

STEPHEN DENNING

**THE
AGE
OF**

AGILE

**How Smart Companies Are
Transforming the Way Work Gets Done**

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—SETH KAHAN,
author of *Getting Change Right* and *Getting Innovation Right*

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AMACOM

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To Stephanie, for all that she inspires in me.

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FOREWORD

Bureaucracy is the default operating system for virtually every large-scale organization on the planet. Founded on the ideology of controlism, it elevates conformity above all other organizational virtues. Bureaucracy constitutes an organizational caste system that differentiates between the thinkers (managers) and the doers (employees). As a consequence, bureaucracy squanders enormous quantities of human initiative and imagination.

Today's creative economy needs a radical rethink of our top-down, tradition-encrusted management principles and processes. The challenge: building organizations that are as innovative as they are efficient, as passion-filled as they are pragmatic.

This is not merely about implementing a new practice, process, or structure. Instead, we have to start with a new set of management principles, among which four are particularly vital: transparency, competence, localization, and upside.

Nucor, the most consistently profitable steel company in the world, practices radical transparency. Every single associate knows the profitability of every order that ships. At Nucor, it is the frontline employees, not managers, who are responsible for maximizing margins.

Empowerment also depends on competence. Take Morningstar, the world's largest tomato processor. It has no managers and all key investment decisions are taken by individuals who in other organizations would be regarded as "blue collar" employees. Most of these employees are capable of sophisticated financial modeling—they can calculate the net present value and internal rate of return of new investments. Instead of moving decisions upward at Morningstar, they have moved competence down—to individuals who have the information and the context to make the best decisions.

If you want individuals to think and behave like owners, the organization must be decomposed into small, localized units—each with its own profit and loss (P&L) responsibility. All employees need to be able to see a direct line

between their contribution and the profitability of the microbusiness in which they work. In large, monolithic organizations, there is little sense of accountability for results and little discretion in decision making. The result: employees who show up at work physically, but leave most of their discretionary energy at home.

Finally, if you want people to give their best, they must have an upside—that is, the possibility of personal and financial growth. In most organizations, fixed salaries and role definitions give individuals little incentive to do more than merely meet their targets. There is virtually no room for internal entrepreneurship.

These findings are entirely consistent with what Steve has observed in organizations that are committed to small, agile teams. Make no mistake, the management revolution is well under way. The only question for your organization is whether it is going to lead or follow.

—*Gary Hamel*
Professor, London Business School and
Director, Management Lab

INTRODUCTION

An unstoppable revolution is now under way in our society, affecting almost everyone. The revolution isn't being launched by opposition political parties, or by terrorists in secret cells, or through espionage by some obscure government department. The revolution is being conducted in plain sight by some of our largest and most respected corporations. It's visible to anyone with eyes to see. It's a revolution in how organizations are being run.

The revolution is very simple. Today, organizations are connecting everyone and everything, everywhere, all the time. They are becoming capable of delivering instant, intimate, frictionless value on a large scale. They are creating a world in which people, insights, and money interact quickly, easily, and cheaply. For some, the revolution is uplifting and beautiful. For others, it is dark and threatening.¹

Dazzling examples of the new way of running organizations are everywhere apparent. Firms like Apple and Samsung offer devices that can be tailored to meet the individual wants and whims of hundreds of millions of users. Firms like Tesla, Saab, and Ericsson are upgrading cars, planes, and networks, not by physically installing new items, but by delivering new software to the products via the Web. Meanwhile, Spotify matches billions of musical playlists to individual users' tastes and delivers a weekly playlist tailored to each user's preferences, while Warby Parker sells high-quality eyeglasses for a small fraction of what traditional retailers charge by using a low-friction online model. Online services like Skype, Zoom, and WhatsApp are taking tens of billions of dollars away from old-guard telecom firms by giving customers free or low-cost calls. Amazon has demonstrated what can be accomplished when customer value is pursued ahead of short-term profits: It's not just the world's biggest retailer—it's bigger than all the other retailers put together.² Google has become big and rich very quickly, by providing search capabilities that are offered free.³ The population of Facebook is bigger than that of China. Airbnb, Uber, and Lyft are

showing how to unlock the value in existing assets that were previously lying idle. And so on.

At the same time, what is lifting some companies is killing others. The examples here are also abundant. “Market-leading companies,” as analyst Alan Murray has written in the *Wall Street Journal*, “have missed game-changing transformations in industry after industry—computers (mainframes to PCs), telephony (landline to mobile), photography (film to digital), stock markets (floor to online)—not because of ‘bad’ management, but because they followed the dictates of ‘good’ management.”⁴ In effect, the “good management” that these firms were practicing had become anachronistic. It simply didn’t work anymore.

Spoiler alert. The difference between winners and losers *isn’t* a matter of access to *technology* or *big data*. Both the successful and the unsuccessful firms generally have access to the same technology and data, which are now largely commodities. Traditionally managed organizations also use digital technology and big data but typically get meager results. In some cases, like Kodak, it’s the firm that invented the new technology that has failed to exploit it. It’s not access to technology and data that makes the difference. The difference lies in a different way of running the organization that deploys technology and data more nimbly.⁵

Trying to exploit technology and data with the management practices that are still pervasive in many big corporations today is like driving a horse and buggy on the freeway. To prosper in the very different world that is emerging, firms need a radically different kind of management.

Some firms are embracing the new management paradigm with alacrity. They are happy to shed the traditional management practices of manipulating both staff and customers and instead follow their natural preference to treat people as people and engage in authentic adult-to-adult conversations. Some of them are generating inspired workplaces that create meaning in people’s lives.

Other firms are getting on board more gradually. They reflect on the obvious anomalies of traditional management and feel frustrated that their efforts to fix things don’t work. They find themselves having to run faster and faster just to stay in place. Yet they can also see the extraordinary gains of firms operating in the new way and begin to wonder: “Why can’t we have what they are having?” There often follows a lengthy period of reflection and experimentation before managers finally “get it” and internalize the new mindset.

Some firms are actively resisting the change. For established organizations that have been successfully managed in a traditional fashion for many years with

settled processes, routines, attitudes, and values, the new management paradigm can be difficult, even baffling. It is often at odds with the unspoken assumptions about “the way we do things around here.”

Still other firms have sought to avoid the dilemma through financial engineering. They are pursuing ways of extracting value from the corporation through short-term cost-cutting, offshoring, share buybacks, tax gadgets, and other devices. While these expedients can create an appearance of prosperity for investors in the stock market, they are systematically destroying real shareholder value and genuine economic well-being.

When managers do embrace the new way of running the organization and the “Aha!” of how the new management paradigm is happening on a large scale, it can be an amazing and humanizing experience. Why would anyone consider doing things differently?

In short, this book explores how some organizations are learning how to operate in a way that is potentially better for those doing the work, better for those for whom the work is done, better for the organizations themselves, and better for society. These organizations now form a vast global movement that is transforming the world of work.⁶

The movement began many decades ago, but took off in a major way more recently in an unexpected place: software development. It is now spreading rapidly to all parts, and all kinds, of organizations—big firms and small, simple and complex, software and hardware, technology, manufacturing, health, pharmaceuticals, telecommunications, aircraft, and automobiles—you name it.

