

Re-imagining the corporation

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**Prepared for American Sociological Association annual meetings:
“Real Utopias”
DRAFT, April 24, 2012**

Executive summary

The problems of increasing inequality, decreasing mobility, and greater economic insecurity in the United States are in large part due to the collapse of the traditional American corporation. For most of the twentieth century, vertically integrated, shareholder owned corporations were the central pillars of the American economy, producing goods and services, providing secure employment and opportunities for advancement, ensuring social welfare for employees and their dependents, and offering a vehicle for retirement savings. Due to the success of the “shareholder value” movement and the widespread Nikefication of the American economy over the past generation, however, public corporations have become less concentrated, less integrated, less interconnected at the top, shorter lived, less remunerative for average investors, and less prevalent since the turn of the 21st century. There are fewer than half as many public corporations today as there were 15 years ago. Those that remain are ill-equipped to provide long-term employment, opportunities for economic advancement, and benefits such as health care and retirement security. The range of activities for which the most economical format is to organize as a corporation and list shares on a stock market is rapidly diminishing. Corporations today are in retreat, and there is reason to expect that their significance will continue to dwindle over the next generation as they are superseded by alternative forms of organizing.

Shareholder capitalism has bequeathed a large set of social pathologies. We are left with one generation entering the labor force saddled with enormous student loan debt, a broken social welfare system still tied to employment, and limited prospects for future economic advancement, while another anxiously eyes the stock market and awaits a point when it will be safe to retire--if ever. Moreover, the effects of climate change are upon us, requiring both large-scale capacities for remediation and a less carbon-intensive economy. But we also have in hand a legacy of technological and economic infrastructures suitable for being re-purposed in more democratic and localized social forms. Production technologies such as CNC machines are both far more powerful and vastly cheaper than they were a few years ago, while newer digitally-enabled tools such as 3D printing are rapidly declining in price and increasing in quality and flexibility. Equipping every town with a high-end DIY facility capable of producing products from scratch based on digital designs, from furniture to prosthetic limbs to replacement auto parts, is within reach technically and economically. At the same time, Web-based tools for design, collaboration, sharing, and participation enable a cosmopolitan localism; these tools are second nature for the digital generation.

Local solutions for producing, distributing, and sharing can provide functional alternatives to corporations for both production and employment.¹ The technology for locavore production is already here; what is needed is the social organization to match the tools that we already have, or will have shortly. To inform this effort we can draw on the long history of non-corporate forms in the US and elsewhere such as mutuals, co-ops, and municipal companies, which provide a kind of organizational seed bank. Experiments in collaborative locavore economies are underway in Cleveland, Detroit, and other post-industrial cities, and merit systematic study by social scientists to determine what works and what does not. Successful formats can be compiled and made available along the lines of open source software. Combined with new technologies that lower the “transaction costs of democracy,” this suggests that the time for democratic local economic forms prophesied by generations of activists may finally be at hand.

¹ Social welfare functions that involve risk-sharing, such as health care and income security, are best organized at a more aggregated level such as by the Federal government.

The global Occupy movement that emerged in the fall of 2011 has highlighted the problems of rising inequality, decreasing mobility, and rampant economic insecurity in the United States and elsewhere. The gap between the incomes of the top 1% and the rest is greater than at any point since the start of the Great Depression, while the prospects for those at the bottom of the economic ladder to move up have dimmed. Financial elites appear more concentrated and less constrained than at any time since the turn of the 20th century, when J.P. Morgan and a handful of other bankers controlled the flow of capital and held positions on the boards of nearly every major national corporation.

Many accounts attribute our current situation to the unfettered power of large corporations. In reality, the reverse is true: our current problems of higher inequality, lower mobility, and greater economic insecurity are in large part due to the *collapse* of the traditional American corporation. Over the past generation, large, publicly-traded corporations have become less concentrated, less interconnected, shorter-lived, and less prevalent: there are fewer than half as many public corporations today as there were 15 years ago. Those that remain are ill-equipped to provide long-term employment, opportunities for economic advancement, and benefits such as health care and retirement security. Corporations today are in retreat, and there is reason to expect that their significance will continue to dwindle over the next generation.

This paper lays out the case for corporate collapse and suggests a more local and democratic path going forward. I review the history of the rise and fall of the large corporation, including several surprising recent findings which indicate that the first decade of the 21st century has seen the twilight of the public corporation in the US. Ironically, much of the blame for the decline of the corporation belongs to the success of the shareholder capitalism movement in the US, which effectively reduced the corporation from an institution to a “nexus of contracts.” The dominance of finance has come at the expense of the corporation. I then describe how several of the “ruins” left by shareholder capitalism favor a form of economic locavorism, and suggest that the time for democratic local economic forms prophesied by generations of activists may finally be at hand.

The roles of the 20th century corporation in American society

Public corporations as we know them are a distinctly 20th century phenomenon in the United States.² Roy (1997) points out that there were fewer than a dozen manufacturers listed on major US stock markets in 1890. Most public corporations were railroads, whereas even the largest manufacturers (such as Carnegie Steel) were organized as private partnerships. During the subsequent 15 years, bankers on Wall Street--most prominently J.P. Morgan and his firm--organized the mergers of dozens of dispersed regional companies into a relative handful of oligopolistic corporations able to serve markets on a national scale, with their shares traded on stock markets. US Steel, organized in 1901, was the first billion-dollar corporation in America, combining nearly every major steel producer (including Carnegie) into a single public corporation.

In the blink of an eye, the American economy had become both national in scope and corporatized. The growing concentration of economic resources prompted a backlash from Progressives, who believed that the US needed a powerful Federal government to act as a counterweight to the power of the new corporations. As Teddy Roosevelt put it in his "New nationalism" speech in 1912, "Combinations in industry are the result of an imperative economic law which cannot be repealed by political legislation. The effort at prohibiting all combination has substantially failed. The way out lies, not in attempting to prevent such combinations, but in completely controlling them in the interest of the public welfare." This became the progressive project through the end of the Great Depression and beyond.

Over the course of the 20th century, the public corporation took on four central functions in American society. The obvious ones are the production of goods and services and the provision of employment, which they share with corporations around the world. But the American corporation evolved additional functions that distinguished it from businesses elsewhere, prodded in part by the progressive agenda. The corporation became a crucial source of social welfare services that were provided by the state in other industrialized economies, including health care for employees and their dependents and retirement security. After 1980, they also become the predominant vessel for individual retirement savings. I summarize these four functions below.

² Public corporations are corporations with ownership shares traded on stock markets. Throughout the text I will use "corporation" and "public corporation" interchangeably, although nonprofits and private companies are also typically organized as corporations under the law.

Production of goods and services. In the wake of the merger wave at the turn of the 20th century, non-agricultural production was increasingly housed within corporations. By 1930, after a second wave of consolidation during the 1920s, the large majority of the assets in manufacturing were held by public corporations. Berle and Means (1932) reported that the top 200 corporations alone controlled 49.2% of corporate wealth, and if the trends of the prior decade had continued, they would control it all by 1959.

Employment. Employment also came to be concentrated in corporations. At the turn of the 20th century, 42% of the American labor force was dispersed among six million farms. By the time of the Second World War, almost half of the private labor force worked in manufacturing--overwhelmingly in public corporations such as General Motors and General Electric--and by 1970 nearly one in ten workers were employed by the 25 largest corporations. As Berle and Means (1932) described it, assets and employment seemed to respond to a centripetal force, becoming increasingly concentrated through corporate consolidation. During the decade of the 1960s, for instance, GM added 100,000 employees, AT&T grew by 200,000 employees, and ITT grew from 132,000 employees to 392,000 through dozens of acquisitions (Davis and Cobb, 2010).

Social welfare services. In most advanced economies, states took on the provision of health care and retirement income security. In the US during and after the Second World War, however, corporations took on these functions. The United Auto Workers and other unions had advocated for national health insurance and a more generous national pension system just after the War, but idiosyncratic historic circumstances sent the US down a distinctive path in which health and income security for households became attached to employers (Cobb, 2011). American workers and their families were uniquely dependent on corporate employers, not just for wages but for the basic social safety net.

A vehicle for savings. The standard employer-based pension plans that prevailed after WWII provided a guaranteed income in retirement, giving employees little direct reason to worry about the stock market. Since the advent of the individually-based 401(k) in 1982, however, most future retirees have invested their retirement savings in US corporate stocks and bonds. Unlike traditional pensions, the value of these "defined contribution" plans varies directly with the market--that is, the stock price of American corporations. College savings in the US are also heavily invested in the stock market, due in part to the high cost of both public and private higher education. Thus, in the US, households became dependent on the performance of financial markets for their economic well-being.

