

FARSIGHTED



How We Make the
Decisions That Matter the Most

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INTRODUCTION

MORAL ALGEBRA

Roughly ten thousand years ago, at the very end of the last Ice Age, a surge of glacial melt broke through a thin barrier of land that connected modern-day Brooklyn and Staten Island, creating the tidal strait now known as the Narrows—the entrance to what would subsequently become one of the world’s great urban harbors, New York Bay. This geological event would prove to be both a curse and a blessing to the human beings who would subsequently live along the nearby shores. The opening to the sea was a great boon for maritime navigation, but it also allowed salt water to pour into the bay with each rising tide. Though Manhattan Island is famously bordered by two rivers, in reality, the names are misleading, since both the East River and the lower section of the Hudson are tidal estuaries, with extremely low concentrations of fresh water. The opening up of the Narrows made Manhattan Island a spectacular place to settle if you were looking for a safe harbor for your ships. But the fact that it was an island surrounded by salt water posed some real challenges if you were interested in staying hydrated, as humans are wont to do.

In the centuries before the completion of the epic aqueduct projects of the 1800s, which brought fresh drinking water to the city from rivers and reservoirs upstate, the residents of Manhattan Island—originally the Lenape tribes, then the early Dutch settlers—survived amid the salty estuaries by drinking from a small lake near the southern tip of the island,

just below modern-day Canal Street. It went by several names. The Dutch called it the Kalck; later it was known as Freshwater Pond. Today it is most commonly referred to as Collect Pond. Fed by underground springs, the pond emptied out into two streams, one of which meandered toward the East River, the other draining out westward into the Hudson. At high tide, the Lenape were said to have been able to cross the entire island by canoe.

Paintings from the early eighteenth century suggest that the Collect was a tranquil and scenic spot, an oasis for early Manhattanites who wished for an afternoon's escape from the growing trade center to its south. An imposing bluff—sometimes called Bayard's Mount, sometimes Bunker Hill—loomed over the northeast edge of the pond. Climbing the hundred feet of elevation that led to its summit opened up a spectacular vista of the pond and its surrounding wetlands, with the spires and chimneys of the bustling town in the distance. "It was the grand resort in winter of our youth for skating," William Duer recalled in a memoir of early New York written in the nineteenth century, "and nothing can exceed in brilliancy and animation the prospect it presented on a fine winter day, when the icy surface was alive in skaters darting in every direction with the swiftness of the wind."

By the second half of the eighteenth century, however, commercial development had begun to spoil the Collect's bucolic setting. Tanneries set up shop on the edge of the pond, soaking the hides of animals in tannins (including poisonous chemicals from the hemlock tree) and then expelling their waste directly into the growing city's main supply of drinking water. The wetlands at the edge of the pond became a common dumping ground for dead animals—and even the occasional murder victim. In 1789, a group of concerned citizens—and a handful of real estate speculators—proposed expelling the tanneries and turning Collect Pond and the hills rising above into a public park. They hired the

French architect and civil engineer Pierre Charles L'Enfant, who would design Washington, DC, several years later. An early forerunner of the public-private partnerships that would ultimately lead to the renaissance of many Manhattan parks in the late twentieth century, L'Enfant's proposal that Collect Pond Park be funded by real estate speculators buying property on the borders of the preserved public space. But the plan ultimately fell through, in large part because the project's advocates couldn't persuade the investment community that the city would ultimately expand that far north.

By 1798, the newspapers and pamphleteers were calling Collect Pond a "shocking hole" that attracted "all the leakings, scrapings, scourings, pissings, and shittings for a great distance around." With the pond's water now too polluted to drink, the city decided it was better off filling the pond and the surrounding marshlands, and building a new "luxury" neighborhood on top of it, attracting well-to-do families who wished to live outside the tumult of the city, not unlike the suburban planned communities that would sprout up on Long Island and in New Jersey a hundred and fifty years later. In 1802, the Common Council decreed that Bunker Hill be flattened and the "good and wholesome earth" from the hill be used to erase Collect Pond from the map of New York. By 1812, the freshwater springs that had slaked the thirst of Manhattan's residents for centuries had been buried belowground. No ordinary, surface-dwelling New Yorker has seen them since.