The new paradigm enables organizations to thrive in a world of rapid and unpredictable change. It enables a team, a unit, or an entire enterprise to nimbly adapt and upgrade products and services to meet rapidly changing technology and customer needs with efficiency gains, quality improvements, or even completely new products and services. It permits an organization to flourish in a marketplace that is increasingly volatile, uncertain, complex, and ambiguous—the so-called VUCA world.



How did this revolution happen? Some, but not all, of the organizations implementing the new management paradigm see the foundational document of the movement as the 2001 *Manifesto for Software Development*—now commonly called the Agile Manifesto. Others refer to earlier historical antecedents and management practices and use terms like “lean,” “quality,” “design thinking,” or their own home-grown label.⁷

The Agile Manifesto declared that “uncovering better ways of developing software” requires a reversal of some fundamental assumptions of twentieth-century management. It values “individuals and interactions over processes and tools, working software over comprehensive documentation, customer collaboration over contract negotiation and responding to change over following a plan.”⁸

Yet in propounding these values, the Manifesto was implicitly raising a wider and deeper set of questions. What if firms could create workplaces that drew on all the talents of those doing the work? What if those talents were totally focused on delivering extraordinary value to the customers and other stakeholders for whom the work is being done? What if those receiving this unique value would be willing to offer generous recompense for it? What would these workplaces look like? How would they operate? How would they be reconciled with existing goals, principles, and values? Could they operate on a large scale? Could they be reliable?

In 2001, no one really knew the answers to those questions. Experiments were conducted to find out. As with anything new, things proceeded in fits and starts, with frequent setbacks. Many variations in practices were explored. Even when the practices were in essence the same, the approaches often had different labels.

The initial experiments were with single teams. As some of these experiments succeeded, the experiments expanded to groups of teams and eventually to large-scale implementations, even whole organizations. The new way of running organizations spread to manufacturing and other fields.⁹ Some startups that began operating in an Agile fashion continued to be run this way, even as they grew.

For some years, it was hard to make sense of what was going on. Even some of those who embraced the new management paradigm saw it as playing a limited role, mainly in simple software activities in small units or in organizations where reliability was not an issue. Many teams and firms that claimed to be operating in the new way were doing so in name only. Some suggested that the new way of managing, as it expanded beyond individual software development teams, would inevitably mutate into the traditional practices of top-down bureaucracy in order to achieve efficient, reliable management in large-scale operations.

Yet over time what was working and what wasn't became apparent. As a result, there was a convergence toward a family of goals, principles, and values that is demonstrably more productive and more responsive to today's

marketplace than traditional management and that can operate on a large scale. As the movement matures, and as managing software becomes central to the success of most businesses, the new paradigm is becoming a key to the management of everything.

The new paradigm has not been easy for traditional managers to understand or implement. First, much of the recent momentum came from an unexpected source: software development, which had no prior reputation for excellence in management. It was hard for general managers to accept that they had anything to learn about management from software developers. Managers were slow to grasp the wider significance. In some ways, the new way of running an organization is still the best-kept management secret on the planet.¹⁰

The antagonism is understandable. These managers have spent most of their careers accepting the prevailing management paradigm and proceeding within its assumptions. Their careers have flourished by mastering and implementing twentieth-century concepts and practices. They see that business schools still teach these concepts and practices. The thought that everything on which they have built their careers is changing beneath their feet can be unnerving—even alarming. Yet the change is coming at them willy-nilly. One study suggests that 75 percent of the Standard & Poor's 500 Index (S&P 500) will turn over in the next fifteen years.¹¹ Another says that one in three public companies will delist in the next five years.¹² The choice for many organizations is simple: change or die.

Second, the illusion that technology will by itself solve the challenge of adaptability is still widespread. Many firms fail to see that since generally all organizations have access to the same rapidly evolving technology, competitive advantage flows not from the technology itself but rather from the agility with which organizations understand and adapt the technology to meet customers' real needs.

And third, the way of running an organization represents a genuine paradigm shift in management, with fundamentally different goals, principles, and values that disrupt deeply entrenched assumptions, attitudes, and habits. Traditional managers often believe—and hope—that the changes are merely a fix that they can apply to specific issues, rather than a fundamentally different way of approaching management itself.

The revolution is proceeding at different speeds in different sectors. Manufacturing, for instance, which pioneered the early stages of the Agile revolution, is now behind software development. Yet as physical products and services are increasingly software driven and the “Internet of Things” makes its

presence felt, the distinction between software and manufacturing is disintegrating. As “software is eating the world,” all firms are becoming dependent on software, thus accelerating the spread of the Agile paradigm.¹³



The central theme of this book—that corporations must radically reinvent how they are organized and led and embrace a new management paradigm—may seem to some readers to be extreme. It is not. This isn’t a management fad that was invented last Tuesday and will be gone by Friday. It is based not just on a handful of recent examples—mere flashes in the pan—but on the experiences over decades of tens of thousands of organizations around the world.

As someone who had been deeply involved in general management for decades as a manager at the World Bank, I have to admit that I didn’t pay much attention to these developments until 2008. It was only then that I suddenly grasped that the management discoveries of these software developers had vast implications for all organizations. I introduced the thinking to general managers in my 2010 book, *The Leader’s Guide to Radical Management*. Since then, I have been studying the rapidly expanding implications in many different sectors, as whole organizations join the movement. I have written over 700 articles as a contributor to Forbes.com, with many case studies—both recent and historical.

For the last couple of years, I have been leading a learning consortium of major organizations that are passionate about discovering together what these changes mean for their goals, principles, and practices. This book is in part a progress report on their discoveries.¹⁴

Implementing the new management paradigm isn’t easy. It’s not for the faint of heart. All the firms that we studied experienced major setbacks in the early going. The leaders persevered and eventually succeeded through adherence to their goals, principles, and values.

Nor should we be distracted by the fact that a great deal of fake change is still rampant. In some cases, organizations claim to be operating in the new way while offering no more than a thin veneer laid on top of traditional top-down bureaucracy. These companies are doing what they’ve always done; they’re just giving it a new name.

The new management paradigm is a journey, not a destination. It involves never-ending innovation, *both* in terms of the specific innovations that the organization generates for the customer *and* the steady improvements to the practice of management itself. A firm never “arrives” at a steady state where it can relax because “we are now Agile.” Embracing the new paradigm requires

continuous commitment and leadership from management.

This book offers snapshots of firms that are at different stages of their respective journeys. What got them to where they are now is no guarantee of future success. These firms will only continue to prosper if they persist in their embrace of the new goals, principles, and values and go on delighting customers with continuous innovation.

This book does not of course begin with a clean slate. There is a vast and growing body of literature on the new management goals, principles, and practices. Particularly practices. Much of the literature is written by software developers for other software developers, often in software-centric jargon and often focused on tools and processes. This book distills the essence of the new management paradigm, particularly the relevant mindset, in nontechnical language.

The first part of the book ([Chapters 1 through 7](#)) covers the principles of Agile management. To master the heart of the new management paradigm, we will begin in [Chapter 1](#) by visiting two very different firms—a very young firm, Spotify, the music streaming service, and a very old firm, Barclays, the global bank—with one key thing in common: a ferocious commitment to the new management paradigm.

Then we'll explore the three laws of the new management paradigm: the Law of the Small Team, the Law of the Customer, and the Law of the Network. We will see how the new management mindset applies the three laws. This isn't just a methodology or process to be implemented within the assumptions of current management practice. It involves a fundamentally different concept of what an organization is and how it must operate to succeed in today's marketplace.

