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Why You Should Visit Cemeteries

Survivorship Bias

No matter where Rick looks, he sees rock stars. They appear on television, on the front pages of magazines, in concert programs, and at online fan sites. Their songs are unavoidable—in the mall, on his playlist, in the gym. The rock stars are everywhere. There are lots of them. And they are successful. Motivated by the stories of countless guitar heroes, Rick starts a band. Will he make it big? The probability lies a fraction above zero. Like so many others, he will most likely end up in the graveyard of failed musicians. This burial ground houses ten thousand times more musicians than the stage does, but no journalist is interested in failures—with the exception of fallen superstars. This makes the cemetery invisible to outsiders.

In daily life, because triumph is made more visible than failure, you systematically overestimate your chances of succeeding. As an outsider, you (like Rick) succumb to an illusion, and you mistake how minuscule the probability of success really is. Rick, like so many others, is a victim of *survivorship bias.*

Behind every popular author you can find a hundred other writers whose books will never sell. Behind them are another hundred who haven't found publishers. Behind them are yet another hundred whose unfinished manuscripts gather dust in drawers. And behind each one of these are a hundred people who dream of—one day—writing a book. You, however, hear of only the successful authors (these days, many of them self-published) and fail to recognize how unlikely literary success is. The same goes for photographers, entrepreneurs, artists, athletes, architects, Nobel Prize winners, television presenters, and beauty queens. The media is not interested in digging around in the graveyards of the unsuccessful. Nor is this its job. To elude the *survivorship bias*, you must do the digging yourself.

You will also come across *survivorship bias* when dealing with money and risk: Imagine that a friend founds a start-up. You belong to the circle of potential investors and you sense a real opportunity: This could be the next Google. Maybe you'll be lucky. But what is the reality? The most likely scenario is that the company will not even make it off the starting line. The second most likely outcome is that it will go bankrupt within three years. Of the companies that survive these first three years, most never grow to more than ten employees. So, should you never put your hard-earned money at risk? Not necessarily. But you should recognize that the *survivorship bias* is at work, distorting the probability of success like cut glass.

Take the Dow Jones Industrial Average index. It consists of out-and-out survivors. Failed and small businesses do not enter the stock market, and yet these represent the majority of business ventures. A stock index is not indicative of a country's economy. Similarly, the press does not report proportionately on all musicians. The vast number of books and coaches dealing with success should also you make skeptical: The unsuccessful don't write books or give lectures on their failures.

Survivorship bias can become especially pernicious when you become a member of the "winning" team. Even if your success stems from pure coincidence, you'll discover similarities with other winners and be tempted to mark these as "success factors." However, if you ever visit the graveyard of failed individuals and companies, you will realize that its tenants possessed many of the same traits that characterize your success.

If enough scientists examine a particular phenomenon, a few of these studies will deliver statistically significant results through pure coincidence —for example, the relationship between red wine consumption and high life expectancy. Such (false) studies immediately attain a high degree of popularity and attention. As a result, you will not read about the studies with the “boring” but correct results.

Survivorship bias means this: People systematically overestimate their chances of success. Guard against it by frequently visiting the graves of once-promising projects, investments, and careers. It is a sad walk but one that should clear your mind.

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Beware the “Special Case”

Confirmation Bias (Part 1)

Gil wants to lose weight. He selects a particular diet and checks his progress on the scale every morning. If he has lost weight, he pats himself on the back and considers the diet a success. If he has gained weight, he writes it off as a normal fluctuation and forgets about it. For months, he lives under the illusion that the diet is working, even though his weight remains constant. Gil is a victim of the *confirmation bias*—albeit a harmless form of it.

The *confirmation bias* is the mother of all misconceptions. It is the tendency to interpret new information so that it becomes compatible with our existing theories, beliefs, and convictions. In other words, we filter out any new information that contradicts our existing views (“disconfirming evidence”). This is a dangerous practice. “Facts do not cease to exist because they are ignored,” said writer Aldous Huxley. However, we do exactly that, as super-investor Warren Buffett knows: “What the human being is best at doing is interpreting all new information so that their prior conclusions remain intact.”

