

## Introduction

In the Swiss canton of St. Gallen, near the northern banks of Lake Zurich, is a village named Bollingen. In 1922, the psychiatrist Carl Jung chose this spot to begin building a retreat. He began with a basic two-story stone house he called the Tower. After returning from a trip to India, where he observed the practice of adding meditation rooms to homes, he expanded the complex to include a private office. “In my retiring room I am by myself,” Jung said of the space. “I keep the key with me all the time; no one else is allowed in there except with my permission.”

In his book *Daily Rituals*, journalist Mason Currey sorted through various sources on Jung to re-create the psychiatrist’s work habits at the Tower. Jung would rise at seven a.m., Currey reports, and after a big breakfast he would spend two hours of undistracted writing time in his private office. His afternoons would often consist of meditation or long walks in the surrounding countryside. There was no electricity at the Tower, so as day gave way to night, light came from oil lamps and heat from the fireplace. Jung would retire to bed by ten p.m. “The feeling of repose and renewal that I had in this tower was intense from the start,” he said.

Though it’s tempting to think of Bollingen Tower as a vacation home, if we put it into the context of Jung’s career at this point it’s clear that the lakeside retreat was not built as an escape from work. In 1922, when Jung bought the property, he could not afford to take a vacation. Only one year earlier, in 1921, he had published *Psychological Types*, a seminal book that solidified many differences that had been long developing between Jung’s thinking and the ideas of his onetime friend and mentor, Sigmund Freud. To disagree with Freud in the 1920s was a bold move. To back up his book, Jung needed to stay sharp and produce a stream of smart articles and books further supporting and establishing *analytical psychology*, the eventual name for his new school of thought.

Jung’s lectures and counseling practice kept him busy in Zurich—this is clear. But he wasn’t satisfied with busyness alone. He wanted to change the way we understood the unconscious, and this goal required deeper, more careful thought than he could manage amid his hectic city lifestyle. Jung retreated to Bollingen, not to escape his professional life, but instead to advance it.

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Carl Jung went on to become one of the most influential thinkers of the twentieth century. There are, of course, many reasons for his eventual success. In this book, however, I'm interested in his commitment to the following skill, which almost certainly played a key role in his accomplishments:

**Deep Work:** Professional activities performed in a state of distraction-free concentration that push your cognitive capabilities to their limit. These efforts create new value, improve your skill, and are hard to replicate.

Deep work is necessary to wring every last drop of value out of your current intellectual capacity. We now know from decades of research in both psychology and neuroscience that the state of mental strain that accompanies deep work is also necessary to improve your abilities. Deep work, in other words, was exactly the type of effort needed to stand out in a cognitively demanding field like academic psychiatry in the early twentieth century.

The term “deep work” is my own and is not something Carl Jung would have used, but his actions during this period were those of someone who understood the underlying concept. Jung built a tower out of stone in the woods to promote deep work in his professional life—a task that required time, energy, and money. It also took him away from more immediate pursuits. As Mason Currey writes, Jung’s regular journeys to Bollingen reduced the time he spent on his clinical work, noting, “Although he had many patients who relied on him, Jung was not shy about taking time off.” Deep work, though a burden to prioritize, was crucial for his goal of changing the world.

Indeed, if you study the lives of other influential figures from both distant and recent history, you’ll find that a commitment to deep work is a common theme. The sixteenth-century essayist Michel de Montaigne, for example, prefigured Jung by working in a private library he built in the southern tower guarding the stone walls of his French château, while Mark Twain wrote much of *The Adventures of Tom Sawyer* in a shed on the property of the Quarry Farm in New York, where he was spending the summer. Twain’s study was so isolated from the main house that his family took to blowing a horn to attract his attention for meals.

Moving forward in history, consider the screenwriter and director Woody Allen. In the forty-four-year period between 1969 and 2013, Woody Allen wrote and directed forty-four films that received twenty-three Academy Award nominations—an absurd rate of artistic productivity. Throughout this period, Allen never owned a computer, instead completing all his writing, free from electronic distraction, on a German Olympia SM3 manual typewriter. Allen is joined in his rejection of computers by Peter Higgs, a theoretical physicist who performs his work in such disconnected

isolation that journalists couldn't find him after it was announced he had won the Nobel Prize. J.K. Rowling, on the other hand, *does* use a computer, but was famously absent from social media during the writing of her Harry Potter novels—even though this period coincided with the rise of the technology and its popularity among media figures. Rowling's staff finally started a Twitter account in her name in the fall of 2009, as she was working on *The Casual Vacancy*, and for the first year and a half her only tweet read: "This is the real me, but you won't be hearing from me often I am afraid, as pen and paper is my priority at the moment."