We'll begin with the *Law of the Small Team* ([Chapter 2](#)) because it's the aspect of management that received most of the attention of the early Agile implementations. In our visits to Menlo Innovations (the developer of mission-critical software in Ann Arbor, Michigan) and Etsy (the handicrafts marketplace), we'll see how, in a VUCA world, big and difficult problems need to be disaggregated into small batches and performed by small cross-functional autonomous teams, working iteratively in short cycles in a state of flow, with fast feedback from customers and end-users.

We then take a look at the *Law of the Customer* ([Chapter 3](#)). It's the most important of the three laws because it makes sense of the other two. We'll examine the implications of the epic shift in power in the marketplace from seller to buyer, and the need for firms to radically accelerate their ability to make decisions and change direction in the light of unexpected events.

Then we'll take a tour of the lynchpin of Agile management—the *Law of the Network*—which ties together the other two laws. We'll see (in [Chapter 4](#)) what's involved in making the whole organization Agile. We'll learn how even the U.S. Army has discovered that a steep, vertical hierarchy is no match for a committed, interactive network, even one that is underresourced and underskilled. We'll probe yet more Agile paradoxes: Control is enhanced by letting go of control, and Agile leaders are less like fierce, conquering warriors than curators or gardeners.

We'll pay a visit to an old global behemoth in Seattle that, against all the odds and the predictions of Agile experts, is undergoing an *Agile transformation at scale* ([Chapter 5](#)). Then we'll explore what's involved in making major financial gains by moving from operational Agility to *Strategic Agility* ([Chapter 6](#)).

Achieving Strategic Agility will often involve a *shift in an organization's culture* ([Chapter 7](#)). We'll pay a call on a Silicon Valley icon that was on the verge of bankruptcy and that turned its toxic culture into a dynamic innovative culture that is now generating huge profits through market-creating innovations.

In the second part of the book ([Chapters 8 through 11](#)), we'll explore key constraints or traps to implementing Agile management. First up is the pervasive goal in publicly owned corporations: *maximizing shareholder value* as reflected in the current stock price. We'll see the havoc caused to Agile management and to the economy by managers who focus on extracting, rather than creating, value ([Chapter 8](#)).

We'll look at the mind-boggling use of *share buybacks* and examine what organizations—and society—need to do about it ([Chapter 9](#)). We'll examine the problems caused by *cost-oriented economics* and the resulting large-scale offshoring of jobs over the last several decades ([Chapter 10](#)). We'll see how a backward-looking strategy became a constraint instead of an enabler ([Chapter 11](#)).

In the epilogue ([Chapter 12](#)), we'll explore the historical precedents over four centuries for making paradigm shifts in management and the leadership implications for the emerging age of Agile, which offers the possibility of a great awakening—the foreshadowing of a transformation in the way our organizations and our society function.¹⁵

This book answers three simple questions. How do organizations flourish in a VUCA world, where the customer is in charge of the marketplace? Why has embracing this new way of running organizations become a necessity? What can leaders at all levels of the society do to create a more energizing, prosperous, and

meaningful mode of working and living?

[PART ONE]

AGILE

MANAGEMENT

1.

MORE VALUE FROM LESS WORK

What we need is an entrepreneurial society in which innovation and entrepreneurship are normal, steady, and continuous.

—PETER DRUCKER¹

For Spotify—the fast-growing Swedish music streaming service with over 100 million active users and more than 30 million paying users—the true value of Agile management became dramatically apparent in mid-2015. Spotify had embraced Agile management since its launch in 2008, with swarms of self-organizing teams intent on delivering steadily more value to Spotify’s users. The premise of Agile management is that empowering bottom-up innovation will steadily add significant value for customers and the firm. Accordingly, the teams at Spotify—some 2,500 people as of mid-2016—seek to learn everything about you as both a listener of music and as a user of Spotify, and then find interesting ways to appeal to you on both levels. Sometimes they do that by matchmaking, by telling you at the right moment about a great playlist, or a great new feature, or some new content that they think you will like. Other times, they do it by creating new listening experiences.

Innovations generated by Agile teams had fueled Spotify’s growth for seven years. But in March 2015, a couple of Spotify’s software engineers—Chris Johnson and Ed Newett—came to Matt Ogle, a senior product leader with two degrees in English literature and a background as an engineer, with an idea that turned out to be a game-changer. They had thought of a way of solving a problem that had stumped Spotify and other music streaming services like Pandora and Apple Music for years: How could users find the music they would really love in a library of millions of songs without wasting time browsing

through music they didn't like?²

In 2013, Spotify had introduced a feature called News-Feed in which users received personalized recommendations of albums and artists. This was progress, but it still took a lot of effort on the part of users to engage with the recommendations and get to listen to the music.

In 2014, Spotify had offered a feature called Discover, which grouped the recommendations into strips, as on Netflix. This was easier to use than News-Feed, but it also required active user effort. Studies showed that users were still spending more time listening to playlists that Spotify's editors had created.

Now the two engineers had another idea. What if, they asked, we could completely remove the friction for you as a user? What if we took the music you had listened to in the past and sorted it into micro-genres? What if we analyzed the billions of playlists created by other users and algorithmically matched preferences with your playlists, so we can then create a new playlist specifically designed for you? What if we delivered this personalized playlist of songs for you once a week? What if, every time you skipped a track, we learned from that and made sure that your next weekly playlist would appeal to you even more? What if we did this not just for you but for every one of our tens of millions of active users? Would that be possible? Or would it just produce noise? This was the embryo of the wildly successful idea on Spotify that became known as Discover Weekly.

Ogle liked the idea. He discussed with the engineers different ways of making it work. They brought in a designer who played the bad cop in the discussion. "Why should this feature exist?" he asked. "We already have too many things for users! What will it do that we're not already doing?" Those questions helped the team get clearer on what the new idea was for and what value it might add.

Ogle's team had all the elements in place to conduct a quick experiment. Spotify had already collected data on active users—which then numbered some 75 million. They had also built high-level capabilities in machine learning and artificial intelligence. They had already developed micro-genres of music and classified its entire vast repository of music and its billions of playlists.

But most important, Spotify had created an organizational culture of Agile management in which autonomous cross-functional teams were encouraged to experiment and create new ways of adding value to customers. With Agile management, Ogle and his team didn't need to prepare a detailed cost-benefit proposal and seek a series of approvals up a steep management chain before they could try out their idea. They were used to working as a team, with radical

transparency among the team members. They were already tightly focused on the user experience: They knew how to test alternatives and learn from the tests. Within a couple of weeks, the tiny cross-functional team had pulled together a quick prototype and tried it out on Spotify’s own staff—all active Spotify users.

The result? Spotify staff just loved it. Ogle himself became a huge enthusiast. On one of his very first playlists, he recalls listening to a song by Jan Hammer, the composer of the *Miami Vice* theme. “It starts off with this poppy thing, then the strings,” said Ogle. “When the vocals came in, I thought, holy shit, we have to ship this feature. Whatever just served this song needs to be out in the world.”³

Ogle and his team did another quick experiment on one percent of the active Spotify users—close to a million people. Again, the response was strongly positive. Amazingly, 65 percent of respondents found “a new favorite song” in their personalized weekly playlist. As a result, Spotify’s management was ready to introduce Discover Weekly for all Spotify listeners.