Over the course of the 20th century, the public corporation became the central indispensable actor in the American economy. Households relied on the corporation for goods and services, employment, health care, and financial security in retirement. The US had become, as Chick Perrow (1991) described it, a “society of organizations.”

This was not inevitable. The public corporation is not a *sine qua non* for a capitalist economy. Germany has a robust export-oriented economy with far fewer public corporations than the US. Indeed, with fewer than 600 companies listing shares, Germany has fewer public corporations than Pakistan. In Canada and the UK, health care comes as a benefit of citizenship and is not linked to employment, although these two economies are often categorized as sharing the same “variety of capitalism” with the US. And higher education in these three countries generally does not require two decades of savings to fund due to relatively generous state subsidies. In short, American households and the American economy were uniquely dependent on the public corporation.

The rise of shareholder capitalism and the collapse of the corporation

Several events combined to break up the familiar vertically-integrated corporation in the United States. Bust-up takeovers of diversified firms in the 1980s led to a substantial restructuring and re-focusing of American industry. During the 1960s and 1970s, dozens of American corporations had pursued programs of growth through merger, leaving the corporate economy both heavily concentrated in assets and employment and highly diversified. ITT Corporation, perhaps the most infamous conglomerate, owned businesses around the world in industries that included hotels and casinos, auto parts, copper mining, bakeries, vocational education, insurance, and many others, becoming one of the 10 largest American corporations through aggressive acquisitions (Davis and Cobb, 2010). Along the way, it also acquired substantial political influence.

By the time of Ronald Reagan’s election in 1980, analysts on Wall Street and elsewhere had determined that conglomerates like ITT were heavily undervalued by the stock market. Most would be worth more if they were split up into their constituent parts, their fleet of corporate jets sold off, and their corporate headquarters closed--a course of action that became possible with a series of Federal decisions in the early 1980s (Davis and Stout, 1992). Over the course of the decade, one in three Fortune 500

corporations were taken over, often through hostile “bust-up” deals in which the companies were split into parts and either sold to related acquirers or floated as free-standing businesses (Davis, Diekmann and Tinsley, 1994). Those corporations that remained often voluntarily restructured, selling off or closing peripheral businesses to focus on a core set of industries. As a result, GE’s 400,000-member workforce declined by one-quarter during the first half of the decade. Thus, unlike prior merger movements, the 1980s hostile takeover wave left the corporate economy substantially *less* concentrated than when it started (White, 2001).

During the 1990s, offshoring and the growth of a sector of “turnkey” vendors and distributors helped disaggregate the corporation further. The story of offshoring is familiar to everyone, as China has become workshop to the world and India has become IT center to the world. Less evident is the extent to which turnkey manufacturers and distributors have taken over core economic activities from name-brand corporations. In electronics, companies like Solectron, Flextronics, and Ingram Micro expanded from “board stuffing” (the low-skill tasks of assembling circuit boards) to full-fledged assembly, supplier management, and distribution. Dozens of companies like Dell, Ericson, and Sony sold their factories to generic manufacturers so that they could focus on their “core competence” of design and brand management (Davis and McAdam, 2000).

This basic model has spread quite broadly to cover essentially all of the computer and electronics industry; consumer goods from branded clothing to pet food; pharmaceuticals; and many others. For nearly any branded product a consumer buys in the US, it is a good bet that it was manufactured and distributed by an anonymous vendor, not the company whose name is on the label. As a result, the corporations owning the “brand” often employ relatively few people directly. Nike is by far the world’s largest athletic shoe and clothing company, with nearly \$21 billion in annual revenues, yet its global workforce numbers just 38,000.

In sectors that have been “Nikefied,” the employment consequences are stark. According to the Bureau of Labor Statistics, the “Computer and electronic products” industry has shed 750,000 jobs in the US since 2000, even as Apple’s products have become ubiquitous and its stock market value has surpassed one-half trillion dollars (see Figure 1). Meanwhile, Foxconn, which assembles most of Apple’s products, employs over one million workers in China.

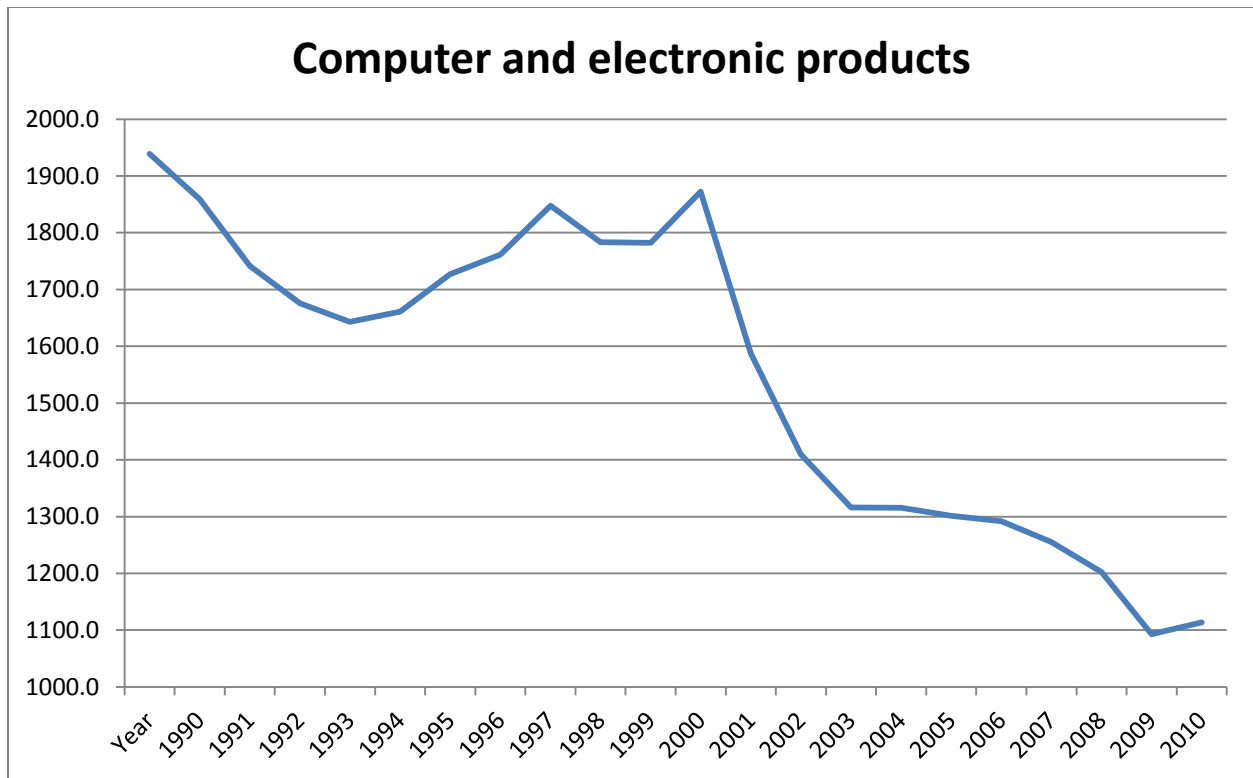


Figure 1: Employment in “Computer and electronic products” industry in thousands, 1988-2011. (Source: Bureau of Labor Statistics)

The massive expansion of a sector of “generic” manufacturers and distributors in China and elsewhere allows enterprises to scale rapidly and collapse even more rapidly. The company behind the Flip video camera serves as a vivid example. The Flip is an inexpensive camera that records onto flash memory and connects to a computer’s USB port for easy editing and sharing of videos. Reductions in the size and cost of its components, modest quality requirements, and the growth of YouTube as a popular site to share amateur videos made Flip a highly popular product when it was launched in 2007. By 2009 it had sold millions of units and dominated its category, where “Flipcam” was synonymous with the type of product, like “Xerox” or “Kleenex.” The existence of a large sector of generic manufacturers allowed the business to grow extremely rapidly without having to build its own factories. In 2009, the company had only 100 employees, in spite of enjoying a roughly 20% share of the market for portable video cameras (“A tiny camcorder has a big payday,” *New York Times*, 3/19/09). A clever design, low cost, and good marketing were the essential elements; the rest could be hired out. That year the company’s founders sold Flip to Cisco for roughly \$600 million. In early 2011, Cisco announced that it was closing the Flip business. The Flip’s functions had been superseded by advances in cellphone technology such that

everyone likely to buy a Flip already had a smart phone that could do the same thing (“For Flip video camera, four years from hot start-up to obsolete,” *New York Times*, 4/12/11). Unlike the collapse of a company like Eastman Kodak, which was a major employer and philanthropist in Rochester for 120 years before its recent bankruptcy, the disappearance of Flip would leave little trace.

