

19 Key Essays on  
**How Internet is  
Changing our Lives**

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**Thomas W. Malone**

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the Way We Work?

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Thomas W. Malone is the Patrick J. McGovern Professor of Management at the MIT Sloan School of Management and the founding director of the MIT Center for Collective Intelligence. He was also the founder and director of the MIT Center for Coordination Science and one of the two founding co-directors of the MIT Initiative on “Inventing the Organizations of the 21st Century.” In 2004 he summarized two decades of his groundbreaking research on how work can be organized in new ways to take advantage of the possibilities provided by information technology in the critically acclaimed book *The Future of Work* (translated into six languages). He has published over 100 articles, research papers, and book chapters, and is also an inventor with 11 patents and the co-editor of three books: *Coordination Theory and Collaboration Technology* (Psychology Press, 2001), *Inventing the Organizations of the 21st Century* (MIT Press, 2003), and *Organizing Business Knowledge: The MIT Process Handbook* (MIT Press, 2003). In 2012, he received an honorary doctorate from the University of Zurich. He was cofounder of three software companies and has consulted and served as a board member for a number of other organizations. He speaks frequently for business audiences around the world and is often quoted in the media. Before joining MIT in 1983, he was a research scientist at the Xerox Palo Alto Research Center (PARC). He has a BA in Mathematical Sciences from Rice University, an MS in Engineering-Economic Systems from Stanford University, and a PhD in Cognitive and Social Psychology from Stanford University.

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## How Is the Internet Changing the Way We Work?

Imagine you are a shopkeeper, living somewhere in Spain, in 1795. You no longer believe, as did the ancient Egyptians, that your king, Carlos IV, is literally a god, living on earth. But you still believe that he has a *divine right* to rule over you. You can't imagine any country being governed well without a king who is responsible for the protection and control of his subjects.

You have heard of the strange rebellion in North America where the British colonists claimed that they could govern themselves without any king at all. You've also heard about the recent violent bloodshed in France where a group of so-called revolutionaries killed their king, replaced the government, and destroyed, almost overnight, so many good things. But these experiments seem to you like profound mistakes, bound to fail.

It just doesn't make sense to say—as these democratic revolutionaries do—that people could ever really *govern themselves*. That's a contradiction in terms, like saying that children could raise themselves or farm animals could run a farm. People can try it, you think, but it certainly couldn't work as well as a wise and just king.

Well, of course, today we know what happened to those strange democratic experiments. They worked. Really well. Over the past two hundred years those democratic ideas have triumphed in Europe, America, and many other parts of the world. While democratic governments are not everywhere in the world today, their economic, political, and military successes have far surpassed what almost anyone would have predicted in the late 1700s. And, perhaps more importantly, our whole way of thinking about many things—the role of government, the rights of people, the importance

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of public opinion—has profoundly changed, even in countries that don't themselves have democratic governments.

Now, we are in the early stages of another revolution—a revolution in business—that may ultimately be as profound as the democratic revolution in government. Like the democratic revolution, the revolution in business will lead to a transformation in our thinking about control: Where does power come from? Who should be in control? Who is responsible?

And, once again, the result of this revolution will be a world where people have more freedom. A world in which power and control in business are spread more widely than our industrial age ancestors would have ever thought possible. A world in which more and more people are at the *center* of their own organizations.

In this new world of business, lots of highly connected individuals will each make their own decisions using information from many other places. In fact, this revolution is now possible because new information technologies make it feasible—on a scale never before possible in human history—for vastly more people to have the information they need to make well-informed choices.

But the real impetus for this revolution will not come from these new technologies. It will come from our own human desires—our desires for economic efficiency and flexibility, certainly, but also our desires for non-economic values like personal satisfaction and fulfillment.

In other words, one of the most important drivers of the revolution is this: for the first time in history, new technologies allow us to have the economic benefits of large organizations—like economies of scale and knowledge—without giving up the human benefits of small ones—like freedom, creativity, motivation, and flexibility.

This revolution has already begun. We saw its harbingers in the final decades of the twentieth century in talk about *empowering* workers,

*outsourcing* almost everything, creating *networked* or *virtual* corporations. We saw it in the premature—but partly correct—enthusiasm for new ways of doing business in the *dot.com* bubble and in the slogan that “the Internet changes everything.” We see it all around us today in the increasing amount of choice many people have in how they do their work.