Scaling up the Discover Weekly algorithms from one million users to 75 million users in twenty-one languages in multiple time zones each week proved to be more of a challenge than the engineers expected. Nevertheless, working in an Agile fashion totally focused on the goal, the team took only a couple of months to complete the work. When Discover Weekly was deployed to all Spotify users in July 2015, just four months from the initial concept, it was a wild success—beyond anything Ogle and his engineers had imagined.

In fact, Discover Weekly has become a global phenomenon. It has resulted in a massive boost for Spotify’s brand and a huge influx of new users. It is more than just another feature—it is almost a new brand in itself, with foreign-language countries clamoring for “Discover Weekly” rather than a label in their own language. Every Monday morning, Spotify users—now more than 100 million of them—receive a playlist of thirty songs that feels like a gift from a talented and knowledgeable musical friend who understands their taste in music and who has searched the world to put together a handpicked playlist of the very best music they will adore.

Users say it’s spooky how fresh and familiar their Discover Weekly playlists feel. A common reaction is, “How come Discover Weekly knows me better than myself?” Within the first six months, songs from Discover Weekly had been streamed several billion times.

“If you’re the smallest, strangest musician in the world, doing something that only twenty people in the world will dig,” says Ogle, “we can now find those twenty people and connect the dots between the artist and listeners. Discover

Weekly is a compelling new way to do that at a scale that's never been done before.”⁴

Discover Weekly gives Spotify a massive brand advantage over competitors like Pandora and Apple Music, which also have vast catalogs of music but without Spotify's personalized approach to help you find music you will enjoy. Yet Spotify knows it can't rest on this success. It knows that its competitors will soon emulate Discover Weekly. In the spirit of Agile, Spotify is already racing ahead with further innovations that will bind its user community ever more tightly to the music streaming service they have come to love. Spotify's management knows that it will only survive if it continues to pursue Agile management and innovates faster than its competitors.



At first glance, the idea that Barclays—a 327-year-old transatlantic bank with more than 100,000 employees—could become as Agile as Spotify and deliver an instant, frictionless, intimate banking experience at scale might seem ridiculous. The bank operates in a difficult environment. It's highly regulated. It's recovering from a major financial crisis. And it has new challenges coming its way as it grapples with what Brexit means for the future. It's a transatlantic bank offering products and services across personal, corporate, and investment banking, credit cards, and wealth management, with a strong presence in its two home markets: the United Kingdom and the United States. The bank operates in over forty countries. One-third of payments made in the U.K. pass through Barclays.

Despite its size and reach, Barclays, like all the big global banks, finds itself in a world in which its customers are coming to expect the same kind of instant, intimate, frictionless responsiveness at scale that they experience with Spotify's Discover Weekly playlist. What they would like from a bank are prompt, helpful responses, not just to simple questions like, “What's my bank balance?” but also, “Should I spend this money on this car? Should I buy, lease, or get a loan? What sort of insurance do I need? What impact will this have on my savings? How is my retirement looking?”

Ironically, if Barclays, like all banks, knew what it already knew, it could, like Spotify, provide good answers to those questions. That's because Barclays, like Spotify, has massive amounts of data about its customers and clients that could help the bank add value by answering some of these questions—if this data was put to better use.

Barclays, like all the big global banks, also faces the challenge of inherited

management practices and old data structures and processes that can make it difficult to deliver instant, frictionless, intimate banking experiences at scale. As an old institution, it has to invest time and money in upgrading and streamlining old data structures, processes, and applications to improve the products and services it can offer its customers. With individual customers' information stored on separate parts of the bank's systems, it can be difficult to provide the level of customer experience that customers have come to expect from companies today.

Decades ago, none of that mattered to customers when they would make an appointment to see their local bank manager and discuss how they could finance an extension on their house, or buy a new car, or invest in shares to provide for their retirement. Much depended on a personal relationship with the bank manager. In the end, customers might have gotten the loan or the advice they needed. But the process took time to arrange. It was inconvenient. It involved significant effort producing documents and records. And it worked for only a handful of customers.

How could Barclays possibly go from that old-school banking experience to the kind of easy, convenient, personalized responsiveness that its millions of twenty-first-century customers are coming to expect in everything they do?

Unlike Spotify, Barclays had not, until recently, made an institutional commitment to Agile management. Like most of the big global banks, Barclays had management practices and processes that were steeply hierarchical and bureaucratic. As in most large organizations today, Barclays had isolated islands of Agile software developers, but this wasn't consistent across the organization. Nor had Barclays developed the capability to carry out and learn from rapid experiments with its customers.

Yet management could see that some of the bank's competitors are already acting with that kind of agility. On the international front, large Asian competitors, such as Alibaba and Tencent, are expanding rapidly, with management and data systems oriented to meeting their customers' needs, not their own internal requirements. They are acquiring new customers for just a couple of cents each, while the cost for larger, mainstream financial players like Barclays was a large multiple of that. Meanwhile, digital behemoths like Google, Amazon, and Apple are handling an increasing proportion of the world's financial transactions that used to be handled by banks. On yet another front, financial sector startups are innovating rapidly and threatening to create the very instant, personalized, frictionless responsiveness that customers increasingly expect. Although these startups are still small, many of them are now valued at more than a billion dollars. A group of some thirty of them formed in just the

last few years are worth collectively more than Barclays' own market capitalization.⁵

In 2014, Barclays started to respond to these external threats, recognizing that it needed to adapt its way of working, management practices, and systems. To keep pace with what new competitors were offering, the bank recognized that it would only succeed if it was able to offer, like Spotify, easy, quick, convenient, personalized responsiveness at scale. In short, Barclays had to become Agile. In March 2015, Barclays' operations and technology team announced that becoming Agile was a key strategic initiative. The many islands of Agile within Barclays were invited to come out from the shadows and become the champions of Agile transformation at Barclays.

Two years later, by March 2017, Barclays had made remarkable progress. After a massive program of Agile training and coaching, the equivalent of more than a thousand self-organizing Agile teams—around 15,000 people—were operating, covering every aspect of the business (commercial bank, investment bank, accounts, audits, and compliance)—all focused on delivering more value sooner to customers. While some teams were still in the early stages of mastering Agile management practices, a sizable proportion were already mature and making significant inroads improving Barclays' performance.

For example, the *Agile Loans* team devised an online loan application that reduced the time from “initial ask” to “the Barclays response” from twelve days to twenty minutes. The online solution operates almost a thousand times faster than cumbersome paper-based procedures and in-person interactions requiring visits to physical offices.

Agile Onboarding is another example. You might think that a bank like Barclays would have figured out how to make it easy for anyone to become a customer, either as an individual or as a business, through opening a new account, applying for a loan, or making a new investment. Yet in practice, the online and in-branch processes for this function were cumbersome. Barclays had recognized the importance of improving the process: Several years before, it had tasked a group of over a hundred developers to create a better online onboarding process, but they had yet to produce a desirable solution. By contrast, when Barclays put together an Agile team of only six developers, they developed a viable onboarding tool in just six months, also resulting in cost savings and improved productivity.