The centripetal force that encouraged the concentration of corporate assets and employment was no longer operative, as the Flip business model had replaced the vertically-integrated Kodak model. On the other hand, the centrifugal force that led to the dispersion of corporate ownership had also reversed course. The growth of individual pensions and retail investment has resulted in the re-intermediation of corporate ownership in the hands of financial institutions, particularly mutual funds and exchange-traded funds (ETFs). The numbers are striking. By 2010, 75% of the largest 1000 corporations’ shares were held by institutions, not individuals. Moreover, as of 2011, BlackRock--proprietor of the iShares ETF business--owned at least 5% of the shares of more than 1800 US corporations. This represents more than 40% of the roughly 4300 American companies listed on major stock markets. With \$3.5 trillion in assets under management, BlackRock was the *single largest shareholder of one in five corporations in the US*, often including the largest competitors in the same industry (Davis, 2012). At this writing, these include Exxon Mobil and Chevron; AT&T and Verizon; JP Morgan Chase and Citigroup; GE; and more than 800 others. Similarly, Fidelity is the largest shareholder of one in ten American corporations, frequently owning stakes of 10-15% or more. Even at the height of “finance capitalism” in the early 20th century, the US has never before seen corporate ownership this concentrated in the hands of a small number of financial institutions (see Table 1). In relative terms, BlackRock is far more massive than J.P. Morgan ever was.

Yet “Finance Capitalism 2.0” is highly labile, as ownership positions rise and fall rapidly and seem detached from direct control. The long-standing perception that large shareholders are relatively permanent, and thus prone to taking a long-term view, is demonstrably false today, and we are only now groping our way to an understanding of this new form of finance capitalism (Davis, 2008; Davis and Kim, 2007).

Owner	# of 5% stakes in US-listed companies
BlackRock	1803
Fidelity	677
Vanguard	524
Dimensional Fund Advisors	428
T. Rowe Price	362

Table 1: Number of ownership blocks of 5% or greater in US-listed companies in 2011. (From Davis 2012)

On the other hand, while corporate ownership has become concentrated, identifiable control has become more dispersed. Due to corporate governance reforms that included the Sarbanes-Oxley Act of 2002 and new stock exchange listing requirements, the incidence of individual corporate directors simultaneously serving on several corporate boards--taken as clear evidence of oligarchy by theorists from Brandeis and Lenin to Domhoff and Useem--has declined dramatically since 2000. In 1974 more than 90 individuals, exclusively male and almost universally white, served on five or more major corporate boards, comprising a more-or-less cohesive "inner circle" of the corporate elite. In 1990, nearly 50 directors still held five or more board seats, although the demography of the inner circle had become modestly more diverse. By 2010, the inner circle had only one member left: Shirley Ann Jackson, president of Rensselaer Polytechnic Institute and the first African-American woman to receive a PhD from MIT. (Dr. Jackson currently serves on the boards of FedEx, IBM, Marathon Oil, Medtronic, and Public Service Enterprise Group.) During the 1980s and 1990s, the "inner circle" of elite white old boys was colonized by women and underrepresented minorities. It has subsequently been abandoned by the 1% (Chu and Davis, 2011).

The public corporation in the US is now unnecessary for production, unsuited for stable employment and the provision of social welfare services, and incapable of providing a reliable long-term return on investment.

Production has become modular across nearly every industry, allowing both large and small firms to contract out the manufacture and distribution of physical goods. Apple's ubiquitous iPhones and iPads are famously assembled by Taiwanese companies that operate massive complexes employing hundreds

of thousands of workers in Shenzhen. But the same infrastructure also allows tiny new entrants such as Flip to produce on a grand scale. The implication is that one person with a Web connection can organize the production and distribution of both physical products and services. The case is even stronger for online services. Dropbox, the cloud-based storage site, has 50 million users and only 100 employees. Facebook, with upwards of a billion users around the world, has roughly 3000 employees. In this scenario, US-domiciled corporations are unnecessary for large-scale production.

Automation and outsourcing, and the rapid cycle time for products, imply that long-term corporate employment is largely obsolete in the US for the majority of the workforce. Even short-term employment may be rare and unpredictable. As a result, the employer-based social welfare system in the US is increasingly unsuited to the realities of employment here. Companies like Eastman Kodak provided health insurance and retirement pensions in part to encourage employees to invest in firm-specific skills, and both benefited from long-term attachments (Jacoby, 1997). But what sane worker would invest in firm-specific assets at Flip or its ilk? Given the fruitfly-like expected lifespans of these enterprises, it makes little sense for such companies to build strong corporate cultures with generous employee benefits intended to ensure commitment, and it makes even less sense for an employee to risk learning idiosyncratic skills for a company that is unlikely to still exist in five years.

Ironically, the intended beneficiaries of “shareholder capitalism” have also been shortchanged, as American stock markets have produced disastrous and increasingly volatile returns since 2000. The S&P 500 closed at \$1469.25 on the first trading day of 2000; on April 20, 2012, it ended at \$1378.53. An individual entering the workforce in 2000 who listened to the nearly universal advice of experts to invest their retirement savings in a diversified mutual fund might have been better off putting that money into a savings account at the local credit union. Moreover, due in part to the rise of exchange traded funds, daily market volatility in the last quarter of 2011 was higher than at any point in memory, scaring off both individual investors and potential listing companies. “Stocks move together today more than at any time in modern market history...When individual common stocks increasingly behave as if they are derivatives of frequently traded and interlinked ETF baskets, then it is trading in the ETFs that is driving the prices of the underlying stocks rather than the other way around” (Bradley and Litan, 2011).

One striking consequence of the past several years of market turmoil is that the number of public corporations in the US has dropped by more than half since 1997 and has declined every year but one since then, as mergers and delistings each year far outstrip IPOs (see Figure 2 and Figure 3).

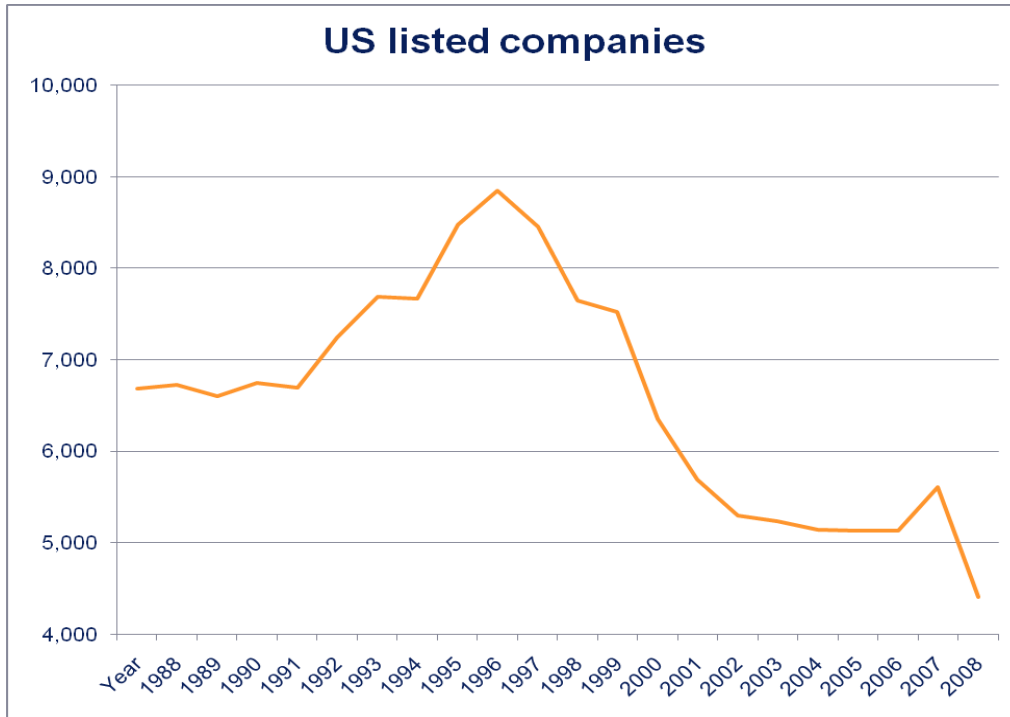


Figure 2: US corporations listed on domestic stock markets, 1988-2010 (from Davis, 2011)