Deep work, of course, is not limited to the historical or technophobic. Microsoft CEO Bill Gates famously conducted "Think Weeks" twice a year, during which he would isolate himself (often in a lakeside cottage) to do nothing but read and think big thoughts. It was during a 1995 Think Week that Gates wrote his famous "Internet Tidal Wave" memo that turned Microsoft's attention to an upstart company called Netscape Communications. And in an ironic twist, Neal Stephenson, the acclaimed cyberpunk author who helped form our popular conception of the Internet age, is near impossible to reach electronically—his website offers no e-mail address and features an essay about why he is purposefully bad at using social media. Here's how he once explained the omission: "If I organize my life in such a way that I get lots of long, consecutive, uninterrupted time-chunks, I can write novels. [If I instead get interrupted a lot] what replaces it? Instead of a novel that will be around for a long time... there is a bunch of e-mail messages that I have sent out to individual persons."

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The ubiquity of deep work among influential individuals is important to emphasize because it stands in sharp contrast to the behavior of most modern knowledge workers—a group that's rapidly forgetting the value of going deep.

The reason knowledge workers are losing their familiarity with deep work is well established: network tools. This is a broad category that captures communication services like e-mail and SMS, social media networks like Twitter and Facebook, and the shiny tangle of infotainment sites like BuzzFeed and Reddit. In aggregate, the rise of these tools, combined with ubiquitous access to them through smartphones and networked office computers, has fragmented most knowledge workers' attention into slivers. A 2012 McKinsey study found that the average knowledge worker now spends more than 60 percent of the workweek engaged in electronic communication and Internet searching, with close to 30 percent of a worker's time dedicated to reading and answering e-mail alone.

This state of fragmented attention cannot accommodate deep work, which requires long periods of uninterrupted thinking. At the same time, however, modern knowledge

workers are not loafing. In fact, they report that they are as busy as ever. What explains the discrepancy? A lot can be explained by another type of effort, which provides a counterpart to the idea of deep work:

**Shallow Work:** Noncognitively demanding, logistical-style tasks, often performed while distracted. These efforts tend to not create much new value in the world and are easy to replicate.

In an age of network tools, in other words, knowledge workers increasingly replace deep work with the shallow alternative—constantly sending and receiving e-mail messages like human network routers, with frequent breaks for quick hits of distraction. Larger efforts that would be well served by deep thinking, such as forming a new business strategy or writing an important grant application, get fragmented into distracted dashes that produce muted quality. To make matters worse for depth, there's increasing evidence that this shift toward the shallow is not a choice that can be easily reversed. Spend enough time in a state of frenetic shallowness and you *permanently* reduce your capacity to perform deep work. "What the Net seems to be doing is chipping away my capacity for concentration and contemplation," admitted journalist Nicholas Carr, in an oft-cited 2008 *Atlantic* article. "[And] I'm not the only one." Carr expanded this argument into a book, *The Shallows*, which became a finalist for the Pulitzer Prize. To write *The Shallows*, appropriately enough, Carr had to move to a cabin and forcibly disconnect.

The idea that network tools are pushing our work from the deep toward the shallow is not new. *The Shallows* was just the first in a series of recent books to examine the Internet's effect on our brains and work habits. These subsequent titles include William Powers's *Hamlet's BlackBerry*, John Freeman's *The Tyranny of E-mail*, and Alex Soojung-Kin Pang's *The Distraction Addiction*—all of which agree, more or less, that network tools are distracting us from work that requires unbroken concentration, while simultaneously degrading our capacity to remain focused.

Given this existing body of evidence, I will not spend more time in this book trying to establish this point. We can, I hope, stipulate that network tools negatively impact deep work. I'll also sidestep any grand arguments about the long-term societal consequence of this shift, as such arguments tend to open impassible rifts. On one side of the debate are techno-skeptics like Jaron Lanier and John Freeman, who suspect that many of these tools, at least in their current state, damage society, while on the other side techno-optimists like Clive Thompson argue that they're changing society, for sure, but in ways that'll make us better off. Google, for example, might reduce our memory, but we no longer *need* good memories, as in the moment we can now search for anything we need to know.

I have no stance in this philosophical debate. My interest in this matter instead veers toward a thesis of much more pragmatic and individualized interest: Our work culture's shift toward the shallow (whether you think it's philosophically good or bad) is exposing a massive economic and personal opportunity for the few who recognize the potential of resisting this trend and prioritizing depth—an opportunity that, not too long ago, was leveraged by a bored young consultant from Virginia named Jason Benn.

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There are many ways to discover that you're not valuable in our economy. For Jason Benn the lesson was made clear when he realized, not long after taking a job as a financial consultant, that the vast majority of his work responsibilities could be automated by a “kludged together” Excel script.

The firm that hired Benn produced reports for banks involved in complex deals. (“It was about as interesting as it sounds,” Benn joked in one of our interviews.) The report creation process required hours of manual manipulation of data in a series of Excel spreadsheets. When he first arrived, it took Benn up to six hours per report to finish this stage (the most efficient veterans at the firm could complete this task in around half the time). This didn't sit well with Benn.

