



Superforecasting: The Art and Science of Prediction

By Philip E. Tetlock, Dan Gardner

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A New York Times Bestseller
An Economist Best Book of 2015

"The most important book on decision making since Daniel Kahneman's *Thinking, Fast and Slow*."
—Jason Zweig, *The Wall Street Journal*

Everyone would benefit from seeing further into the future, whether buying stocks, crafting policy, launching a new product, or simply planning the week's meals. Unfortunately, people tend to be terrible forecasters. As Wharton professor Philip Tetlock showed in a landmark 2005 study, even experts' predictions are only slightly better than chance. However, an important and underreported conclusion of that study was that some experts do have real foresight, and Tetlock has spent the past decade trying to figure out why. What makes some people so good? And can this talent be taught?

In *Superforecasting*, Tetlock and coauthor Dan Gardner offer a masterwork on prediction, drawing on decades of research and the results of a massive, government-funded forecasting tournament. The Good Judgment Project involves tens of thousands of ordinary people—including a Brooklyn filmmaker, a retired pipe installer, and a former ballroom dancer—who set out to forecast global events. Some of the volunteers have turned out to be astonishingly good. They've beaten other benchmarks, competitors, and prediction markets. They've even beaten the collective judgment of intelligence analysts with access to classified information. They are "superforecasters."

In this groundbreaking and accessible book, Tetlock and Gardner show us how we can learn from this elite group. Weaving together stories of forecasting successes (the raid on Osama bin Laden's compound) and failures (the Bay of Pigs) and interviews with a range of high-level decision makers, from David Petraeus to Robert Rubin, they show that good forecasting doesn't require powerful computers or arcane methods. It involves gathering evidence from a variety of sources, thinking probabilistically, working in teams, keeping score,

and being willing to admit error and change course.

Superforecasting offers the first demonstrably effective way to improve our ability to predict the future—whether in business, finance, politics, international affairs, or daily life—and is destined to become a modern classic.

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Editorial Review

Review

- "Tetlock's work is fascinating and important, and he and Gardner have written it up here with verve." --*The Financial Times*
- "Superforecasting is the most important scientific study I've ever read on prediction." --*The Bloomberg View*

About the Author

PHILIP E. TETLOCK is the Annenberg University Professor at the University of Pennsylvania, with appointments in Wharton, psychology and political science. He is co-leader of the Good Judgment Project, a multi-year forecasting study, and the author of *Expert Political Judgment* and (with Aaron Belkin) *Counterfactual Thought Experiments in World Politics*.

DAN GARDNER is a journalist and the author of *Risk: The Science and Politics of Fear and Future Babble: Why Pundits are Hedgehogs and Foxes Know Best*. He resides in Ottawa.

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An Optimistic Skeptic

We are all forecasters. When we think about changing jobs, getting married, buying a home, making an investment, launching a product, or retiring, we decide based on how we expect the future will unfold. These expectations are forecasts. Often we do our own forecasting. But when big events happen--markets crash, wars loom, leaders tremble--we turn to the experts, those in the know. We look to people like Tom Friedman.

If you are a White House staffer, you might find him in the Oval Office with the president of the United States, talking about the Middle East. If you are a Fortune 500 CEO, you might spot him in Davos, chatting in the lounge with hedge fund billionaires and Saudi princes. And if you don't frequent the White House or swanky Swiss hotels, you can read his New York Times columns and bestselling books that tell you what's happening now, why, and what will come next.¹ Millions do.

Like Tom Friedman, Bill Flack forecasts global events. But there is a lot less demand for his insights.

For years, Bill worked for the US Department of Agriculture in Arizona--"part pick-and-shovel work, part spreadsheet"--but now he lives in Kearney, Nebraska. Bill is a native Cornhusker. He grew up in Madison, Nebraska, a farm town where his parents owned and published the Madison Star-Mail, a newspaper with lots of stories about local sports and county fairs. He was a good student in high school and he went on to get a bachelor of science degree from the University of Nebraska. From there, he went to the University of Arizona. He was aiming for a PhD in math, but he realized it was beyond his abilities--"I had my nose rubbed in my limitations" is how he puts it--and he dropped out. It wasn't wasted time, however. Classes in ornithology made Bill an avid bird-watcher, and because Arizona is a great place to see birds, he did fieldwork part-time for scientists, then got a job with the Department of Agriculture and stayed for a while.

Bill is fifty-five and retired, although he says if someone offered him a job he would consider it. So he has free time. And he spends some of it forecasting.

Bill has answered roughly three hundred questions like “Will Russia officially annex additional Ukrainian territory in the next three months?” and “In the next year, will any country withdraw from the eurozone?” They are questions that matter. And they’re difficult. Corporations, banks, embassies, and intelligence agencies struggle to answer such questions all the time. “Will North Korea detonate a nuclear device before the end of this year?” “How many additional countries will report cases of the Ebola virus in the next eight months?” “Will India or Brazil become a permanent member of the UN Security Council in the next two years?” Some of the questions are downright obscure, at least for most of us. “Will NATO invite new countries to join the Membership Action Plan (MAP) in the next nine months?” “Will the Kurdistan Regional Government hold a referendum on national independence this year?” “If a non-Chinese telecommunications firm wins a contract to provide Internet services in the Shanghai Free Trade Zone in the next two years, will Chinese citizens have access to Facebook and/or Twitter?” When Bill first sees one of these questions, he may have no clue how to answer it. “What on earth is the Shanghai Free Trade Zone?” he may think. But he does his homework. He gathers facts, balances clashing arguments, and settles on an answer.

