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S Y M P O S I U M

CAN AN ECONOMY SURVIVE WITHOUT CORPORATIONS? TECHNOLOGY AND ROBUST ORGANIZATIONAL ALTERNATIVES

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Shareholder-owned corporations were dominant for much of the 20th century in the United States, yet their numbers are substantially declining in the 21st. This article argues that we are observing a regime shift in the transaction costs of organizing that disfavors traditional corporations. Accompanying this shift is the emergence of low-cost, small-scale production technologies that will allow locally based universal fabrication facilities. In combination, these changes are compatible with new forms of non-corporate enterprise. While corporations are basic units of production in many theories about the economy, they should be regarded as only one hypothesis about how production is and can be organized. Traditional alternatives to the corporation include producer and consumer cooperatives (e.g., Land o' Lakes, REI) and mutuals (e.g., State Farm, Vanguard). More recent possibilities include commons-based peer production (such as Linux and Wikipedia) and "platforms" that connect buyers and sellers (such as Uber and Airbnb). The raw materials are available for more democratic and locally oriented enterprise. Management scholarship has an opportunity to document and encourage this movement.

We are living through a radical shift in how business is organized in the United States and around the world. In many sectors, the corporation—the dominant economic form of the 20th century—is under siege. The number of public corporations (those with shares traded on stock markets) has dropped by more than half in the United States since 1997 (Davis, 2016). National retailers including Blockbuster, Borders, and Circuit City have been liquidated in favor of lightweight online alternatives. Century-spanning brands such as Westinghouse and Eastman Kodak have been rendered irrelevant. Even hotel chains and taxi companies face new forms of competition thanks to smartphone apps. Many of the corporations that remain engage in nearly continuous restructurings. Every week brings news of corporations either splitting up into constituent elements (Hewlett-Packard, Time-Warner, DuPont, Alcoa, Abbott Labs,

Sony), going private or bankrupt to radically restructure (Dell, GM), or evaporating entirely (Lehman, Countrywide). Even GE, the venerable conglomerate and vanguard of every new trend in management, is abandoning most of GE Capital, America's seventh-largest bank and once the source of half the company's profits.

This article argues that we are witnessing the results of a regime shift in the costs of organizing. Information and communication technologies have made it much cheaper to organize commercial activity on a small and provisional basis rather than investing in long-term institutions such as corporations. Corporations are costly compared to pop-up businesses. Moreover, computer-controlled production technology is getting more powerful, cheaper, and smaller. As such, the economies of scale that made corporations so dominant in the 20th century are flipping into diseconomies in many cases, while locavore alternatives are increasingly cost-effective.

What comes next? Is the shrinking number of corporations a reason to panic, or an opportunity to create alternatives that better serve human needs? I

I thank Paul Adler for organizing this symposium, Donald Siegel for his thoughtful editing, and the reviewer for insightful comments that greatly improved the article's argument.

argue here that new technologies enable new forms of enterprise that can be more democratic and that can ameliorate some of the problems created by late-stage shareholder capitalism. I describe some of these developments and the possibilities they open. I begin with a brief discussion of some approaches to the organization of business to provide an orientation to the argument. I then describe why corporations became dominant and how the pathologies of shareholder capitalism have undermined some of the benefits of the corporate form. I discuss technological trends that are changing the economic viability of the corporation and survey some of the alternatives, both ancient (cooperatives, mutuals) and new (peer mutualism, platforms). I close by suggesting that new technologies will not choose the path ahead for us, but that it is up to us to determine which way our enterprises will develop. Values and politics, not technology alone, will shape enterprise, and management researchers have a positive role to play, if they choose to do so.

THE SOCIAL ORGANIZATION OF THE ECONOMY

What does it mean to ask how business is organized? This may seem like a simple question, but scholars have focused on very different aspects of the organization of business. Different theories of the firm focus on different questions: what price/quantity combination firms choose, what kind of legal structure is most efficient, how firms raise capital to fund their operations, which inputs should be made inside the firm's boundary and which should be purchased on the market, and how different ownership structures shape incentives for managers to make different decisions.

At a more basic level, one might ask what exactly counts as a "firm." General Motors and Toyota clearly seem to count as firms. But what about Linux, the open-source software operating system produced by anonymous volunteers? Or Wikipedia? How about a Hollywood film production team? Or a group of impromptu laborers assembled at a Home Depot parking lot to install a patio? The definition of a "firm" is not self-evident.