The *confirmation bias* is alive and well in the business world. One example: An executive team decides on a new strategy. The team enthusiastically celebrates any sign that the strategy is a success. Everywhere the executives look, they see plenty of confirming evidence, while indications to the contrary remain unseen or are quickly dismissed as "exceptions" or "special cases." They have become blind to disconfirming evidence.

What can you do? If the word "exception" crops up, prick up your ears. Often it hides the presence of disconfirming evidence. It pays to listen to Charles Darwin: Since his youth, he set out to fight the *confirmation bias* systematically. Whenever observations contradicted his theory, he took them very seriously and noted them down immediately. He knew that the brain actively "forgets" disconfirming evidence after a short time. The more correct he judged his theory to be, the more actively he looked for contradictions.

The following experiment shows how much effort it takes to question your own theory. A professor presented his students with the number sequence 2–4–6. They had to calculate the underlying rule that the professor had written on the back of a sheet of paper. The students had to provide the next number in the sequence to which the professor would reply "fits the rule" or "does not fit the rule." The students could guess as many numbers as they wanted but could try only once to identify the rule. Most students suggested 8 as the next number, and the professor replied: "Fits the rule." To be sure, they tried 10, 12, and 14. The professor replied each time: "Fits the rule." The students concluded: "The rule is to add two to the last number." The professor shook his head: "That is not the rule."

One shrewd student tried a different approach. He tested out the number –2. The professor said: "Does not fit the rule." "Seven?" he asked. "Fits the rule." The student tried all sorts of numbers: –24, 9, –43. Apparently he had an idea, and he was trying to find a flaw with it. Only when he could no longer find a counterexample, the student said: "The rule is this: The next number must be higher than the previous one." The professor turned over the sheet of paper, revealing those very words. What distinguished the resourceful student from the others? While the majority of students sought merely to confirm their theories, he tried to find fault with his, consciously looking for disconfirming evidence. You might think: "Good for him, but

not the end of the world for the others." However, falling for the *confirmation bias* is not a petty intellectual offense. How it affects our lives will be revealed in the next chapter.

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Murder Your Darlings

Confirmation Bias (Part 2)

In the previous chapter, we met the father of all fallacies, the *confirmation bias*. Here are a few examples of it: We are forced to establish beliefs about the world, our lives, the economy, investments, our careers, and more. We deal mostly in assumptions, and the more nebulous these are, the stronger the *confirmation bias*. Whether you go through life believing that "people are inherently good" or "people are inherently bad," you will find daily proof to support your case. Both parties, the philanthropists and the misanthropes, simply filter disconfirming evidence (evidence to the contrary) and focus on the do-gooders and dictators who support their worldviews.

Astrologers and economists operate on the same principle. They utter prophecies so vague that any event can substantiate them: "In the coming weeks you will experience sadness," or "In the medium term, the pressure on the dollar will increase." But what is the medium term? What will cause the dollar to depreciate? And depreciation measured against what—gold,

yen, pesos, wheat, residential property in Manhattan, the average price of a hot dog?

Religious and philosophical beliefs represent an excellent breeding ground for the *confirmation bias*. Here, in soft, spongy terrain, it grows wild and free. For example, worshippers always find evidence for God's existence, even though he never shows himself overtly—except to illiterates in the desert and in isolated mountain villages. It is never to the masses in, say, Frankfurt or New York. Counterarguments are dismissed by the faithful, demonstrating just how powerful the *confirmation bias* is.

No professionals suffer more from the *confirmation bias* than business journalists. Often, they formulate an easy theory, pad it out with two or three pieces of "evidence," and call it a day. For example: "Google is so successful because the company nurtures a culture of creativity." Once this idea is on paper, the journalist corroborates it by mentioning a few other prosperous companies that foster ingenuity. Rarely does the writer seek out disconfirming evidence, which in this instance would be struggling businesses that live and breathe creativity or, conversely, flourishing firms that are utterly uncreative. Both groups have plenty of members, but the journalist simply ignores them. If he or she were to mention just one, the story line would be ruined.