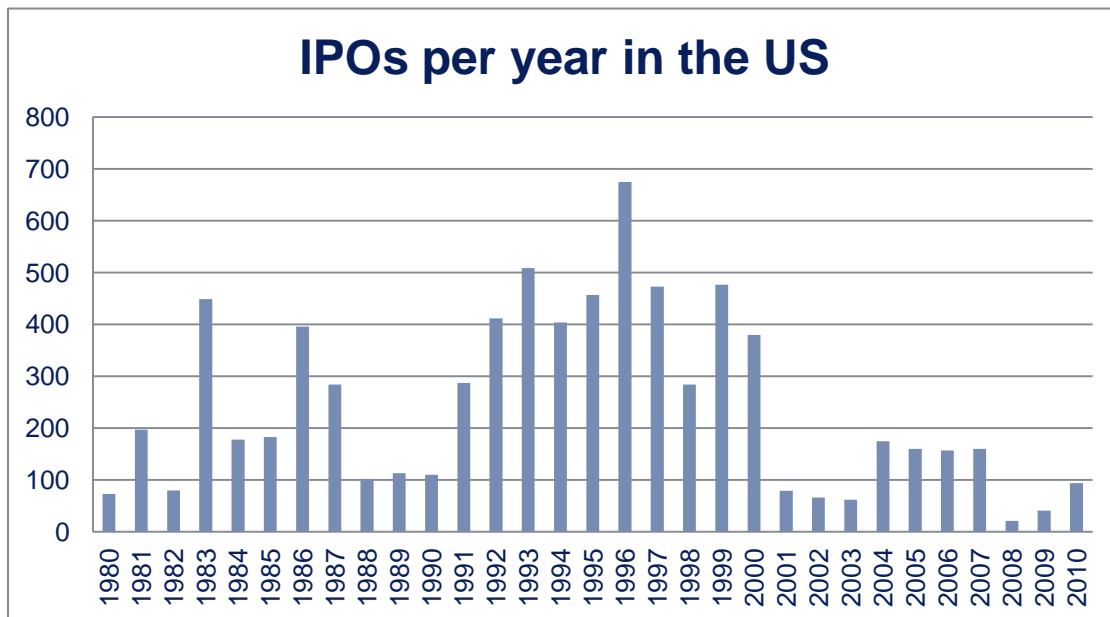


Figure 3: Initial public offerings per year, 1980-2010 (Source: Jay Ritter, University of Florida)

Moreover, the best-known companies that have gone public in recent years are violating the most basic ground rules of corporate governance under shareholder capitalism by giving the founders super-voting rights. This essentially guarantees the founders the ability to select their own boards and withstand most challenges from their shareholders—that is, to continue to operate the firms as essentially private companies. The two co-founders of Google, Larry Page and Sergei Brin, enjoy 10 votes per share, giving the pair (along with executive chairman Eric Schmidt) control of 59% of the votes. LinkedIn also gave its founder and initial investors 10 votes per share at IPO. 27-year-old Mark Zuckerberg single-handedly controls an absolute majority of the votes at Facebook, which allows him to make billion-dollar acquisitions such as Instagram without consulting his board. Mark Pincus of game company Zynga controls 70 votes per share of the newly-public company. And Groupon’s three founders retained an astounding 150 votes per share, essentially guaranteeing them control in perpetuity, no matter what the majority of other shareholders think (“One share, one vote?,” *Wall Street Journal*, 10/28/11). Notably, the SEC announced an investigation of Groupon shortly after it released its first-ever financial statement. Perhaps the online coupon vendor will not grow to take the place of Eastman Kodak as a pillar of the American economy after all.³

It may be an exaggeration to call this the death rattle of the public corporation in the US. Yet it is certainly striking that these newly-public companies are listing on markets with feudal governance structures not because they need funds to buy factories and expand their business, but because they need to satisfy their early investors and employees who want to cash out, and/or to have a currency with which to make acquisitions. It is understandable why the founders want to sell; far less obvious is why any long-term investor would ever want to buy.

Many of the most powerful American corporations have either disappeared or stopped being identifiably “American.” Of the Dow Jones 30 firms in 1973, only 7 are left in the index (see Table 2). Long gone are Anaconda Copper, Bethlehem Steel, International Harvester, Union Carbide, Westinghouse, Woolworth, and other household names, largely due to bankruptcies, mergers, and financial distress. And many large firms that remain employ most of their workers outside of the US. These include GE, IBM, GM, United Technologies, and Citigroup.

³ While this might seem like corporate governance arcana, consider a situation in which China’s sovereign wealth fund offered to buy Facebook, and all the information it has on its billion or so users, for \$1 trillion. One 27-year-old could in principle approve or reject this deal.

Allied Chemical	Eastman Kodak	Owens-Illinois Glass
<u>Alcoa</u>	<u>Exxon</u>	<u>Procter & Gamble</u>
American Can	<u>GE</u>	Sears Roebuck
AT&T	General Foods	Swift & Co
American Tobacco	GM	Texaco
Anaconda Copper	Goodyear	Union Carbide
Bethlehem Steel	International Harvester	<u>United Technologies</u>
<u>Chevron</u>	International Nickel	U.S. Steel
Chrysler	International Paper	Westinghouse Electric
<u>Du Pont</u>	Johns-Manville	Woolworth

Table 2: Dow Jones Industrial Index for 1973. Underlined are still included in the index. (Note that the current AT&T is the successor to SBC.)

Of the manufacturers that continue to employ a substantial number of Americans, several of the largest are military contractors who receive from 50-90% of their revenues from the US government. Boeing, Lockheed Martin, General Dynamics, Northrop Grumman, and Raytheon are among the 20 largest manufacturing employers in the US. Of course, creating or preserving “American jobs” is part of the rationale in selecting military contractors. Without these military contractors, the manufacturing employment picture in the US would be even more disastrous.

The disaggregation of the corporation opens up the prospect of the reallocation of the four core functions of the corporation. This reallocation is bound to happen either purposefully or otherwise; in the remainder of the paper I propose a preferred alternative. Production and employment can be organized at a more local level, through processes that may not map on to traditional formal organizations. Social welfare insurance and economic security (savings and investment), on the other hand, are best handled at a more aggregated level that allows the large-scale pooling of risks.

The ruins of shareholder capitalism: an inventory

The social costs of the collapse of the corporation have been enormous. To a surprising extent, the grievances represented by the Occupy movement--increased inequality, decreased mobility, uncertain employment, and an unduly powerful financial class--result from the collapse of the corporation and the triumph of a finance-centered ideology. I say “surprising” because Occupy is often described as an anti-corporate movement. Yet many of these problems can be traced to the collapse of the 20th century corporation.

Increased inequality. One of the paradoxes of corporate hierarchies is that although big companies have greater wage dispersion than small companies, economies comprised of small companies are typically more unequal than economies comprised of big companies. Consider two extreme examples. Colombia is one of the most unequal countries on Earth, and its largest domestic corporation employs just 7000 of its 46 million citizens. Denmark is one of the least unequal countries, and its largest domestic corporation has over 500,000 employees (albeit not all in Denmark) in a nation with just 5.5 million people. This regularity holds cross-sectionally around the world and over time within the US, where wage inequality varies almost perfectly ($r = -0.89$) with the relative size of the largest employers (see Figure 4). The US achieved its lowest recorded point of income inequality in 1968, just as the conglomerate merger movement had concentrated employment among a relative handful of firms. As firms de-composed during the takeovers of the 1980s and the outsourcing movement of the 1990s, inequality rose dramatically. The disaggregation of the corporation is, I have argued elsewhere, a direct proximal cause of the dramatic increase in inequality over the past generation (Davis and Cobb, 2010).

