***Structure your organization's work to encourage wise choices.***

*by John Beshears and Francesca Gino*

# Leaders as Decision Architects

**ALL EMPLOYEES,** from CEOs to frontline workers, commit preventable mistakes: We underestimate how long it will take to finish a task, overlook or ignore information that reveals a flaw in our planning, or fail to take advantage of company benefits that are in our best interests. It's extraordinarily difficult to rewire the human brain to undo the patterns that lead to such mistakes. But there is another approach: Alter the environment in which decisions are made so that people are more likely to make choices that lead to good outcomes.

Leaders can do this by acting as architects. Drawing on our extensive research in the consulting, software, entertainment, health care, pharmaceutical, manufacturing, banking, retail, and food industries and on the basic principles of behavioral economics, we have developed an approach for structuring work to encourage good decision making.

ALICE MASSANO

Our approach consists of five basic steps: (1) Understand the systematic errors in decision making that can occur, (2) determine whether behavioral issues are at the heart of the poor decisions in question, (3) pinpoint the specific underlying causes, (4) redesign the decision-making context to mitigate the negative impacts of biases and inadequate motivation, and (5) rigorously test the solution. This process can be applied to a wide range of problems, from high employee turnover to missed deadlines to poor strategic decisions.

There are two main causes of poor decision making: insufficient motivation and cognitive biases.

### Understand How Decisions Are Made

For decades, behavioral decision researchers and psychologists have suggested that human beings have two modes of processing information and making decisions. The first, System 1 thinking, is automatic, instinctive, and emotional. It relies on mental shortcuts that generate intuitive answers to problems as they arise. The second, System 2, is slow, logical, and deliberate. (Daniel Kahneman, winner of the Nobel prize in economics, popularized this terminology in his book *Thinking, Fast and Slow.*)

Each of the two modes of thinking has distinct advantages and disadvantages. In many cases, System 1 takes in information and reaches correct conclusions nearly effortlessly using intuition and rules of thumb. Of course, these shortcuts can lead us astray. So we rely on our methodical System 2 thinking to tell us when our intuition is wrong or our emotions have clouded our judgment, and to correct poor snap judgments. All too often, though, we allow our intuitions or emotions to go unchecked by analysis and deliberation, resulting in poor decisions. (For a look at how *both* modes of thinking can cause problems, see "Outsmart Your Own Biases" on page 64.)

Overreliance on System 1 thinking has another negative effect: It leads to poor follow-through on plans, despite people's best intentions and genuine desire to achieve their goals. That's because System 1 tends to focus on concrete, immediate payoffs, distracting us from the abstract, long-term consequences of our decisions. For instance, employees know they should save for retirement, yet they rarely get around to signing up for their 401(k) plans. (A survey conducted in 2014 by TIAA-CREF found that Americans devote more time to choosing a TV or the location for a birthday dinner than to setting up a retirement account.)

We do not mean to suggest that System 1 should be entirely suppressed in order to promote sound decisions. The intuitive reactions of System 1 serve as important inputs in the decision-making process. For example, if an investment opportunity triggers a fearful emotional response, the decision maker should carefully consider whether the investment is too risky. Using System 2, the emotional response should be weighed against other factors that may be underappreciated by System 1—such as the long-term strategic value of the investment.

Engaging System 2 requires exerting cognitive effort, which is a scarce resource; there's simply not enough of it to govern all the decisions we're called on to make. As the cognitive energy needed to exercise System 2 is depleted, problems of bias and inadequate motivation may arise.

### Define the Problem

Not every business problem should be tackled using behavioral economics tools. So before applying them, managers should determine whether:

**Human behavior is at the core of the problem.** Certain problems—employee burnout, for instance—can be resolved by changing the way people perceive and respond to a situation. Others are fundamentally technological in nature—for example, the lack of scientific knowledge needed to create a new drug for treating a disease. Those problems are unlikely to be solved by applying behavioral economics tools unless addressing them involves changing human behavior (for example, encouraging teams of scientists to share their discoveries in order to develop the drug).

