

CHAPTER ONE

The Outside View

Why Big Brown Was a Bad Bet

“IT’S A FOREGONE CONCLUSION.” So proclaimed Rick Dutrow on the likelihood that his race horse, Big Brown, would capture the coveted Triple Crown in 2008. Winning the Triple Crown is a tremendous feat. A horse must win the Kentucky Derby, the Preakness Stakes, and the Belmont Stakes on three tracks of different lengths over just five weeks. Before Big Brown’s attempt, only eleven horses had succeeded in the preceding century, and none had done so in the previous thirty years. Here was Big Brown, only one race away from horse-racing “immortality.”¹

Dutrow, the horse’s trainer, had reason to be optimistic. Not only was his three-year-old colt undefeated in his first five starts, he was dominant. Although the odds makers placed only a 25 percent probability on his winning the Kentucky Derby, Big Brown won by four-and-three-quarters lengths. He was stronger still in the Preakness, crossing the finish line five-and-one-quarter lengths ahead of the field, even though his jockey eased him coming down the home stretch. In his last race, the Belmont, Big Brown faced mediocre competition, and his biggest challenger, Casino Drive, dropped out of the race at the last minute.

Not surprisingly, enthusiasm for Big Brown built. Sensing opportunity, UPS, the company after which Big Brown was named, signed

a marketing deal that included a corporate logo on the jacket of Big Brown's outrider. A majority of racetrack pros picked him to win the race. And then there was Big Brown himself. He was portrayed as strong, confident, and ready. Dutrow gushed, "He looks as good as he can possibly look. I can't find any flaws whatsoever in Big Brown. I see the prettiest picture. I'm so confident, it's unbelievable."² The fans agreed: attendance for the pivotal race was double what it had been in the previous year despite the sweltering heat, as the crowd yearned to see history made.

Big Brown made history, all right. It just wasn't the kind of history everyone expected. He finished dead last, which no Triple Crown contender had ever done.³

Veterinarians gave Big Brown a full physical exam following the race and he appeared to be fine. His capricious performance evoked what lab researchers call Harvard's Law, "Under the most rigorously controlled conditions of pressure, temperature, volume, humidity, and other variables, the organism will do as it damn well pleases."⁴

However, there was another way of looking at Big Brown's chances of winning the Triple Crown, one that was far less optimistic about his prospects of joining the pantheon of horse racing. This point of view asked a simple question: how successful were other horses when they were in Big Brown's position?

Steven Crist, a talented writer and renowned handicapper, provided some sobering statistics.⁵ Of the twenty-nine horses with a chance to capture the Triple Crown after winning the Kentucky Derby and the Preakness Stakes, only eleven triumphed, a success rate less than 40 percent. But a closer examination of those statistics yielded a stark difference before and after 1950. Before 1950, eight of the nine horses attempting to win the Triple Crown succeeded. After 1950, only three of twenty horses won. It's hard to know why the achievement rate dropped from nearly 90 percent to just 15 percent, but logical factors include better breeding (leading to more quality foals) and bigger starting fields.

While a 15 percent rate of success may raise some concern, it doesn't take into consideration Big Brown's innate ability and

impressive track record. After all, not all of the horses in a position to win the Triple Crown had similar talent. One way to compare horses is the Beyer Speed Figure, which assigns a number to a horse's performance based on the time of the race and the speed of the track, given the weather conditions. Higher speed figures are better.

Table 1-1 shows the speed figures in the first two Triple Crown races for the last seven aspirants, including Big Brown. The sample is small because speed figures have been widely available only since 1991. While his jockey's actions likely pared a few points from his Preakness figure, Big Brown looked downright lead-hoofed when compared to the other horses. Even considering the so-so Belmont field, it was obvious that Big Brown was not certain to win. Yet the bettors had Big Brown's odds at a euphoric three-to-ten, implying he had more than a 75 percent probability of winning the final leg. Crist and other sharp handicappers had the horse sense to recognize the tote board substantially overstated Big Brown's chance of winning.

