THE PREDICTIONEER'S GAME

USING THE LOGIC OF BRAZEN SELF-INTEREST TO SEE & SHAPE THE FUTURE

WITH A NEW EPILOGUE BY THE AUTHOR

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BRUCE BUENO DE MESQUITA

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The Predictioneer's Game

For my grandchildren,
Nathan, Clara, Abraham, Hannah,
and those who may be yet to come.
They will be fine caretakers
of the future.

Introduction

KING LEOPOLD II, remembered today as Belgium's Builder King, reigned from 1865 to 1909.[1] A constitutional monarch who, like many of his contemporaries, longed for the bygone days of absolute power, he was nonetheless an unusually influential and activist king who helped make Belgians free, prosperous, and secure.

Belgium's good works during Leopold's reign are almost uncountable. He oversaw the expansion of political freedom with the adoption of universal adult male suffrage in competitive elections, putting his country on a firm footing to become a modern democracy. On the economic front, he encouraged free-trade policies that guided Belgium to remarkable growth. In little Belgium, coal production, the engine of industry in nineteenth-century Europe, rose to such heights that it almost equaled that of France. Social policy too moved briskly ahead. Primary education became compulsory, and with the 1881 School Law, girls were assured access to secondary education.[2] Moreover, Leopold's policies provided greater protection for women and children than was then the norm in most of Europe. Thanks to legislation passed in 1889, children under twelve could not be put to work, and after they turned twelve their workdays were limited to twelve hours, a radical departure from prevailing policy of the time.

When the Belgian economy was racked by a major economic crisis in 1873, Leopold helped improve the lot of the poor with pro-labor reforms, including granting workers the right to strike, a right that was still hotly resisted in the United States half a century later. He promoted truly ambi-

tious public works projects, including massive road and railway construction designed to reduce unemployment, promote urbanization, and increase business opportunities. He was way ahead of Franklin Delano Roosevelt and Barack Obama in recognizing how to stimulate employment and economic prosperity by building up infrastructure.

Leopold was a great reformer at home, a founder of Belgium's long years of peace and plenty.

But then there was the Congo.

Though he never set foot in Africa, Leopold also ruled over the Congo Free State for nearly a quarter of a century (1885–1908). He built his personal wealth in the Congo first by extracting high-priced ivory from the region and then by exploiting the even more lucrative rubber trade that developed there. Unlike in Belgium, there was no *chef de cabinet* (roughly, prime minister), and no voters among the Congo's approximately 30 million people to limit what he could do. Because it was his personal property, Leopold was free to exert the absolute rule he could not have at home. His "police," the Force Publique, became the key to governing the Congo. Their job was to extract wealth for him (and for themselves) by ensuring the vast exportation of rubber to meet world demand. This band of butchers was led by a small number of Europeans who kidnapped and enslaved Congolese as soldiers who were in turn responsible for making sure that rubber quotas were met. Slave labor was the Force Publique's preferred mode of production, so its soldiers set about enslaving Congolese men, women, and children.

Leopold's "police" received low salaries but could earn big commissions by meeting or exceeding their rubber quotas. Unrestricted by any law governing their conduct except, literally, the law of the jungle, and provided with a huge financial incentive through the commission system, these soldiers of sorrow, from the very bottom of the ladder to the very top, used whatever means they saw fit to meet the quotas. The incentives included not only riches for those who succeeded but the severest punishment for those who failed, including beatings and even death. To avoid this fate the police tortured, maimed, and often murdered those below them who threatened (or could be claimed to have threatened) rubber production. Rewarded for killing people allegedly engaged in antigovernment activities and needing to account for every bullet they spent, soldiers quickly took to indiscriminate mutilation of innocent souls as a way to boost their

counts and thereby their fees, going so far as to chop off the right hands of women and children to provide evidence of their work on behalf of Leopold's interests. Perhaps as many as 10 million people were murdered at the hands of the Force Publique in their pursuit of wealth for Leopold and, of course, for themselves.[3]

In contrast to Leopold's progressive policies in Belgium, virtually nothing was invested in improving conditions in the Congo. Roads were built only where they helped move rubber to market. Laws protecting women and children or worker's right to strike were unheard of. Much as Leopold worried about protecting the security of his Belgian subjects, he worked to undermine the security of his Congolese subjects. Just about the only items exported to the Congo were weapons for the Force Publique, while vast riches flowed back to Europe. Indeed, it was this extraordinary imbalance in trade that eventually led to the revelation in Belgium that Leopold was growing rich through slavery and much worse. In 1908, the evidence of atrocities reached such a level that they could no longer be denied, and Leopold, with great reluctance, surrendered his control over the Congo to the Belgian government. The ministers certainly did not rule it well, but compared to Leopold, they were a significant improvement.

