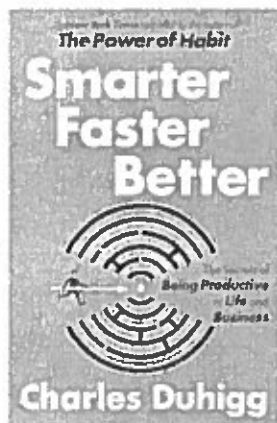


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## MANAGEMENT

## ‘Smarter, Faster, Better’: The New Science of Productivity

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*Why are some people so much more productive than others? How can we increase our own productivity? A new book by New York Times reporter and bestselling author Charles Duhigg mines recent scientific findings for the answers.*

*In the following book review, Knowledge@Wharton shares highlights from Smarter Faster Better: The Secrets of Being Productive in Life and Business.*

In an economy ruled by change, disruption, and uncertainty, it seems that everyone — individuals and companies alike — is searching for an edge. Stephen Covey published *The 7 Habits of Highly Effective People* back in 1989; since then, interest in the art and science of habit formation has grown steadily and shows no signs of abating.

*New York Times* reporter Charles Duhigg has contributed to that literature — but with a difference. While the majority of books about habits are geared to personal transformation, his book *The Power of Habit* focused equally on the habits of individuals, but also on those of organizations and societies. His new book, *Smarter Faster Better: The Secrets of Being Productive in Life and Business*, builds on his previous one and maintains its broad scope.

Although the word “habit” doesn’t even appear in the book’s index, Duhigg’s latest work isolates a very particular set of habits: those that govern decision-making. Enhanced productivity, he argues, flows from “making certain choices in certain ways.” How we frame those choices, and the incentives and motivations and inputs we attach to them, will “separate the merely busy from the genuinely productive.”

#### Motivation and Control

Productivity begins with motivation; and motivation, according to the research Duhigg cites, begins with control — or more precisely, the location of control. Psychologists have been considering the question of our “locus of control” since the 1950s. Those with an

external locus of control have a sense of life happening *to* them; they believe their lives are primarily influenced by forces outside their control.

Those with an internal locus of control, by contrast, feel in charge of their own destiny and attribute success or failure to their own efforts. An internal locus of control yields vastly superior results. One representative study finds it “has been linked with academic success, high self-motivation and social maturity, lower incidences of stress and depression, and longer life span.”

It might be tempting to view locus of control as an innate personality trait, like the tendency to be introverted or extroverted. But researchers like Stanford psychologist Carol Dweck see it not as a fixed, static quality, but as a “learned skill.” And like any skill, it can be practiced and consciously cultivated.

This view has been adopted, perhaps surprisingly, in a new approach in the Marine Corps to basic training. Boot camp has long been associated with discipline and taking orders — giving up individual control in the interest of the group. But General Charles C. Krulak found that the recruits he was seeing needed more than discipline: “they needed a mental makeover,” and a “vocabulary for ambition.” So he pushed for a redesign of basic training that forced trainees to take control of their own choices — sometimes creating situations that required recruits to modify and work around given orders.

Consciously instilling a “bias toward action” in the Marine Corps begins at a small, mundane level — like suddenly leaving a group of recruits in charge of cleaning the mess hall, without any instructions or guidance. And that approach seems to work for the rest of us as well. The point is to trigger a “will to act.” Faced with an overwhelming stream of emails, for example, just pick one from the middle of your inbox and answer it. If you’ve been avoiding a difficult sales call, settle on your opening line. “Find a choice, almost any choice, that allows you to exert control.”

### Goals: ‘SMART’ Stretching

Control is only a start. In order to “self-motivate more easily, we need to learn to see our choices not just as expressions of control but also as affirmations of our values and goals.” Without overarching meaning and purpose, without linking smaller tasks to larger aspirations, we can “seize” on an isolated decision just because it makes us *feel* productive.

The experience of General Electric is an object lesson in the importance of ambition. As early as the 1940s, GE had formalized what was widely seen as a model system of corporate goal-setting. SMART goals had to be Specific, Measurable, Achievable, Realistic, and based on a Timeline. Yet by the 1980s, GE was seeing some of its key divisions lag. In 1993, CEO Jack Welch visited Japan, and heard first-hand how in the 1960s they had succeeded in developing high-speed “bullet trains” that traveled an average speed of 120 miles per hour. Engineers had initially estimated 75 as the top “realistic” speed; the head of the railway system insisted that wasn’t good enough, not even close. So the engineers doubled down, and via hundreds of innovations small and large, eventually broke through — an achievement instrumental in Japan’s decades-long economic boom.