These contrasting points of view reveal our first mistake, a tendency to favor the inside view over the outside view.⁶ An inside view considers a problem by focusing on the specific task and by using information that is close at hand, and makes predictions based on

TABLE 1-1

Beyer Speed Figures for Triple Crown contenders

Horse	Kentucky Derby	Preakness	Total
Silver Charm	115	118	233
Smarty Jones	107	118	225
Funny Cide	109	114	223
War Emblem	114	109	223
Real Quiet	107	111	218
Charismatic	108	107	215
Big Brown	109	100	209

Source: Steven Crist.

that narrow and unique set of inputs. These inputs may include anecdotal evidence and fallacious perceptions. This is the approach that most people use in building models of the future and is indeed common for all forms of planning. Rick Dutrow and the other fans of Big Brown dwelled largely on the inside view, including the horse's wins and imposing physical appearance. This comes naturally but almost always paints too optimistic a picture.

The outside view asks if there are similar situations that can provide a statistical basis for making a decision. Rather than seeing a problem as unique, the outside view wants to know if others have faced comparable problems and, if so, what happened. The outside view is an unnatural way to think, precisely because it forces people to set aside all the cherished information they have gathered. Handicappers using the outside view judged Big Brown to be a very poor bet, as the experience of other horses in the same spot suggested a probability of winning that was much lower than what was on the tote board. The outside view can often create a very valuable reality check for decision makers.

Why do people tend to embrace the inside view? Most of us are unduly optimistic a good deal of the time. Social psychologists distinguish three illusions that lead people to the inside view.⁷

To introduce the first illusion, take a moment to answer (honestly!) the following questions either yes or no:

- I am an above-average driver.
- I have an above-average ability to judge humor.
- My professional performance places me in the top half of my organization.

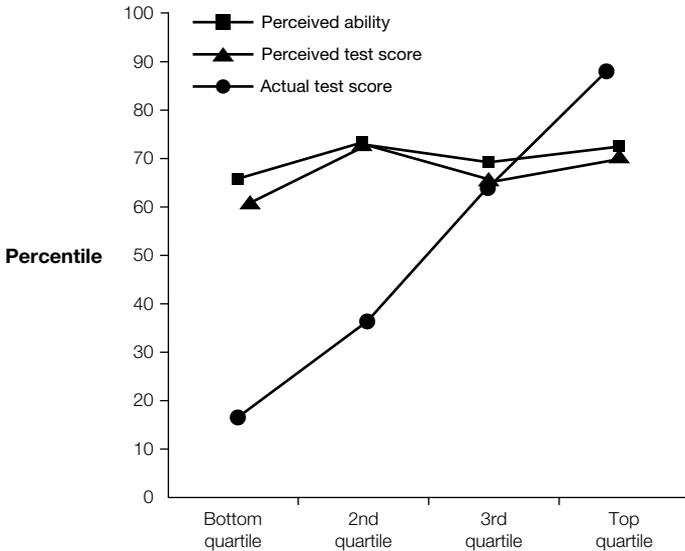
If you are like most people, you said yes to all three questions. This shows the illusion of superiority, which suggests people have an unrealistically positive view of themselves. Of course, not everyone can be above average. In a classic 1976 survey, the College Board asked high school test takers to rate themselves on a host of criteria. Eighty-five percent considered themselves above the median in

getting along with others, 70 percent above the median in ability to lead others, and 60 percent above the median in sports. One survey showed that more than 80 percent of people believed that they were more skillful than half of all drivers.⁸

Remarkably, the least capable people often have the largest gaps between what they think they can do and what they actually achieve.⁹ In one study, researchers asked subjects to rate their perceived ability and likely success on a grammar test. Figure 1-1 shows that the poorest performers dramatically overstated their ability, thinking that they would be in the next-to-highest quartile. They turned in results in the bottom quartile. Furthermore, even when individuals do acknowledge that they are below average, they tend to dismiss their shortcomings as inconsequential.

FIGURE 1-1

The least competent are often the most confident



Source: Justin Kruger and David Dunning, "Unskilled and Unaware of It: How Difficulties in Recognizing One's Own Incompetence Lead to Inflated Self-Assessments." *Journal of Personality and Social Psychology* 77, no. 6 (1999): 1121–1134.