Self-help and get-rich-quick books are further examples of blinkered storytelling. Their shrewd authors collect piles of proof to pump up the most banal of theories, such as "meditation is the key to happiness." Any reader seeking disconfirming evidence does so in vain: Nowhere in these books do we see people who lead fulfilled lives without meditation, or those who, despite meditation, are still sad.

The Internet is particularly fertile ground for the *confirmation bias*. To stay informed, we browse news sites and blogs, forgetting that our favored pages mirror our existing values, be they liberal, conservative, or somewhere in between. Moreover, a lot of sites now tailor content to personal interests and browsing history, causing new and divergent opinions to vanish from the radar altogether. We inevitably land in communities of like-minded people, further reinforcing our convictions—and the *confirmation bias*.

Literary critic Arthur Quiller-Couch had a memorable motto: "Murder your darlings." This was his advice to writers who struggled with cutting

cherished but redundant sentences. Quiller-Couch's appeal is not just for hesitant hacks but for all of us who suffer from the deafening silence of assent. To fight against the *confirmation bias*, try writing down your beliefs —whether in terms of worldview, investments, marriage, health care, diet, career strategies—and set out to find disconfirming evidence. Axing beliefs that feel like old friends is hard work but imperative.

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Never Judge a Decision by Its Outcome

Outcome Bias

A quick hypothesis: Say one million monkeys speculate on the stock market. They buy and sell stocks like crazy and, of course, completely at random. What happens? After one week, about half of the monkeys will have made a profit and the other half a loss. The ones that made a profit can stay; the ones that made a loss you send home. In the second week, one half of the monkeys will still be riding high, while the other half will have made a loss and are sent home. And so on. After ten weeks, about one thousand monkeys will be left—those who have always invested their money well. After twenty weeks, just one monkey will remain—this one always, without fail, chose the right stocks and is now a billionaire. Let's call him the success monkey.

How does the media react? It will pounce on this animal to understand its "success principles." And they will find some: Perhaps the monkey eats more bananas than the others. Perhaps he sits in another corner of the cage. Or maybe he swings headlong through the branches, or he takes long, reflective pauses while grooming. He must have some recipe for success,

right? How else could he perform so brilliantly? Spot-on for two years—and that from a simple monkey? Impossible!

The monkey story illustrates the *outcome bias*: We tend to evaluate decisions based on the result rather than on the decision process. This fallacy is also known as the "historian error." A classic example is the Japanese attack on Pearl Harbor. Should the military base have been evacuated or not? From today's perspective: obviously, for there was plenty of evidence that an attack was imminent. However, only in retrospect do the signals appear so clear. At the time, in 1941, there was a plethora of contradictory signals. Some pointed to an attack; others did not. To assess the quality of the decision, we must use the information available at the time, filtering out everything we know about it postattack (particularly that it did indeed take place).

Another experiment: You must evaluate the performance of three heart surgeons. To do this, you ask each to carry out a difficult operation five times. Over the years, the probability of dying from these procedures has stabilized at 20 percent. With surgeon A, no one dies. With surgeon B, one patient dies. With surgeon C, two die. How do you rate the performances of A, B, and C? If you think like most people, you rate A the best, B the second best, and C the worst. And thus you've just fallen for the *outcome bias*. You can guess why: The samples are too small, rendering the results meaningless. You can only really judge a surgeon if you know something about the field, and then carefully monitor the preparation and execution of the operation. In other words, you assess the process and not the result. Alternatively, you could employ a larger sample: one hundred or one thousand operations if you have enough patients who need this particular operation. For now it is enough to know that, with an average surgeon, there is a 33 percent chance that no one will die, a 41 percent chance that one person will die, and a 20 percent chance that two people will die. That's a simple probability calculation. What stands out: There is no huge difference between zero dead and two dead. To assess the three surgeons purely on the basis of the outcomes would be not only negligent, but also unethical.

In conclusion: Never judge a decision purely by its result, especially when randomness and "external factors" play a role. A bad result does not automatically indicate a bad decision and vice versa. So rather than tearing your hair out about a wrong decision, or applauding yourself for one that

may have only coincidentally led to success, remember why you chose what you did. Were your reasons rational and understandable? Then you would do well to stick with that method, even if you didn’t strike it lucky last time.