The Agile transformation at Barclays is both top-down and bottom-up. Support and inspiration from the top are critical to legitimizing the Agile way of working and helping to remove impediments to the fundamental changes

implicit in Agile. At the staff level, there is a community of Agile practitioners with some 2,500 people, along with around 15,000 practitioners involved in Agile teams. In fact, it was these Agile community members who drafted the bank's Agile Enterprise transformation proposal in 2014. Barclays' own Agile advocates said, "Here's what Agile means for us and here's how we should do it." And now Barclays is doing exactly that. Since Agile is perceived as something inspired and supported—not imposed—from on high, the psychological level of buy-in at the working level is strong.

Nevertheless, it's still early days for Barclays' Agile transformation. Barclays has much work to do before it can fully deploy the intelligence and the know-how of algorithms that could help millions of customers make better financial decisions in real time. This will require deeper understanding of their different situations, contexts, and prospects, as well as insight into how their needs can be met on the fly and at scale. And it is only through years of steady implementation that Barclays will be able to claim that it has embedded a culture of Agility throughout the organization.

But Barclays has made a start. And everywhere there is evidence of early success. Its management knows that Agile transformations involve a deep change in organizational culture that will take time. Barclays can take heart from the experience of other global behemoths like Microsoft and Ericsson that have persevered with Agile transformations at scale over a period of years and have made sustained progress. In other words, firms don't have to be "born Agile," like Spotify. Even big, old firms can undertake an Agile transformation if they set their minds and hearts to it—and stick with it.



Spotify and Barclays are just two of thousands of organizations that have made a fundamental discovery: Business success in the twenty-first century increasingly depends on becoming as nimble as the rapidly shifting and unpredictable context in which they find themselves.

As a result, Agile management is now spreading to every kind of organization and every aspect of work, as recognized in 2016 by the citadel of general management, *Harvard Business Review*, with its article "Embracing Agile," by Darrell K. Rigby, Jeff Sutherland, and Hirotaka Takeuchi.

Now agile methodologies—which involve new values, principles, practices, and benefits and are a radical alternative to command-and-control-style management—are spreading across a broad range of

industries and functions and even into the C-suite. National Public Radio employs agile methods to create new programming. John Deere uses them to develop new machines, and Saab to produce new fighter jets. Intronis, a leader in cloud backup services, uses them in marketing. C. H. Robinson, a global third-party logistics provider, applies them in human resources. Mission Bell Winery uses them for everything from wine production to warehousing to running its senior leadership group.⁶

The centrality of Agile for general management was also recognized in March 2016 with McKinsey & Company hosting a Global Agility Hackathon involving some 1,500 participants worldwide. According to the winning submission:

Becoming an agile organization is an increasingly urgent necessity for companies in today's digital economy, yet most companies have a deeply embedded command organization architecture and culture. This reflects, first and foremost, the industrial economy mindsets and skills of their senior leaders, which is arguably the greatest obstacle to becoming an agile organization. . . . To make the transformation, senior leaders must learn and practice a holistic and complete set of new mindsets and skills, and apply them to design a wholly new, agile organization architecture and culture.⁷

The emergence of Agile for general management was also confirmed by the findings of the SD Learning Consortium, a group of companies including Microsoft, Ericsson, CH Robinson, Riot Games, Barclays, and Cerner. Amid conflicting claims as to whether Agile is something real, the Consortium seeks to discover what is actually happening on the ground and to learn what works and what doesn't. Site visits showed that in a few cases, Agile was indeed hardly more than talk; the organization was still functioning as a top-down bureaucracy. But in most cases, site visits showed that major corporations have large-scale implementations of Agile goals, principles, and values. In effect, Agile management in large organizations is actually happening.⁸

In organizations that have embraced Agile management, self-organizing teams are continuously providing new value for customers. Because the work is done in an iterative fashion with continuous interaction with users, the organization can constantly upgrade what it offers to users, sometimes in real time. When teams work in a common cadence—short iterations of the same

length that start on the same day—many teams can work together on large, complex challenges in a coordinated fashion and deliver fail-safe products. When Agile is done right, the teams are working within a business model in which the organization is generating value for the organization itself as well as the customer. Everything—the work being done, the information, and the money—moves easily, in an integrated fashion, often with strong returns to scale.⁹



Agile management is about working smarter rather than harder. It's not about doing *more work* in less time: It's about generating *more value* from *less work*. For instance, in 2011, Ericsson (a 140-year-old Swedish firm with around 100,000 employees) embraced Agile for its business unit in managing networks for the world's telecommunications companies. Competition in the sector is fierce. Of seven global firms that operated just a few years ago, only three, including Ericsson, have survived. Before 2011, Ericsson would build its systems on a five-year cycle with a unit housing several thousand employees. When the system was finally built, it would be shipped to telecom customers and there would be an extended period of adjustment as the system was adapted to fit their needs.

Now Ericsson has over a hundred small teams working with its specific customers' needs instead of working on all of the requirements for the overall system. They involve the customers in testing different aspects of the system in three-week cycles. The result is faster development that is more relevant to the specific needs of the customers. Moreover, the interaction has enabled Ericsson to focus on the customers' highest priorities. The client gets to see the next iteration of the system every three weeks, instead of waiting five years for one "big bang" delivery. They know exactly what is being worked on and can direct the course of the work.

In one case, Ericsson's client said, "For us to deploy this new system in our entire network, we would need around 120 improvements." It turned out, because of Ericsson working interactively with its customers, the client decided to go ahead with around sixty of the improvements. The client said: "If we had been working as we were in the past, we would never have done that at this stage. But because of the cooperation that we have, now we are ready to go ahead." The result? The client gets value sooner. Ericsson has less work in progress. And Ericsson is deploying one to two years earlier than it otherwise would, so its revenue comes in one to two years sooner. The client is much happier and there is a financial benefit for Ericsson.¹⁰



One common misunderstanding of Agile management is to see it as a technology solution—digitization—rather than an approach to running an organization. While obviously Agile does use digital technology to enable instant, frictionless, intimate value at scale, the gains are driven by *Agile management*. When top-down bureaucracies use digital technology, machine learning, platforms, blockchain technology, or the Internet of Things, they typically get meager results. That’s in part because internally driven innovation often generates changes that customers don’t want or aren’t willing to pay for.

Resolving complex problems requires both continuous collaboration across internal silos and interaction with customers. Delivering instant, intimate, frictionless customer experiences that delight customers lies beyond the performance capability of an internally focused bureaucracy. Bureaucracy was never intended to accomplish that: It was designed to produce merely consistent average performance according to internal rules set by the organization itself.

Moreover, bureaucracies, with their steep chains of command, can’t move fast enough to take advantage of opportunities in a VUCA marketplace as they emerge. In a competitive setting, it’s not technology itself that makes the difference. The key is how adroitly the firm uses the technology. The driver of sustained success is the Agile mindset.



But what exactly is Agile? What does it mean for an organization to embrace the Agile mindset? When I use the word “agile” or “nimble,” you might think about a squirrel or a ballet dancer or a champion soccer player. You probably wouldn’t think of a large organization—big, unwieldy, clunky, slow, out to make money from you, and fundamentally unfriendly. You generally don’t think of organizations as being nimble because generally they’re not. We’re accustomed to dealing with organizations that are frustratingly set in their ways and preoccupied with their own internal processes. Their motto could be: “You take what we make; that’s the way it is.” The possibility that organizations could operate with agility is thus not obvious. And yet the site visits of the SD Learning Consortium show that large Agile organizations are not only possible. They do exist.