Welch returned determined to get GE to adopt “bullet train thinking.” In a letter to shareholders, he proposed marrying SMART goals to what he called “stretch” goals. That would mean “using dreams to set business targets — with no real idea of how to get there. If you do know how to get there — it’s not a stretch target.” Welch tested the new approach with GE’s airplane engine division, which had announced it was going to try to reduce defects by 25%. Not good enough, Welch said. He told them he wanted 70%, and gave them three years to get there. The audacious goal “set off a chain reaction” in which the division completely reimaged the entire manufacturing process. By 1999, defects had dropped 75%.

“Numerous academic studies have examined the impact of stretch goals,” Duhigg writes, “and have consistently found that forcing people to commit to ambitious, seemingly out-of-reach objectives can spark outsized jumps in innovation and productivity.”

On a personal level, we can apply this to something as mundane as a to-do list. A commonly traded productivity tip is to first write down easy tasks that can be completed and finished right away. A psychologist Duhigg interviewed says this is exactly the *wrong* way to approach a to-do list, and accomplishes little more than “mood repair.” Genuine productivity grows from starting a to-do list with larger goals and then splitting them up into bite-sized “smart” goals.

### Tunnel Vision

The need to balance large goals and small goals — the big picture and the small one, the forest and the trees — is an ongoing theme in

Duhigg's investigations. Our need for "cognitive closure" can compel us to "seize" on a sub-par choice or goal simply because it "meets a minimum threshold of acceptability." On the one hand, it's healthy to activate our decision-making and to avoid the paralysis of endless second-guessing. Yet if our urge for closure is too strong, we can "freeze" our goals and analysis.

The challenge is to balance order and chaos, certainty and ambiguity — a challenge that is particularly pronounced in high-stakes jobs like flying an airplane. Complicating matters is the introduction of automatic flight systems that have greatly improved safety, yet which require pilots to be fully active for only a small part of each flight, transforming piloting from a proactive to a reactive profession. In doing so, these systems create new risks at moments when pilots must suddenly switch modes and are forced to "toggle between automaticity and focus."

Duhigg shares the harrowing story of Air France Flight 447 from Rio de Janeiro to Paris in 2009. The Airbus plane had a highly advanced flight system that vastly reduced the number of decisions a pilot had to make. In response to a fairly routine occurrence at high altitudes — a tube measuring air speed became clogged with ice crystals — the auto-flight system turned off. Jarred by unexpectedly having to shift into active mode, the pilot fell prey to a mental glitch called "cognitive tunneling" — an immediate focus on the first thing to come to attention, even if it's not the most important thing. In this case, the pilot latched onto a display showing whether the plane was rolling slightly to one side or the other. He focused solely on leveling the wings, not realizing he was pulling back on the control stick and raising the plane's nose. In the thin high air, the smooth flow of air over the wings that generates "lift" was disrupted, causing what's called an "aerodynamic stall" and sending the plane into free fall.

**"Those with an internal locus of control ... feel in charge of their own destiny and attribute success or failure to their own efforts."**

The pilot never recovered from his initial tunnel vision, and so was not able to assess the situation and correct it. "But what's happening?" he asked two seconds before the plane plunged into the sea.

### Telling Stories

A year later, another Airbus plane, a Qantas Airways flight from Singapore to Sydney, experienced multiple engine failures shortly after takeoff. The pilot had to turn back and attempt an emergency landing, despite the fact that the plane's major systems were failing. The difference is this: The pilot kept his head and successfully avoided tunnel vision. He did so by creating a narrative and by envisioning scenarios — generating what cognitive scientists call "mental models."

For the pilot of Qantas Flight 32, this was a habit of mind he consciously cultivated, for himself and his crew. Part of his pre-flight ritual was for the entire crew to run through potential emergencies, and to visualize what they would do, and to where they would turn their attention. When disaster struck, he and his crew had a picture in their minds of how they would react.

Moreover, when he realized that 21 of the plane's 22 major systems were damaged or completely disabled, the pilot simplified the situation by constructing a new narrative on the spot. He imagined he was flying a Cessna, a simple single-engine plane, the first he had ever flown. Instead of panicking over what wasn't working, this story helped him focus on what was working. In a case that has since been much studied, investigators declared it the most damaged Airbus ever to land safely.

Duhigg finds this pattern across a wide range of occupations and settings — from neonatal intensive care units to corporate recruiting firms. Especially in challenging or chaotic situations, the most successful are those with a habit of telling stories about their experiences, generating theories and mental models. A corporate vice-president Duhigg interviewed says he looks for candidates "who describe their experiences as some kind of narrative. It's a tip-off that someone has an instinct for connecting the dots and understanding how the world works at a deeper level."