For a time in the early 1820s, a respectable neighborhood flourished over the former site of the pond. But before long, the city's attempt to erase the natural landscape of the Collect fell victim to a kind of return of the repressed. Below those fashionable new homes, in the "good and wholesome earth" plowed in from Bunker Hill, microorganisms were steadily working their way through the organic material that

had remained from Collect Pond's earlier life: all those decaying animal carcasses and other biomass from the wetlands.

The work of those subterranean microbes caused two problems at ground level. As the biomass decomposed, the houses above began to sink into the earth. And as they sank, putrid smells began to emanate from the soil. The mildest rains would cause basements to flood with dank marsh water. Typhus outbreaks became routine in the neighborhood. Within a matter of years, the well-to-do residents had fled, and the housing stock had plummeted in value. The neighborhood soon became a magnet for the poorest residents of the city, for African Americans escaping slavery in the South, for the new immigrants arriving from Ireland and Italy. In the squalor of its decaying infrastructure, the neighborhood developed a reputation for crime and debauchery that echoed around the world. By the 1840s, when Charles Dickens visited it, it had become the most famous slum in the United States: Five Points.

THE FIVE-HUNDRED-YEAR MISTAKE

The story of Collect Pond is, in part, a story about a decision, or about two decisions, really. The decisions did not coincide directly in time, and neither was adjudicated by a single individual. But for the sake of shorthand we can compress them down into a simple binary: Should we preserve Collect Pond by turning it into a public park, or should we erase it? The consequences that trailed behind in the wake of that decision continue to affect the daily experiences of New Yorkers who live and work in the neighborhood today, more than two centuries later. Today, the land that was once occupied by the menacing crowds of Five Points now hosts a more wholesome, but not exactly lively, collection of government buildings and quotidian

office towers. But imagine a Lower Manhattan that harbored a green oasis, perhaps the size of Boston Common, featuring a picturesque pond bordered by a rocky bluff that rivaled the heights of the man-made structures around it. We like to romanticize the Five Points era now, but the gangs of New York would have found somewhere else to assemble if the city hadn't filled the pond. The sudden drop in real estate prices that those subterranean microbes triggered certainly helped attract the immigrants who would make the city a truly cosmopolitan center, but there were other forces driving that population influx beyond the cheap housing in Five Points. City neighborhoods are still capable of great demographic and architectural change, reinventing themselves every few generations. But once you bury the pond, it never comes back.

If L'Enfant's plan had been put in place, it's entirely likely that Collect Pond Park would today stand as one of the great urban idylls in the world. The National Mall in Washington, DC, which L'Enfant also designed, attracts millions of tourists each year. Formal city parks have a longevity to them that can exceed that of castles or cemeteries or forts. The decisions to create Central and Prospect Parks continue to benefit New Yorkers a hundred and fifty years after they were first contemplated, and there is every reason to suspect that the parks will survive, more or less intact, for centuries to come. Wetlands similar to Collect Pond in the Spanish city of Seville were converted into an urban park in 1574 when the Count of Barajas drained the marsh into irrigation channels and constructed a promenade lined with poplar trees. Like many similar urban spaces, the park went through some dark times in the 1970s as a den of drugs and crime, but today it prospers, its boundaries a constant island in the sea of urban change for almost five hundred years. Only the street plan itself is more durable.

When you think about it this way, it's hard not to conceive of the decision to fill Collect Pond as a five-hundred-year mistake. But that mistake ultimately had its roots in the fact that rejecting the L'Enfant plan and burying the pond was never truly approached as a decision. It was, instead, a disorganized muddle of action and inaction. No one set out to deliberately contaminate the fresh water; the demise of the Collect was a textbook case of the tragedy of the commons. The L'Enfant plan collapsed not because the citizens didn't want to see their pond preserved, but because a handful of speculators were fantastically shortsighted about the future growth of Manhattan.