No one bases decisions on Bill Flack’s forecasts, or asks Bill to share his thoughts on CNN. He has never been invited to Davos to sit on a panel with Tom Friedman. And that’s unfortunate. Because Bill Flack is a remarkable forecaster. We know that because each one of Bill’s predictions has been dated, recorded, and assessed for accuracy by independent scientific observers. His track record is excellent.

Bill is not alone. There are thousands of others answering the same questions. All are volunteers. Most aren’t as good as Bill, but about 2% are. They include engineers and lawyers, artists and scientists, Wall Streeters and Main Streeters, professors and students. We will meet many of them, including a mathematician, a filmmaker, and some retirees eager to share their underused talents. I call them superforecasters because that is what they are. Reliable evidence proves it. Explaining why they’re so good, and how others can learn to do what they do, is my goal in this book.

How our low-profile superforecasters compare with cerebral celebrities like Tom Friedman is an intriguing question, but it can’t be answered because the accuracy of Friedman’s forecasting has never been rigorously tested. Of course Friedman’s fans and critics have opinions one way or the other--“he nailed the Arab Spring” or “he screwed up on the 2003 invasion of Iraq” or “he was prescient on NATO expansion.” But there are no hard facts about Tom Friedman’s track record, just endless opinions--and opinions on opinions.² And that is business as usual. Every day, the news media deliver forecasts without reporting, or even asking, how good the forecasters who made the forecasts really are. Every day, corporations and governments pay for forecasts that may be prescient or worthless or something in between. And every day, all of us--leaders of nations, corporate executives, investors, and voters--make critical decisions on the basis of forecasts whose quality is unknown. Baseball managers wouldn’t dream of getting out the checkbook to hire a player without consulting performance statistics. Even fans expect to see player stats on scoreboards and TV screens. And yet when it comes to the forecasters who help us make decisions that matter far more than any baseball game, we’re content to be ignorant.³

In that light, relying on Bill Flack’s forecasts looks quite reasonable. Indeed, relying on the forecasts of many readers of this book may prove quite reasonable, for it turns out that forecasting is not a “you have it or you don’t” talent. It is a skill that can be cultivated. This book will show you how.

The One About the Chimp

I want to spoil the joke, so I'll give away the punch line: the average expert was roughly as accurate as a dart-throwing chimpanzee.

You've probably heard that one before. It's famous--in some circles, infamous. It has popped up in the New York Times, the Wall Street Journal, the Financial Times, the Economist, and other outlets around the world. It goes like this: A researcher gathered a big group of experts--academics, pundits, and the like--to make thousands of predictions about the economy, stocks, elections, wars, and other issues of the day. Time passed, and when the researcher checked the accuracy of the predictions, he found that the average expert did about as well as random guessing. Except that's not the punch line because "random guessing" isn't funny. The punch line is about a dart-throwing chimpanzee. Because chimpanzees are funny.

I am that researcher and for a while I didn't mind the joke. My study was the most comprehensive assessment of expert judgment in the scientific literature. It was a long slog that took about twenty years, from 1984 to 2004, and the results were far richer and more constructive than the punch line suggested. But I didn't mind the joke because it raised awareness of my research (and, yes, scientists savor their fifteen minutes of fame too). And I myself had used the old "dart-throwing chimp" metaphor, so I couldn't complain too loudly.

I also didn't mind because the joke makes a valid point. Open any newspaper, watch any TV news show, and you find experts who forecast what's coming. Some are cautious. More are bold and confident. A handful claim to be Olympian visionaries able to see decades into the future. With few exceptions, they are not in front of the cameras because they possess any proven skill at forecasting. Accuracy is seldom even mentioned. Old forecasts are like old news--soon forgotten--and pundits are almost never asked to reconcile what they said with what actually happened. The one undeniable talent that talking heads have is their skill at telling a compelling story with conviction, and that is enough. Many have become wealthy peddling forecasting of untested value to corporate executives, government officials, and ordinary people who would never think of swallowing medicine of unknown efficacy and safety but who routinely pay for forecasts that are as dubious as elixirs sold from the back of a wagon. These people--and their customers--deserve a nudge in the ribs. I was happy to see my research used to give it to them.