“The way it was taught to me, the process seemed clunky and manually intensive,” Benn recalls. He knew that Excel has a feature called macros that allows users to automate common tasks. Benn read articles on the topic and soon put together a new worksheet, wired up with a series of these macros that could take the six-hour process of manual data manipulation and replace it, essentially, with a button click. A report-writing process that originally took him a full workday could now be reduced to less than an hour.

Benn is a smart guy. He graduated from an elite college (the University of Virginia) with a degree in economics, and like many in his situation he had ambitions for his career. It didn't take him long to realize that these ambitions would be thwarted so long as his main professional skills could be captured in an Excel macro. He decided, therefore, he needed to increase his value to the world. After a period of research, Benn reached a conclusion: He would, he declared to his family, quit his job as a human spreadsheet and become a computer programmer. As is often the case with such grand plans, however, there was a hitch: Jason Benn had no idea how to write code.

As a computer scientist I can confirm an obvious point: Programming computers is hard. Most new developers dedicate a four-year college education to learning the ropes before their first job—and even then, competition for the best spots is fierce. Jason Benn didn't have this time. After his Excel epiphany, he quit his job at the financial firm and moved home to prepare for his next step. His parents were happy he

had a plan, but they weren't happy about the idea that this return home might be long-term. Benn needed to learn a hard skill, and needed to do so *fast*.

It's here that Benn ran into the same problem that holds back many knowledge workers from navigating into more explosive career trajectories. Learning something complex like computer programming requires intense uninterrupted concentration on cognitively demanding concepts—the type of concentration that drove Carl Jung to the woods surrounding Lake Zurich. This task, in other words, is an act of deep work. Most knowledge workers, however, as I argued earlier in this introduction, have lost their ability to perform deep work. Benn was no exception to this trend.

“I was always getting on the Internet and checking my e-mail; I couldn't stop myself; it was a compulsion,” Benn said, describing himself during the period leading up to his quitting his finance job. To emphasize his difficulty with depth, Benn told me about a project that a supervisor at the finance firm once brought to him. “They wanted me to write a business plan,” he explained. Benn didn't know how to write a business plan, so he decided he would find and read five different existing plans—comparing and contrasting them to understand what was needed. This was a good idea, but Benn had a problem: “I couldn't stay focused.” There were days during this period, he now admits, when he spent almost every minute (“98 percent of my time”) surfing the Web. The business plan project—a chance to distinguish himself early in his career—fell to the wayside.

By the time he quit, Benn was well aware of his difficulties with deep work, so when he dedicated himself to learning how to code, he knew he had to simultaneously teach his mind how to go deep. His method was drastic but effective. “I locked myself in a room with no computer: just textbooks, notecards, and a highlighter.” He would highlight the computer programming textbooks, transfer the ideas to notecards, and then practice them out loud. These periods free from electronic distraction were hard at first, but Benn gave himself no other option: He *had* to learn this material, and he made sure there was nothing in that room to distract him. Over time, however, he got better at concentrating, eventually getting to a point where he was regularly clocking five or more disconnected hours per day in the room, focused without distraction on learning this hard new skill. “I probably read something like eighteen books on the topic by the time I was done,” he recalls.

After two months locked away studying, Benn attended the notoriously difficult Dev Bootcamp: a hundred-hour-a-week crash course in Web application programming. (While researching the program, Benn found a student with a PhD from Princeton who had described Dev as “the hardest thing I've ever done in my life.”)

Given both his preparation and his newly honed ability for deep work, Benn excelled. “Some people show up not prepared,” he said. “They can’t focus. They can’t learn quickly.” Only half the students who started the program with Benn ended up graduating on time. Benn not only graduated, but was also the top student in his class.

The deep work paid off. Benn quickly landed a job as a developer at a San Francisco tech start-up with \$25 million in venture funding and its pick of employees. When Benn quit his job as a financial consultant, only half a year earlier, he was making \$40,000 a year. His new job as a computer developer paid \$100,000—an amount that can continue to grow, essentially without limit in the Silicon Valley market, along with his skill level.

When I last spoke with Benn, he was thriving in his new position. A newfound devotee of deep work, he rented an apartment across the street from his office, allowing him to show up early in the morning before anyone else arrived and work without distraction. “On good days, I can get in four hours of focus before the first meeting,” he told me. “Then maybe another three to four hours in the afternoon. And I do mean ‘focus’: no e-mail, no Hacker News [a website popular among tech types], just programming.” For someone who admitted to sometimes spending up to 98 percent of his day in his old job surfing the Web, Jason Benn’s transformation is nothing short of astonishing.

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Jason Benn’s story highlights a crucial lesson: Deep work is not some nostalgic affectation of writers and early-twentieth-century philosophers. It’s instead a skill that has great value today.

There are two reasons for this value. The first has to do with learning. We have an information economy that’s dependent on complex systems that change rapidly. Some of the computer languages Benn learned, for example, didn’t exist ten years ago and will likely be outdated ten years from now. Similarly, someone coming up in the field of marketing in the 1990s probably had no idea that today they’d need to master digital analytics. To remain valuable in our economy, therefore, you must master the art of quickly learning complicated things. This task requires deep work. If you don’t cultivate this ability, you’re likely to fall behind as technology advances.