How could King Leopold II have ruled two places at the same time in such dramatically different manners?

It's easy to blame Leopold's apparent split personality—a progressive in Belgium and a monster in the Congo—on some character flaw or on a diseased mind. It's also easy to explain away his horrible rule in the Congo as typical racist behavior. These explanations feel good, but they almost certainly cannot describe the big picture. After all, just think about Mobutu Sese Seko, the Congo's latter-day Leopold, the monster in a leopard-skin hat who ruled Zaire (largely what used to be the Congo Free State and is today the Democratic Republic of Congo) for more than thirty years (1965–97). During that time he bankrupted his country, stole billions of dollars for himself, and murdered hundreds of thousands of Congolese. Surely we cannot blame Mobutu's murderous rule on racism. Was he crazy? Probably not, and besides, what are the odds that so many allegedly crazy people would rise to and then successfully cling to power for decades despite their awful rule?

Leopold and Mobutu are far from unusual cases. Even today, the United Nations reports that people caught up in Sierra Leone's diamond

war have had their hands and feet cut off. Similar policies of mutilation, torture, and murder are reported in Zimbabwe and occurred in the genocide in Rwanda. And then we should not forget the Holocaust or, more recently, Cambodia's Pol Pot, who ordered the murder of millions of Cambodians for such crimes as wearing eyeglasses (proof that they were educated and therefore probably a threat to the regime). Such monstrous rulers are not a thing of the past. Murder and misery have been mainstays of long-lasting leaders throughout history, a fact that remains as true today as a hundred or a thousand years ago.[4]

It's nice to think that leaders who provide peace and plenty rule for long, happy years, beloved by the people and content to do good for them day and night. But in fact those who want to run a country for a long time are ill advised to go around promoting peace and prosperity. Not that making people well off is inherently bad for leaders; it isn't. It's just that promoting corruption and misery is *better.* That was well understood by Leopold and Mobutu in the Congo, and is clearly understood today by the governments in places like North Korea, Zimbabwe, Turkmenistan, Chad, Syria . . . sadly, the list goes on.

It so happens that leaders who are really good at giving their people life, liberty, and happiness are, overwhelmingly, democratically elected and therefore face organized political competition. It also so happens that they are routinely thrown out after only a short time in office.

It's true that Leopold ruled Belgium for forty-four years, but he was a constitutional monarch who had to work within the constraints of the democratic system that governed Belgium if he was to remain in power. Yet in looking at modern democratic governments, we see that doing right by the people is no guarantee of political longevity. During Golda Meir's period as prime minister, Israel enjoyed a 9 percent average annual growth rate. She held office for just four years. Japan's Eisaku Sato presided over a 9.8 percent growth rate, surviving as prime minister for less than eight years. Perhaps most famously, in 1945, after five years in office and less than two months after Germany's surrender in World War II, Winston Churchill was tossed out as prime minister of Great Britain and replaced by Clement Attlee, despite having (allowing for slight exaggeration) saved the United Kingdom itself.

Why, in contrast, do those leaders who make their subjects' lives miserable typically die in their sleep or live out their retirement years loung-

ing on a luxurious beach after being in office twenty, thirty, or forty or more years? It's my claim, and it may seem controversial, that kleptocratic leaders are not inherently evil—at least not necessarily so—and that those who do a great job for their people in hopes of reelection are hardly fit for sainthood. They're all doing the right things if they want to stay in power as long as possible. Leopold, despicable as he was, did what worked best for him in the politically unconstrained environment of the Congo, and he did what worked best for him in the constitutionally limiting environment of Belgium.

The difference between doing a good job and doing a lousy job is driven by how many people a leader *has* to keep happy. Why doesn't every leader allow cronies to loot and steal the way the Force Publique did? Large-scale democratic leaders can't—they have to reward too many people to make theft and corruption work for them. In other words, the system does not effectively incentivize that strategy. Virtually all long-lasting (read authoritarian) leaders, however, really depend only on a very small number of generals, senior civil servants, and their own families for support. Because they rely on so few people to keep them in power, they can afford to bribe them handsomely. With such big paydays, those cronies aren't going to risk losing their privileges. They'll do whatever it takes to keep the boss in power. They will oppress their fellow citizens; they'll silence a free press and punish protesters. They will torture, maim, and murder to protect the incumbent as long as the incumbent delivers enough goodies to them.