The second is the illusion of optimism. Most people see their future as brighter than that of others. For example, researchers asked college students to estimate their chances of having various good and bad experiences during their lives. The students judged themselves far more likely to have good experiences than their peers, and far less likely to have bad experiences.¹⁰

Finally, there is the illusion of control. People behave as if chance events are subject to their control. For instance, people rolling dice throw softly when they want to roll low numbers and hard for high numbers. In one study, researchers asked two groups of office workers to participate in a lottery, with a \$1 cost and a \$50 prize. One group was allowed to choose their lottery cards, while the other group had no choice. Luck determined the probability of winning, of course, but that's not how the workers behaved.

Before the drawing, one of the researchers asked the participants at what price they would be willing to sell their cards. The mean offer for the group that was allowed to choose cards was close to \$9, while the offer from the group that had not chosen was less than \$2. People who believe that they have some control have the perception that their odds of success are better than they actually are. People who don't have a sense of control don't experience the same bias.¹¹

I must concede that my occupation, active money management, may be one of the best examples of the illusion of control in the professional world. Researchers have shown that, in aggregate, money managers who actively build portfolios deliver returns lower than the market indexes over time, a finding that every investment firm acknowledges.¹² The reason is pretty straightforward: markets are highly competitive, and money managers charge fees that diminish returns. Markets also have a good dose of randomness, assuring that all investors see good and poor results from time to time. Despite the evidence, active money managers behave as if they can defy the odds and deliver market-beating returns. These investment firms rely on the inside view to justify their strategies and fees.

The Odds of Success Are Poor . . . But Not for Me

A vast range of professionals commonly lean on the inside view to make important decisions with predictably poor results. This is not to say these decision makers are negligent, naïve, or malicious. Encouraged by the three illusions, most believe they are making the right decision and have faith that the outcomes will be satisfactory. Now that you are aware of the distinction between the inside and outside view, you can measure your decisions and the decisions of others more carefully. Let's look at some examples.

Corporate mergers and acquisitions (M&A) are a multitrillion dollar global business year in and year out. Corporations spend vast sums identifying, acquiring, and integrating companies in order gain a strategic edge. There is little doubt that companies make deals with the best of intentions.

The problem is that most deals don't create value for the shareholders of the acquiring company (shareholders of the companies that are bought do fine, on average). In fact, researchers estimate that when one company buys another, the acquiring company's stock goes down roughly two-thirds of the time.¹³ Given that most managers have an explicit objective of increasing value—and that their compensation is often tied to the stock price—the vigor of the M&A market appears moderately surprising. The explanation is that while most executives recognize that the overall M&A record is not good, they believe that they can beat the odds.

“A high-quality beachfront property” is how the chief executive officer of Dow Chemical described Rohm and Haas after Dow agreed to acquire the company in July 2008. Dow was undaunted by the bidding war, which had driven the price premium it had to pay to a steep 74 percent. Instead, the CEO declared the deal “a decisive step towards establishing Dow as an earnings-growth company.”¹⁴ The enthusiasm of Dow's management had all the hallmarks of the inside view. When the deal was announced, the stock price of Dow Chemical slumped

4 percent, putting the deal on top of a growing pile of losses suffered through acquisitions.

Basic math explains why most companies don't add value when they acquire another firm. The change in value for the buyer equals the difference between the increase in cash flow from combining the two companies (synergies) and the amount over the market value that the acquirer pays (premium). Companies want to get more than they pay for. So if synergies exceed the premium, the price of the buyer's stock will rise. If not, it will fall. In this case, the value of the synergy—based on Dow's own figures—was less than the premium it paid, justifying a drop in price. Glowing rhetoric aside, the numbers were not good for the shareholders of Dow Chemical.¹⁵

The Plural of Anecdote Is Not Evidence

A few years ago, my father was diagnosed with late-stage cancer. After the chemotherapy failed, he was basically out of options. One day, he called seeking my advice. He had read a magazine advertisement about an alternative cancer treatment that claimed near-miraculous results and pointed to a Web site full of glowing testimonials. If he sent me the information, would I tell him what I thought?

It didn't take long to do the research. No well-constructed studies had shown the treatment's efficacy, and the evidence in favor of the approach amounted to a collection of anecdotes. When my father called back, I could hear in his voice that his mind was made up. Despite the substantial cost and taxing travel, he wanted to pursue this long-shot alternative. When he asked me what I thought, I told him, "I try to think like a scientist. And based on everything I can see, this won't work." Hanging up the phone, I felt torn. I wanted to believe the story and go with the inside view. I wanted my father to be well again. But the scientist in me admonished me to stick with the outside view. Even considering the power of the placebo effect, hope is not a strategy.