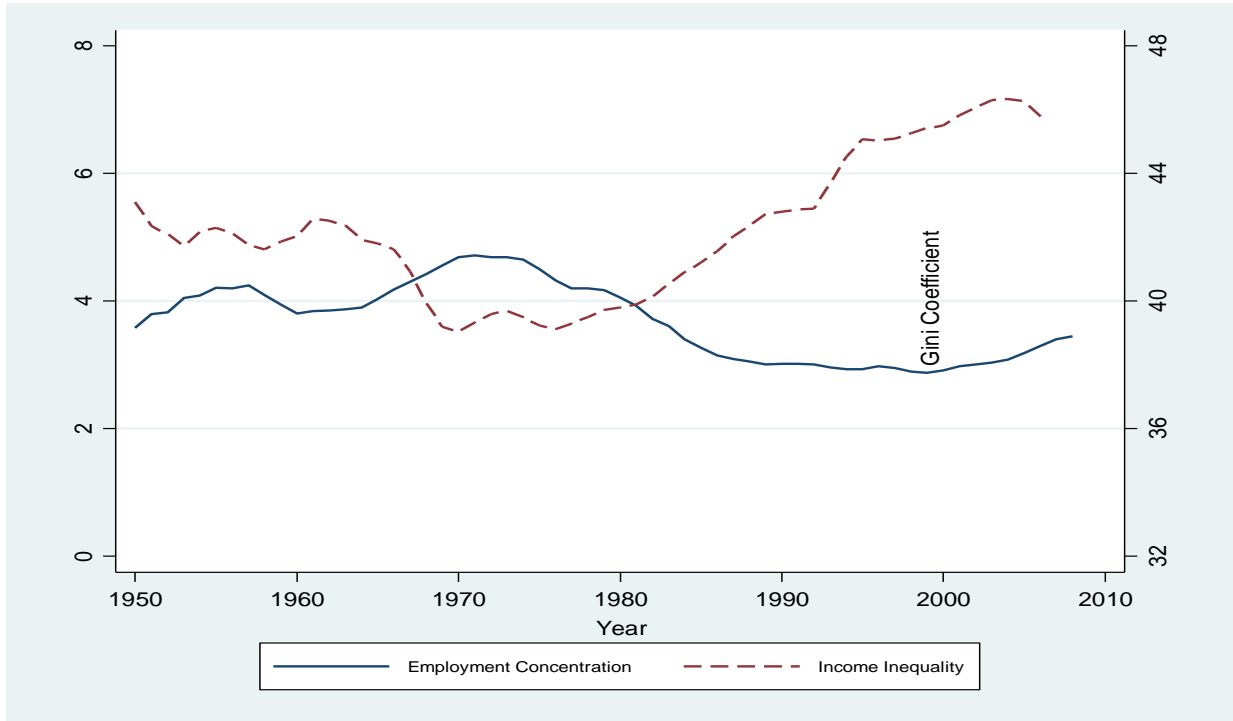


Figure 4: Three-year moving average of employment concentration (employment in 10 largest corporations/total labor force) and Gini index of income inequality in the US (from Davis and Cobb, 2010)

Decreased mobility. Corporate disaggregation also limits pathways to upward mobility, as the parts of production are increasingly free-standing and often “flat” rather than linked into job ladders. Studies find that young men entering the job market in the late 1980s and 1990s were far more likely to stay in entry-level jobs several years later than were their predecessors who entered the labor force in the 1960s and 1970s (Bernhardt et al., 1999). This is arguably attributable to the rise of networked production in place of vertically-integrated firms and the replacement of large manufacturers with large retailers as the nation’s dominant employers. To oversimplify, the job ladder at a General Motors plant has many more rungs than the job ladder at a Walmart supercenter, and the very notion of a job ladder at Flip makes little sense.

Uncertain employment. Pathways to employment are increasingly obscure in the US. Economic sectors that would have seemed promising at the start of the 21st century have experienced widespread Nikefication, leaving young people perplexed about how to “invest in their human capital” and saddled

with roughly \$1 trillion in student loan debt. Although the handful of teen billionaires who manage to cash in on the latest app may suggest otherwise, surprisingly few people actually work in the high-visibility success stories of the tech economy. The combined global workforces of Google (32,467), Apple (63,300), Facebook (3000), Microsoft (90,000), Cisco (71,825), and Amazon.com (56,200)--316,792 as of the end of 2011--are smaller than the US workforce of Kroger (339,000). Notably, a recent survey of college graduates under 40 found that one in five listed Google as their most preferred employer, followed by Apple and Facebook ("Young workers like Facebook, Apple, and Google," *Wall Street Journal*, 11/13/11). They might as well have chosen the NBA as Facebook, given the firm's miniscule employment, and Apple's recent surge in net jobs is almost entirely attributable to the roll-out of its retail stores, where most of its current employees work.⁴ As noted previously, the Computer and Electronic Products industry has seen a loss of 750,000 jobs since 2000 as production has been almost universally offshored. But even the Information Services sector, which includes telecommunications, broadcasting, publishing, and data processing, shed over one million jobs during the same period (see Figure 5). Many of those who followed the advice to attend an expensive college and study computer science or engineering have discovered that their skills are not so rare or remunerative in a globalized economy. Those without a college degree faced an even more disastrous jobs situation, particularly in manufacturing. To oversimplify only slightly, big firms prefer investing in machines to people, and small firms rely on outside vendors for much of the heavy lifting of production and distribution (Brynjolfsson and McAfee, 2011).

⁴ Lest the optimistic reader infer that retail will become an engine of job growth, the *New York Times* reports that retailers are increasingly turning to in-store iPads and other technology to allow shoppers to avoid salespeople while still buying things in person. Combined with self-checkout registers and security tags, it is possible to project a time when stores will have few if any employees on-site. "Retailers add gadgets for shoppers at ease with technology," *New York Times*, 3/9/12.

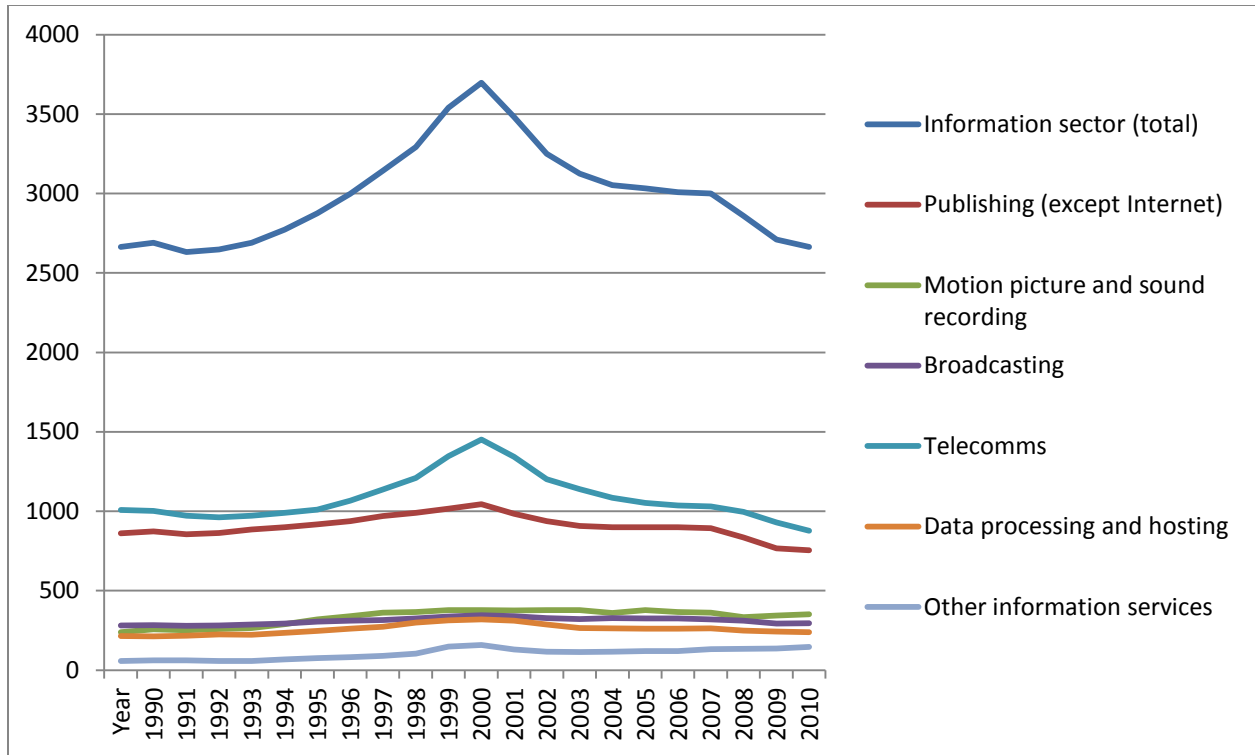


Figure 5: Employment in “Information services” sector in thousands, 1988-2011.
 (Source: Bureau of Labor Statistics)

Bleak finances. It’s not just the rich who suffer from miserable stock market performance, as baby boomers who rely on 401(k) returns to retire and state governments that rely on personal income taxes to fund their operations also face a bleak future. The broad stock market is lower today than it was at the beginning of January 2000, having suffered the worst decade in American history--just after more than half of the population had been lured into investing their savings in 401(k)s and mutual funds, and the nation narrowly averted having its Social Security system “privatized” and invested in shares (Davis, 2010).

We are left with one generation entering the labor force saddled with enormous student loan debt, a broken social welfare system still tied to employment, and uncertain prospects for future economic prosperity, while another anxiously eyes the stock market and awaits a point when it is safe to retire--if ever. The corporate system lies broken, with no obvious replacement in sight.

Choosing a way forward requires a social and economic terrain map. Several technological, economic, and social tendencies have emerged in the past decade that provide elements for a potential path that builds “with the ruins” of shareholder capitalism.