The rub is that even when crony-dependent leaders want to do good deeds, they dare not pay for them with money promised to their essential supporters. Taking money from their cronies' pockets is a sure way to get overthrown. Spend too much on helping the people, and the cronies will find someone new to take over the top spot, someone who will pay them reliably instead of "dissipating" money on the masses.[5]

Like autocrats, elected officials are held accountable by people who want to know, *What have you done for me lately?*—except, for elected leaders, there are millions of such potential backers (or detractors, if not made happy), as opposed to hundreds. Democratic leaders *have* to act as if they care about the masses. Their campaigns are always an arms race in policy ideas: which candidate has (or appears to have) the best ideas about health care, about taxes, about national security, about education, and on

and on. When a seemingly fit democratic leader is thrown out of office, it's generally because his or her opponent is perceived to be just a little bit better—a remarkably positive condition, particularly when the alternatives are considered.

So the explanation for Leopold the Builder King and Leopold the Monster has begun to fall into place. When rulers need the support of many—as was Leopold's situation in Belgium—the best way to rule is by creating good policies. When leaders rely only on a few to stay in control—as was the case for Leopold in the Congo—their best bet is to make the few fat and happy, even if that means making everyone else miserable. But let's take this a step further.

Leopold, Mobutu Sese Seko, and Golda Meir were all powerful leaders, but (to state a most obvious but important fact) they were all people, too, and no different from the rest of us. Whether in government or business, we all want to keep our jobs, we all seek advantage in the accumulation of wealth or influence, and we all evaluate our self-interest, often ahead of such lofty ideas as the national interest or notions of corporate well-being.

With this in mind, if we were to turn back the clock, could we not have made some educated predictions that Leopold, the very same man, would behave differently as the head of the Belgian and Congolese states? Could we not have surmised that Mobutu Sese Seko would rule in the fashion that he did? Or that Churchill would lose power when the attention of the British people turned to postwar reconstruction and domestic matters? Or, in a completely different setting, could we see how a corporate partnership's structure might encourage its members to overlook fraud? And wouldn't knowing these things ahead of time be of some potential value?

I believe the answer to all of those questions is yes, which brings me to the very purpose of my work and to the principal claim of this book: that it is possible for us to anticipate actions, to predict the future, and, by looking for ways to change incentives, to engineer the future across a stunning range of considerations that involve human decision making. That's not to say it's easy, or that it's a mere matter of anecdote and reflection—there's hard science, theory, and some mind-bending arithmetic that come into play—but it is possible, and given what we've seen when

humans in power run amok, whether in châteaus or boardrooms, it's preferable to letting the chips fall where they may or to saving our better ideas, regrets, and outrage for when they usually appear—that is, when they're too late.

■ ■ ■

Who am I that you should care what I think about these big questions? And why in the world should you take me seriously as a predictioneer?

It so happens I've been predicting future events for three decades, often in print before the fact, and mostly getting them right. Don't get me wrong—I'm no soothsayer and I have no patience for crystal ball gazers, astrologers, or even most pundits. In my world, science, not mumbo-jumbo, is the way to anticipate people's choices and their consequences for altering the future. I use game theory—we'll talk later about what that means—to do just that for the U.S. government, big corporations, and sometimes ordinary folks too. In fact, I have made hundreds, even thousands of predictions—a great many of them in print, ready to be scrutinized by any naysayer. There is nothing uncanny about my ability to predict. Anyone can learn to use scientific reasoning to do what I do, and I'm going to show you a bit of how to do it right here. But first, let me fill you in a little bit about how I got into the prediction business.

I'm a political science professor at New York University, where I also run the Alexander Hamilton Center for Political Economy. The Center and all of my courses try to teach students how to solve problems with logic and evidence. The idea is to wean them from knee-jerk conclusions based on gut feel, personal opinions, simple linear reasoning, partisan preferences, or ideology. My colleagues at NYU and I are interested in training students to know how to address problems before they go out into the world. We don't want them shaking things up without much insight into whether they're helping to make matters better or worse.

Besides being a professor at NYU, I wear two other hats. I'm a senior fellow at the Hoover Institution at Stanford University. There my job is to think about finding solutions to policy problems. That side of my research is about putting the ideas I teach at NYU to good use by writing op-ed columns, articles, and books, some very technical and some, like this one, designed to spread the word. My third hat is as a partner in a small con-

sulting company, Mesquita & Roundell, LLC. M&R, as we call it, also uses some of the game theory models I've designed to advise people in the national security community and also in the private sector.