My father died shortly after that episode, but the experience compelled me to think about how we decide about our medical treatments.

For a long time, the paternalistic model reigned in relationships between physicians and patients. Physicians would diagnose a condition and select the treatment that seemed best for the patient. Patients nowadays are more informed and generally want to take part in making decisions. Physicians and patients frequently discuss the pros and cons of various treatments and together select the best course of action. Indeed, studies show that patients involved in making those decisions are more satisfied with their medical treatment.

But research also suggests that patients regularly make choices that are not in their best interests, often due to a failure to consider the outside view.¹⁶ In one study, researchers presented subjects with a fictitious disease and various treatments. Each subject had a choice between two treatments. The first, the control treatment, had 50 percent effectiveness. The second was one of twelve options that combined a positive, neutral, or negative anecdote about a fictional patient with four possible levels of effectiveness, ranging from 30 percent to 90 percent.

The stories made a huge difference and swamped the base-rate data in the decision-making process. Table 1-2 tells the tale. Patients selected a treatment with 90 percent effectiveness less than 40 percent of the time when it was paired with a story about a failed

TABLE 1-2

Are anecdotes more important than antidotes?

Percent of subjects choosing the treatment

	BASE RATE			
	90%	70%	50%	30%
Positive anecdote	88	92	93	78
Neutral anecdote	81	81	69	29
Negative anecdote	39	43	15	7

Source: Angela K. Freymuth and George F. Ronan, "Modeling Patient Decision-Making: The Role of Base-Rate and Anecdotal Information," *Journal of Clinical Psychology in Medical Settings* 11, no. 3 (2004): 211-216.

patient. Conversely, nearly 80 percent of the patients selected a treatment with 30 percent effectiveness when it was matched with a success story. The results of this study were fully consistent with my father's behavior.

While it's good for patients to be informed and engaged, they run the risk of being influenced by sources that rely predominantly on anecdotes, including friends, family, the Internet, and mass media. Doctors might find anecdotes to be an effective way of getting their points across to patients. But doctors and patients should be careful not to lose sight of the scientific evidence.¹⁷

On Time and Within Budget—Maybe Next Time

You will be familiar with this example if you have ever been part of a project, whether it involved renovating a house, introducing a new product, or meeting a work deadline. People find it hard to estimate how long a job will take and how much it will cost. When they are wrong, they usually underestimate the time and expense. Psychologists call this the planning fallacy. Here again, the inside view takes over, as the majority of people imagine how they will complete the task. Only about one-quarter of the population incorporates the base-rate data either from their own experience or from that of others, while laying out planning timetables.

Roger Buehler, a professor of psychology at Wilfrid Laurier University, did an experiment that illustrates the point. Buehler and his collaborators asked college students how long it would take to complete a school assignment with three levels of chance: 50, 75, and 99 percent. For example, a subject might say that there was a 50 percent chance that he would finish the project by next Monday, a 75 percent chance he'd be done by Wednesday, and a 99 percent chance by Friday.

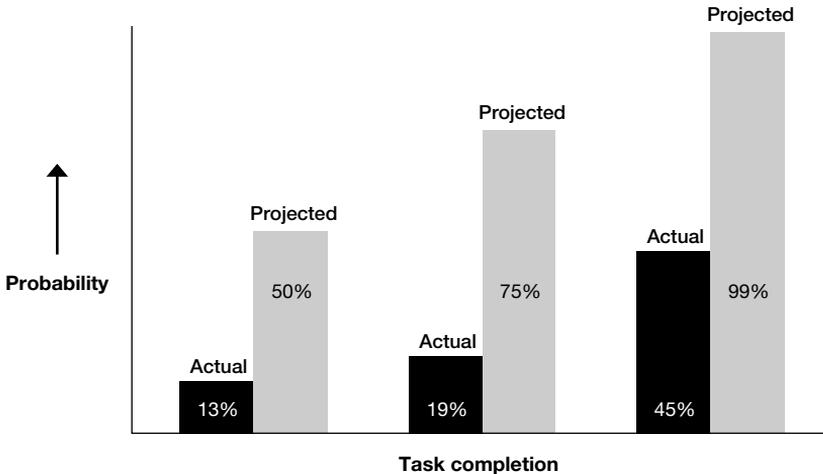
Figure 1-2 shows how accurate the estimates were: when the deadline arrived for which the students had given themselves a 50 percent chance of finishing, only 13 percent actually turned in their