The challenge of understanding Agile is magnified by the more than forty labels that have been used for different flavors of Agile.¹¹ Nor does the multiplicity of Agile practices help: In my 2010 book, *The Leader’s Guide to*

Radical Management, I identified more than seventy different Agile practices. How on earth are traditional managers going to make sense of such a bewildering blizzard of ideas?

The truth is that when we look closely, we can see that organizations that have embraced Agile have three core characteristics:

1. The Law of the Small Team
2. The Law of the Customer
3. The Law of the Network

The first universal characteristic of Agile organizations is the *Law of the Small Team*. Agile practitioners share a mindset that work should, in principle, be done in small, autonomous, cross-functional teams working in short cycles on relatively small tasks and getting continuous feedback from the ultimate customer or end-user. Big and complex problems are resolved by descaling them into tiny, manageable pieces.

For the first decade of the Agile movement (i.e., the 2000s), much of the effort was spent on figuring out how to generate high-performance teams on a systematic basis. Teams of course were not a new idea. We all know the magic. We have all at one time or another been involved in a small group where communications flow effortlessly and the group seems to think and act as one. When we are members of such a team, we can analyze a situation, decide, and act as though we are part of a single, uninterrupted motion. There is no one in charge telling us what to do. We trust the other members of the team. That trust is rewarded by performance. It's as though the group has a mind of its own. Face-to-face conversation sorts out any differences in point of view. Work has become fun. The group is in a state of flow.¹²

Work in most twentieth-century organizations was very different. Big systems were implemented with big plans delivering large quantities of a standard product and succeeded through economies of scale. Work was broken down into small, often meaningless pieces. Individuals reported to bosses who ensured consistent and accurate performance in accordance with the plan's specifications. The boss's boss did the same, and so on, up the line. Plans and budgets were generated and allocated, division by division. The connection between any piece of work and its impact on the life of a customer was often hidden by mind-numbing internally focused systems. The result today is a disengaged workforce, with only one in five employees fully engaged in the work. Even worse, almost one in seven employees is actively disengaged and

intent on deliberately undermining what the organization does.¹³

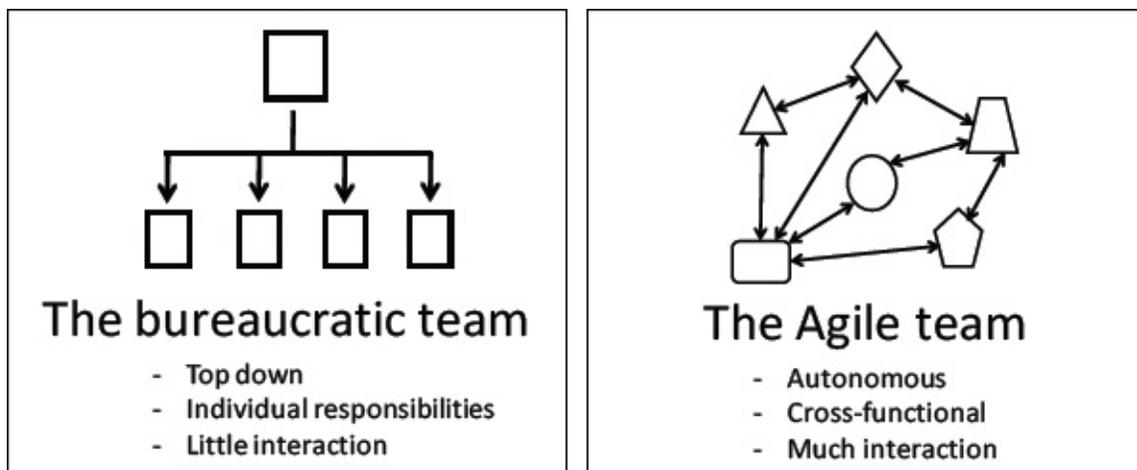
Throughout the twentieth century, writer after writer suggested that working in teams would be a better way to get work done. It began with Mary Parker Follett in the 1920s, and continued with Elton Mayo and Chester Barnard in the 1930s, Abraham Maslow in the 1940s, Douglas McGregor in the 1960s, Tom Peters and Robert Waterman in the 1980s, on to Douglas Smith and Jon Katzenbach in the 1990s and Richard Hackman in the 2000s.

Yet most organizations stayed stubbornly bureaucratic, with bosses supervising individuals. One reason was the pervasive management belief that teams couldn't deliver disciplined, efficient performance at scale: They were useful for solving complex one-off problems, but for the run-of-the-mill work in a big organization, the conventional wisdom was that bureaucracy was better.

Another reason was that most teams in twentieth-century organizations were teams in name only. Most of them weren't real teams at all. The team leader acted like any other boss in a bureaucracy. (See [Figure 1-1](#).)

A third reason is that self-organizing teams achieving high performance were a rarity. The literature on teams often talked about high-performance teams—teams that were not just 10 percent or 20 percent better, but two, three, or even many times better—but suggested that they were a matter of luck. The right people had to have come together. The context had to be conducive. The stars had to be aligned. You could create conditions where it *might* happen. You could encourage it. But ultimately a high-performance team was a rare accident.

Figure 1-1. Agile vs. bureaucratic team.



It was the Agile movement that figured out how to create an environment that fostered consistent high performance in its teams. If there were a Nobel Prize for management, which there isn't, and if there were any justice in the world, which

there isn't, the creators of Agile would be Nobel laureates. It is a breakthrough achievement, well accepted in the world of software development, and just now becoming more widely understood and recognized in general management.



The second characteristic of Agile organizations is the *Law of the Customer*. Agile practitioners are obsessed with delivering value to customers. The primary importance of the customer is recognized in the first principle of the Agile Manifesto:

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.

But frankly, in the first decade after the Agile Manifesto, customer focus received secondary consideration among software developers: Most of their attention was on getting the characteristics of the high-performance team right. In this period, teams often had very little contact with the actual customer. Instead, the customer was represented by a proxy representative who was mysteriously called a “product owner” and who supposedly knew what customers wanted.

Once Agile had solved the problem of how to generate high-performance teams on a consistent basis, then attention turned to the epic shift in power in the marketplace—the shift in power from seller to buyer. Who were these “product owners” and how did they figure out what the customer wanted or needed? The question became urgent, because under the Law of the Customer, abruptly, frighteningly, and to the great surprise of twentieth-century organizations, the customer had become the boss. Globalization, deregulation, and new technology, particularly the Internet, provided the customer with choices, reliable information about those choices, and the ability to interact with other customers. Suddenly the customer was in charge and expected value that was instant, frictionless, intimate, and preferably free.

As a result, firms had to think about the customer in a new way. Twentieth-century firms had gotten used to the notion that they could exploit and manipulate customers. If a customer didn't like something they were offering, the firm would say, “We hear what you're saying, but that's what we're offering. Take it or leave it. We'll consider introducing changes in our next model, now some years away.” In today's competitive marketplace, this approach is steadily less effective. The customer is thinking: “Why are we waiting a couple of years?”