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## Idea in Brief

**THE PROBLEM**
People often make poor decisions that don't serve their employer's and their own interests not because they are dumb but because of the way the human brain is wired—because of cognitive biases. This helps explain why people underestimate how long it will take to finish projects, are overconfident about our ability to implement strategies, don't choose the optimal health or retirement benefits, and so on.

**THE SOLUTION**
Instead of trying to rewire the human brain, which is difficult if not impossible, change the environment in which decisions are made to encourage people to make wiser choices.

**THE STEPS**
Understand the kinds of systematic errors people make and the factors that affect motivation; define the problem to determine whether behavioral issues are at play; diagnose the specific underlying causes; design a way to tweak the environment to reduce or mitigate the negative impact of cognitive biases and insufficient motivation on decisions; and rigorously test the proposed solution.

**People are acting in ways contrary to their own best interests.** Most behavioral economics tools gently guide people to different choices. They will be most effective in situations where they encourage people to switch from choices that are contrary to their interests to those better aligned with them.

**The problem can be narrowly defined.** Sometimes all-encompassing change is required to shake up an organization. But in many instances, complex organizational problems can be broken down into smaller, more manageable pieces.

Consider a large U.S. retailer's efforts to rein in health care costs without adversely impacting employees' health, which one of us (John) studied in collaboration with James Choi, David Laibson, and Brigitte Madrian. The company identified one piece of the problem: the high cost of the subsidies it paid for employees' prescription drugs. Working with the drug plan administrator, the retailer narrowed the problem further and focused on encouraging employees to switch from picking up their prescriptions at pharmacies to having them mailed to their homes. That shift would save both the company and employees money, because prescriptions can be processed more cheaply at a large distribution facility.

Behavioral economics techniques were appropriate in this case (we'll describe later which ones the retailer used) because the problem was narrowly defined and involved employees' not acting in their own best interests: Pharmacy pickup was less convenient than home delivery, more expensive, riskier (the error rate in filling mail-order prescriptions is lower), and made employees more prone to lapses in their treatment plan.

### Diagnose Underlying Causes

There are two main causes of poor decision making: insufficient motivation and cognitive biases. To determine which is causing the problematic behavior, companies should ask two questions: First, is the problem caused by people's failure to take any action at all? If so, the cause is a lack of motivation. Second, are people taking action but in a way that introduces systematic errors into the decision-making process? If so, the problem is rooted in cognitive biases. These categories are not mutually exclusive, but recognizing the distinction between them is a useful starting point. (See the exhibit "Common Biases That Affect Business Decisions.")

Because problems of motivation and cognition often occur when System 2 thinking fails to kick in, the next step is to ascertain which aspect of the situation caused System 1 to weigh the trade-offs among available options incorrectly and what prevented System 2 from engaging and correcting the mistake. Common sense can go a long way in diagnosing underlying causes. Put yourself in the shoes of the person making the decision (or failing to make a decision) and ask, "What would I do in this situation and why?"

At the retailer that wished to reduce health care costs, lack of motivation was preventing employees from switching to home delivery for prescriptions. When management asked them directly about the advantages and disadvantages of home delivery, many expressed a preference for it—yet only 6% of employees who regularly took maintenance medications (such as statins for high cholesterol) got around to signing up for it. Simple inertia kept them from picking up the phone, enrolling online, or mailing in a form.

Wipro BPO, a division of the business-process outsourcing firm Wipro, faced a different kind of motivation problem. Many of its employees were burning out and quitting after only a few months on the job. To find out why, one of us (Francesca),

together with Daniel Cable and Bradley Staats, interviewed employees and observed their behavior. The problem lay with the division's onboarding process, which was focused on indoctrinating new employees into the company's culture. The training failed to build an emotional bond between new hires and the organization and caused them to view the relationship as transactional rather than personal. Because they were disengaged and demotivated, the stresses of the job—dealing with frustrated customers, the rigid scripts they had to use, and so on—got to them, causing them to leave the company just a few months after joining.