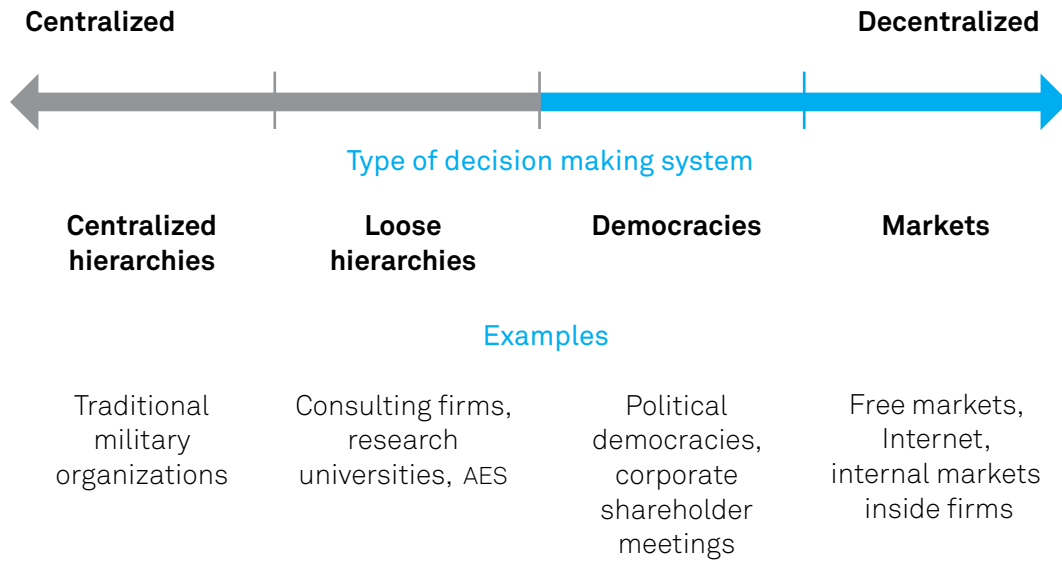
But, like the loyal subjects of King Carlos IV in 1795, most of us don’t yet begin to understand how far-reaching these changes may eventually be. We still assume, without even really thinking about it, that someone always needs to be *responsible* and *accountable* in business. We assume that the managers of well-run companies should always be *in control* of what’s happening. We assume that power should always come from the *top* of an organization and be delegated *down*.

But the underlying technological and economic forces all around us today are making these beliefs less useful. New ways of organizing work are now becoming possible. Management is changing. And that gives all of us more choices in how we shape the world that is being created.

## What Will These New Ways of Organizing Work Look Like?

There’s a technical term for the kind of organization this revolution will make more common. The word is *decentralized*. But most people have a very limited view of what this word means. If you’re like many people in business today, when you hear the word *decentralized*, you assume that it means delegating more power to lower-level managers inside traditional organizations. It might mean, for instance, letting divisional vice-presidents make product strategy decisions that used to be made by the CEO.

But this limited kind of decentralization barely scratches the surface of what’s possible. Let’s define decentralization as the *participation of people in making the decisions that matter to them*. In this sense, decentralization means roughly the same thing as *freedom*. Decentralized organizations are those where more people have more freedom. And from this point of view, as you can see in figure 1, there’s a much wider range of possibilities for decentralization.



**Fig. 1**

**The decentralization continuum.**

Organizations can be placed on a continuum based how much people participate in making decisions that matter to them.

At the far left of the continuum are highly centralized organizations. If all important decisions are made by high-level centralized decision-makers (as in traditional military organizations, for instance), then the organization is highly centralized. The rest of the continuum shows three important kinds of decision-making structures where people have more freedom: *loose hierarchies*, *democracies*, and *markets*. As you progress along the continuum, from loose hierarchies to democracies to markets, the amount of freedom people have in decision-making increases.

For example, some companies today already have *loose hierarchies* where they delegate huge amounts of decision-making authority to very low levels in their organization. Many management consulting firms, for instance, let the individual partners and consultants on a project make almost all operational decisions about the project. And AES Corp., one of the world’s largest electric power producers, has let very low-level workers make critical multimillion-dollar decisions about things like acquiring new subsidiaries. In an even more extreme example, one of the most important computer operating systems in the world today—Linux—was written by

a loosely coordinated hierarchy of thousands of volunteer computer programmers all over the world.

When most people think about decentralization, they stop at this point—delegating lots of decisions to lower levels in hierarchies. But what if power didn't get *delegated* to lower levels? What if, instead, it originated there? How much energy and creativity might it be possible to unlock if everyone in an organization felt they were *in control*?