I didn't set out to wear these three hats. The opportunity initially fell into my lap back in 1979 when an official at the State Department called me to ask my opinion about a government crisis in India. He wanted to know who was likely to be the next prime minister. At the time I was a professor of political science at the University of Rochester—where the application of game theory to political questions originated—and I had written my Ph.D. thesis at the University of Michigan about winning and losing strategies among India's opposition parties. So the State Department official was asking me to be a pundit, to use my "expert" knowledge to speculate about the next Indian government.

It happened that I was on a Guggenheim fellowship at the time, working on a book about war. I had just designed a mathematical model for that project, as well as a little computer program to make calculations that were important for solving that model. The computer program provided a way to simulate decision making under stressful circumstances such as sometimes lead to war. It looked at the choices people could make and calculated the probability that they would get what they wanted if they chose one course of action (say, negotiations) or another (like war), weighting the probabilities by an estimate of how much the decision makers valued winning, losing, or intermediate compromise outcomes. Of course, it also recognized that they had to work out how others might respond to the choices they made.

Like every model, it needed data. The State Department's phone call about India came in just as I was trying to figure out where to get data to feed into my war and peace model. The timing was perfect. The phone call got me thinking that maybe war and peace decisions really aren't that different from everyday political confrontations. Sure, the stakes are higher—people get killed in wars—but then any politician seeking high office or about to lose high office sees the personal political stakes as pretty darn high. Probably all of us make similar calculations about how to advance our own well-being in any complex situation involving big risks and potentially big rewards, whether that involves politics, business, or daily life.

The State Department was pressing me for an answer and I wanted to

help them. I also wanted to see how well my new model worked. I decided to find out whether the model could really be a useful tool to sort out the political infighting in India. Linking that model to Indian politics was a huge "Aha!" moment for me, one that would change the rest of my life.

I grabbed a yellow pad and picked my own brain, putting together the information the model needed. I wrote down a list of everyone I thought would try to influence the selection of India's next government. For each of those people (political party leaders, members of India's parliament, and some members of critical state governments) I also wrote down my estimate of how much clout each had, what their preference was between the various plausible candidates for prime minister, and how much they cared about trying to shape that choice. With just one page of my yellow pad filled with numbers, I had all the information the computer program needed to predict what would happen. I plugged those data into my little program and crunched the numbers overnight. When the computing was done the next morning—computers were slow in those days—I pored over the hundred or so pages of calculated values to see what the model's predictions looked like.

I thought I had personal insight into what was going to happen in India. My "pundit" knowledge had led me to believe that a man named Jagjivan Ram would be the next prime minister. He was a popular and prominent politician who was better liked than his main rivals for the prime minister's job. I was confident that he was untouchable—truly unbeatable—in the political arena, and not just in the sense of his caste status. He had paid his political dues and it seemed like his time had come. Many other India watchers thought the same thing. Imagine my surprise, then, when my computer program, written by me and fed only with my data, predicted an entirely different result. It predicted that Charan Singh would become prime minister and that he would include someone named Y. B. Chavan in his cabinet, and that they would gain support—albeit briefly—from Indira Gandhi, then the recently ousted prime minister. The model also predicted that the new Indian government would be incapable of governing and so would soon fall.

I found myself forced to choose between personal opinion and my commitment to logic and evidence as the basis for coming to conclusions about politics. I believed in the logic behind my model and I believed in

the correctness of the data I had jotted down. After staring at the output, working out how my own program came to a conclusion so different from my personal judgment, I chose science over punditry. In fact, I told colleagues at Rochester what the model's prediction was even before I reported back to the State Department. When I spoke with the official at State he was taken aback. He noted that no one else was suggesting this result and that it seemed strange at best. He asked me how I had come to this judgment. When I told him I'd used a computer program based on a model of decision making that I was designing, he just laughed and urged me not to repeat that to anyone.

A few weeks later, Charan Singh became the prime minister with Y. B. Chavan as his deputy prime minister, with support from Indira Gandhi. And a few months after that, Charan Singh's government unraveled, Indira Gandhi withdrew her support, and a new election was called, just as the computer-generated forecast had indicated. This got me pretty excited. Here was a case where my personal judgment had been wrong, and yet my knowledge was the only source of information the computer model had. The model came up with the right answer and I didn't. Clearly there were at least two possibilities: I was just lucky, or I was onto something.