It is a truism that we suffer from chronic short-attention spans in the twenty-first century, but the fact is, we are much better at making these sorts of decisions today. A geographic element so important to the ecology of downtown Manhattan would never be destroyed without an extensive environmental impact analysis. Stakeholders would be convened to discuss alternate land-use scenarios, and participate in group decision-making rituals like design charrettes. Economists would calculate the cost to local businesses, or potential revenue from tourists visiting a landmark urban park. Participants in this conversation would be guided by a growing scientific field called decision theory—with roots in economics, behavioral psychology, and neuroscience—that has codified a number of helpful frameworks for making these kinds of long-term decisions. None of those resources were available to the residents of Manhattan at the end of the eighteenth century. We are still capable of five-hundred-year mistakes, to be sure, but we have tools and strategies now that can help us avoid them.

The ability to make deliberative, long-term decisions is one of the few truly unique characteristics of *Homo sapiens*, right alongside our technological innovation and our gift for language. And we're getting better at it. We can confront

these epic choices with an intelligence and foresight that would have astonished those city planners two centuries ago.

DARWIN'S CHOICE

In July 1838, a decade or so after those fine homes began to sink into the remnants of Collect Pond, Charles Darwin sat down on the other side of the Atlantic to take notes on a decision that would, indirectly, alter the course of scientific history. Darwin was twenty-nine. He had returned from his legendary voyage around the globe on the HMS *Beagle* two years before, and was a few months away from sketching the first outline of natural selection in his notebooks, though he wouldn't publish his discovery for another two decades. The decision he was wrestling with in July would play a critical role in that agonizing delay, though it was not, strictly speaking, related to scientific questions about the origins of species. It was a different kind of decision—existential as well, but of a more personal nature: *Should I get married?*

Darwin's approach to this decision took a form that would be recognizable to many of us today: he made a list of pros and cons, dividing two facing pages in his notebook into two columns, one arguing for marriage and one against. Under the heading "Not Marry" he listed the following arguments:

Freedom to go where one liked
Choice of Society and little of it
Conversation of clever men at clubs
Not forced to visit relatives and bend in every trifle
Expense and anxiety of children
Perhaps quarrelling
Loss of Time
Cannot read in the evenings
Fatness and idleness
Anxiety and responsibility
Less money for books etc.
If many children forced to gain one's bread (But then it is very bad for one's health to work too much)

Perhaps my wife won't like London; then the sentence is banishment and degradation into indolent, idle fool

Under the heading “Marry” he compiled this list:

Children (if it Please God)

Constant companion (and friend in old age) who will feel interested in one

Object to be beloved and played with. Better than a dog anyhow

Home, & someone to take care of house

Charms of music and female chit-chat These things good for one's health—but terrible loss of time

My God, it is intolerable to think of spending one's whole life, like a neuter bee, working, working, and nothing after all—No, no, won't do

Imagine living all one's day solitary in smoky dirty London House

Only picture to yourself a nice soft wife on a sofa with good fire and books and music perhaps

Compare this vision with the dingy reality of Great Marlboro Street, London

Darwin's emotional accounting survives to this day in the Cambridge University Library archives, but we have no evidence of how he actually weighed these competing arguments against each other. We do know the decision he eventually reached, not only because he scribbled “Marry, Marry, Marry QED” at the bottom of the page, but also because he did, in fact, wed Emma Wedgwood six months after writing the words. The wedding marked the beginning of a union that would bring much happiness to Darwin, but also great intellectual conflict, as his increasingly agnostic scientific worldview clashed with Emma's religious beliefs.

Darwin's two-column technique dates back to a famous letter written a half century before by Benjamin Franklin, responding to a plea for advice from Joseph Priestley, the British chemist and political radical. Priestley was trying to decide whether to accept a job offer from the Earl of Shelburne, which would involve moving his family from Leeds to the earl's estate just east of Bath. Priestley had been friends with Franklin for several years, and so in the late summer of 1772 he wrote Franklin, who was then residing in London, and asked for his advice on this momentous career

decision. Ever the master of self-improvement techniques, Franklin chose not to take sides in his reply but instead offered up a method for making the decision:

In the Affair of so much Importance to you, wherein you ask my Advice, I cannot for want of sufficient Premises, advise you what to determine, but if you please I will tell you how.

When these difficult Cases occur, they are difficult chiefly because while we have them under Consideration all the Reasons pro and con are not present to the Mind at the same time; but sometimes one Set present themselves, and at other times another, the first being out of Sight. Hence the various Purposes or Inclinations that alternately prevail, and the Uncertainty that perplexes us.