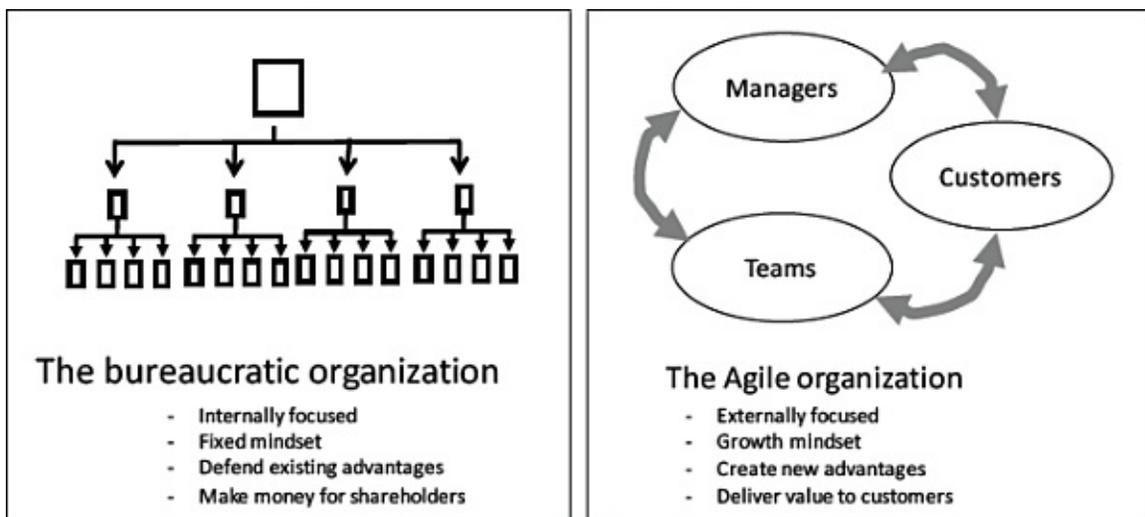
If you won't fix it now, I'll find someone who will.”

The primacy of the customer is at once the most obvious and the most difficult aspect of Agile to grasp. One reason that it's difficult to understand is that twentieth-century managers had learned to parrot phrases like “The customer is number one!” while continuing to run the organization as an internally focused, top-down bureaucracy interested in delivering value to shareholders.

It's not that bureaucratic organizations ignore the customer. They do what they can for the customer—but only within the limits of their own internal systems and processes. Firms may say they are customer-focused, but if the information they need to answer simple questions from customers is hidden in multiple systems that don't talk to each other, or if customer services must be cut to meet a quarterly profit target, then it's too bad for the customer. The customer gets the short end of the stick. In a top-down bureaucracy, “the customer is number one” is just a slogan: Internal systems, processes, and goals take precedence. (See [Figure 1-2](#).)

In the Agile organization, “customer focus” means something very different. In firms that have embraced Agile, everyone is passionately obsessed with delivering more value to customers. Everyone in the organization has a clear line of sight to the ultimate customer and can see how their work is adding value to that customer—or not. If their work isn't adding value to any customer or user, then an immediate question arises as to why the work is being done at all. The firm adjusts everything—goals, values, principles, processes, systems, practices, data structures, incentives—to generate continuous new value for customers and ruthlessly eliminates anything that doesn't contribute.

Figure 1-2. Bureaucratic vs. Agile organization.





The third characteristic is the *Law of the Network*. Agile practitioners view the organization as a fluid and transparent network of players that are collaborating toward a common goal of delighting customers.

In the early years of the Agile movement, it was generally assumed that if the firm could get high-performance teams going, then the whole organization would be “Agile.” It turned out not to be the case. It wasn’t enough to have Agile teams totally focused on delivering more value to the customer if the rest of the organization was being run as a top-down bureaucracy focused on cutting costs or increasing the current stock price. Such a dynamic undermines and, over time, kills Agile management.

The problem is widespread, even in organizations that are actively embracing Agile at the team level. We found in surveys of Agile teams that some 80 percent to 90 percent of Agile teams perceive tension between the way the Agile team is run and the way the whole organization is run. In half of those cases, the tension was “serious.”

The Law of the Network is the current frontier of the Agile movement—how to make the whole organization Agile. It’s a tough nut to crack because Agile represents a radically different concept of an organization. At the heart of twentieth-century management thinking is the notion of a corporation as an efficient steady-state machine aimed at exploiting its existing business model. As Google executives Eric Schmidt and Jonathan Rosenberg write in their book, *How Google Works*, “Traditional, MBA-style thinking dictates that you build up a sustainable competitive advantage over rivals and then close the fortress and defend it with boiling oil and flaming arrows.”¹⁴

The fortress is run from the top, with an assumption that the top knows best. The fortress is “built to minimize risk and keep people in their boxes and silos,” as business school professor John Kotter writes. People “are working with a system that is designed to get today’s job done—a system that asks most people, usually benignly, to be quiet, take orders, and do their jobs in a repetitive way.”¹⁵ *Exploitation* of the existing business model takes precedence over the *exploration* of new possibilities.

Over many decades, multiple fixes were explored to alleviate the static nature of the organization, including task forces, special project groups, strategy departments, tiger teams, skunk works, R&D, dual operating systems, knowledge funnels, design thinking, and so on.¹⁶ But these were still fixes to the same concept of the corporation as a static machine with a vertical reporting dynamic. Big bosses continued to appoint little bosses, and so on down the line.

The organization continued to operate like a giant warship—big and disciplined but slow and hard to maneuver.

By contrast, when the whole organization truly embraces Agile, the organization is less like a giant warship and more like a flotilla of tiny speedboats. Instead of a steady-state machine, the organization is an organic living network of high-performance teams. In these organizations, managers recognize that competence resides throughout the organization and that innovation can come from anywhere. The whole organization, including the top, is obsessed with delivering more value to customers. Agile teams take initiative on their own and interact with other Agile teams to solve common problems. In effect, the whole organization shares a common mindset in which the organization is viewed and operated as a network of high-performance teams.



One common misunderstanding is that Agile organizations are necessarily flat or nonhierarchical. In Agile organizations, the top management still has the important function of setting direction for the organization. People are still removed for not getting their job done. If anything, the drive for higher performance in an Agile organization is even more relentless than in a bureaucracy. Because of radical transparency and peer-to-peer accountability, there is nowhere to hide. Everyone knows everything.

But the hierarchy in an Agile organization is primarily a hierarchy of competence, not a hierarchy of authority. The performance question is not whether you have pleased your manager by doing what you were told to do: The question is whether you have added value to your real boss—the customer. The organization operates with an interactive communication dynamic, both horizontally and vertically. Anyone can talk to anyone. Ideas can come from anywhere, including customers. As a network, the organization becomes a growing, learning, adapting living organism that is in constant flux to identify and develop new opportunities that add new value for customers. When done right, continuous delivery of more value to customers from less work results in generous returns to the organization that provides it.

Agile thus explodes the distinction between exploitation and exploration. All parts of the organization are continuously exploring how to add more value to customers.

In the early years of the Agile movement, critics said that small teams would never be able to handle big, complex problems. It turns out that once the teams are housed in a network driven by horizontal conversations focused on a

common goal and operating in a common cadence, then networks of small teams can handle large, complex problems with the same agility as small teams—and much better than a top-down bureaucracy.



These three laws—first, small teams working on small tasks in short iterative work cycles delivering value to customers; second, an obsession with continuously adding more value for customers; and third, coordinating work in an interactive network—are the same three principles that enable Spotify to provide personalized music playlists to over 100 million users every week. These same principles are allowing Barclays to become a bank that can provide easy, quick, convenient, personalized banking at scale; and Ericsson’s network management to deliver more value to its clients sooner.