## Design the Solution

Once they've diagnosed the underlying source of a problem, companies can begin to design a solution. In particular, managers can use choice architecture and nudges, concepts introduced by Richard Thaler and Cass Sunstein in their 2008 book *Nudge: Improving Decisions About Health, Wealth, and Happiness*. The goal of choice architecture is to improve people's decisions by carefully structuring how information and options are presented to them. In this fashion, companies can nudge employees in a certain direction without taking away their freedom to make decisions for themselves.

Public-policy makers are increasingly using choice architecture tools to nudge people toward better decisions on issues such as tax payments, medical treatments, consumer health and wellness, and climate-change mitigation. And businesses are starting to follow suit. For example, Google implemented choice architecture in its cafeterias in an effort to get employees to adopt more healthful eating habits. As Googlers reach for a plate, they encounter a sign informing them that people who use bigger plates tend to eat more than those who use smaller plates. Thanks to this simple change, the proportion of people using small plates has increased by 50%.

Adjustments to the choice environment can drive big improvements at low or even no cost. They include simply varying the order in which alternatives are presented, altering the wording used to describe them, adjusting the process by which they are selected, and carefully choosing defaults.

Here's a classic example: For many years, U.S. companies offered opt-in retirement savings plans. Employees who did not actively sign up were not enrolled. More recently, companies have been automatically enrolling their employees. Under this opt-out system, employees have a fraction of each paycheck (say, 6%) contributed to the plan unless they actively choose otherwise. A collection of studies by one of us (John), with James Choi, David Laibson, and Brigitte Madrian, found that on average only half the workers at companies with opt-in systems join their plan by the time they've been employed at the firm for one year. Automatic enrollment generates participation rates of 90% or higher. In changing the default, firms altered neither the menu of options available nor the financial incentives for enrollment. They simply changed the consequences of refraining from actively indicating one's preferences.

Choice architecture is more effective in improving employees' decisions than widely used approaches such as educating individuals or offering monetary incentives (see "When Economic Incentives Backfire," HBR, March 2009). The reason: Those methods rely on individuals' acting in their self-interest, which people often fail to do. They also attempt to fundamentally change the way employees process information and make decisions, which is difficult to accomplish. The following levers can help companies take advantage of the enormous potential of choice architecture to improve decision making.

**Trigger System 1.** The emotions and biases that accompany System 1 thinking often wreak havoc, but they can be tapped for productive purposes. Executives can trigger System 1 in several ways:

**Arouse emotions.** Let's return to the Wipro BPO example. In a bid to reduce the high turnover at its call centers, the organization—in collaboration with one of us (Francesca), Dan Cable, and Brad Staats—conducted an experiment aimed at strengthening employees' emotional connection with the organization. It divided new hires into two groups: In one, the employees were asked on the first day of orientation to think about their strengths and how they could apply them in their new jobs. In the control group, the employees were not given an opportunity for self-reflection. The approach, which Wipro BPO adopted, helped new employees to feel they could be themselves at work. The resulting emotional bond with the organization led not only to lower employee turnover but also to higher performance as measured by customer satisfaction. We have achieved similar results in other organizations.

## Common Biases That Affect Business Decisions

Psychologists and behavioral economists have identified many cognitive biases that impair our ability to objectively evaluate information, form sound judgments, and make effective decisions. Here are several biases that can be particularly problematic in business contexts.

### ACTION-ORIENTED BIASES

**EXCESSIVE OPTIMISM** We are overly optimistic about the outcome of planned actions. We overestimate the likelihood of positive events and underestimate that of negative ones.

**OVERCONFIDENCE** We overestimate our skill level relative to others' and consequently our ability to affect future outcomes. We take credit for past positive outcomes without acknowledging the role of chance.

### BIASES RELATED TO PERCEIVING AND JUDGING ALTERNATIVES

**CONFIRMATION BIAS** We place extra value on evidence consistent with a favored belief and not enough on evidence that contradicts it. We fail to search impartially for evidence.