The second reason that deep work is valuable is because the impacts of the digital network revolution cut both ways. If you can create something useful, its reachable audience (e.g., employers or customers) is essentially limitless—which greatly magnifies your reward. On the other hand, if what you’re producing is mediocre, then you’re in trouble, as it’s too easy for your audience to find a better alternative online. Whether you’re a computer programmer, writer, marketer, consultant, or entrepreneur,

your situation has become similar to Jung trying to outwit Freud, or Jason Benn trying to hold his own in a hot start-up: To succeed you have to produce the absolute best stuff you're capable of producing—a task that requires depth.

The growing necessity of deep work is new. In an industrial economy, there was a small skilled labor and professional class for which deep work was crucial, but most workers could do just fine without ever cultivating an ability to concentrate without distraction. They were paid to crank widgets—and not much about their job would change in the decades they kept it. But as we shift to an information economy, more and more of our population are knowledge workers, and deep work is becoming a key currency—even if most haven't yet recognized this reality.

Deep work is not, in other words, an old-fashioned skill falling into irrelevance. It's instead a crucial ability for anyone looking to move ahead in a globally competitive information economy that tends to chew up and spit out those who aren't earning their keep. The real rewards are reserved not for those who are comfortable using Facebook (a shallow task, easily replicated), but instead for those who are comfortable building the innovative distributed systems that run the service (a decidedly deep task, hard to replicate). Deep work is so important that we might consider it, to use the phrasing of business writer Eric Barker, “the superpower of the 21st century.”

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We have now seen two strands of thought—one about the increasing scarcity of deep work and the other about its increasing value—which we can combine into the idea that provides the foundation for everything that follows in this book:

**The Deep Work Hypothesis:** The ability to perform deep work is becoming increasingly *rare* at exactly the same time it is becoming increasingly *valuable* in our economy. As a consequence, the few who cultivate this skill, and then make it the core of their working life, will thrive.

This book has two goals, pursued in two parts. The first, tackled in Part 1, is to convince you that the deep work hypothesis is true. The second, tackled in Part 2, is to teach you how to take advantage of this reality by training your brain and transforming your work habits to place deep work at the core of your professional life. Before diving into these details, however, I'll take a moment to explain how I became such a devotee of depth.

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I've spent the past decade cultivating my own ability to concentrate on hard things. To understand the origins of this interest, it helps to know that I'm a theoretical computer scientist who performed my doctoral training in MIT's famed Theory of Computation group—a professional setting where the ability to focus is considered a crucial



occupational skill.

During these years, I shared a graduate student office down the hall from a MacArthur “genius grant” winner—a professor who was hired at MIT before he was old enough to legally drink. It wasn’t uncommon to find this theoretician sitting in the common space, staring at markings on a whiteboard, with a group of visiting scholars arrayed around him, also sitting quietly and staring. This could go on for hours. I’d go to lunch; I’d come back—still staring. This particular professor is hard to reach. He’s not on Twitter and if he doesn’t know you, he’s unlikely to respond to your e-mail. Last year he published sixteen papers.

This type of fierce concentration permeated the atmosphere during my student years. Not surprisingly, I soon developed a similar commitment to depth. To the chagrin of both my friends and the various publicists I’ve worked with on my books, I’ve never had a Facebook or Twitter account, or any other social media presence outside of a blog. I don’t Web surf and get most of my news from my home-delivered *Washington Post* and NPR. I’m also generally hard to reach: My author website doesn’t provide a personal e-mail address, and I didn’t own my first smartphone until 2012 (when my pregnant wife gave me an ultimatum—“you have to have a phone *that works* before our son is born”).

On the other hand, my commitment to depth has rewarded me. In the ten-year period following my college graduation, I published four books, earned a PhD, wrote peer-reviewed academic papers at a high rate, and was hired as a tenure-track professor at Georgetown University. I maintained this voluminous production while rarely working past five or six p.m. during the workweek.

This compressed schedule is possible because I’ve invested significant effort to minimize the shallow in my life while making sure I get the most out of the time this frees up. I build my days around a core of carefully chosen deep work, with the shallow activities I absolutely cannot avoid batched into smaller bursts at the peripheries of my schedule. Three to four hours a day, five days a week, of uninterrupted and carefully directed concentration, it turns out, can produce a lot of valuable output.

My commitment to depth has also returned nonprofessional benefits. For the most part, I don’t touch a computer between the time when I get home from work and the next morning when the new workday begins (the main exception being blog posts, which I like to write after my kids go to bed). This ability to fully disconnect, as opposed to the more standard practice of sneaking in a few quick work e-mail checks, or giving in to frequent surveys of social media sites, allows me to be present with my

wife and two sons in the evenings, and read a surprising number of books for a busy father of two. More generally, the lack of distraction in my life tones down that background hum of nervous mental energy that seems to increasingly pervade people's daily lives. I'm comfortable being bored, and this can be a surprisingly rewarding skill—especially on a lazy D.C. summer night listening to a Nationals game slowly unfold on the radio.