To get over this, my Way is, to divide half a Sheet of Paper by a Line into two Columns, writing over the one Pro, and over the other Con. Then during three or four Days Consideration I put down under the different Heads short Hints of the different Motives that at different Times occur to me for or against the Measure. When I have thus got them all together in one View, I endeavour to estimate their respective Weights; and where I find two, one on each side, that seem equal, I strike them both out: If I find a Reason pro equal to some two Reasons con, I strike out the three. If I judge some two Reasons con equal to some three Reasons pro, I strike out the five; and thus proceeding I find at length where the Ballance lies; and if after a Day or two of farther Consideration nothing new that is of Importance occurs on either side, I come to a Determination accordingly.

And tho' the Weight of Reasons cannot be taken with the Precision of Algebraic Quantities, yet when each is thus considered separately and comparatively, and the whole lies before me, I think I can judge better, and am less likely to take a rash Step; and in fact I have found great Advantage from this kind of Equation, in what may be called Moral or Prudential Algebra.

Like most pros-vs.-cons notepad sketches since, Darwin's "Marry/Not Marry" litany did not appear to utilize all the complexity of Franklin's "moral algebra." Franklin used a primitive but still powerful technique of "weighting," acknowledging that some arguments will inevitably be more

meaningful than others. In Franklin's approach, the "Ballancing" stage is just as important as the initial stage of writing down entries in each column. But it seems likely that Darwin intuitively calculated the respective weights, presumably deciding that having children might in the long run matter more to him than the "conversation of clever men in clubs." In terms of simple arithmetic, there were five more entries on the "con" side of Darwin's dilemma, and yet the moral algebra in his head appears to have led to an overwhelming decision on the side of marriage.

Most of us, I suspect, have jotted down pros-vs.-cons lists at various crossroads in our personal or professional lives. (I remember my father teaching me the method on a yellow legal pad sometime in my grade-school years.) Yet Franklin's balancing act—crossing out arguments of corresponding weight—has largely been lost to history. In its simplest form, a pros-vs.-cons list is usually just a question of tallying up the arguments and determining which column is longer. But whether you integrate Franklin's more advanced techniques or not, the pros-vs.-cons list remains one of the only techniques for adjudicating a complex decision that is regularly taught. For many of us, the "science" of making hard choices has been stagnant for two centuries.

DELIBERATING

Think back to a decision you made along the lines of Darwin's or Priestley's. Perhaps it was that time you weighed leaving a comfortable but boring job for a more exciting but less predictable start-up; or the time you wrestled with undergoing a medical procedure that had a complicated mix of risk and reward. Or think of a decision you made that belonged to the public sphere: casting a vote in the Brexit referendum, say, or debating whether to hire a new principal as part of your responsibilities on a school board. Did you

have a *technique* for making that decision? Or did it simply evolve as a series of informal conversations and background mulling? I suspect most of us would say the latter; at best, our techniques would not be all that different from Darwin's jotting down notes in two columns on a piece of paper and tallying up the results.

The craft of making farsighted choices—decisions that require long periods of deliberation, decisions whose consequences might last for years, if not centuries, as in the case of Collect Pond—is a strangely underappreciated skill. Think about the long list of skills we teach high school students: how to factor quadratic equations; how to diagram the cell cycle; how to write a good topic sentence. Or we teach skills with a more vocational goal: computer programming, or some kind of mechanical expertise. Yet you will almost never see a course devoted to the art and science of decision-making, despite the fact that the ability to make informed and creative decisions is a skill that applies to every aspect of our lives: our work environments; our domestic roles as parents or family members; our civic lives as voters, activists, or elected officials; and our economic existence managing our monthly budget or planning for retirement.