**ANCHORING AND INSUFFICIENT ADJUSTMENT** We root our decisions in an initial value and fail to sufficiently adjust our thinking away from that value.

**GROUPTHINK** We strive for consensus at the cost of a realistic appraisal of alternative courses of action.

**EGOCENTRISM** We focus too narrowly on our own perspective to the point that we can't imagine how others will be affected by a policy or strategy. We assume that everyone has access to the same information we do.

### BIASES RELATED TO THE FRAMING OF ALTERNATIVES

**LOSS AVERSION** We feel losses more acutely than gains of the same amount, which makes us more risk-averse than a rational calculation would recommend.

**SUNK-COST FALLACY** We pay attention to historical costs that are not recoverable when considering future courses of action.

**ESCALATION OF COMMITMENT** We invest additional resources in an apparently losing proposition because of the effort, money, and time already invested.

**CONTROLLABILITY BIAS** We believe we can control outcomes more than is actually the case, causing us to misjudge the riskiness of a course of action.

### STABILITY BIASES

**STATUS QUO BIAS** We prefer the status quo in the absence of pressure to change it.

**PRESENT BIAS** We value immediate rewards very highly and undervalue long-term gains.

**Harness biases.** Executives can also use cognitive biases to their advantage. For example, research shows that people feel twice as bad about incurring a loss as they feel good about receiving a gain of the same amount (a bias known as loss aversion) and that people pay extra attention to vivid information and overlook less flashy data (known as vividness bias). Work conducted by the Behavioral Insights Team (BIT), an organization set up to apply nudges to improve government services, demonstrates this. BIT collaborated with the UK Driver and Vehicle Licensing Agency to reduce the number of people delinquent in paying their vehicle taxes. To trigger System 1 thinking, a new notification letter was written in plain English along the lines of "Pay your tax or lose your car"—a departure from the complex legal language used in the original letter. To make the demand more personal, some letters included a photo of the car in question. The rewritten letters alone and those with the photo increased the number of people who paid their taxes by 6% and 20%, respectively.

Organizations can also highlight the downside of failing to take action to motivate weak performers. For instance, it's well known that having a high-quality pipeline of new sales talent is an effective way to get underperforming salespeople to improve their performance. This so-called "man on the bench effect" makes vivid the possibility that they could lose their jobs or bonuses, motivating them to work harder. Studies have found that salespeople in districts with a bench player perform about 5% better than those in districts without one. In the long run, the overall increase in revenue outweighs the costs associated with hiring bench players.

**Simplify the process.** Organizational processes often involve unnecessary steps that lower motivation or increase the potential for cognitive biases. By streamlining processes, executives can reduce such problems. At a health care center that one of us (Francesca) worked with, the doctors had to use different IT systems across departments to input patient information, which was then used to make decisions about patient care. The hospital introduced a centralized system that allows a doctor to see all of a patient's historical and personal information, regardless of what department the patient visited in the past. As a result, the doctors are much more motivated to keep the information up-to-date and to use the system.

## How to Use Choice Architecture to Improve Decisions

In making decisions, people rely too much on instinct and emotion and too little on logical, deliberate thinking. The result is poor choices and poor outcomes. Executives can mitigate the effects of bias and motivate employees and customers to make choices that are in both the organization's and individuals' best interests. Here's how.

**Engage System 2.** Executives have a range of options they can use to encourage greater deliberation and analysis in decision making.