The right half of the continuum shows the possibilities for what this more extreme kind of freedom can look like in business. For example, some businesses already act like miniature democracies where decisions are made by voting. Many good managers today, for instance, informally poll their employees about key decisions, and some companies do more formal polling of employees for many purposes. In a few cases, like the cooperative Mondragon Corporation in Spain, the workers own the company and, therefore, can elect the equivalent of a board of directors and vote on other key issues. What if companies begin to take this notion of democratic decision-making even more seriously? What if, for instance, professional partnerships and other worker-owned businesses let workers elect (and fire) their own managers at every level, not just at the top? And what if these employee-owners could vote on any other key questions on which they wanted to express opinions?

The most extreme kind of business freedom occurs in markets because, in markets, no one is bound by a decision to which he or she doesn't agree. In a pure market, for instance, no one *on top* delegates decisions about what to buy and sell to the different players in the market. Instead, all the individual buyers and sellers make their own mutual agreements, subject only to their own financial constraints, their abilities, and the overall rules of the market.

For instance, companies can use this form of organization by outsourcing things they used to do inside. Many companies today are already outsourcing all kinds of things, from manufacturing, to sales, to human resource management. In some cases, large companies may not even need to exist in the first place. Flexible webs of small companies or even temporary combinations of electronically connected freelancers (“e-lancers”) can sometimes do the same things more effectively. This way of organizing

is already common in the film industry, for example, where a producer, a director, actors, cinematographers, and others come together for the purpose of making one movie and then disband and rearrange in different combinations to make others.

In other cases, you can get many of the benefits of markets *inside* the boundaries of large companies. For example, some companies today are beginning to experiment with micro-level *internal markets* where employees of the company *buy* and *sell* things among themselves, and their internal trading is just another way of allocating resources for the company as a whole. One semiconductor company, for instance, has looked at letting individual salespeople and plant managers *buy* and *sell* individual products directly to each other in an internal electronic market. This gives the plants very immediate and dynamic feedback about which products to make each day, and it helps the salespeople continually set prices for external customers.

To understand why decentralized things like these are likely to happen more often in the future, you need to understand what leads to centralization and decentralization in the first place.

## Why Is This Happening?

Of course, there are many factors that affect how and where decisions are made in a business, or for that matter, in any organization. Here are just a few of the factors that sometimes matter: Who already has the information needed to make good decisions? Who already has the power to make the decisions, and whom do they trust to make decisions on their behalf? What specific individuals are potential decision makers, and what are their capabilities and motivations? What are the cultural assumptions in the company and its country about what kinds of people should make decisions? All these factors vary widely from situation to situation, but in general, they aren't changing dramatically in any single direction overall.

There is, however, another factor that affects where decisions are made in businesses, and this factor is changing dramatically in the same direction

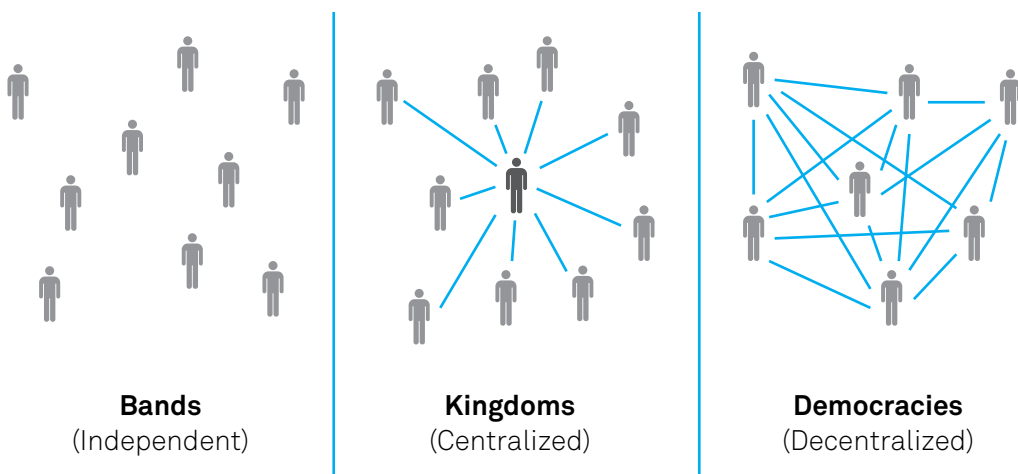
almost everywhere. In fact, when we look back carefully at the history of humanity, we can see that this very same factor has been implicated, time after time, in some of the most important historical changes in where decisions were made, not just in businesses, but in human societies, too.

What could this factor possibly be?

It's the *cost of communication*.

When the only form of communication was face-to-face conversation, our distant hunting and gathering ancestors organized themselves in small, egalitarian, decentralized groups called bands. Over many millennia, as hunting and gathering gave way to agriculture, and as our ancestors learned to communicate over long distances more cheaply by writing, they were able to form larger and larger societies ruled by kings, emperors, and other centralized rulers (see fig. 2). These larger societies had many economic and military advantages over the hunting and gathering bands, but their members had to give up some of their freedom to get these benefits.