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This book is best described as an attempt to formalize and explain my attraction to depth over shallowness, and to detail the types of strategies that have helped me act on this attraction. I've committed this thinking to words, in part, to help you follow my lead in rebuilding your life around deep work—but this isn't the whole story. My other interest in distilling and clarifying these thoughts is to further develop my own practice. My recognition of the deep work hypothesis has helped me thrive, but I'm convinced that I haven't yet reached my full value-producing potential. As you struggle and ultimately triumph with the ideas and rules in the chapters ahead, you can be assured that I'm following suit—ruthlessly culling the shallow and painstakingly cultivating the intensity of my depth. (You'll learn how I fare in this book's conclusion.)

When Carl Jung wanted to revolutionize the field of psychiatry, he built a retreat in the woods. Jung's Bollingen Tower became a place where he could maintain his ability to think deeply and then apply the skill to produce work of such stunning originality that it changed the world. In the pages ahead, I'll try to convince you to join me in the effort to build our own personal Bollingen Towers; to cultivate an ability to produce real value in an increasingly distracted world; and to recognize a truth embraced by the most productive and important personalities of generations past: A deep life is a good life.

## PART 1

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### The Idea

## Chapter One

### Deep Work Is Valuable

As Election Day loomed in 2012, traffic at the *New York Times* website spiked, as is normal during moments of national importance. But this time, something was different. A wildly disproportionate fraction of this traffic—more than 70 percent by some reports—was visiting a single location in the sprawling domain. It wasn't a front-page breaking news story, and it wasn't commentary from one of the paper's Pulitzer Prize-winning columnists; it was instead a blog run by a baseball stats geek turned election forecaster named Nate Silver. Less than a year later, ESPN and ABC News lured Silver away from the *Times* (which tried to retain him by promising a staff of up to a dozen writers) in a major deal that would give Silver's operation a role in everything from sports to weather to network news segments to, improbably enough, Academy Awards telecasts. Though there's debate about the methodological rigor of Silver's hand-tuned models, there are few who deny that in 2012 this thirty-five-year-old data whiz was a winner in our economy.

Another winner is David Heinemeier Hansson, a computer programming star who created the Ruby on Rails website development framework, which currently provides the foundation for some of the Web's most popular destinations, including Twitter and Hulu. Hansson is a partner in the influential development firm Basecamp (called 37signals until 2014). Hansson doesn't talk publicly about the magnitude of his profit share from Basecamp or his other revenue sources, but we can assume they're lucrative given that Hansson splits his time between Chicago, Malibu, and Marbella, Spain, where he dabbles in high-performance race-car driving.

Our third and final example of a clear winner in our economy is John Doerr, a general partner in the famed Silicon Valley venture capital fund Kleiner Perkins Caufield & Byers. Doerr helped fund many of the key companies fueling the current technological revolution, including Twitter, Google, Amazon, Netscape, and Sun Microsystems. The return on these investments has been astronomical: Doerr's net worth, as of this writing, is more than \$3 billion.

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Why have Silver, Hansson, and Doerr done so well? There are two types of answers

to this question. The first are *micro* in scope and focus on the personality traits and tactics that helped drive this trio's rise. The second type of answers are more *macro* in that they focus less on the individuals and more on the type of work they represent. Though both approaches to this core question are important, the macro answers will prove most relevant to our discussion, as they better illuminate what our current economy rewards.

To explore this macro perspective we turn to a pair of MIT economists, Erik Brynjolfsson and Andrew McAfee, who in their influential 2011 book, *Race Against the Machine*, provide a compelling case that among various forces at play, it's the rise of digital technology in particular that's transforming our labor markets in unexpected ways. "We are in the early throes of a Great Restructuring," Brynjolfsson and McAfee explain early in their book. "Our technologies are racing ahead but many of our skills and organizations are lagging behind." For many workers, this lag predicts bad news. As intelligent machines improve, and the gap between machine and human abilities shrinks, employers are becoming increasingly likely to hire "new machines" instead of "new people." And when only a human will do, improvements in communications and collaboration technology are making remote work easier than ever before, motivating companies to outsource key roles to stars—leaving the local talent pool underemployed.

This reality is not, however, universally grim. As Brynjolfsson and McAfee emphasize, this Great Restructuring is not *driving down* all jobs but is instead *dividing* them. Though an increasing number of people will lose in this new economy as their skill becomes automatable or easily outsourced, there are others who will not only survive, but thrive—becoming more valued (and therefore more rewarded) than before. Brynjolfsson and McAfee aren't alone in proposing this bimodal trajectory for the economy. In 2013, for example, the George Mason economist Tyler Cowen published *Average Is Over*, a book that echoes this thesis of a digital division. But what makes Brynjolfsson and McAfee's analysis particularly useful is that they proceed to identify three specific groups that will fall on the lucrative side of this divide and reap a disproportionate amount of the benefits of the Intelligent Machine Age. Not surprisingly, it's to these three groups that Silver, Hansson, and Doerr happen to belong. Let's touch on each of these groups in turn to better understand why they're suddenly so valuable.