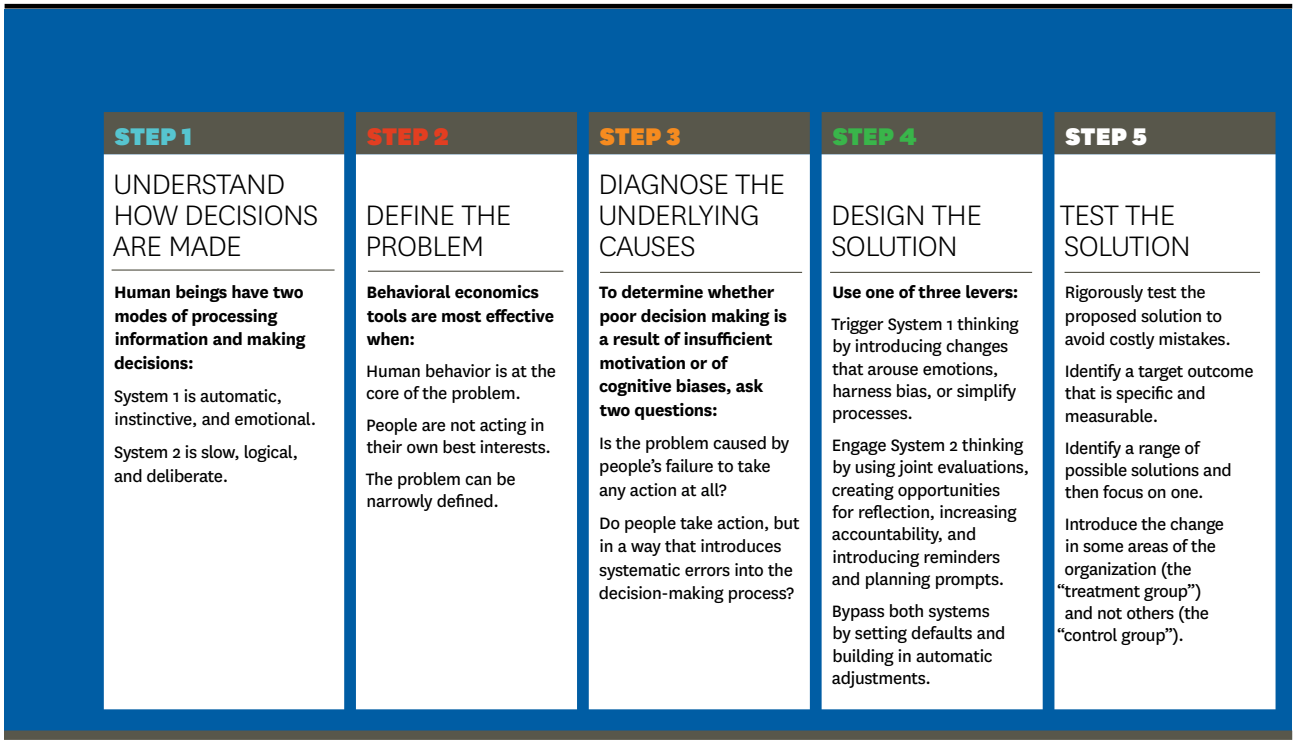
**Use joint, rather than separate, evaluations.** Evaluating decision alternatives simultaneously, rather than sequentially, reduces bias. For instance, a manager who is evaluating job candidates can avoid making biased assessments of their likely future performance by comparing them against one another rather than evaluating them separately. That's because joint evaluation nudges employers to focus more on employees' past performance and less on gender and implicit stereotypes, as research by Iris Bohnet, Alexandra van Geen, and Max Bazerman shows. Managers often use joint evaluations in initial hiring decisions, especially at lower levels, but they rarely take advantage of this approach when considering employees for job assignments and promotions. It can be helpful in many situations, such as choosing which products to advance in the development process, evaluating investment alternatives, and setting strategic direction.

**Create opportunities for reflection.** Taking time out of our busy days to just think may sound costly, but it is an effective way to engage System 2. Let's return to the example of the retailer that wanted its employees to use home delivery for their medical prescriptions. The firm told employees that in order to take advantage of their prescription drug benefit, they had to make an active choice (by phone, web, or mail) between home delivery and pick-up at a pharmacy. In doing so, the company forced employees to reflect and make a decision. When the active choice program was introduced, the percentage of employees taking long-term medications who opted for home delivery increased more than sixfold. This generated a savings of approximately $1 million, which was split roughly equally between employees and the retailer.