Behind this ambiguity is a basic observation: There are a lot of different ways to produce a shirt, or a television, or a software program, or a financial instrument. Economies vary widely in how these activities are accomplished, and how they do it changes over time. American management scholars often assume that the exchange-listed corporation is

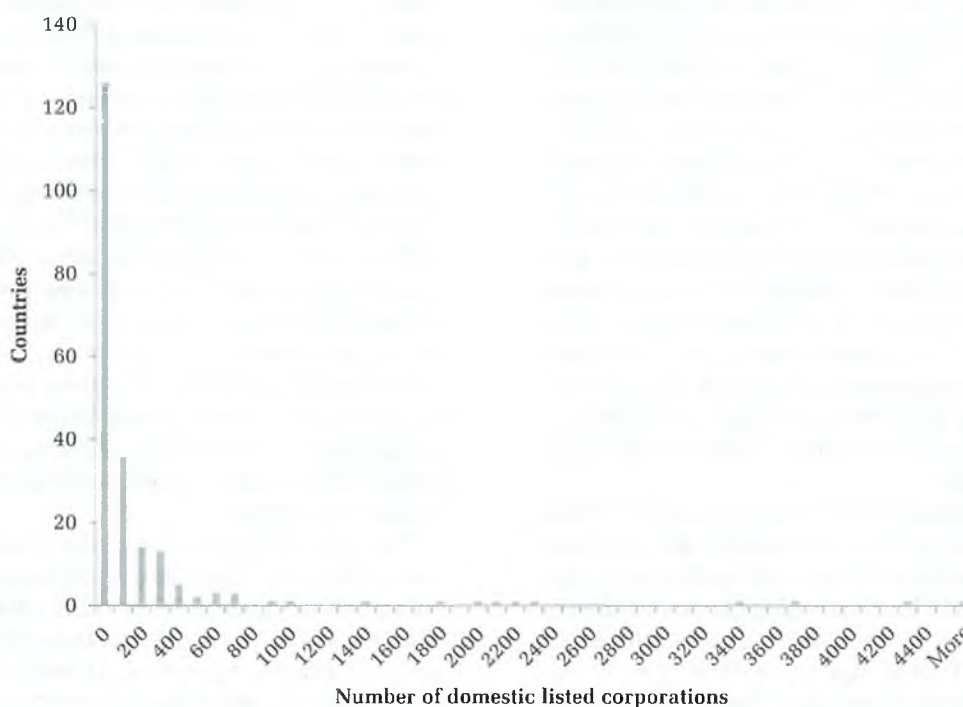
the default form of doing business, as it has been in the United States for over a century. Business school curricula reflect this norm, typically requiring courses on accounting, finance, and strategy oriented toward public corporations. Classes on entrepreneurship almost inevitably describe an initial public offering (IPO) of shares as a desirable "exit strategy." Yet most of the world's economies do not have a stock market, and half of those that do have markets (including China and most of Eastern Europe) created them only within the past 30 years. As Figure 1 suggests, the United States is an extreme outlier relative to the rest of the world in its reliance on public corporations. Moreover, the dominance of the public corporation may be ending in the United States as well, because the number of listed corporations has been in decline for two decades.

For the purposes of this discussion, I will draw selectively on three traditions that focus on different aspects of the social organization of the economy: transaction cost economics, the contemporary theory of the firm in law and economics, and the comparative institutionalism of "varieties of capitalism." I briefly describe these below, but note that my goal is to give a brief orientation and not a comprehensive overview.

Transaction Cost Economics

Transaction cost economics focuses on the boundaries of the firm. Ronald Coase (1937) famously asked why there are firms at all rather than just market transactions, and answered that using the price system came with its own costs. Production costs and transaction costs both contribute to the overall cost of organizing production, and sometimes firms were cheaper overall than markets. A half-century later, Oliver Williamson (1985) detailed the specifics of when it made economic sense for firms to make inputs rather than buying them on the market. When inputs entailed firm-specific investments that were uniquely valuable to a particular relationship, it was often worthwhile to protect the transaction by bringing it inside the firm's boundary. Notably, Williamson's account encompassed the employment relation, seeking to explain when firms would seek to retain employees for the long term by providing benefits and career ladders, rather than "renting" contractors on an ad hoc basis. Williamson's approach is also valuable for its institutional historicism: Although the opening question is "Why do we have firms?", the real underlying question might be framed as "What accounts for the diversi-

FIGURE 1
Distribution of Countries by Number of Domestic Exchange-Listed Corporations in 2010



Note. From World Bank World Development Indicators.

of ways that products and services are delivered?" (I will call this broader system of delivery, which may or may not be a single firm, the "enterprise.") A vertically integrated firm might be one answer, a thoroughly dispersed supply chain might be another, and there is no reason to imagine that the integrated firm (or the dispersed supply chain) is always the most economical answer.

A critical implication of this approach is that when broad transaction costs change (e.g., due to information and communication technologies), the economical form of enterprise will change as well. For instance, Coase noted that the advent of the telephone made large and geographically dispersed firms relatively more cost-effective than in the days of the telegraph.

Contemporary Theories of the Firm

Contemporary theories of the firm in law and economics ask how law and other institutions shape the financing of firms. Production costs and transaction costs are important for shaping how enterprises look, but how they are financed is also critical. A business funded by a family or a government will

be controlled and managed very differently from one funded by a stock market. Theories of corporate governance provide an elaborate account of the institutions that shape how corporations are structured, from boards of directors and accounting firms to corporate law and the market for corporate control (see Davis, 2005, for a review).

An implication of this approach is that when the means of financing business changes, the dominant form of enterprise is likely to change as well. For example, when a country creates a stock exchange, enacts legal protections for shareholders, and opens its economy to foreign investors, domestic businesses may come to look more like American-style public corporations (Useem, 1998).