## The High-Skilled Workers

Brynjolfsson and McAfee call the group personified by Nate Silver the "high-skilled"

workers. Advances such as robotics and voice recognition are automating many low-skilled positions, but as these economists emphasize, “other technologies like data visualization, analytics, high speed communications, and rapid prototyping have augmented the contributions of more abstract and data-driven reasoning, increasing the values of these jobs.” In other words, those with the oracular ability to work with and tease valuable results out of increasingly complex machines will thrive. Tyler Cowen summarizes this reality more bluntly: “The key question will be: are you good at working with intelligent machines or not?”

Nate Silver, of course, with his comfort in feeding data into large databases, then siphoning it out into his mysterious Monte Carlo simulations, is the epitome of the high-skilled worker. Intelligent machines are not an obstacle to Silver’s success, but instead provide its precondition.

## The Superstars

The ace programmer David Heinemeier Hansson provides an example of the second group that Brynjolfsson and McAfee predict will thrive in our new economy: “superstars.” High-speed data networks and collaboration tools like e-mail and virtual meeting software have destroyed regionalism in many sectors of knowledge work. It no longer makes sense, for example, to hire a full-time programmer, put aside office space, and pay benefits, when you can instead pay one of the world’s best programmers, like Hansson, for just enough time to complete the project at hand. In this scenario, you’ll probably get a better result for less money, while Hansson can service many more clients per year, and will therefore also end up better off.

The fact that Hansson might be working remotely from Marbella, Spain, while your office is in Des Moines, Iowa, doesn’t matter to your company, as advances in communication and collaboration technology make the process near seamless. (This reality does matter, however, to the less-skilled local programmers living in Des Moines and in need of a steady paycheck.) This same trend holds for the growing number of fields where technology makes productive remote work possible—consulting, marketing, writing, design, and so on. Once the talent market is made universally accessible, those at the peak of the market thrive while the rest suffer.

In a seminal 1981 paper, the economist Sherwin Rosen worked out the mathematics behind these “winner-take-all” markets. One of his key insights was to explicitly model talent—labeled, innocuously, with the variable  $q$  in his formulas—as a factor with “imperfect substitution,” which Rosen explains as follows: “Hearing a succession of mediocre singers does not add up to a single outstanding performance.”

In other words, talent is not a commodity you can buy in bulk and combine to reach the needed levels: There's a premium to being the best. Therefore, if you're in a marketplace where the consumer has access to all performers, and everyone's  $q$  value is clear, the consumer will choose the very best. Even if the talent advantage of the best is small compared to the next rung down on the skill ladder, the superstars still win the bulk of the market.

In the 1980s, when Rosen studied this effect, he focused on examples like movie stars and musicians, where there existed clear markets, such as music stores and movie theaters, where an audience has access to different performers and can accurately approximate their talent before making a purchasing decision. The rapid rise of communication and collaboration technologies has transformed many other formerly local markets into a similarly universal bazaar. The small company looking for a computer programmer or public relations consultant now has access to an international marketplace of talent in the same way that the advent of the record store allowed the small-town music fan to bypass local musicians to buy albums from the world's best bands. The superstar effect, in other words, has a broader application today than Rosen could have predicted thirty years ago. An increasing number of individuals in our economy are now competing with the rock stars of their sectors.

## The Owners

The final group that will thrive in our new economy—the group epitomized by John Doerr—consists of those with capital to invest in the new technologies that are driving the Great Restructuring. As we've understood since Marx, access to capital provides massive advantages. It's also true, however, that some periods offer more advantages than others. As Brynjolfsson and McAfee point out, postwar Europe was an example of a bad time to be sitting on a pile of cash, as the combination of rapid inflation and aggressive taxation wiped out old fortunes with surprising speed (what we might call the “Downton Abbey Effect”).

The Great Restructuring, unlike the postwar period, *is* a particularly good time to have access to capital. To understand why, first recall that bargaining theory, a key component in standard economic thinking, argues that when money is made through the combination of capital investment and labor, the rewards are returned, roughly speaking, proportional to the input. As digital technology reduces the need for labor in many industries, the proportion of the rewards returned to those who own the intelligent machines is growing. A venture capitalist in today's economy can fund a company like Instagram, which was eventually sold for a billion dollars, while

employing *only thirteen people*. When else in history could such a small amount of labor be involved in such a large amount of value? With so little input from labor, the proportion of this wealth that flows back to the machine owners—in this case, the venture investors—is without precedent. It's no wonder that a venture capitalist I interviewed for my last book admitted to me with some concern, "Everyone wants my job."

