause. Worst of all, people steadily fail to consider “black swans”.

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<sup>1</sup> Self-selection bias occurs when participants voluntarily choose to participate in a study or program group rather than being randomly selected into one

<sup>2</sup> Confirmation bias is the tendency to search for, interpret, favor, and recall information in a way that confirms or supports one's prior beliefs or values.

## Bell or Power Ball

Some data or phenomena are better represented with a Gaussian distribution, or bell curve. However, some would be better off with a power law curve, where extreme events are not treated as outliers but rather determine the shape of the curve.

In the case of human heights, a bell curve would be roughly properly representative. However, consider the music. Some songs become embedded in pop culture to the point where you feel obliged to listen to them. Such songs can exceed the median song performance to the point that the Gaussian curve would be misleading to the human mind.

Such statistical representation is prevalent for social phenomena. These are impossible to model with Gaussian normal distribution because they exhibit abundant feedback loops — where people prompt each other to participate in that phenomenon. For instance, one reason you see a hit movie is because everyone else sees it.

On a different note, wealth follows this pattern of power law distribution too.

## Make Believers

Predicting these black swans would be very rewarding, but no one can do it precisely. Anyone who claims to be able to predict the price of a stock or commodity years in the future is a charlatan in my opinion. If you believe them, email me please I have the ultimate long-term 100x earning guide, only for 500\$.

*When all you have is a hammer, everything becomes a nail.* If all you have is a Gaussian distribution, you'll see normal distribution everywhere and put aside the disconfirming data as outliers or noise. Doing this (plus following the herd, and only listening to these “experts”) serves humans well. It gives a sense of comfort and safety. But there are fields where the majority don't have anything but a guess, and there are no stable experts because the phenomena these experts try to predict are wild and random.

## Uncontrollable but Manageable

While you cannot fully predict every black swan, you can prepare yourself and even catch up on some of them.

- **Keep your eyes open for black swans** – Look around and realize whether the situation would fit the bell curve or a power-law distribution.
- **Beliefs are “sticky,” but don’t get glued to them** – Revise your beliefs when confronted with contrary evidence. Dare to say, “I don’t know,” “I was wrong” or “It didn’t work.”
- **Know where you can be a fool and where you can’t** – Are you trying to predict what sort of Lego your brother wants? Or the price of oil in 17 years after investing your life’s savings in oil futures? You can’t help being foolish – no one can. But sometimes foolishness is dangerous, and sometimes it is benign.
- **Know that in many cases, you cannot know** – Think outside your usual, customary conceptual categories. Eliminate alternatives that you know are wrong rather than always trying to find out what is right.
- **As a forecasting period lengthens, prediction errors grow exponentially** – Suspend judgment where evidence is lacking and be wary of overly precise predictions. Often you should focus only on consequences, not overly precise probabilities.
- **Expose yourself to “positive black swans”** – And, at the same time, hedge against negative ones. “Bet pennies to win dollars.” Look for asymmetries where favorable consequences are greater than unfavorable ones. Maximize the possibilities of serendipity by, say, living in a city, and having a wide circle of diverse friends and business associates.
- **Look for the nonobvious** – Seek out disconfirming evidence for pet theories. Think, “What event would refute this theory?” rather than just stacking up confirming evidence for the sake of consistency, and turning out any evidence that contradicts your notion. In other words: Amassing confirming evidence doesn’t prove a theory or a mental model.
- **Avoid dogmatism** – “De-narrate” the past and remember that stories mislead. That’s the whole point: They are psychological armor against the “slings and arrows of outrageous fortune.” Think for yourself.

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The Impact of the  
HIGHLY IMPROBABLE

Nassim Nicholas Taleb