Varieties of Capitalism

Finally, the varieties of capitalism (VOC) perspective in political science describes how economy-level institutions shape the organization of the firm. The VOC approach (Aguilera & Jackson, 2003; Amable, 2003; Hall & Soskice 2001) switches the figure and ground in the theory of the firm to examine economy-level institutions that provide the raw materials for

creating enterprises. Firms look very different in countries around the world, and the VOC approach attributes this diversity to different institutions that shape the feasibility and broad cost profile of different ways of organizing: how labor markets are organized, how product market competition is regulated, how finance is channeled, how the workforce is educated, and what kind of social safety net is in place. A key insight of VOC is that the configuration of these institutions favors some kinds of enterprises over others. Germany's large banks, strong vocational education system, export-oriented product market regulation, and labor participation in corporate governance support family-owned manufacturing businesses. America's vast capital markets, strong research universities, and modest labor protections favor technology entrepreneurship.

The VOC approach implies that it is the configuration of institutions in an economy, and not just a single factor such as finance or technology, that shapes enterprise. Thus, installing a stock exchange may change how finance is channeled to some businesses, but it will not be sufficient to create American-style corporate capitalism because of the existence of other relevant institutions around product markets, labor, education, and social welfare. An excellent recent collection (Kogut, 2012) surveys the diverse national responses to the global spread of financial markets during the 1990s. The experience of dozens of countries shows that stock markets and foreign investors alone were not sufficient to overcome long-standing domestic institutions, but often resulted in hybrid forms of governance. Thus, varieties of capitalism can adapt (e.g., when technologies change, or when particular factors such as financial markets grow in significance), but there is likely to be considerable institutional inertia.

The upshot of this discussion is to point to a variety of factors that can account for why forms such as the public corporation might arise and become dominant, and why they might fall. I next apply these ideas to the American corporation.

THE PATHOLOGIES OF SHAREHOLDER CAPITALISM

It is widely agreed in American business today that corporations exist to create shareholder value. Mission statements almost inevitably describe creating shareholder value as a central purpose of the organization. It is the standard rationale for

restructurings, layoffs, stock buybacks, and corporate inversions. Indeed, many people incorrectly believe that allegiance to shareholder value is a legal duty of corporate officers and directors (Stout, 2012).

This was not always the case. For much of the 20th century, shareholders were largely irrelevant. Peter Drucker wrote in 1949: "A growing number of our large enterprises are run on the model which Owe D. Young proposed twenty years ago, when he was head of the General Electric Company: the stockholders are confined to a maximum return equivalent to a risk premium. The remaining profit stays in the enterprise, is paid out in higher wages, or is passed on to the consumer in the form of lower prices" (Drucker, 1949, p. 76). The postwar consensus held that corporations were social institutions with broad obligations to society; the theology of shareholder value began to take hold only with the takeover wave of the 1980s.

The rise of finance and the shareholder value revolution have been described in detail elsewhere (Davis, 2009). Some of the key elements include changes in law and antitrust that enabled the 1980s wave of hostile takeovers, in which roughly one-third of the largest American corporations were acquired or merged and often split up into component parts; the increasing power of institutional investors over corporate decision making; changes in executive compensation toward the awards of stock options and restricted shares; and the advent of the 401(k) plan, through which much of the American population began to invest in the stock market for the first time. In combination, these factors reinforced the view that creating shareholder value is what should be a dominant objective for the corporation.

Shareholder value capitalism comes with a standard playbook of strategies (Useem, 1996). Financial markets signal their approval or disapproval by the valuations they give to companies. Sara Lee was number 57 on the Fortune 500 list in 1997 when its CEO announced a plan to sell off its factories to boost its stock market valuation. Its CEO stated, "Wall Street can wipe you out. They are the rule-setters. They do have their fads, but to a large extent they have decided to give premiums to companies that harbor the most profits for the least assets" (Davis, 2016, p. 76).

Thus, many companies, including Sara Lee, sought to look more like Nike, focusing on design and marketing but minimizing employment and tangible assets by outsourcing production and distribution. Industries such as computers and electronics have

almost universally outsourced production to electronics manufacturing services firms, with U.S. employment in the sector declining by more than 40% since 2000 (Davis, 2016). Garments, pet food, pharmaceuticals, and core aspects of national security have been similarly “Nikefied.” Other market-approved tactics include stock buybacks and the creation of offshore entities for tax purposes. Seventeen years after announcing its de-verticalization, Sara Lee—by then known as Hillshire Brands—had shrunk to a tiny fraction of its former self, and the remaining stub was bought by a competitor.

As a result of this dynamic, creating shareholder value has become largely detached from creating remunerative employment. For most of the postwar era, the companies with the biggest market capitalization were those with the biggest labor forces, revenues, and assets. “Big” meant big on all dimensions. Table 1 compares the firms with the largest market capitalizations in 1962 and 2012. Although the civilian labor force more than doubled, from 71 million to 156 million, in that time, the most valuable firms in 2012 (other than Walmart) were much smaller than their predecessors.