Encouraging reflection can also help in training and employee development. One of us (Francesca) conducted an experiment at a Bangalore call center with colleagues Giada Di Stefano, Brad Staats, and Gary Pisano. Three groups of employees were given the same technical training with a couple of key differences. Workers in one group spent the last 15 minutes of certain days reflecting (in writing) on what they'd learned. Employees in another group did the same, and then spent an additional five minutes explaining their notes to a fellow trainee. People in the control group just kept working at the end of the day. In a test given after the training program, employees in the first and second groups performed 22.8% and 25% better, respectively, than those in the control group, despite having spent less time working. We found that reflection had a similarly beneficial impact on employees' on-the-job performance.

**Use planning prompts.** People often resolve to act in a particular way but forget or fail to follow through. Simple prompts can help employees stick to the plan. In a study one of us (John) conducted with Katherine Milkman, James Choi, David Laibson, and Brigitte Madrian, we mailed letters to the employees of a midwestern utility about the company's flu shot clinics, describing the benefits of flu shots as well as the times and clinic locations. Some of the letters included blank spaces for recipients to fill in with the time they would go to a clinic. Merely prompting them to form plans by jotting down a time, even though they were not actually scheduling an appointment, caused them to briefly engage System 2, increasing the number of employees who got the shots by 13%.

A similar technique can be used to improve team performance. Many team efforts, particularly those that fail to meet objectives, end with a vow to "do




better next time." Unfortunately, such vague promises do nothing to prevent teams from making the same mistakes again. A leader can help teams follow through on resolutions by having members create clear maps for reaching their goals that detail the "when" and the "how."

**Inspire broader thinking.** We commonly approach problems by asking ourselves, "What should I do?" Asking "What *could* I do?" helps us recognize alternatives to the choice we are facing, thus reducing bias in the evaluation of the problem and in the final decision. But companies generally fail to broaden their perspectives in this way. In an analysis of more than 160 decisions made by businesses over the years, management scholar Paul Nutt found that 71% of them had been framed in terms of whether or not an organization or a person should take a certain course of action. That kind of framing often leads decision makers to consider only one alternative: the course of action being discussed. A simple change in language—using "could" rather than "should"—helps us think past the black and white and consider the shades of gray. It also allows us to consider solutions to ethical dilemmas that move beyond selecting one option over another.

**Increase accountability.** Holding individuals accountable for their judgments and actions increases the likelihood that they will be vigilant about eliminating bias from their decision making. For example, a study of federal government data on 708 private-sector companies by Alexandra Kalev and colleagues found that efforts to reduce bias through diversity training and evaluations were the least effective ways to increase the proportion of women in management. Establishing clear responsibility for diversity (by creating diversity committees and staff positions, for example) was more effective and led to increases in the number of women in management positions.

**Encourage the consideration of disconfirming evidence.** When we think that a particular course of action is correct, our tendency is to interpret any available information as supporting that thinking. This is known as confirmation bias. Furthermore, once we invest resources in a course of action, we tend to justify those investments by continuing down that path, even when new information suggests that doing so is unwise—a phenomenon known as escalation of commitment. Together, these biases lead decision makers to discount contradictory evidence and to ignore the possibility of superior alternatives. Organizations can solve this problem by actively encouraging counterfactual thinking (asking "How might events have unfolded

had we taken a different course of action?") and making sure that employees consider disconfirming evidence. In situations where a group is making decisions, the leader might assign one member to ask the tough questions and look for evidence that reveals flaws in the planned course of action. (For more details on how to do this effectively, see "Making Dumb Groups Smarter," HBR, November 2014.)

Alternatively, the leader may ask function heads to rotate their roles to get a fresh perspective, as auditors at accounting firms, credit officers at banks, and board members serving on committees frequently do. People who are in charge of one domain for a long time tend to irrationally escalate their commitment to the established way of doing things; newcomers are more likely to notice evidence that a different course of action would be wiser. Furthermore, the knowledge that a rotation will bring in a new set of eyes to scrutinize past decisions encourages people to make more-disciplined choices.