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Let's pull together the threads spun so far: Current economic thinking, as I've surveyed, argues that the unprecedented growth and impact of technology are creating a massive restructuring of our economy. In this new economy, three groups will have a particular advantage: those who can work well and creatively with intelligent machines, those who are the best at what they do, and those with access to capital.

To be clear, this Great Restructuring identified by economists like Brynjolfsson, McAfee, and Cowen is not the *only* economic trend of importance at the moment, and the three groups mentioned previously are not the *only* groups who will do well, but what's important for this book's argument is that these trends, even if not alone, *are* important, and these groups, even if they are not the only such groups, *will* thrive. If you can join any of these groups, therefore, you'll do well. If you cannot, you might still do well, but your position is more precarious.

The question we must now face is the obvious one: How does one join these winners? At the risk of quelling your rising enthusiasm, I should first confess that I have no secret for quickly amassing capital and becoming the next John Doerr. (If I had such secrets, it's unlikely I'd share them in a book.) The other two winning groups, however, are accessible. How to access them is the goal we tackle next.

## How to Become a Winner in the New Economy

I just identified two groups that are poised to thrive and that I claim are accessible: those who can work creatively with intelligent machines and those who are stars in their field. What's the secret to landing in these lucrative sectors of the widening digital divide? I argue that the following two core abilities are crucial.

### *Two Core Abilities for Thriving in the New Economy*

1. The ability to quickly master hard things.
2. The ability to produce at an elite level, in terms of both quality and speed.



Let's begin with the first ability. To start, we must remember that we've been spoiled by the intuitive and drop-dead-simple user experience of many consumer-facing technologies, like Twitter and the iPhone. These examples, however, are consumer products, not serious tools: Most of the intelligent machines driving the Great Restructuring are significantly more complex to understand and master.

Consider Nate Silver, our earlier example of someone who thrives by working well with complicated technology. If we dive deeper into his methodology, we discover that generating data-driven election forecasts is not as easy as typing "Who will win more votes?" into a search box. He instead maintains a large database of poll results (thousands of polls from more than 250 pollsters) that he feeds into Stata, a popular statistical analysis system produced by a company called StataCorp. These are not easy tools to master. Here, for example, is the type of command you need to understand to work with a modern database like Silver uses:

```
CREATE VIEW cities AS SELECT name, population, altitude FROM capitals UNION SELECT  
name, population, altitude FROM non_capitals;
```

Databases of this type are interrogated in a language called SQL. You send them commands like the one shown here to interact with their stored information. Understanding how to manipulate these databases is subtle. The example command, for example, creates a "view": a virtual database table that pulls together data from multiple existing tables, and that can then be addressed by the SQL commands like a standard table. When to create views and how to do so well is a tricky question, one of many that you must understand and master to tease reasonable results out of real-world databases.

Sticking with our Nate Silver case study, consider the other technology he relies on: Stata. This is a powerful tool, and definitely not something you can learn intuitively after some modest tinkering. Here, for example, is a description of the features added to the most recent version of this software: "Stata 13 adds many new features such as treatment effects, multilevel GLM, power and sample size, generalized SEM, forecasting, effect sizes, Project Manager, long strings and BLOBs, and much more." Silver uses this complex software—with its generalized SEM and BLOBs—to build intricate models with interlocking parts: multiple regressions, conducted on custom parameters, which are then referenced as custom weights used in probabilistic expressions, and so on.

The point of providing these details is to emphasize that intelligent machines are complicated and hard to master.\* To join the group of those who can work well with these machines, therefore, requires that you hone your ability to master hard things.

And because these technologies change rapidly, this process of mastering hard things never ends: You must be able to do it quickly, again and again.

This ability to learn hard things quickly, of course, isn't just necessary for working well with intelligent machines; it also plays a key role in the attempt to become a superstar in just about any field—even those that have little to do with technology. To become a world-class yoga instructor, for example, requires that you master an increasingly complex set of physical skills. To excel in a particular area of medicine, to give another example, requires that you be able to quickly master the latest research on relevant procedures. To summarize these observations more succinctly: If you can't learn, you can't thrive.

Now consider the second core ability from the list shown earlier: producing at an elite level. If you want to become a superstar, mastering the relevant skills is necessary, but not sufficient. You must then transform that latent potential into tangible results that people value. Many developers, for example, can program computers well, but David Hansson, our example superstar from earlier, leveraged this ability to produce Ruby on Rails, the project that made his reputation. Ruby on Rails required Hansson to push his current skills to their limit and produce unambiguously valuable and concrete results.

This ability to produce also applies to those looking to master intelligent machines. It wasn't enough for Nate Silver to learn how to manipulate large data sets and run statistical analyses; he needed to then show that he could use this skill to tease information from these machines that a large audience cared about. Silver worked with many stats geeks during his days at *Baseball Prospectus*, but it was Silver alone who put in the effort to adapt these skills to the new and more lucrative territory of election forecasting. This provides another general observation for joining the ranks of winners in our economy: If you don't produce, you won't thrive—no matter how skilled or talented you are.