Some firms that are highly valued by the market are even more radically tiny. At the end of 2015, Facebook’s market cap was nearly \$300 billion (larger than JPMorgan Chase), but it had just 9,200 workers and \$12.5 billion in annual revenues in 2014. Meanwhile, Kroger—America’s second-largest employer, with 400,000 workers and more than \$100 billion in revenues—was valued at just \$41 billion.

Markets do not reward moves to create jobs or to provide decent wages—if anything, they punish them. Walmart—America’s largest employer by far—announced a plan to raise the minimum wage for its U.S. workers to \$9 per hour on February 19, 2015, at an expected cost of \$1 billion for the year. By the end of the day its share price had dropped by 3.2%, or more than \$8 billion.

TABLE 1
Top Five Market Cap U.S. Corporations and the Size of Their Workforces (in thousands)

1962		2012	
Company	Employees	Company	Employees
AT&T	564	Apple	76
GM	605	Exxon	77
Exxon	150	Microsoft	94
DuPont	101	Google	54
IBM	81	Walmart	2200

Note. From Compustat.

Thus, our system of shareholder-owned corporations may be good for shareholders, but it is often detached from the economic benefits we expect from them—starting with the creation of economic opportunities. The biggest American employers are almost entirely in retail, providing low wages and limited career opportunities (Davis, 2009). Stock markets reward companies that create few permanent full-time jobs. Valuations are also largely detached from revenues. It is clear that shareholder capitalism has become misaligned with some of the most crucial benefits we want from an economy, such as stable employment.

ARE CORPORATIONS INEVITABLE?

If shareholder-owned corporations are not providing the benefits that society wants from them—particularly stable full-time employment—are we stuck? Are corporations the only way to organize an economy, or are there alternatives?

For most of the 20th century, the answer would have been clear; “capitalism” was almost synonymous with “corporations.” Alfred Chandler (1977) argued that a continent-wide transportation system, economies of scale in manufacturing and distribution, and sophisticated systems of bureaucratic management made the corporation the most economical way to produce and distribute goods in the United States. A wave of mergers among regional producers around the turn of the 20th century left most major industries organized into a handful of exchange-listed oligopolies. The virtues of American-style mass production became evident during the First World War and spread widely after that—even to the new Soviet Union, where Henry Ford was an icon. Cars and refrigerators and petroleum and steel were cheaper when they were made in giant factories, and giant factories often required capital on a scale too large for family-owned businesses. In the United States this meant that the public corporation, with shares traded on a stock market, came to dominate industry. Economic theories were premised on the idea that the corporation was inherently dominant, in spite of its flaws (e.g., the limited control created by dispersed share ownership and the high overhead associated with managerial hierarchies), because it was more economically efficient than the alternatives. These alternatives were winnowed out, dead ends on an evolutionary path not taken.

Thirty years ago, Piore and Sabel (1984) pointed out that this potted history was not entirely correct

and relied too heavily on the peculiar American experience. Other advanced industrial economies managed to get by with alternative ways of organizing industry. Italy still had vibrant industrial districts producing high-end products, from fashion to Ferraris. Germany was a global manufacturing powerhouse, yet public corporations were a much smaller part of its economy. Banks (rather than markets) were a major source of funding, and family-owned businesses were an essential element of its manufacturing prowess.

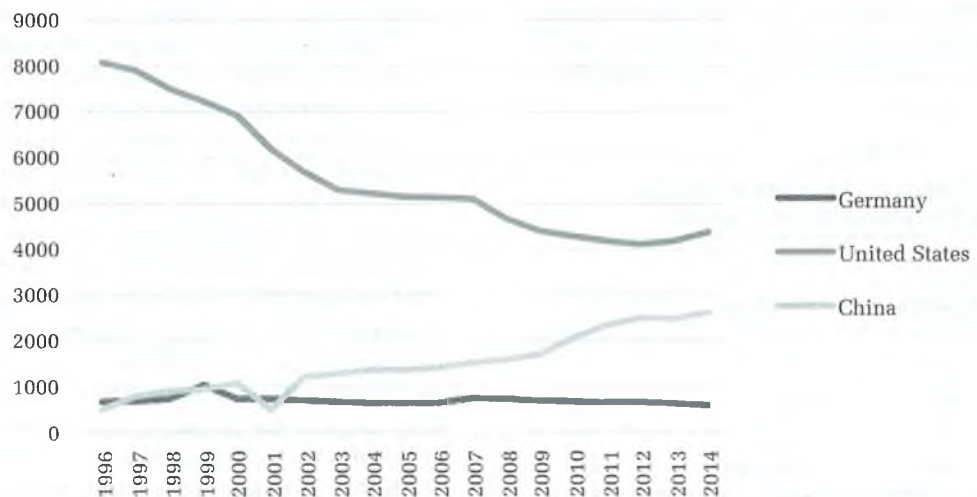
Twenty years ago, Mark Roe (1994) argued compellingly that financing business through stock markets was not inevitable even in the United States, but reflected the peculiarities of American politics and its federal system of regulation. If the U.S. had giant national banks when it industrialized, as Germany did, public corporations might have been much less dominant. Moreover, most countries in the world did not even have a stock market until fairly recently, and fewer than half of the world's 200 nations have a functioning stock market today. Public corporations are perhaps less inevitable than we thought.