- As we have already described, elements of supply chains around the world are readily accessible to both large and small “producers,” enabling both large firms like Apple and miniscule firms like Flip to engage in large-scale production.
- High-end production technology is much, much cheaper than it used to be. For example, a typical CNC machine tool--Braverman’s *bête noire*--costs less than 5% of what it did 20 years ago and embodies a technology that can be mastered (or at least learned) in mere hours. De-skilling has reached its logical endpoint when a college professor can readily learn the basics of operating a Tormach 4-axis milling machine in an afternoon.
- New technologies such as 3D printing (also known as desktop manufacturing) allow highly dispersed production. At a cost of \$1100, a MakerBot Thing-O-Matic “prints” 3D plastic objects from digital instructions that can be downloaded, modified, and shared. On higher-end 3D printers, materials that can be used include sandstone, titanium, stainless steel, and even cake icing. Products that have been created with this technology range from customized prosthetic limbs to violins to aircraft parts to houses (“The printed world,” *The Economist*, 2/10/11). There is every reason to believe that, like laser printers, the cost will continue to plummet while the quality and variety of the output will continue to increase, allowing localized production of nearly any 3-dimensional object in a wide variety of materials. (As I completed this draft, *The Economist* [4/21/12] published an illuminating special report titled “A third industrial revolution” on this topic.)
- Communication across borders is instant and almost costless, enabling the rapid spread of information, ideas, and designs, and a global catchment area for political engagement. From the Arab Spring to the insta-movement in response to the Komen Foundation’s decision to cut funding to Planned Parenthood, the prospects for rapid engagement and large-scale social change are enormously enlarged by the Web (see, e.g., Shirky, 2008).
- Open source has emerged as a viable method of dispersed production, from software (Linux) to encyclopedias (Wikipedia) to auto design to DIY genetic engineering (“Do-it-yourself genetic engineering,” *New York Times Sunday Magazine*, 2/10/10).

- The maker movement has caught on among many people disenchanted with soulless post-industrial work (e.g., *Shop class as soulcraft*).
- Locavorism has taken hold in many places, as an indigenous-but-networked movement. “Think globally, act locally” has become the operating creed for a generation of producers, from farmers to manufacturers. As one sign of this, the number of farmers markets has tripled in recent years, and Detroit and Brooklyn have become destination spots for a large cohort of entrepreneurs.
- Collaborative consumption has also taken off thanks to the Web, allowing individuals to rent or give sleeping space in their homes, or rent out their cars and appliances, or swap the use of various goods. Technologies for “locavore power production” from solar, wind, and other sources are also likely to prompt the creation of community-based power grids.
- Methods of urban agriculture have greatly advanced as means to re-claim abandoned areas and to re-purpose high-rise buildings as vertical farms close to the spaces for final consumption. In Detroit, vast tracts of vacant land are being re-purposed using advanced methods of urban agriculture, and abandoned buildings are slated to be used as fish farms. In Brooklyn, communal farming and artisanal food preparation have become routine in formerly blighted neighborhoods. And in Montreal, local restaurants draw on “rooftop agriculture” from local buildings.
- Legal forms that serve as alternatives to the corporation have experienced a swell of innovations and global competition. Several states have adopted B Corporation enabling legislation that allows corporations to be chartered with explicit social benefit goals, giving safe harbor to skirt the perceived requirement to serve primarily shareholder interests, while increasing the standards for providing other social goods. L3Cs (low-profit limited liability companies) have been established in several states, allowing organizations to draw on foundation and non-profit funding to serve needs not strictly as a non-profit, but as a socially-oriented business.
- And the Occupy movement is pioneering horizontal forms of consensus decision making. Occupy’s anarchist approach has spread globally and adapted to local conditions in dozens of cities around the world, potentially creating a substrate for localized democratic economic organization (Graeber, 2011).

All of these tendencies indicate a reversal, or at least a counter-tendency, of the generations-long trend toward aggregation and economic concentration at the national and global level. Instead, they suggest new opportunities for disaggregation and “cosmopolitan localism.”

The tendency toward local disaggregation is evident even among the remaining “big” corporations as well. When Berle and Means (1932) wrote about the emergence of the large corporation, they stated “The factory system, the basis of the industrial revolution, brought an increasingly large number of workers directly under a single management. Then, the modern corporation, equally revolutionary in its effect, placed the wealth of innumerable individuals under the same central control.” It was the exigencies of large-scale production that created the large, bureaucratic manufacturing corporation.

Today, however, nine of the twelve largest US-based employers are retailers (Davis, 2009). Their prototypical facility is not the River Rouge plant with its 100,000 employees, but the Walmart Supercenter, which has roughly 350 employees. Unlike the heavily interdependent Rouge plant, each Supercenter is autonomous; corporate growth or decline comes via the opening or closing of a new store. UPS, AT&T, and Verizon—the three non-retailers among the top twelve—also have branch structures. In each case, the organization’s structure is modular, consisting of local replications of modest-scale establishments. There is little overt interdependence among the establishments as there was in factory production. Measures of corporate “size” in this context are ambiguous. Walmart owns and operates all of its 3868 US stores, while McDonalds operates just 19% of the 33,510 McDonald’s restaurants around the world. A plurality of the stores McDonalds owns and operates are in Europe; the rest (including the vast majority of US outlets) are owned by franchisees and operated according to centralized McDonald principles.

The range of activities for which the most economical format is to organize as a corporation and list shares on a stock market is rapidly diminishing. Oil refining and distribution, and large-scale telecoms networks, are typically done on a scale that requires investment large enough to entail listing on a stock market (or being state owned). But few other business activities require investment so large, and in the absence of a requirement for large-scale financing, many alternative organizational forms become possible. (One telling indication is that “ecosystem” has replaced “network” as the dominant metaphor in business.) Consider some recent examples of successful startups:

- Vizio is the largest-selling brand of LCD televisions in the US, outpacing traditional market leaders Sony and Samsung--with just 196 employees. The Irvine-based company's founder realized that the components for flat-screen televisions were readily available off the shelf and the designs were relatively generic, so he arranged a distribution deal with Costco and persuaded a friend in Taiwan to organize production. The low-price TV business has been so successful that Vizio has expanded into tablet computers, PCs, Blu-ray players, and home theater sound systems.
- Instagram, an 18-month-old photo-sharing app for phones, had no revenues and just 12 employees when it was purchased by Facebook for \$1 billion in April 2012.
- Flip created a category of low-cost portable video cameras in 2007 and went on to sell millions of units, becoming a pervasive "must-have" product for everyone under 30. The founders sold Flip to Cisco in 2009 for \$600 million. Cisco in turn closed Flip in 2011 because ubiquitous smart phone cameras had rendered the product obsolete.
- Local Motors crowdsources the design of cars (other than the chassis), using a democratic open-source tournament process for selecting the best designs for various components. It has a complete design for its "Rally Fighter" and intends to enable buyers to retrieve and assemble the parts at local "build centers."
- MCAP Research, a financial information provider, was founded by an Eritrean physicist who used global "temp" programmers to assemble his product for processing earnings reports for subscribers.

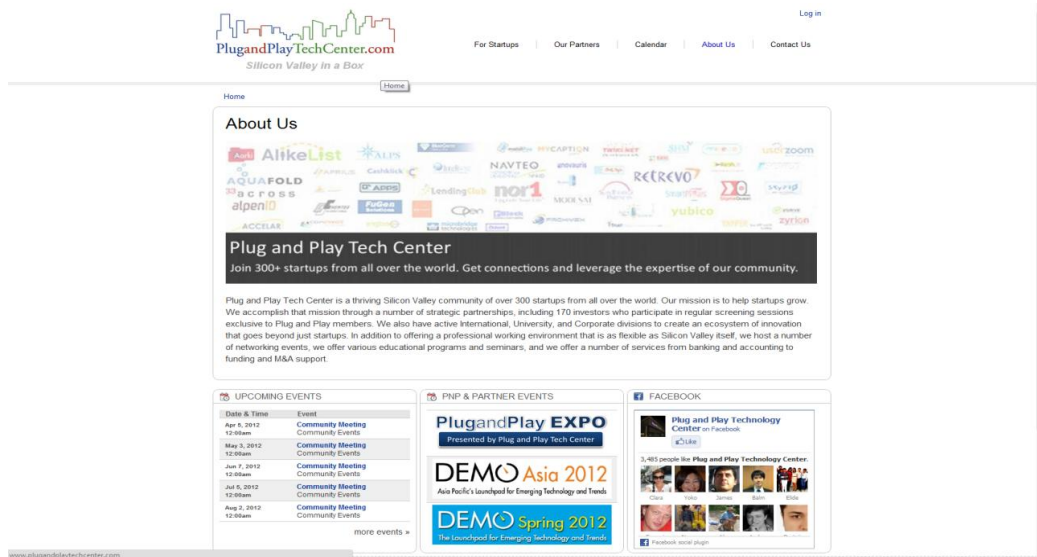
In each case, industries believed to be dominated by big global corporations (Sony, Kodak, Toyota, Bloomberg) are open to miniscule localized competitors that are not themselves necessarily corporations and that require only modest capitalizations.