In a later section on probabilistic thinking, Duhigg delves into another narrative-related skill: the ability to envision multiple futures. In a sense, all decision-making involves anticipating future possibility and probability. Cross-cutting the journey of a star poker player with other fields that rely on forecasting, the author finds that those with the keenest "computational cognition" can "hold multiple, conflicting outcomes" in their minds, and then "estimate their relative likelihoods."

### Teams and 'Psychological Safety'

Generating mental models and theories is key. But so is subjecting them to scrutiny. As part of his pre-flight visualizations, the Qantas pilot actively encouraged his crew to challenge him and one another. “Everyone has a responsibility to tell me if you disagree with my decisions or think I’m missing something.”

Creating an environment that encourages the airing of a diversity of opinion requires what one researcher calls “team psychological safety.” In 1991, Amy Edmondson — then a first-year PhD student and now a professor at the Harvard Business School — began looking into the relationship between team culture and error rates at different units of two Boston hospitals. The most cohesive units were ones that not only encouraged the open sharing of ideas — but also where nurses felt comfortable admitting and reporting mistakes.

Google’s People Analytics group (its version of Human Resources) drew on Edmondson’s research as it tried to hone in on what made for the most successful teams. Always big believers in data, they first studied 180 teams from all over the company to see if they could correlate a team’s composition with its productivity. “The ‘who’ part of the equation didn’t seem to matter,” says one executive, so they began to look at the ‘how’ — the group norms that governed how teams functioned.

What mattered most in the end, concluded Laszlo Bock, head of Google’s people operations, was “voice” and “social sensitivity.” Google created checklists to ensure that team leaders modeled the right behavior and fostered psychological safety. Disagreement was encouraged, always; but leaders should never interrupt during a conversation. And a meeting shouldn’t end until all team members have spoken at least once.

A joint study by MIT and Carnegie Mellon reached similar conclusions. Successful teams exhibited a wide range of personalities and styles, but they shared two core qualities. Members of the best teams spoke in roughly the same proportion. And they exhibited high average social sensitivity: the ability to read one another and react appropriately.

### Lean, Agile Management

Japan’s bullet trains inspired General Electric to adopt stretch goals. And Toyota’s experiments with decentralized decision-making prompted similar changes at General Motors, and later at the FBI.

In 1982, GM shut down its Fremont, California plant — one with a well-earned reputation as “the worst auto factory in the world.” Two years later, GM reopened the plant in a new partnership with Toyota. For the Japanese company, it was an opportunity to expand in the American market. And for GM it was a chance to learn about the famed “Toyota Production System” that consistently produced cars of high quality at low cost. At the heart of this system was the idea of pushing decision making to the lowest level: workers on the assembly line saw mistakes and problems first, so they should be empowered to take immediate action to correct them.

The United Auto Workers had negotiated a commitment that at least 80% of the laid-off workers would be hired at the rebooted plant. The union and workers were skeptical about the promised new “culture of trust,” and management wasn’t sure that culture could be exported to America. For the first month, workers didn’t dare pull the “andon cords” that would immediately halt the production line. They knew that any stoppage would cost the factory \$15,000 a minute. Under the old regime, workers might indicate a problem by marking the vehicle with a crayon or Post-it — and only after it was fully assembled would it then be taken to the back lot and disassembled so the problem could be fixed. It was an inefficient system of passing the buck, but the unspoken rule in the plant had always been: The line never stops.

Eventually, the rehired workers were coaxed into pulling the cord. They realized they could halt the line and take care of the problem without being penalized. Soon there were hundreds of such pulls a day, and the culture was transformed. By 1986, productivity had doubled, and absenteeism was down from 25% to 3%.

Toyota’s approach is sometimes dubbed “lean manufacturing,” and was an unexpected inspiration for major reforms at the Federal Bureau of Investigation. Since 1997, the FBI had been trying to update its computer system for sorting and managing evidence and case histories. The intelligence failures of 9/11 only heightened the urgency of doing so. But 11 years and \$305 million later, the new system, Sentinel, was nowhere near operational. The bureau brought in an outside consultant, Chad Fulgham, who had no background in law enforcement, and whose specialty was developing computer networks for large banks.

## “In a sense, all decision-making involves anticipating future possibility and probability.”

Fulgham and other like-minded programmers were admirers of the Toyota Production System, and had drafted a “Manifesto for Agile Software Development.” Fulgham applied the Toyota philosophy to a skeptical FBI: distributing critical decision-making power to people on the ground. Whoever was closest to a particular challenge was empowered to take initiative, regardless of rank. Top officials were allowed to offer suggestions, but not to micromanage.