Figure 2 compares the number of listed corporations in China, Germany, and the United States since 1996. All three are vast and growing economies with large manufacturing sectors and strong exports, yet the comparisons are stark: While China has seen nearly continuous growth in listed companies since it opened its first post-revolution exchange in 1990, the United States has seen an almost continuous

decline since 1996. Meanwhile, Germany has varied only modestly over the period, with about 600 list companies in 2014.

The prevalence of corporations appears to be related to broader measures of economic vibrancy. Moreover, even where they exist, corporations are more diverse than the use of a single term implies. In this sense, corporations are like breakfast: Around the world, the first meal of the day might consist of a croissant with jam (France), soup and rice (Korea), smoked fish with dark bread (Sweden), *salsich* (Israel), pancakes with maple syrup (Canada), *milk* and yogurt (Switzerland), or eggs, sausage, and baked beans (England). The use of a single term hides the vast diversity of what "breakfast" or "corporation" actually means in practice. A simple example: What should the board of directors of a publicly traded auto company look like? How should it be, and what kind of people should serve as directors—executives, employees, investors, government officials, or outsiders? After more than a century of operations and the globalization of financial markets, the auto industry should have figured this out. Yet in the United States, the board of General Motors includes the CEO and 10 outsiders who are mostly retired CEOs of other companies. In Japan, the board of Toyota includes 21 directors, most of whom are current or former Toyota executives. Under German law, half of the supervisory board is elected by employees to represent labor. China's Geely Automotive board, in contrast, includes 6

FIGURE 2
Corporations Listed on Domestic Stock Markets in China, Germany, and the United States, 1996–2014



Note. From World Bank World Development Indicators.

executive and six non-executive directors. Needless to say, the diversity of these organizations does not stop with the boards. There is no obvious convergence on the one best way, even if global shareholders might prefer it otherwise.

There are a lot of ways to organize the production of a car, or a dress, or a computer program, or a mutual fund. Even in highly competitive industries, we often find wildly divergent ways of organizing that survive side by side. This is true even in finance. Mutual fund companies sell a more or less generic product with explicit and easily compared performance metrics. After seven decades, the industry should have winnowed out the less competitive ways to organize. Yet Vanguard, the biggest operator, is organized as a mutual, owned by the people who buy its low-fee index funds. Fidelity is a private company half-owned by the Johnson family, and uses in-house fund managers advised by its own analysts. T. Rowe Price is a publicly traded corporation and contracts the management of its funds to outside firms. And TIAA-CREF is a nonprofit organization operated on behalf of its participants. Even within a single economy, in which firms face the same configuration of institutions, perhaps there is not a single best “natural path of opulence,” as Adam Smith put it (quoted in Piore & Sabel, 1984, p. 11).

Both transaction cost economics and the VOC approach point out that the nature of individual enterprises varies according to ambient resources for creating a firm. Just as the telephone enabled larger and more dispersed firms, the revolution in information and communication technologies of the past generation has radically changed the possibilities for what an enterprise can look like. Most of us now carry with us a tiny wireless supercomputer/video camera/GPS/communicator that would have filled a room 40 years ago, and that provides access to all the world’s knowledge instantaneously. It is inevitable that this will radically change the kinds of enterprises that are created, just as it has changed the frequency and form of social movements around the world. Ubiquitous smartphones have already enabled the creation of new industries virtually overnight, such as platforms for transportation (Uber and Lyft), personal temp services (TaskRabbit), and temporary relationships (Tinder, Grindr). They are also certain to change the nature of the employment relationship and the shape of enterprise.

The recent proliferation of alternative forms of doing business and the declining prevalence of public corporations suggest that we are observing the

results of shifts in the underlying transaction costs of organizing. But how this plays out, and whose needs are met, is not foreordained, and it is far from inevitable that the corporation will end up being the best or most economical format. Yochai Benkler (2013, p. 214) noted that “peer mutualism” in the form of free and open-source software (FOSS) (e.g., Linux, Firefox, Apache) and Wikipedia have provided proof of concept that large-scale voluntaristic cooperative alternatives to corporations are possible: “Over the course of the first decade of the twenty-first century, commons-based peer production has moved from being ignored, through being mocked, feared, and regarded as an exception or intellectual quirk, to finally becoming a normal and indispensable part of life.” Our contemporary Web-enabled economy relies at countless critical places on free products created through voluntary collaboration. Millions of servers rely on Linux and Apache, and millions more undergraduates rely on Wikipedia when writing their papers. (Thousands of Ph.D. students also rely on R, another free and open-source software application, for their regressions.) As Benkler noted (2013), these are the products of working anarchies in which voluntary cooperation without the need for property or state intervention is the main mode of operation. Not only are corporations not essential; in many cases, they are not even competitive.

TECHNOLOGY AND ORGANIZATIONAL FORM

The most persuasive case for the inevitability of the corporation is economies of scale. Even smartphones are assembled in giant factories employing hundreds of thousands of workers in China. If bigger is cheaper, and being big requires capital on a large scale, then corporations are likely to maintain their advantages over other forms, even in a world of ubiquitous smartphones. Artisanal jumbo jets and locally brewed petroleum are not plausible at the moment. But we have already seen that large-scale non-corporate forms of collaboration are possible, at least on the Web. Linux and Wikipedia demonstrate that free, non-proprietary products superior to their commercial alternatives can be produced entirely by voluntary labor.