**Use reminders.** Reminders are an effective way to engage System 2, helping us avoid the biases that come from relying too much on System 1. Reminders also serve to highlight goals we want to accomplish (for instance, finishing a presentation on time), thus increasing our motivation. One of us (Francesca) and colleagues collaborated with an automobile insurance company to use reminders to reduce customer dishonesty. As part of the study, the company sent 13,488 customers a form that asked them to report how many miles they had driven that year as indicated on their cars' odometers. The lower the reported mileage, the lower the insurance premium—tempting customers to underreport how much they had driven. Half the customers were asked to sign a statement at the bottom of the form that they were being truthful. The other half were asked to sign the same statement at the top of the form. Customers who signed at the top reported an average of 2,400 miles more than those who signed at the bottom, which suggested that the reason for the difference was not driving habits but the reminder *before* they filled out the form of a goal they care about (being honest).

Consider another example of how reminders trigger System 2 thinking. In his book *The Checklist Manifesto,* surgeon and journalist Atul Gawande describes how he introduced a surgery checklist to eight hospitals in 2008. Surgeons, nurses, and other personnel systematically went through the checklist before performing each surgery to remind themselves of the steps involved in the procedure. One study that measured the checklist's effectiveness found that the new practice resulted in 36% fewer major complications and 47% fewer deaths.

**Bypass both systems.** The third approach that organizations can use to avoid biases and lack of motivation is to create processes that automatically skirt System 1 and System 2.

**Set the default.** Changing the default for standard processes—automatically enrolling employees in a retirement plan, for instance—can have a powerful impact on ultimate outcomes, especially when decisions are complex or difficult. At Motorola, for example, employees who have previously worked on one product team may not join another team working on a similar product. This rule is set as the default and allows new teams to develop their own opinions without being affected by other teams.

**Build in automatic adjustments.** Another effective way to counter cognitive biases is to build in adjustments that account for poor System 1 and System 2 thinking. Managers at Microsoft, for example, figured out that programmers vastly underestimate how long it will take them to complete tasks—a common cognitive bias called the planning fallacy. Microsoft's solution: Add buffer time to projects. Managers examined historical data on project delays and came up with guidelines. Timelines for updates

Asking "What *could* I do?" rather than "What *should* I do?" helps us recognize alternatives to a choice we are facing.

# Test Your Thinking

*by John Beshears, Shane Frederick, and Francesca Gino*

To find out how much you rely on each mode of thinking—intuitive System 1 or more deliberate System 2—try this cognitive reflection test.

**1** A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost?

**2** If it takes five machines five minutes to make five widgets, how long would it take 100 machines to make 100 widgets?

**3** In a pond is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire pond, how long would it take for the patch to cover half the pond?

If you made errors in this test, you probably used System 1 thinking instead of System 2. And even if you got all the problems right, it's quite likely that System 1 flirted with you—tempting you with alluring answers that System 2 considered but rejected.

**1. CORRECT ANSWER** five cents

The intuitive response is to assume that the bat costs $1.00 and the ball costs 10 cents. But if you engaged System 2 and did the math, you'd see that this couldn't be true. There's a dollar difference between the two, so the only set of prices that meets all the requirements in the problem is $1.05 for the bat and $0.05 for the ball.

**2. CORRECT ANSWER** five minutes

It's easy to get this one wrong, because our minds spontaneously pick up on a pattern that is misleading: We assume that if five machines make five widgets in five minutes (5-5-5), by analogy 100 machines would make 100 widgets in 100 minutes (100-100-100). But if you're using System 2, you see that each machine takes five minutes to make one widget. Think of it this way: If it takes nine women nine months to birth nine babies, how long would it take 100 women to birth 100 babies?