The new approach was a wild success. A 2010 inspector general’s report had estimated it would take six years and almost \$400 million to get Sentinel working; Fulgham and his team delivered it for \$20 million in just over a year. “It was like government on steroids,” Fulgham remembers, and has had a significant ripple effect on how the bureau goes about its business in general.

### Innovation

Fulgham had taken his experience in the private sector on Wall Street and applied it to the public sector and the FBI. Duhigg finds that cross-pollination and unexpected combinations are yet another key ingredient in increasing productivity. Across a wide range of settings — including academic publishing, show business, and product design — successful innovation is often rooted in unusual combinations and interdisciplinary thinking.

A survey of a database of almost 18 million scientific papers found that those with the most novelty and impact (as measured by subsequent citations and other factors) took largely conventional material and enlivened it by pairing it with something unusual — instead of Newton and Einstein, juxtaposing Einstein and the Chinese philosopher Wang Chong, to cite one instance. The consumer design firm IDEO has had some of its biggest successes by combining “existing knowledge from disparate industries.” A top-selling water bottle, for example, mixed a standard water carafe with the nozzle of a shampoo container. Ronald Burt studied 673 managers at a large electronic company. Those rated most “creative” were the ones who exported ideas from one division to another. “This is not creativity born of genius,” he asserts. “It is creativity as an import-export business.” He dubs such intellectual middlemen “innovation brokers.”

Similarly, the groundbreaking musical *West Side Story* simply takes the familiar story of *Romeo and Juliet* and transplants it among New York City street gangs. It is a fresh and surprising combination of conventional elements. And the runaway hit movie *Frozen* was a very conscious attempt to take the standard princess fairy tale and turn it on its head.

### Disruption

The process by which *Frozen* achieved its creative breakthrough illustrates the last of Duhigg’s keys to productivity. For months, the creative team struggled to get the final third of the film right. They had hit a rut that Pixar founder Ed Catmull calls “spinning.” His ongoing obsession (which he details in his book *Creativity, Inc.*) is how to maintain a culture of creativity and prevent success from letting that culture go stale.

One of his main tactics is a kind of intentional disruption: mid-project, he will step in and shake up a team by tweaking its dynamics, even if he knows that by doing so he will generate a certain amount of tension. In the case of *Frozen*, he named the film’s writer, Jennifer Lee, as a second director. A writer is more a lone voice, where a director must listen to and incorporate suggestions from across the production. The new responsibility and point of view were just the jolt she needed.

Duhigg profiles a very different kind of disruption at an elementary school in Cincinnati that — despite ample funding from the city, and generous sponsorship from companies like Procter & Gamble — had for years languished as one of the worst-performing schools in Ohio. Administrators had embraced the idea of using data to inform education, and they were armed with a sophisticated software system that tracked students’ performance, and made it available online to teachers and parents on an easily accessible dashboard. The hope was that the data would allow educators to target students with exactly the kind of individual assistance they needed; but measurable progress had yet to be seen.

In truth, most of the school’s teachers rarely looked at the data on the students’ dashboards. So the school experimented with a disruption that forced teachers to actively engage with the information, instead of merely passively viewing it on the screen. Teachers

were required to spend at least two afternoons a month in a new "data room" where they participated in mandatory exercise whereby they transcribed the data onto individual index cards and tabulated statistics by hand. Essentially, the school was intentionally complicating the handling of data: the process was more cumbersome and time-consuming, but in the end the information was "stickier."

**"Productive people and companies force themselves to make choices most people are content to ignore."**

-Charles Duhigg

The task was boring, and seemed redundant. But eventually, teachers started engaging with the information in interesting ways. One teacher, Nancy Johnson, ended up spending extra time in the data room, experimenting with different ways of grouping the cards. "Handling the index cards, she found, gave her a more granular sense of each student's strengths and weaknesses."

The changed engagement with data led to a changed engagement with teaching, and a series of innovative moves to help struggling students. In less than a year, the school's overall scores had more than doubled. A year after that, Johnson was named Cincinnati's Educator of the Year.

Duhigg found that absorbing and engaging the insights of his own book was not a simple task. In an Appendix, "A Reader's Guide to Using These Ideas," he shares his own journey to translate the science of productivity into his daily routine. He concludes that it is ultimately about making more conscious (and often more difficult) choices: "Productive people and companies force themselves to make choices most people are content to ignore."

Smarter Faster Better: The Secrets of Being Productive in Life and Business (Hardcover)



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