Here again, technological changes may favor non-corporate alternatives. Production technologies are now emerging that allow small-scale manufacturing at low cost, creating even more new possibilities. The revival of microbrewing and local coffee roasters suggests that it might not always make sense to brew

all the nation's beer in St. Louis and then ship it to local stores in refrigerated trucks, or roast and can all the nation's coffee in one giant factory weeks before it is consumed. Small-scale production equipment has dropped dramatically in cost in recent years. Computer numerical control (CNC) technology has made lathes, routers, machine tools, laser cutters, and other production machinery more accurate and much cheaper than it used to be. Much as the laser printer enabled those of us with no background in design or typography to create sophisticated documents cheaply, CNC machines allow those with minimal skills to produce goods at low cost. As an example, the ShopBot Router (which costs less than a semester's tuition at a private college) could produce much of the Ikea catalog, as well as far more sophisticated furniture, using electronic cut files. Cut files can be produced using software freely available online; alternatively, it is possible to download and modify designs already posted on the Web much the same way that programmers can download and modify open-source software.

It is easy to imagine universal fabrication facilities open to the public that contain CNC machine tools, laser cutters, 3D printers, and other high-tech production equipment. Indeed, this is the business model of TechShop, which charges a monthly fee to use the equipment (much like a gym) and has already spawned dozens of businesses. On the other side of the valley of de-skilling that scholars warned about in the 1970s is a world where design skill is enough to be a micro-producer. I know from personal experience that an imaginative 14-year-old can download 3D designs from the Web, customize them on her laptop, and "print" them at the local fab facility. Given the trajectory of technological development and rapidly declining costs of equipment, it is clear that within a few years every town could be equipped with such a facility for under \$1 million, perhaps housed on a disused floor of the local library. Starting a small manufacturing business (e.g., custom furniture from rescued wood) would not be much more costly than starting, say, a home cleaning business. Barriers to entry, at least at the low end, would effectively vanish.

If mass production technology prompted the spread of the large corporation, what will contemporary technology promote? As Piore and Sabel (1984) demonstrated, the format for organizing the production of goods is not foreordained. Technology is not destiny. In the rest of this article, I describe some of the possible alternative pathways.

ALTERNATIVES: COOPERATIVES AND MUTUALS

Although corporations came to seem inevitable, at least in the American context, a closer examination shows that non-corporate alternatives continued to operate alongside or even in opposition to shareholder-owned corporations from the very start of the "corporate revolution." Marc Schneiberg (e.g., Schneiberg, King, & Smith, 2008) showed that non-corporate alternatives thrived during the late 1800s and early 1900s in industries including grain milling, milk processing, and insurance. Non-corporate alternatives tended to proliferate in "ecosystems" that were mutually supportive. Agricultural co-ops were often found in places with mutual insurance companies and municipal phone companies. Schneiberg argued that the lessons learned in participating in one type of enterprise transferred over to the others, creating symbiotic relationships among different organizations across industries. When people see non-corporate forms working in insurance or food processing, they see them as plausible alternatives in other domains.

Cooperatives

Although worker-owned cooperatives loom large in the imagination, they are far less prevalent in the United States than in some other economies, numbering under 1,000 today. They have nonetheless played an important historical role by exemplifying a democratic alternative to the standard corporate form (Rothschild, 2016). Producer cooperatives are common in agriculture around the world. Farmers often require costly processing equipment that is used only intermittently (e.g., grain milling). It makes sense to pool resources and share capital equipment whose capacity would not be filled by individual producers. Farmers can also benefit from banding together to speak with one voice, either for marketing commodity products (such as butter and cheese) or to bargain more effectively with vendors (such as railroads). Co-ops are an obvious choice for groups of independent producers. In the United States, there are several agricultural cooperatives that date from a century ago and still maintain a strong position in their sector, including Land o' Lakes (dairy), Ocean Spray (cranberries), and Blue Diamond (almonds).

There are also instances of more traditional businesses transitioning to a cooperative form. After almost 50 years in business, Ace Hardware's founder sold the parent company to its retailers in 1973, thus

making the chain a retailer-owned cooperative. The United States also has a handful of consumer co-ops, such as REI (a national athletic goods retailer) and various food cooperatives.

How do new technologies influence the prospects for co-ops? First, much of the research on co-ops shows that the endless time spent in meetings is a drag on their viability. Rothschild and Whitt (1986) found that upwards of 20% of members' time is spent in meetings, making co-ops comparable to some academic departments. Yet information and communication technologies can lower the transaction costs of exercising voice and democracy. As new forms of democratic organization are tested and developed, their experience can serve as a feedstock for new technologies of collaboration (Rothschild, 2016). Not every decision requires a face-to-face meeting; for many purposes a smartphone "workplace democracy app" could allow democratic participation without the endless meetings. Second, the same rationale for agricultural co-ops applies to manufacturing: If banding together and pooling resources to buy equipment for common use works for processing grain, it can work for CNC routers, lathes, and laser cutters. A cooperatively owned high-end fab facility can enable production for many kinds of non-competing businesses.