**3. CORRECT ANSWER** 47 days

If you jumped to the conclusion that half the pond would be covered in half the time (48 ÷ 2 = 24 days), you neglected to account for exponential growth, a type of reasoning that requires cognitive effort (and, thus, System 2 thinking). The correct answer is 47 days, because if the pond is half covered by then, a doubling over the next (48th) day will result in the pond's being entirely covered with lily pads. By the way, "one day" is also a correct, albeit uncommon, response. It takes one day for the lily pads to cover the second half of the pond. If that was your answer, you deserve extra credit for creativity.

**NOTE** THIS TEST WAS ADAPTED FROM "COGNITIVE REFLECTION AND DECISION MAKING," BY SHANE FREDERICK (*JOURNAL OF ECONOMIC PERSPECTIVES*, 2005).

to applications such as Excel and Word, for exam
receive a buffer equal to 30% of the schedule.
more complex projects, such as operating syste
timelines get a 50% buffer.

### How to Choose the Right Lever

We recommend that companies first consider
passing both systems so that the desired outcom
implemented automatically. Because this strat
requires no effort on the part of decision makers,
the most powerful way to influence results.

For many reasons, however, this approach n
not be feasible or desirable. It may be impossi
or prohibitively costly to automate the proces
question. The targeted individuals may resent l
ing the choice made for them. Or a "one size fits
approach may be inappropriate.

Consider the case of a bank that must dec
whether to renew loans to small businesses. It co
automate the renewal decision using informat
from the businesses' balance sheets and cash flc
However, the bank may make better lending d
sions if loan officers familiar with the busines
have discretion over whether to renew loans. Ev
if two businesses appear identical in the ban
computer systems, the loan officers may be aw
of other factors—for instance, changes in the m
agement team—that make one a higher risk than
other. Of course, giving loan officers discretion
troduces biases into the decision-making process
potential cost that must be weighed.

If bypassing both systems is not an option, c
panies must choose whether to trigger System 1 or
gage System 2. The deliberative approach of Syste
can override mistakes caused by System 1, but co
tive effort is a limited resource. Using it for one d
sion means that it may not be available for others, a
this cost must be taken into account. For exam
in a study of fundraising efforts conducted at a
public university by one of us (Francesca) with Ad
Grant, the performance of fundraisers improved
nificantly when the director thanked them for th
work. This intervention strengthened their feeli
of social worth by triggering System 1. One can in
ine interventions that would engage System 2—
instance, asking the fundraisers to take more ti
to prepare for each call or increasing their acco
ability for results. However, such interventio
might drain their energy and cognitive resour
diminishing their effort and persistence.

# It's extremely difficult to change the way people's brains are wired. Instead change the environment in which people make decisions.

### Test the Solution

The final step is to rigorously test the proposed solution to determine whether it will accomplish its objectives. Testing can help managers avoid costly mistakes and provide insights that lead to even better solutions. Tests should have three key elements:

**Identify the desired outcome.** The outcome should be specific and measurable. In the case of the retailer that wanted employees to use home delivery for prescriptions, it was clear: increasing the percentage of employees who signed up for home delivery.

**Identify possible solutions and focus on one.** If you alter too many things at once, it will be difficult to determine which piece of a complex change produced the desired effect. To avoid this problem, the retailer rolled out its "active choice" prescription program without simultaneously implementing other changes.

**Introduce the change in some areas of the organization (the "treatment group") and not others (the "control group").** If possible, divide the individuals, teams, or other entities randomly into two groups. Randomization helps ensure that any differences in outcome between the two groups can be attributed to the change. When such simple randomization is not feasible for reasons of logistics, ethics, cost, or sample size, more-sophisticated analytical techniques can be employed. (For a more detailed explanation of how to conduct rigorous business experiments, see "The Discipline of Business Experimentation," HBR, December 2014.)

"You're right. It's probably not a good sign that our department is the only one that's scrawled on a sticky note."

JOHN CALDWELL

**INSIDIOUS BIASES** and insufficient motivation are often the main drivers behind significant organizational problems. But it's extremely difficult to change the way people's brains are wired. Instead change the environment in which people make decisions. Through some simple adjustments, executives can produce powerful benefits for their employees and organizations.

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