work. At the point when the students thought there was 75 percent chance they'd be done, just 19 percent had completed the project. All the students were virtually sure they'd be done by the final date. But only 45 percent turned out to be right. As Buehler and his fellow researchers note, "Even when asked to make a highly conservative forecast, a prediction that they felt virtually certain that they would fulfill, students' confidence in their time estimates far exceeded their accomplishments."¹⁸

This work has an interesting twist. While people are notoriously poor at guessing when they'll finish their own projects, they're pretty good at guessing about other people. In fact, the planning fallacy embodies a broader principle. When people are forced to look at similar situations and see the frequency of success, they tend to predict more accurately. If you want to know how something

FIGURE 1-2

There's a huge gap between when people believe they will complete a task and when they actually do



Source: Roger Buehler, Dale Griffin, and Michael Ross, "It's About Time: Optimistic Predictions in Work and Love," in *European Review of Social Psychology*, vol. 6, ed. Wolfgang Stroebe and Miles Hewstone (Chichester, UK: John Wiley & Sons, 1995), 1-32.

is going to turn out for you, look at how it turned out for others in the same situation. Daniel Gilbert, a psychologist at Harvard University, ponders why people don't rely more on the outside view, "Given the impressive power of this simple technique, we should expect people to go out of their way to use it. But they don't." The reason is most people think of themselves as different, and better, than those around them.¹⁹

Now that you are aware of how the inside-outside view influences the way people make decisions, you'll see it everywhere. In the business world, it will show up as unwarranted optimism for how long it takes to develop a new product, the chance that a merger deal succeeds, and the likelihood a portfolio of stocks will do better than the market. In your personal life, you'll see it in the parents who believe their seven-year-old is destined for a college sports scholarship, debates about what impact video games have on kids, and the time and cost it will take to remodel a kitchen.

Even people who should know better forget to consult the outside view. Years ago, Daniel Kahneman assembled a group to write a curriculum to teach judgment and decision making to high school students. Kahneman's group included a mix of experienced and inexperienced teachers as well as the dean of the school of education. After about a year, they had written a couple of chapters for the textbook and had developed some sample lessons.

During one of their Friday afternoon sessions, the educators discussed how to elicit information from groups and how to think about the future. They knew that the best way to do this was for each person to express his or her view independently and to combine the views into a consensus. Kahneman decided to make the exercise tangible by asking each member to estimate the date the group would deliver a draft of the textbook to the Ministry of Education.

Kahneman found that the estimates clustered around two years and that everyone, including the dean, estimated between eighteen and thirty months. It then occurred to Kahneman that the dean had been involved in similar projects. When asked, the dean said he knew of a number of similar groups, including ones that had worked

on the biology and mathematics curriculum. So Kahneman asked him the obvious question: “How long did it take them to finish?”

The dean blushed and then answered that 40 percent of the groups that had started similar programs had never finished, and that none of the groups completed it in less than seven years. Seeing only one way to reconcile the dean’s optimistic answer about this group with his knowledge of the shortcomings of the other groups, Kahneman asked how good this group was compared with the others. After a pause, the dean responded, “Below average, but not by much.”²⁰

How to Incorporate the Outside View into Your Decisions

Kahneman and Amos Tversky, a psychologist who had a long collaboration with Kahneman, published a multistep process to help you use the outside view.²¹ I have distilled their five steps into four and have added some thoughts. Here are the four steps:

1. *Select a reference class.* Find a group of situations, or a reference class, that is broad enough to be statistically significant but narrow enough to be useful in analyzing the decision that you face. The task is generally as much art as science, and is certainly trickier for problems that few people have dealt with before. But for decisions that are common—even if they are not common for you—identifying a reference class is straightforward. Mind the details. Take the example of mergers and acquisitions. We know that the shareholders of acquiring companies lose money in most mergers and acquisitions. But a closer look at the data reveals that the market responds more favorably to cash deals and those done at small premiums than to deals financed with stock at large premiums. So companies can improve their chances of making money from an acquisition by knowing what deals tend to succeed.