Mutuals

A second form of non-corporate business is the mutual, in which the residual claimants are not shareholders but the consumers themselves. Some of the biggest insurance companies in the United States are mutuals, including State Farm (#41 in the Fortune 500), Liberty Mutual (#76), Nationwide (#91), and Massachusetts Mutual (#96). Policyholders are in effect the owners. Vanguard, the largest mutual fund family, is also organized as a mutual.

One of the most successful types of mutual is the credit union. By U.S. law, credit unions are non-profit organizations; their residual profits are used for member benefits, such as educational programs. Roughly 100 million Americans belong to credit unions, and they have a solid record relative to shareholder-owned financial institutions. Mutuals are especially well suited to financial products, where they are already prevalent in insurance. Here, extensions to the mandate of credit unions (which are restricted from business lending) may be the most obvious next step.

Municipal Businesses

A final type of non-corporate business that is widespread in the United States is the municipal business. In cities and towns across America, water companies and electric companies are owned by the municipality itself. Municipal ownership lends itself to infrastructure. In the United States, cable television, broadband access, and Wi-Fi are typically provided by corporations, but could be reimaged as municipal utilities.

ALTERNATIVES: COMMONS-BASED PEER PRODUCTION

The Internet has vastly expanded the possibilities for large-scale coordination and facilitated the creation of highly effective non-corporate enterprises. In a series of books and articles, Yochai Benkler (2011, 2013) made the case that our current networked environment contains several "working anarchies," and in fact relies on them to operate. These are anarchies in the sense that they are self-organized, voluntary, and non-hierarchical and eschew government-backed property rights. They are remarkable for many reasons. The idea that thousands of people around the world could collaborate with strangers to produce anything, much less the software and knowledge architecture that underlies the online world, seems nothing short of miraculous. These are products requiring a level of coordination that should be possible only under the hierarchical authority of a corporation or a government, yet they emerged over the past few years almost spontaneously, in the absence of (much) formal organization.

Two broad examples of working anarchies that we have already touched on are free open-source software (FOSS) and Wikipedia, both of which have received some scholarly attention. It is worth reflecting on just how pervasive these are in daily life. According to Benkler (2013, pp. 220–221):

Free and open source software programs account for roughly three-quarters of web servers, the software that a server runs to respond to browser queries (Apache, nginx); more than 70 percent of web browsers (Firefox, Chrome); server-side programming languages (PHP alone is >75 percent share); content management systems (WordPress, Joomla, and Drupal have slightly more than 70 percent of servers); all the way to enterprise stock management or statistical software, R. The sheer scale of our networked information economy's dependence on free software is staggering. Moreover, FOSS has become a critical part

of the strategy of firms; just under 40 percent of firms engaged in software development report spending development time on developing and contributing to FOSS software.

Our online world could probably survive without corporations, but it simply would not work without the products of working anarchies.

How do working anarchies operate in practice? Siobhan O'Mahony and Fabrizio Ferraro (2007) described how open-source software development is governed in the Debian community. The technically proficient can gain authority, but within limits set by the democratic norms of the community. Democratic mechanisms in place enable the community to adapt over time to changing circumstances. As Benkler described it, details of how decisions are made and how disputes are resolved vary across communities. Some rely on a charismatic founder as a symbolic backstop; many have a meritocratic system of allocating status, but this does not translate into "being a boss"; some have formal elections; others use a norm of rough consensus to make decisions.

Research on open-source software is still at a relatively early stage in the organizations literature, but promising works are emerging (e.g., O'Mahony & Ferraro, 2007). The clear success of these cases raises the tantalizing question of whether their lessons can be transferred to domains outside the Internet. We have proof of concept that working anarchies can work: We already use their fruits on a daily basis. What is less well understood is how best to capture their essential features and apply them in other domains. But the digitization of much of social life, and people's widespread experience with the online versions, suggests that this is increasingly possible.

ALTERNATIVES: PLATFORM CAPITALISM

A final and more recent set of possibilities can be described as "platform capitalism." Platform capitalism is a more accurate nomenclature for the sharing economy, and particularly online (often mobile) systems that connect buyers and sellers (e.g., Uber, Airbnb, TaskRabbit). While tool libraries and other forms of sharing have a long history, what is different now is the greatly reduced costs for connecting transactors (sharers, or buyers and sellers) enabled by information and communication technologies, particularly the smartphone. At the extreme, everything one owns and all of one's capacities can be made available for exchange

through online platforms. It is clear that this is going to have transformative effects on the nature and location of markets for capital, labor, products, and services, as well as the institutions that regulate and build on them. Yet thus far our understanding of these platforms and their trajectories is still based largely on anecdote and speculation.