Ironically, in recent years, we have seen a surge in popular books about decision-making, but most of them have focused on a very different kind of decision: the flash judgments and gut impressions profiled in books like *Blink* and *How We Decide*, many of them building on the pioneering research into the emotional brain associated with scientists like Antonio Damasio and Joseph LeDoux. Daniel Kahneman's brilliant *Thinking, Fast and Slow* introduced the notion of the brain as divided between two distinct systems, both of which are implicated in the decision-making process. System 1 is the intuitive, fast-acting, emotionally charged part of the brain; System 2 is what we call on when we have to consciously think through a situation. These are undeniably powerful

categories in thinking about thinking, but Kahneman's work—much of it a collaboration with the late Amos Tversky—has largely focused on the idiosyncrasies and irrationalities of System 1. This new model of the brain is helpful in understanding all sorts of dysfunctions, small and large, that plague us in the modern world. We have learned how our brains can be manipulated by credit card schemes and predatory mortgage lenders; we've learned why we choose certain brands over others, and why we sometimes fall prey to misleading first impressions in deciding whether to trust someone we've just met. But if you read through the clinical research, most of the experiments behind the science tend to sound something like this:

***Problem 1:** Which do you choose? Get \$900 for sure OR 90 percent chance to get \$1,000*

***Problem 2:** Which do you choose? Lose \$900 for sure OR 90 percent chance to lose \$1,000*

***Problem 3:** In addition to whatever you own, you have been given \$1,000. You are now asked to choose one of these options: 50 percent chance to win \$1,000 OR get \$500 for sure*

***Problem 4:** In addition to whatever you own, you have been given \$2,000. You are now asked to choose one of these options: 50 percent chance to lose \$1,000 OR lose \$500 for sure*

You could fill an entire book with examples of this kind of experiment, and the results that these studies have generated have indeed been eye-opening and sometimes counterintuitive. But as you read through the studies, you start to notice a recurring absence: none of the choices being presented to the experimental subjects look anything like the decision to bury Collect Pond or Priestley's choice to take on a new patron. Instead, the decisions almost invariably take the form of little puzzles, closer to the choices you make at a blackjack table than the kind of choice that Darwin was

contemplating in his notebook. Fields like behavioral economics have been built on the foundation of these abstract experiments, where scientists ask their subjects to wager on a few arbitrary outcomes, each with different probabilities attached to them. There's a reason why so many of the questions take this form: these are precisely the kinds of decisions that can be tested in a lab.

But when we look back at the trajectory of our lives, and of history itself, I think most of us would agree that the decisions that ultimately matter the most do not—or at least should not—rely heavily on instincts and intuition to do their calculations. They're decisions that require slow thinking, not fast. While they are no doubt influenced by the emotional shortcuts of our gut reactions, they rely on deliberative thought, not instant responses. We take time in making them, precisely because they involve complex problems with multiple variables. Those properties necessarily make the logical and emotional networks behind these decisions more opaque to the researchers, given the obvious ethical and practical limitations that make it challenging for scientists to study choices of this magnitude. Asking someone to choose one candy bar over another is easy enough to do in the lab; asking someone to decide whether or not to marry is quite a bit more difficult to engineer.

But that does not mean the tools available to us in making hard choices have not improved mightily since Priestley's day. Most of the important research in this multidisciplinary field has been conducted on small- to medium-sized group decisions: a team of business colleagues debating whether to launch a new product; a group of military advisors weighing different options for an invasion; a community board trying to decide on the proper guidelines for development in a gentrifying neighborhood; a jury determining the guilt or innocence of a fellow citizen. For good reason, these sorts of decisions are formally described as “deliberative” decisions.

and the death of Osama bin Laden, who had managed to live in the compound in relative comfort—certainly compared to the cave-dwelling that many suspected he had resorted to—for almost five years. The story of the attack on bin Laden’s unlikely residence—with Black Hawk helicopters descending on the compound in the early morning hours—has been widely covered as a brilliantly executed military operation, and a resilient one, in that it survived what could easily have been a catastrophic failure when one of the helicopters crashed while attempting to hover over the compound’s interior. The actions taken that night tell a story about bravery, near-flawless teamwork, and quick thinking under almost unimaginable pressure. Not surprisingly, it has been the subject of blockbuster Hollywood films and high-profile TV documentaries, as well as a number of bestselling books.