2. *Assess the distribution of outcomes.* Once you have a reference class, take a close look at the rate of success and failure. For example, fewer than one of six horses in Big Brown's position won the Triple Crown. Study the distribution and note the average outcome, the most common outcome, and extreme successes or failures.

In his book *Full House*, Stephen Jay Gould, who was a paleontologist at Harvard University, showed the importance of knowing the distribution of outcomes after his doctor diagnosed him with mesothelioma. His doctor explained that half of the people diagnosed with the rare cancer lived only eight months (more technically, the median mortality was eight months), seemingly a death sentence. But Gould soon realized that while half the patients died within eight months, the other half went on to live much longer. Because of his relatively young age at diagnosis, there was a good chance he would be one of the fortunate ones. Gould wrote, "I had asked the right question and found the answers. I had obtained, in all probability, the most precious of all possible gifts in the circumstances—substantial time." Gould lived another twenty years.²²

Two other issues are worth mentioning. The statistical rate of success and failure must be reasonably stable over time for a reference class to be valid. If the properties of the system change, drawing inference from past data can be misleading. This is an important issue in personal finance, where advisers make asset allocation recommendations for their clients based on historical statistics. Because the statistical properties of markets shift over time, an investor can end up with the wrong mix of assets.

Also keep an eye out for systems where small perturbations can lead to large-scale change. Since cause and effect are difficult to pin down in these systems, drawing on past experiences is more difficult. Businesses driven by hit products, like movies or books, are good examples. Producers

and publishers have a notoriously difficult time anticipating results, because success and failure is based largely on social influence, an inherently unpredictable phenomenon.

3. *Make a prediction.* With the data from your reference class in hand, including an awareness of the distribution of outcomes, you are in a position to make a forecast. The idea is to estimate your chances of success and failure. For all the reasons that I've discussed, the chances are good that your prediction will be too optimistic.

Sometimes when you find the right reference class, you see the success rate is not very high. So to improve your chance of success, you have to do something different than everyone else. One example is the play calling of National Football League coaches in critical game situations including fourth downs, kickoffs, and two-point conversion attempts. As in many other sports, conventional ways to decide about these situations are handed down from one generation of coaches to the next. But this stale decision-making process means scoring fewer points and winning fewer games.

Chuck Bower, an astrophysicist at Indiana University, and Frank Frigo, a former world backgammon champion, created a computer program called Zeus to assess the play-calling decisions of pro football coaches. Zeus uses the same modeling techniques that have succeeded in backgammon and chess programs, and the creators loaded it with statistics and the behavioral traits of coaches. Bower and Frigo found that only four teams in the thirty-two-team league made crucial decisions that agreed with Zeus over one-half of the time, and that nine teams made decisions that concurred less than one-quarter of the time. Zeus estimates that these poor decisions can cost a team more than one victory per year, a large toll in a sixteen-game season.

Most coaches stick to the conventional wisdom, because that is what they have learned and they are averse to the

perceived negative consequences of breaking from past practice. But Zeus shows that the outside view can lead to more wins for the coach willing to break with tradition. This is an opportunity for coaches willing to think twice.²³

4. *Assess the reliability of your prediction and fine-tune.* How good we are at making decisions depends a great deal on what we are trying to predict. Weather forecasters, for instance, do a pretty good job of predicting what the temperature will be tomorrow. Book publishers, on the other hand, are poor at picking winners, with the exception of those books from a handful of best-selling authors. The worse the record of successful prediction is, the more you should adjust your prediction toward the mean (or other relevant statistical measure). When cause and effect is clear, you can have more confidence in your forecast.

The main lesson from the inside-outside view is that while decision makers tend to dwell on uniqueness, the best decisions often derive from sameness. Don't get me wrong. I'm not advocating for bland, unimaginative, imitative, or risk-free decisions. I am saying there is a wealth of useful information based on situations that are similar to the ones that we face every day. We ignore that information to our own detriment. Paying attention to that wealth of information will help you make more effective decisions. Remember this discussion the next time a contender for the Triple Crown goes off at highly optimistic odds.