When these three laws are in effect, people in the organization share a different way of understanding how the world works and how to interact with the world to get things done. Counterintuitive ideas abound: Managers can’t tell people what to do; firms make more money by not focusing on making money; dealing with big issues requires small teams, small tasks, short work cycles—in effect, small everything; control is enhanced by letting go of control.

When a traditional manager encounters an organization with these strange ideas, it’s like visiting a foreign country where everything is different, where yes may mean no, where fixed prices are negotiable, and where laughter may mean anger.¹⁷ The familiar cues that enable travelers to function in their home country are absent. In their place are new rules that are odd and incomprehensible. The result can be bewilderment, frustration, and an inability to cope. Until the travelers grasp what has happened, learn the new cues of the different country, and embody them in their behavior, they will feel disoriented and incompetent.

This is why Agile cannot be implemented within the assumptions of current management practice. Agile means embracing fundamentally different assumptions. For traditional managers, the process usually isn’t comfortable. It isn’t easy. At the outset, it feels wrong. It’s like learning a foreign language with a different grammar. It is only over time and through actual experience and practice that Agile becomes second nature and automatic. This is not about “implementing Agile tools and processes.” It’s about more fully embodying the Agile mindset and acquiring the associated muscle memory.

Ultimately, Agile is about understanding and interacting with the world with a different mindset. When people don’t have an Agile mindset, our research shows that even if they are implementing every tool and process and practice

exactly according to the book, no benefits flow. Conversely, when people in the organization have an Agile mindset, it hardly matters exactly what tools, processes, and practices they are using. The mindset makes things come out right. In the end, Agile is a mindset.



Of the three laws, the first one—the notion that work in principle should be done in small teams working in short cycles—is the best known in the Agile world because that’s what received most of the attention of the early Agile implementations.

But it’s the second law—the idea that the very purpose of a firm is to deliver value to the customer—that is the most important, because this is the principle that makes sense of the other two and that permits the greatest insight into why an Agile organization operates the way it does.

Yet, the lynchpin of Agile management is really the third law: The impact of high-performance teams with a customer focus is suboptimal unless and until the whole organization operates as an interactive network. It is when the three laws combine together and focus on a common external goal that we get the explosive increment in value that comes from truly embracing Agile management.

Agile management thus operates under three laws, and together they generate the basics of the Agile organization. The three laws allow us to make sense of the myriad Agile practices that may—or may not— be applicable in any particular context. Practices may change, but the Agile mindset applying the three laws endures. The Agile mindset offers a lasting guide to what’s involved in an organization implementing the new management paradigm.

BOX 1-1

MANIFESTO FOR AGILE SOFTWARE DEVELOPMENT

We are uncovering better ways of developing software by doing it and helping others do it. Through this work, we have come to value:

- ◆ Individuals and interactions over processes and tools

- ◆ Working software over comprehensive documentation
- ◆ Customer collaboration over contract negotiation
- ◆ Responding to change over following a plan

That is, while there is value in the items on the right, we value the items on the left more.

We follow these principles:

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
4. Business people and developers must work together daily throughout the project.
5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
7. Working software is the primary measure of progress.
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
9. Continuous attention to technical excellence and good design enhances agility.
10. Simplicity—the art of maximizing the amount of work done—is essential.
11. The best architectures, requirements, and designs emerge from self-organizing teams.
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

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BOX 1-2

GLOSSARY: DEFINITIONS OF AGILE, SCRUM, DEVOPS, KANBAN, LEAN

Agile is a movement that took off in 2001 as a set of values and principles articulated by the Agile Manifesto of 2001, although it had many earlier antecedents, such as “quality” and “design thinking.” In due course, the Manifesto spawned various management methodologies including Scrum, DevOps, Lean, and Kanban. Over

time, it evolved into a movement of people with a specific mindset. The mindset focuses on delivering continuous value to customers as the primary goal of work. It embraces iterative, incremental approaches to working in small teams and aims at enterprise-wide agility by operating as a network.

Scrum is the principal Agile management methodology. It uses a cross-functional team-based approach for delivering value to organizations and customers, with specific roles for the Product Owner and the Scrum Master. The team respects individual contribution and builds on the strengths of accountability, deep interpersonal relationships, collaboration, and teamwork. Managers are no longer bosses, but coaches who remove impediments and clear the way for teams to provide value to their customers by remaining focused and creative.

DevOps (a clipped compound word that combines development and operations) is a culture, movement, and practice that emphasizes the collaboration and communication of both software developers and other information technology professionals while automating the process of software delivery and infrastructure changes, with very rapid deployment of changes.

Kanban is a scheduling system for software development, lean manufacturing, and just-in-time manufacturing. Kanban can also serve as an inventory-control system to control the supply chain. One of the main benefits of kanban is that it establishes an upper limit to the work in process, avoiding overloading of the system.

Lean is a systematic methodology for the elimination of waste within a system of manufacturing or software. Essentially, lean is centered on making obvious what adds value by reducing everything else.

Lean Startup is a methodology for developing businesses and products based on the hypothesis that if firms invest their time into iteratively exploring the needs of early customers, they can reduce market risk, reduce the need for initial project funding, and enhance the chance of ultimate success.

Design Thinking is a human-centered approach to innovation that seeks to integrate the needs of people, the possibilities of technology, and the requirements for business success. Design thinking has now spread beyond professional design practice and is applied to a wide range of businesses and to social issues.¹

NOTE

1. Sources include Herbert A. Simon, *The Sciences of the Artificial* (1969); R. McKim, *Experiences in Visual Thinking* (1973); B. Lawson, *How Designers Think* (1980); and R. Buchanan, "Wicked Problems in Design Thinking," *Design Issues* 8, no. 2 (Spring 1992). Design thinking was further adapted for business purposes by the design consultancy IDEO.

2.

THE LAW OF THE SMALL TEAM

The fundamental task is to achieve smallness within large organizations.

—E. F. SCHUMACHER¹

Picture this. It's 1997 and you've just had a great idea: a slim handheld device that's small enough to slip into your pocket and that can perform multiple functions at the touch of a fingertip. It will serve as a portable telephone, an address book, a map, a navigation system, an airline boarding pass, a music or movie player, a television set, a camera, a flashlight, a dictation machine, a stopwatch, an alarm clock, a translation machine, a remote control, a repository of the world's newspapers and magazines, a library of thousands of books, and more. Moreover, the device will be lightning-quick in its responsiveness and it will be customizable to meet the individual needs and preferences of hundreds of millions of people around the world.

Sound good? You know it's a winner. But how to bring it to reality? Well, it's 1997 and so you apply the best management practices of the day. First, you spend a couple of years winning support for the idea's feasibility and persuading the strategy committee of a major corporation to design, build, and market this amazing new device. After finally getting this approval, you pull together a huge team of designers and engineers and spend another couple of years developing detailed specifications for the device with a timeline to deliver and integrate its various components. You then recruit hundreds of thousands of engineers and developers to build the device. You also hire tens of thousands of managers to supervise and control them to ensure that they deliver according to the plan and on schedule. You set up comprehensive reporting systems so that top management knows exactly how every dollar has been spent and what progress