One outcome of these tendencies is that Meyer and Rowan's poetic description of post-industrial organization has essentially come true. In a hyper-rationalized post-industrial economy like the US, "[T]he building blocks for organizations come to be littered around the societal landscape; it takes only a little entrepreneurial energy to assemble them into a structure" (Meyer and Rowan, 1977: 345). This could be the epigram for the founders of contemporary American businesses.

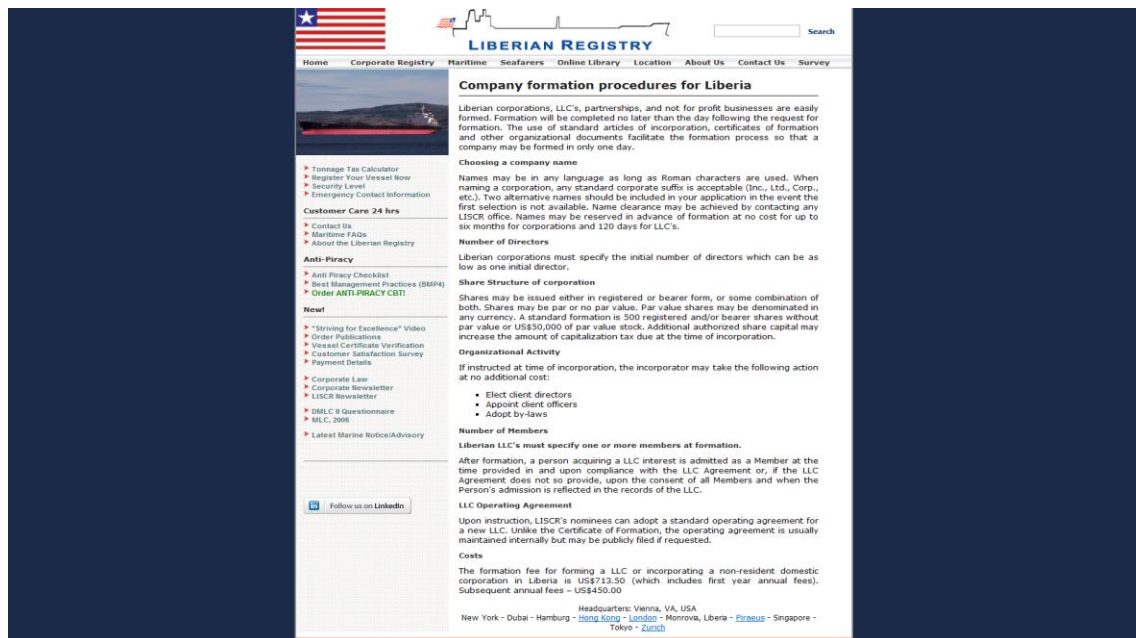
Suppose you came up with the idea for an iPhone “remote drone assassin” app to be sold to neo-mercenary firms like Blackwater (now known as Academi) and you wanted to become an entrepreneur without leaving your couch.

You could rent a desk and an official-sounding mailing address in a shared office at

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posted about 4 hours ago

PROJECT OF THE DAY
The Lower East Side of NYC is a vibrant neighborhood in desperate need of green space. It also just so happens to have an abandoned trolley depot sitting under its main thoroughfare. Enter the LowLine, and its team's plans to turn that old depot into an underground park. Genius!

CHILDREN'S BOOK
You may think you already know Garth Ennis from his notable work on comic series like *Preacher* & *The Punisher*, but his project to self-publish a children's book about four primordial friends at the dawn of time will have you doing a double-take—even if you're all grown up!

CHILDREN'S BOOK
What Makes a Baby is a children's picture book that offers a more modern answer to that age-old question, "Where do babies come from?" Written by a certified sex educator, this story is meant to talk about how we bring children into the world in a way that includes everyone.

VIDEO GAMES
For years Chris, Sean and Jake have been discussing the ins and outs of video game culture with their loyal listenership. After a brief hiatus, the guys are back and ready to deliver an even better version of *Idle Thumbs*. *Blendo* even made a game just for the Kickstarter project!

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The screenshot shows the Alibaba.com website interface. At the top, there's a navigation bar with 'Alibaba.com' logo, 'Welcome to Alibaba.com, Join Free | Sign In', and 'Buy | Sell | Community | My Alibaba | My Favorites | Help'. Below this is a search bar with 'Select Country/Region' dropdown and 'please input a keyword' text. The main content area displays search results for 'Radio Control Toys: 175,483 Products found'. On the left, there are filters for 'Supplier Location' (China, Hong Kong, etc.), 'Type' (Helicopter, Car, etc.), 'Power' (Battery, Gas, etc.), 'Radio Control Style' (RC Model, RC Hobby, etc.), 'Material', 'Scale', 'Plastic Type', 'Place of Origin', 'Province', 'Business Type' (Trading Company, Manufacturer, etc.), and 'Min. Order'. The main product list includes items like 'B/O railway train toy', 'Remote Control Toy Animal', '2012 Hottest Udir U803 Apache Mini RC Helicopter Toy', 'hot-sale RC Hobbies ESC 20A Brushless Motor Speed Controller', and 'RC dolphin'. Each product listing includes a thumbnail, title, min. order, and supplier information.

...set up a payment system at <https://squareup.com/>...

The screenshot shows the Square website's registration page. At the top, there are icons for 'Square', 'Square Register', and 'Square Card Case', along with a 'Sign In' button. The main heading is 'Start accepting credit cards today.' Below this, there's a form with fields for 'Email address', 'Create password', and 'Confirm password', and a 'Sign up for Square' button. A secondary heading says 'Square register >' with a 'Sign up for Square' button. To the right, there's an image of a hand holding a credit card over a tablet displaying a payment interface. At the bottom, there are logos for 'Works with: VISA, MASTERCARD, DISCOVER, iOS' and a footer with 'News | Testimonials | Pricing | Security | Legal | Store Locator | Jobs | Help Center' and '© 2009-2012 Square, Inc. All rights reserved.'

<https://squareup.com/square>

...and get it shipped from the dock to your customers at <http://www.shipwire.com/>



While this model is unlikely to fulfill the dreams of the drafters of the “JOBS Act”--who imagined that setting entrepreneurs free would create employment in the US--it is certainly convenient to execute.

Principles for post-corporate economic organization

The traditional large corporation that dominated the 20th century American economy has reached its twilight. It is no longer suited to fulfilling the functions that it did for much of the past century--producing goods and services, providing stable employment, insuring health care, and creating returns for savers. I propose four principles for nudging the re-allocation of these functions.

1. The size and location of the institution should match the size of the project. Bill McKibben proposed this principle in the context of climate change, but it is generally applicable. Activities that involve risk-sharing, such as health insurance or climate remediation, are typically more efficient the bigger the pool. Thus, income security and financial provision for health care are best accomplished at a

relatively macro, national level. On the other hand, democracy is generally more effective at a local level, and advances in technology allow for highly localized production, as described below. Thus, employment and the production of physical goods and services are best organized locally.

2. Form follows function. Although formal organizations have long been the go-to format for nearly every organized activity in the industrialized West, from auto production to civil rights movements, they are no longer the obvious default option. Consider the contrast between Linux, created by thousands of dispersed volunteers around the world and available for free to anyone, and Windows, created by employees of a secretive shareholder-owned corporation. It makes sense to work from function to form, rather than assuming that a formal organization is the best way.

3. The constraint of carbon emissions implies a preference for local whenever possible. As McKibben (2010) emphasizes, it is not sensible to assume that we will continue to be able to ship our cars from Japan, our wine from Chile, and our bell peppers from Holland at a plausible price. Other things equal, it is appropriate to prefer the local.

4. Local control is preferable to central control, but lateral connections to the rest of the globe are useful. The spate of social movements large and small that have spread around the world, from Tunis to Tahrir Square to Madison to Wall Street, demonstrate the rapid contagion of principles, methods, and “best practices,” adapted to local circumstances. The franchise model may provide a durable template for cosmopolitan localism.

Making it happen: reinvigorating the community

It is possible to foresee starkly different alternatives for social organization arising out of the ruins of shareholder capitalism. The tendencies described previously change the transaction cost profiles of different organizational forms, tilting them against many kinds of global corporation. There may no longer be an enduring economic rationale for an Eastman Kodak or a Sony.

One post-corporate possibility, whose outlines are already evident, is a global hybrid of the putting-out system and Fordism. Amazon’s Mechanical Turk (Mturk), CrowdFlower, and other services allow individual workers to labor at online tasks at home (or in a coffee shop) that range from the mundane to the slightly-less mundane. One representative task is transcribing handwritten words from medical

documents that have been scanned in. For privacy purposes such documents may be divided up into constituent words or phrases, sent out to online workers for transcription on a piece rate basis, and then re-combined into complete texts. It is the online version of the pin factory, spread around the world to the cheapest bidders (cf. “Big firms try crowdsourcing,” *Wall Street Journal*, 1/17/12). The global online sweatshop already exists, often in forms that seem lifted directly from dystopian fiction. In China there is an entire industry of online “gold farming” in which laborers are paid a piece rate to collect gold in the Web-based game “World of Warcraft.” The gold is then sold online to players in the West who hope to avoid the mundane tasks of collecting gold to get to the fun parts of the game (see Davis, 2009: chapter 3 for this and other colorful examples).