Then, only a few hundred years ago, our ancestors invented a new communication technology, the printing press, which reduced even further the



**Fig. 2**

The major ways human societies have been organized throughout history reveal a remarkably simple pattern that foreshadows how businesses are changing now.

costs of communicating to large numbers of people. This time, the declining costs of communication allowed our ancestors to reverse their millennia-long march toward greater centralization. Instead, soon after the printing press came into wide use, the democratic revolution began. Then, ordinary people—who could now be much better informed about political matters—came to have more say in their own government than they had usually had in all the millennia since our hunting and gathering days.

Was the declining cost of communication the only factor that caused all these societal changes? Of course not. Each of these changes arose from complex combinations of forces involving many other factors as well. For instance, our human desires for individual freedom—and for the motivation and flexibility that often accompany individual freedom—were critical. But the declining costs of communication allowed by new *information technologies* like writing and printing played a key role in *enabling* each of these changes. And it is certainly interesting, to say the least, that the very same underlying factor is implicated in such diverse and important changes in human societies as the rise of kingdoms and the rise of democracies.

Even more remarkable still is the fact that this very same pattern appears to be repeating itself now—at a much faster rate—in the history of business organizations as well!

Throughout most of human history, up until the 1800s, most businesses were organized as small, local, often family affairs, similar in many ways to the bands of our hunting and gathering ancestors. But by the 1900s, new communication technologies like telegraph, telephone, typewriters, and carbon paper finally provided enough communication capacity to allow businesses to grow and centralize on a large scale like governments had begun to do many millennia earlier (see fig. 3). By taking advantage of economies of scale and knowledge, these large business *kingdoms* were able to achieve an unprecedented level of material prosperity.

As a result of this massive—and successful—move toward centralization of business in the twentieth century, many of us still unconsciously associate success in business with bigness and centralization. But in order to achieve these economic benefits of bigness, many of the individual



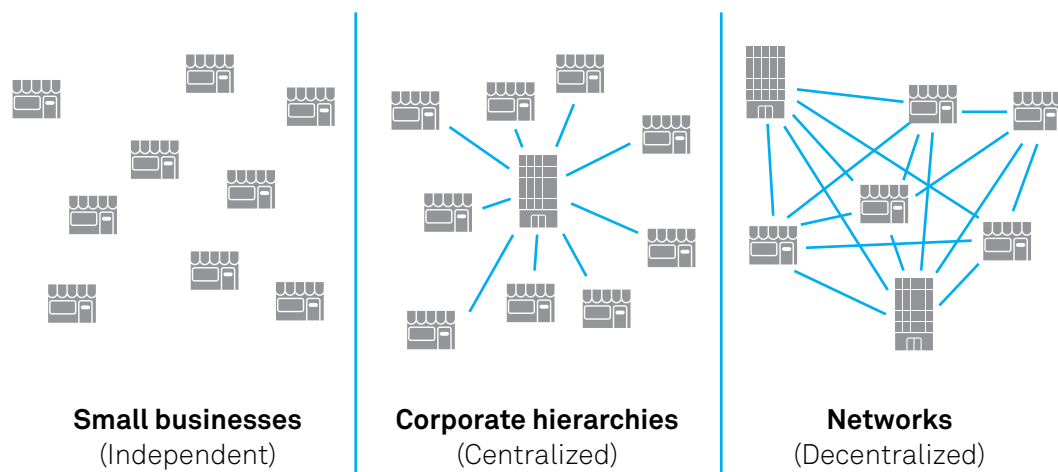
workers in these large companies had to give up some of the freedom and flexibility they had in the farms and small businesses of the previous era.

It's obvious that new information technologies can still be used to continue this trend—to keep creating ever-larger and more centralized business kingdoms. And some of the important business changes in the years to come will still be continuations of this previous trend—integrating larger and larger groups of people to take advantage of economies of scale or knowledge.

But just as the rise of democracies reversed a trend toward centralization in societies that had lasted for millennia, we are now beginning to see signs of a similar reversal in business.

With new technologies like e-mail, instant messaging, and the Internet, it's now becoming economically feasible—for the first time in human history—to give huge numbers of people the information they need to make more choices for themselves.

In the places where this makes economic sense, that means many more people can have the kinds of freedom and flexibility in business that used



**Fig. 3**

The major changes in how businesses were organized through history echo similar changes in the ways societies were organized.

to be common only in small organizations. When people are making their own decisions, for instance, rather than just following orders, they are often more dedicated, more creative, and more innovative.