In an insightful early analysis, Juliet Schor (2011, pp. 2–3) described four categories of the so-called sharing economy: "recirculation of goods [e.g., eBay and Craigslist], increased utilization of durable assets [Airbnb and Uber], exchange of services [TaskRabbit, time-sharing banks], and sharing of productive assets [makerspaces, co-working spaces]." Some of these are simply online versions of forms of exchange that have existed for some time: Craigslist is not so different from the classified advertising section of a newspaper. Others are entirely new and are possible only due to the widespread adoption of smartphones since 2007.

The earliest incarnations of these platforms have been criticized for enabling new forms of exploitative low-income labor, and for profiting at the expense of more established vendors (such as taxi companies and hotels). Some have referred to the class of laborers with intermittent income as the "precarious." But immiseration is not intrinsic to these platforms and they are not intrinsically corporate. At the time of writing, Uber has perhaps 4,000 employees, but has 327,000 "driver-partners" in North America. Airbnb has 2,500 employees but more than a million listings worldwide. The eventual fate of this form of "micro-entrepreneurship" is uncertain, but the lesson of past economic transitions is that technology is not destiny: Platforms are highly malleable, and there is clearly room for non-corporate alternatives.

Schor described the possibilities for a social movement of sharers, with existing platforms coming "user-governed or cooperatively owned." The fact that users create so much of the value in these spaces militates in favor of their being able to capture it, should they organize to do so. To date, this type of movement has not developed, but it might" (2014, p. 11). After all, the platform is not a producer itself, but simply a broker for transactions. It's a safe bet that any kind of software platform that can be created by a 20-year-old in a dorm room is not likely to be a durable common monopoly.

The divergent experiences with platform capitalism around the world reinforce the VOC idea

technology is not destiny: The same technology will be implemented in different ways depending on surrounding institutions. Thus, while Uber seemed like an unstoppable force that spread like bamboo in the United States, in Germany its reception has been much less hospitable. Germany requires health exams, special state licenses, and security checks for taxi drivers, and Uber's inability to recruit suitable drivers led it to pull out of Düsseldorf, Frankfurt, and Hamburg. Meanwhile, locally based competitors, in collaboration with licensed drivers and unions, have launched their own successful versions of app-based ride-hailing services across Germany (Scott, 2016).

CONCLUSION

Thirty years ago, Rothschild and Whitt (1986, p. 190) ended their book about the experiences of cooperatives in the 1970s with a hopeful thought about the possibilities created by emerging technologies:

Possibly the collectivist organization can arise only where technological capacity is great enough to free most from toil. We can hunt in the morning, fish in the afternoon, and talk philosophy at night only when we have the technological capacity to easily sustain material existence. When work is relatively free from the press of necessity it becomes self expressive, playful activity. The mechanical industrial age vastly increased humankind's capacity to reproduce material existence. Now we appear to be moving into an electronic age which vastly increases our capacity in this respect and also alters the nature of work, from transforming things to creating and disseminating new values, services, and knowledge. This transformation perhaps will give us more freedom to merge work with play.

As I have described in this paper, we are now at a branching point in how we organize the economy, made possible by information and communications technology (ICT) and low-cost, small-scale production technology. The diversity of new industries and forms, and the early experience of the sharing economy, show that many future directions are possible. The technology is compatible with the vision of autonomy and democracy described by Rothschild and Whitt, but it is also compatible with a precarious labor market in which careers have devolved into jobs, and jobs into tasks. The declining number of corporations and the move from manufacturing to service employment (particularly in retail) have been accompanied by a shift toward

unpredictable work hours, income, and benefits for many.

My aim in this article has been to advance the argument that corporations are not the inevitable way to organize economic activity, and that we have a wide range of alternatives open, from the revival of old forms such as the cooperative to the creation of new platform-based forms. ICTs have led to simultaneous changes in production technology, financing, and governance, creating the raw materials for entirely new forms of enterprise. They also enable institutional transfer, as practices can be documented and shared globally. Just as Linux and other open-source software can be shared and adapted, practices of democratic governance can be thought of as open-source innovations that can be modified according to circumstance.

Management scholarship can help guide practice in a more humane direction, if we choose to do so, by seeking and documenting alternatives that can serve as a sort of organizational seed bank. We will, however, need to break some ingrained habits as researchers. First, we should not start our search with corporations. The ready availability of time-series data on corporations makes them almost irresistible as a default unit of analysis. Yet sometimes the easy path is not the most informative one, and here we might draw on the example of transaction cost economics and its agnosticism. A corporation is one way to produce an online encyclopedia, or an operating system, but if we fail to consider non-corporate alternatives, we end up with a misleading view.

Second, we should not define performance purely, or even primarily, in terms of profit. Alternative measures might include the creation of jobs, the stability of wages, growth in the wealth of participants, or the level of democracy achieved.¹ Third, we should not be bound by the American experience. As we have seen, America is highly idiosyncratic in its heavy reliance on public corporations and in the forms they take. Most of the world's economies do not have a stock market; if they do, they have relatively few listed corporations, and the ones they have rarely have dispersed ownership. Rather than viewing the vast majority of the world as an aberration, we might instead ask what can be

¹ These first two suggestions may be a problem for research subfields organized around the question "Why are some firms more profitable than others?" I am willing to take that risk.

learned from the rich diversity of alternative forms of enterprise.

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