But I realized that as word of my work spread, its apparent meaning was mutating. What my research had shown was that the average expert had done little better than guessing on many of the political and economic questions I had posed. "Many" does not equal all. It was easiest to beat chance on the shortest-range questions that only required looking one year out, and accuracy fell off the further out experts tried to forecast--approaching the dart-throwing-chimpanzee level three to five years out. That was an important finding. It tells us something about the limits of expertise in a complex world--and the limits on what it might be possible for even superforecasters to achieve. But as in the children's game of "telephone," in which a phrase is whispered to one child who passes it on to another, and so on, and everyone is shocked at the end to discover how much it has changed, the actual message was garbled in the constant retelling and the subtleties were lost entirely. The message became "all expert forecasts are useless," which is nonsense. Some variations were even cruder--like "experts know no more than chimpanzees." My research had become a backstop reference for nihilists who see the future as inherently unpredictable and know-nothing populists who insist on preceding "expert" with "so-called."

So I tired of the joke. My research did not support these more extreme conclusions, nor did I feel any affinity for them. Today, that is all the more true.

There is plenty of room to stake out reasonable positions between the debunkers and the defenders of experts and their forecasts. On the one hand, the debunkers have a point. There are shady peddlers of questionable insights in the forecasting marketplace. There are also limits to foresight that may just not be surmountable. Our desire to reach into the future will always exceed our grasp. But debunkers go too far when they dismiss all forecasting as a fool's errand. I believe it is possible to see into the future, at least in some situations and to some extent, and that any intelligent, open-minded, and hardworking person can cultivate the requisite skills.

Call me an “optimistic skeptic.”

The Skeptic

To understand the “skeptic” half of that label, consider a young Tunisian man pushing a wooden handcart loaded with fruits and vegetables down a dusty road to a market in the Tunisian town of Sidi Bouzid. When the man was three, his father died. He supports his family by borrowing money to fill his cart, hoping to earn enough selling the produce to pay off the debt and have a little left over. It’s the same grind every day. But this morning, the police approach the man and say they’re going to take his scales because he has violated some regulation. He knows it’s a lie. They’re shaking him down. But he has no money. A policewoman slaps him and insults his dead father. They take his scales and his cart. The man goes to a town office to complain. He is told the official is busy in a meeting. Humiliated, furious, powerless, the man leaves.

1. Why single out Tom Friedman when so many other celebrity pundits could have served the purpose? The choice was driven by a simple formula: (status of pundit) X (difficulty of pinning down his/her forecasts) X (relevance of pundit’s work to world politics). Highest score wins. Friedman has high status; his claims about possible futures are highly difficult to pin down--and his work is highly relevant to geopolitical forecasting. The choice of Friedman was in no way driven by an aversion to his editorial opinions. Indeed, I reveal in the last chapter a sneaky admiration for some aspects of his work. Exasperatingly evasive though Friedman can be as a forecaster, he proves to be a fabulous source of forecasting questions.

2. Again, this is not to imply that Friedman is unusual in this regard. Virtually every political pundit on the planet operates under the same tacit ground rules. They make countless claims about what lies ahead but couch their claims in such vague verbiage that it is impossible to test them. How should we interpret intriguing claims like “expansion of NATO could trigger a ferocious response from the Russian bear and may even lead to a new Cold War” or “the Arab Spring might signal that the days of unaccountable autocracy in the Arab world are numbered” or .?.?.?? The key terms in these semantic dances, may or could or might, are not accompanied by guidance on how to interpret them. Could could mean anything from a 0.0000001 chance of “a large asteroid striking our planet in the next one hundred years” to a 0.7 chance of “Hillary Clinton winning the presidency in 2016.” All this makes it impossible to track accuracy across time and questions. It also gives pundits endless flexibility to claim credit when something happens (I told you it could) and to dodge blame when it does not (I merely said it could happen). We shall encounter many examples of such linguistic mischief.

3. It is as though we have collectively concluded that sizing up the starting lineup for the Yankees deserves greater care than sizing up the risk of genocide in the South Sudan. Of course the analogy between baseball and politics is imperfect. Baseball is played over and over under standard conditions. Politics is a quirky

game in which the rules are continually being contorted and contested. So scoring political forecasting is much harder than compiling baseball statistics. But “harder” doesn’t mean impossible. It turns out to be quite possible.

There is also another objection to the analogy. Pundits do more than forecasting. They put events in historical perspective, offer explanations, engage in policy advocacy, and pose provocative questions. All true, but pundits also make lots of implicit or explicit forecasts. For instance, the historical analogies pundits invoke contain implicit forecasts: the Munich appeasement analogy is trotted out to support the conditional forecast “if you appease country X, it will ramp up its demands”; and the World War I analogy is trotted out to support “if you use threats, you will escalate the conflict.” I submit that it is logically impossible to engage in policy advocacy (which pundits routinely do) without making assumptions about whether we would be better or worse off if we went down one or another policy path. Show me a pundit who does not make at least implicit forecasts and I will show you one who has faded into Zen-like irrelevance.

Users Review

From reader reviews:

Angela Rodriguez:

Nowadays reading books are more than want or need but also become a life style. This reading practice give you lot of advantages. The huge benefits you got of course the knowledge even the information inside the book that will improve your knowledge and information. The info you get based on what kind of book you read, if you want get more knowledge just go with schooling books but if you want feel happy read one together with theme for entertaining for instance comic or novel. The actual Superforecasting: The Art and Science of Prediction is kind of book which is giving the reader unstable experience.

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