Luck is great, but I'm not a great believer in luck alone as an explanation for results. Sure, rare events happen—rarely. I set out to push my model by testing it against lots of cases, hoping to learn whether it really worked. I applied it to prospective leadership changes in the Soviet Union; to questions of economic reform in Mexico and Brazil; and to budgetary decisions in Italy—that is, to wide-ranging questions about politics and economics. The model worked really well on these cases—so well, in fact, that it attracted the attention of people in the government who heard me present some of the analyses at academic conferences. Eventually this led to a grant from the Defense Advanced Research Projects Agency (DARPA), a research arm of the Department of Defense (and the sponsors of research that fostered the development of the Internet long before Al Gore "invented" it). They gave me seventeen issues to examine, and as it happened, the model—by then somewhat more sophisticated—got all seventeen right. Government analysts who provided the data the model needed—we'll talk more about that later—didn't do nearly as well. Confident that I was onto something useful, I started a small consulting company with a couple of colleagues who had their own ideas about how to

predict big political events. Now, many years later, I operate a small consulting firm with my partner and former client, Harry Roundell. Harry, formerly a managing director at J. P. Morgan, and I apply a much more sophisticated version of my 1979 model to interesting business and government problems. We'll see lots of examples in the pages to come.

It's easy to see if predictions are right or wrong when they are precise, and almost impossible to judge them when they are cloaked in hazy language. In my experience, government and private businesses want firm answers. They get plenty of wishy-washy predictions from their staff. They're looking for more than "On the one hand this, but on the other hand that"—and I give it to them. Sometimes that leads to embarrassment, but that's the point. If people are to pay attention to predictions, they need real evidence as to the odds that the predictions are right. Being reluctant to put predictions out in public is the first sign that the prognosticator doesn't have confidence in what he's doing.

According to a declassified CIA assessment, the predictions for which I've been responsible have a 90 percent accuracy rate.[6] This is not a reflection of any great wisdom or insight on my part—I have little enough of both, and believe me, there are plenty of ivy-garlanded professors and NewsHour intellectuals who would agree. What I do have is the lesson I learned in my "Aha!" moment: Politics is predictable. All that is needed is a tool—like my model—that takes basic information, evaluates it by assuming everyone does what they think is best for them, and produces reliable assessments of what they will do and why they will do it. Successful prediction does not rely on any special personal qualities. You don't need to walk around conjuring the future, plucking predictions out of thin air. There's no need for sheep entrails, tea leaves, or special powers. The key to good prediction is getting the logic right, or "righter" than any way that is achieved by other means of prediction.

Accurate prediction relies on science, not artistry—and certainly not sleight of hand. It is a reflection of the power of logic and evidence, and testimony to the progress being made in demystifying the world of human thought and decision. There are lots of powerful tools for making predictions. Applied game theory, my chosen method, is right for some problems but not all. Statistical forecasting is a terrific way to address questions that don't involve big breaks from past patterns. Election prognosticators, whether at universities, polling services, or blogs on the Web (like Nate

Silver, the son of an old family friend) all estimate the influence of variables on past outcomes and project the weight of that influence onto current circumstances. Online election markets work well too. They work just the way jelly bean contests work. Ask lots of people how many jelly beans there are in a jar, and just about no one will be close to being right, but the average of their predictions is often very close to the true number. These methods have terrific records of accuracy when applied to appropriate problems.

Statistical methods are certainly not limited to just studying and predicting elections. They help us understand harder questions too, such as what leads to international crises or what influences international commerce and investments. Behavioral economics is another prominent tool grounded in the scientific method to derive insights from sophisticated statistical and experimental tests. Steven Levitt, one of the authors of *Freakonomics,* has introduced millions of readers to behavioral economics, giving them insights into important and captivatingly interesting phenomena.

Game-theory models, with their focus on strategic behavior, are best for predicting the business and national-security issues I get asked about. I say this having done loads of statistical studies on questions of war and peace, nation building, and much more, as well as historical and contemporary case studies. Not every method is right for every problem, but for predicting the future the way I do, game theory is the way to go, and I'll try to convince you of that not only by highlighting the track record of my method, but also by daring to be embarrassed later in this book when I make predictions about big future events.

Prediction with game theory requires learning how to think strategically about other people's problems the way you think about your own, and it means empathizing with how others think about the same problems. A fast laptop and the right software help, but any problem whose outcome depends on many people and involves real or imagined negotiations is susceptible to accurate forecasting drawn from basic methods.

In fact, not only can we learn to look ahead at what is likely to happen, but—and this is far more useful than mere prediction and the visions of seers past and present—we can learn to engineer the future to produce happier outcomes. Sadly, our government, business, and civic leaders rarely take advantage of this possibility. Instead, they rely on wishful