Having established two abilities that are fundamental to getting ahead in our new, technology-disrupted world, we can now ask the obvious follow-up question: How does one cultivate these core abilities? It's here that we arrive at a central thesis of this book: **The two core abilities just described depend on your ability to perform deep work.** If you haven't mastered this foundational skill, you'll struggle to learn hard things or produce at an elite level.

The dependence of these abilities on deep work isn't immediately obvious; it requires a closer look at the science of learning, concentration, and productivity. The sections ahead provide this closer look, and by doing so will help this connection

between deep work and economic success shift for you from unexpected to unimpeachable.

## Deep Work Helps You Quickly Learn Hard Things

“Let your mind become a lens, thanks to the converging rays of attention; let your soul be all intent on whatever it is that is established in your mind as a dominant, wholly absorbing idea.”

This advice comes from Antonin-Dalmace Sertillanges, a Dominican friar and professor of moral philosophy, who during the early part of the twentieth century penned a slim but influential volume titled *The Intellectual Life*. Sertillanges wrote the book as a guide to “the development and deepening of the mind” for those called to make a living in the world of ideas. Throughout *The Intellectual Life*, Sertillanges recognizes the necessity of mastering complicated material and helps prepare the reader for this challenge. For this reason, his book proves useful in our quest to better understand how people quickly master hard (cognitive) skills.

To understand Sertillanges’s advice, let’s return to the quote from earlier. In these words, which are echoed in many forms in *The Intellectual Life*, Sertillanges argues that to advance your understanding of your field you must tackle the relevant topics systematically, allowing your “converging rays of attention” to uncover the truth latent in each. In other words, he teaches: *To learn requires intense concentration*. This idea turns out to be ahead of its time. In reflecting on the life of the mind in the 1920s, Sertillanges uncovered a fact about mastering cognitively demanding tasks that would take academia another seven decades to formalize.

This task of formalization began in earnest in the 1970s, when a branch of psychology, sometimes called performance psychology, began to systematically explore what separates experts (in many different fields) from everyone else. In the early 1990s, K. Anders Ericsson, a professor at Florida State University, pulled together these strands into a single coherent answer, consistent with the growing research literature, that he gave a punchy name: deliberate practice.

Ericsson opens his seminal paper on the topic with a powerful claim: “We deny that these differences [between expert performers and normal adults] are immutable... Instead, we argue that the differences between expert performers and normal adults reflect a life-long period of deliberate effort to improve performance in a specific domain.”

American culture, in particular, loves the storyline of the prodigy (“Do you know

how easy this is for me!?” Matt Damon’s character famously cries in the movie *Good Will Hunting* as he makes quick work of proofs that stymie the world’s top mathematicians). The line of research promoted by Ericsson, and now widely accepted (with caveats\*), de-stabilizes these myths. To master a cognitively demanding task requires this specific form of practice—there are few exceptions made for natural talent. (On this point too, Sertillanges seems to have been ahead of his time, arguing in *The Intellectual Life*, “Men of genius themselves were great only by bringing all their power to bear on the point on which they had decided to show their full measure.” Ericsson couldn’t have said it better.)

This brings us to the question of what deliberate practice actually requires. Its core components are usually identified as follows: (1) your attention is focused tightly on a specific skill you’re trying to improve or an idea you’re trying to master; (2) you receive feedback so you can correct your approach to keep your attention exactly where it’s most productive. The first component is of particular importance to our discussion, as it emphasizes that deliberate practice cannot exist alongside distraction, and that it instead requires uninterrupted concentration. As Ericsson emphasizes, “Diffused attention is almost antithetical to the *focused attention* required by deliberate practice” (emphasis mine).

As psychologists, Ericsson and the other researchers in his field are not interested in *why* deliberate practice works; they’re just identifying it as an effective behavior. In the intervening decades since Ericsson’s first major papers on the topic, however, neuroscientists have been exploring the physical mechanisms that drive people’s improvements on hard tasks. As the journalist Daniel Coyle surveys in his 2009 book, *The Talent Code*, these scientists increasingly believe the answer includes myelin—a layer of fatty tissue that grows around neurons, acting like an insulator that allows the cells to fire faster and cleaner. To understand the role of myelin in improvement, keep in mind that skills, be they intellectual or physical, eventually reduce down to brain circuits. This new science of performance argues that you get better at a skill as you develop more myelin around the relevant neurons, allowing the corresponding circuit to fire more effortlessly and effectively. To be great at something is to be well myelinated.

This understanding is important because it provides a neurological foundation for why deliberate practice works. By focusing intensely on a specific skill, you’re forcing the specific relevant circuit to fire, again and again, in isolation. This repetitive use of a specific circuit triggers cells called oligodendrocytes to begin wrapping layers of myelin around the neurons in the circuits—effectively cementing the skill. The reason, therefore, why it’s important to focus intensely on the task at