But the wider story behind the raid—not just the actions taken that night, but the nine months of debate and deliberation that resulted in the Abbottabad attack—helps explain why the talent for making hard choices has been generally neglected in our schools and the wider culture. We have a tendency to emphasize the *results* of good decisions and not the process that led to the decision itself. The Abbottabad raid was a triumph of military institutions like the Navy SEALs and the satellite technology that enabled them to analyze the compound with enough precision to plan the attack. But beneath all that spectacular force and daring, a slower and less headline-worthy process had made the raid possible in the first place, a process that explicitly drew on our new understanding about how to make hard choices. The technology deployed to track down bin Laden was state-of-the-art, from the satellites to the Black Hawks. But so was the decision-making. The irony is, most of us ordinary civilians have almost nothing to learn from the story of the raid itself. But we have everything to learn from the decision process that set it in motion. The vast majority of us will never have

to land a helicopter in a small courtyard under the cover of darkness. But all of us will confront challenging decisions in our lives, the outcomes of which can be improved by learning from the internal deliberations that led to the killing of bin Laden.

When news first reached the CIA's headquarters at Langley that their operative had tracked al-Kuwaiti to a mysterious compound on the outskirts of Abbottabad, almost no one in the CIA suspected they had stumbled across Osama bin Laden's actual hideout. The consensus was that bin Laden was living in some remote region, not unlike the caves outside Tora Bora where US forces had nearly captured him eight years before. The compound itself was situated less than a mile from the Pakistan Military Academy; many of bin Laden's neighbors were members of the Pakistan military. Pakistan was supposed to be our ally in the war on terror. The idea that the man who had engineered the 9/11 plot might be living in the middle of a Pakistan military community seemed preposterous.

But early reconnaissance on the compound only heightened the mystery. The CIA quickly determined that the compound had no phone lines or Internet, and the residents burned their own trash. Al-Kuwaiti's presence suggested that the building had some connection to al-Qaeda, but the construction costs alone—estimated at more than \$200,000—were puzzling: Why would the cash-starved terror network spend so much money on a building in suburban Abbottabad? According to Peter Bergen's account of the hunt for bin Laden, CIA chief Leon Panetta was briefed about al-Kuwaiti's visit in August 2010. Officials described the compound—somewhat aggressively—as a “fortress.” The word caught Panetta's attention, and he ordered the officials to pursue “every possible operation avenue” to discover who was living behind those concrete walls.

The decision process that led to the killing of Osama bin Laden was, ultimately, a sequence of two very different kinds of decisions. The first took the form of a mystery: the CIA had to decide who was living inside the enigmatic compound. The second decision arose once they had reached reasonable certainty that the structure housed al-Qaeda's leader: how to get into the compound and either capture or kill bin Laden, assuming the first decision had been correct. The first decision was epistemological: How can we *know* for certain the identity of the people living in this building on the other side of the planet? Making the decision involved a kind of detective work: piecing together clues from a wide range of sources. The second decision revolved around actions and their consequences: If we simply flatten the compound with a B-2 bombing run, will we ever know for sure that bin Laden was on the premises? If we send in a special ops team to extract him, what happens if they run into trouble on the ground? And even if they're successful, should they attempt to capture bin Laden alive?

As it happened, each of these decisions was shadowed by a similar decision in the past that had gone horribly wrong. The Bush administration had wrestled with a comparable epistemological decision—does Saddam Hussein possess weapons of mass destruction?—with disastrous consequences eight years before. And the decision to launch the raid on the compound had echoes both of Jimmy Carter's failed helicopter rescue of the Iranian hostages and John F. Kennedy's botched Bay of Pigs invasion. These decisions had been made by smart people working in good faith to make the correct call. The decisions were deliberated on for months, and yet they ended in catastrophic failure. In a sense you can see the ultimate triumph of the bin Laden raid as a rare example of an institution learning from its mistakes by deliberately improving the *process* that had led to those past mistakes.