Decentralized businesses can usually be more flexible, too—both with their customers and with their own workers. Because they give people more choices, decentralized businesses just plain have a lot more chances to give people the things they really want. In other words, they give people more freedom.

But these new decentralized businesses don't have the limitations that small, isolated businesses did in the past. Because these new organizations have access to the best information available anywhere in the world, they can also benefit from many of the advantages of large organizations, too. If there are economies of scale in parts of their business, for instance, they can find the best suppliers in the world for those things. They can find customers all over the world, and they can use electronic reputation systems to establish credibility with potential customers who've never heard of them. And if someone on the other side of the globe has figured out how to do something better, they can learn from that experience, too.

Of course, this kind of decentralization doesn't work well in all situations. In some places, for instance, like making certain kinds of semiconductors, the critical factors in business success are just economies of scale. And, in these places, we should expect cheaper communication to lead to more centralization in order to take advantage of these economies of scale.

But in our increasingly knowledge-based and innovation-driven economy, the critical factors in business success are often precisely the same as the benefits of decentralized decision making: motivation, creativity, flexibility, and innovation.

So even though it won't happen everywhere, we should expect this change to more decentralized decision-making to happen in more and more parts of our economy over the coming decades.

Even where decentralization is desirable, however, the changes won't all happen overnight. Just as the democratic transformation of societies evolved in fits and starts over a period of centuries, these changes in business will take decades to play out fully. And every time there is a setback in one place, or a failure to move forward somewhere else, there will be people who say that things aren't going to change after all. When people over-invested in e-business and the speculative *new economy* bubble burst, for instance, many people thought that the *old economy* had won, and we were going back to business as usual.

But the relentless improvements in the cost of communication, year after year, and decade after decade, mean that there will continue to be more and more opportunities for decentralization. These fundamental changes in the economics of communication and decision-making will continue working their way through our economy, company after company, and industry after industry, for many, many years to come.

### What Does This Mean for You?

If decentralization becomes desirable in more and more places in business, then we'll need to manage in new ways. But no matter how much we talk about new kinds of management, most of us still have—deep in our minds—models of management based on the classic centralized philosophy of *command and control*. To be successful in the world we're entering, you'll need a new—broader—set of mental models. While these new models shouldn't exclude the possibility of commanding and controlling, they need to also encompass a much wider range of possibilities—both centralized and decentralized.

Here's one way of summarizing this new perspective: we need to move from thinking about *command and control* to *coordinate and cultivate*. For example, when you *coordinate*, you organize work so that good things happen, whether you are *in control* or not. Some kinds of coordination are centralized; others are decentralized. But either way, coordinating focuses on the *activities* that need to be done and the relationships among them.

When you *cultivate*, you bring out the best in a situation by the right combination of controlling and letting go. Sometimes, for example, you need to give people top-down commands, but sometimes you just need to help them find and develop their own natural strengths. Good cultivation, therefore, involves finding the right balance between centralized and decentralized control. In fact, sometimes—paradoxically—the best way to gain power is to give it away.

In both these cases, coordinating and cultivating are not the *opposites* of commanding and controlling; they are the *supersets*. That is, they include the whole range of possibilities from completely centralized to completely decentralized.

And that is a key part of how the world of management is changing: to be an effective manager in the world we're entering, you can't be *stuck* in a centralized mindset. You need to be able to move flexibly back and forth on the decentralization continuum as the situation demands. Since most of us already understand centralization pretty well, the thing that's new—the thing we need to understand better—is decentralization.

## The Choices

Like the democratic revolution that preceded it, the business revolution we have entered is a time of dramatic change in the economies, the organizations, and the cultural assumptions of our society. And, as in any time of dramatic change, small choices can often have big effects. Whether you participate in events as significant as writing the American Declaration of Independence or whether you just make lots of daily decisions about what work to do and how to do it, you will be shaping the world in which we and our descendants will live for the rest of this century.

If you choose to, you can use the new possibilities enabled by information technology to help create a world that is both more economically efficient and more flexible than has ever before been possible in human history. There are many powerful economic forces that will lead us to do just that, to combine the economic benefits of bigness—like global scale

and diverse knowledge—with the human benefits of smallness—like flexibility, creativity, and motivation.

But that isn't the end of the possibilities these new technologies provide. Because more people will have more choices, they can bring more of their own values into business. And that means you can put a broader range of your human values, not just your economic ones, at the center of your thinking about business.

In other words, you can—if you choose—use your work to help create a world that is not just richer, but also a world that is better.

That is the choice before you.

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