Many hard choices turn out to contain interior decisions that have to be adjudicated separately, and often in some kind of preordained sequence, as in the Abbottabad raid. To make the right choice, you have to figure out how to structure the decision properly, which is itself an important skill. With the pursuit of bin Laden, the CIA had to make a decision about who was in the compound, and then it had to make a decision about how to attack the compound. But each of those decisions was itself made up of two distinct phases, sometimes called divergence and consensus phases. In a divergence phase, the key objective is to get as many perspectives and variables on the table as possible through exploratory exercises designed to reveal new possibilities. Sometimes those possibilities take the form of information that might influence your ultimate choice of which path to take; sometimes those possibilities take the form of entirely new paths that you didn't contemplate at the beginning of the process. In the consensus phase, the open-ended exploration of new possibilities reverses course, and the group begins to narrow down its options, seeking agreement on the correct path. Each phase requires a distinct set of cognitive tools and collaborative models to succeed. Of course, most of us don't separate the two phases in our minds at all. We just look at the options, have a few informal meetings, and make a decision, either through some kind of show of hands or an individual assessment.

In the bin Laden pursuit, the CIA deliberately set up a divergence phase at both stages of its investigation into that mysterious compound. A few weeks after Panetta first heard word of the "fortress" on the edge of Abbottabad, his chief of staff ordered the bin Laden team to conjure up twenty-five different ways of identifying the occupants of the compound. They were explicitly told that no idea was too crazy. This was the exploratory phase, after all. The goal was to generate more possibilities, not narrow the field. The analysts turned

out to be all too willing to propose unlikely schemes. “One idea was to throw in foul-smelling stink bombs to flush out the occupants of the compound,” Bergen writes. “Another was to play on the presumed religious fanaticism of the compound’s inhabitants and broadcast from loudspeakers outside the compound what purported to be the ‘Voice of Allah,’ saying, ‘You are commanded to come out into the street!’” In the end, they proposed *thirty-seven* ways of getting surreptitious access to the compound. Most of them turned out to be utterly useless in identifying the occupants, dead ends in the exploratory phase. But some of the schemes ended up opening new paths. One of those paths would eventually lead to the death of Osama bin Laden.

BOUNDED RATIONALITY

What is it about complex decisions that makes them so challenging? For most of the preceding two centuries, our understanding of decision-making largely revolved around the concept of “rational choice” from classical economics. When people confronted a decision point in their lives—whether it involved buying a car or moving to California or voting to leave the European Union—they evaluated the options available to them and considered the relative benefits and costs of each potential outcome (in economics-speak, the “marginal utility” of each option). And then they simply picked the winner: the path that would lead to the most useful destination, the one that satisfied their needs or produced the most happiness with minimal cost.

If you had to specify a point in our intellectual history where that classical foundation first began to crumble, you might well land on the speech Herbert Simon delivered in Stockholm in 1958 when accepting the Nobel Prize in Economic Sciences. Simon’s work had explored all the ways in which the “rational choice” framework concealed the much

Decisions can be imagined in a similar way. The blizzard of decisions that you make over the course of an ordinary day are largely narrowband in nature, like choosing this brand of ketchup over that one or deciding which route to take on your morning commute. But the decisions that really matter in life, the hard choices, can't be understood on a single scale. It's not just that they contain multiple variables; it's also that those variables draw on completely different frames of reference. They are multidisciplinary. Consider the public decisions of voting or rendering a jury verdict. To make those decisions well, you need to force your mind out of its narrowband priorities. You have to think about a problem from multiple perspectives. Voting for a candidate demands that you think about the temperament of the politicians in the race, their economic positions and their impact on your own pocketbook, the global forces likely to shape their tenure in elected office, their ability to work with their colleagues in government, and many other variables. A juror has to cognitively shift from the microscopic realm of forensic evidence to the arcane history of legal precedent to the intuitive psychology of reading the facial expressions of witnesses on the stand. Most of us have a powerful urge to retreat to narrowband assessments: *She just looks guilty; I'm voting for the guy who will lower my taxes.* But we decide better when we break out of the myopia of the single scale.

Complex decisions force us to predict the future. Most decisions, big or small, are fundamentally predictions about the future. I choose vanilla ice cream over chocolate because I can predict, with an accuracy long-buffered by experience, that I will enjoy the vanilla more than the chocolate. The consequences of the US government staging a raid on a private residence in Pakistan were not quite as easy to predict. A modern-day environmental planner might well include microorganisms in weighing the decision to bury Collect Pond, since cleaning up the drinking water involves ridding it of dangerous bacteria.