An alternative to the online sweatshop is the locavore wiki-everything in which one is a genetic engineer in the morning, an urban fish farmer in the afternoon, and a mash-up DJ in the evening, sharing tips and discourse with the online workers of the world. Both of these are somewhat fanciful, but not entirely implausible. The default option, in the absence of conscious efforts to guide things in a different direction, is likely to be digital Fordism and large-scale unemployment.

The switch on the tracks in this case is the existence of plausible organizational alternatives. Here, we already have well-known examples, as Linux and Wikipedia rapidly became clichés for techno-utopians. Linux, for instance, is the world’s most pervasive operating system, running on machines from smart phones to supercomputers, and available free to anyone. Wikipedia has come as close as one is likely to get to realizing Diderot’s dream of a compendium of knowledge about all topics, accessible for free from almost anywhere. And while Linux and Wikipedia are cliché examples, they nonetheless serve as proof of concept: it is possible for voluntary, dispersed, collaborative, relatively non-hierarchical forms of organizing not just to work well, but to far surpass their privately-produced alternatives.

The broader point is that information and communication technologies have dramatically enhanced the prospects for democratic forms of organization. Rothschild and Whitt (1986: 190) foresaw the possibility of widespread collective enterprises at an early stage of ubiquitous computing: “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 that again 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."

Rothschild and Whitt identified conditions that facilitate collective organizations, several of which have become far more widespread in the intervening years. One was a provisional orientation that favored "projects" over stable organizations. Another was small scale that allowed face-to-face contact. A third was the diffusion of knowledge through de-mystification--"the process whereby formerly exclusive, obscure, or esoteric bodies of knowledge are simplified, explicated, and made available to the membership at large" (114)--which limits the power of individual specialists or professionals, and thus constrains hierarchy. It is this last feature, the "algorithmization" of formerly specialized production tasks, which is perhaps most striking about the current moment.

But what is to replace the corporation as an organizing principle? In the context of carbon constraint, the geographic community is the appropriate place to start. Municipal solutions have a long history in the US, and are likely to be an imperative in the future if trends in energy consumption and climate change continue as they have (McKibben, 2010). During the Progressive Era, mutuals, cooperatives, and municipally-owned companies arose out of social movements and served as a counterweight to national corporations, often rooted in local communities, in industries from agriculture to finance and insurance to electrical and telephone networks. Across the upper Midwest in particular, farmers banded together to cooperatively own grain elevators, milk processors, and other large-scale production and distribution facilities, and the organizational principles behind them are straightforward. Moreover, they tended to create mutually-supportive systems: "Over the course of the late nineteenth and early twentieth centuries, producers and consumers did not just organize isolated or scattered enterprise alternatives to corporations. To the contrary, they produced correlated systems of organizational diversity, generating dense and overlapping ecologies of cooperative and related forms" (Schneiberg, 2011: 1418). Experience with coops in one setting transferred to the use of coops in other settings.

Many vestiges of these non-corporate experiments still exist today, and some extensions are well-known nationally. Land o' Lakes is a Minnesota-based farmer-owned cooperative and a Fortune 500 company. Sunkist, Ocean Spray, Riceland, and Blue Diamond Growers are also well-known agricultural

coops. In insurance, State Farm--the 37th-largest company in the US, according to Fortune--is still a mutual, owned by its policyholders rather than shareholders. In finance, the giant mutual fund group Vanguard is also organized as a mutual on behalf of its investors. TIAA-CREF (#87 on the Fortune 500 list) and the roughly 8000 credit unions in the US are organized as non-profit organizations, run explicitly for their beneficiaries rather than shareholders. In retail, Ace Hardware is a coop owned by those that operate its stores, while REI is a consumer-owned cooperative.

Municipal companies are also still quite widespread, from local water companies and electricity providers to vestigial local phone companies. Large parts of the US economy are already organized on non-corporate terms. Remarkably, these organizations have operated for generations without an armed backlash against government over-reach and creeping socialism.

Local solutions for producing, distributing, and sharing can provide functional alternatives to corporations for both production and employment. As I have described already, the technology for locavore production is already here; what is needed is the social organization to match the tools that we have in hand, or will have shortly. Elsewhere I called this potentiality “the iPhone ‘workplace democracy’ app that will turn General Motors into a kibbutz” (Davis, 2010). Although this sounds like sarcastic techno-utopianism, aspects of it are already in place. Platform technologies for democratic participation are already ubiquitous: consider the array of recent technologically-enabled social movements both large (the Arab Spring) and small (the week-long movement to reverse the Komen Foundation’s de-funding of Planned Parenthood). As William Gibson put it, the future is already here; it’s just unevenly distributed. Moreover, social research can speed up the distribution process by finding and publicizing experiments that work and those that do not.⁵ A good start would be to examine some of the many new experiments in post-industrial coops and other formats that are sprouting around the world, which I sample below.

Mondragon is a well-known example of worker-owned cooperatives, but there are solutions closer to home, e.g., the Cleveland Model, documented (and facilitated) by Gar Alperovitz and others. The

⁵ This process has been hindered somewhat by the easy availability of detailed time-series data on public corporations compared to other kinds of enterprise formats, which encourages research publications on these organizations, and by the general orientation of business school research toward for-profit organizations.

Evergreen Cooperative is a network of worker-owned businesses in Cleveland spawned out of efforts among Alperovitz's Democracy Collaborative at the University of Maryland and the Cleveland Foundation, which provided much of the seed funding. A core insight was that Cleveland has a set of "anchor institutions"--including the Cleveland Clinic and Case Western Reserve University--which were not going to move offshore and which had a permanent stake in the well-being of their neighborhoods. They also provided a long-term market for certain services, such as laundry. Thus, the Evergreen Cooperative's first venture was the Evergreen Laundry, intended as the greenest laundry in the state, with a low carbon footprint and much-reduced use of water and heat. Workers are given free healthcare and, after a six-month trial period, can join the coop as a member-owner through payroll deductions of 50 cents per hour over the following three years, after which they are fully vested. A second business, Ohio Solar, served similar markets; a third, Green City Growers, is a hydroponic farm growing produce for local consumption. 10% of any profits from Evergreen member companies are plowed back into the network to help fund future ventures. Although it is still early in the life of this experiment, the results are promising and potentially transferable to other urban areas ("The Cleveland Model," Gar Alperovitz, Thad Williamson, and Ted Howard, *The Nation*, 2/11/10).

The Cleveland Model primarily draws on existing types of business (laundry, local agriculture, solar installers) with somewhat unconventional financing, but it is possible to extend the model by drawing on some of the ruins of shareholder capitalism. TechShop is one model, putting together in one place dozens of high-end pieces of capital equipment such as CNC machine tools, laser cutters, water drills, high-end sewing equipment, coating booths, lathes, arc welders, Shopbot woodworking machines, 3D printers, and so on. 20 years ago such equipment would have been impossibly expensive. Due to globalization and cheap computing, however, costs have dropped dramatically for capital equipment--in some cases, such as CNC machine tools, by 95% or more. Members pay \$100 per month for unlimited access, much like a fitness club. Although its core audience seems to be hobbyists, one can learn new skills, prototype products, and even produce them onsite in relatively small batches. It is easy to share digital recipes for, say, ready-to-assemble furniture to be cut from plywood, or for computer motherboards, or auto parts to be produced with CNC milling machines, or designs for plastic cufflinks in the shape of Stephen Colbert's head to be spit out by a 3D printer (the Colbert cufflink design is available at <http://www.thingiverse.com/thing:9154>). Indeed, a substantial part of Ikea's catalog of flat-pack furniture could already be turned into Shopbot recipes and sold over iTunes. (Open-source

alternatives are being shared over the Web at Shopbot's at <http://www.shopbottools.com/mSupport/projects.htm>.)

TechShop is private, but it is easy to project a municipally- or cooperatively-owned analogue. The key ingredients are roughly \$500,000 in equipment, safety procedures, and some people who know enough to train others. In Detroit, where I have spent time at the local TechShop, there are thousands of retired or under-employed skilled laborers with the relevant expertise, and the same is undoubtedly true of many post-industrial cities. At this price, it is entirely plausible for every significant municipality or even neighborhood to have its own TechShop; if experts aren't available on-site, it is highly likely that someone will post a how-to video on the Web. For locations, there are hundreds of abandoned Circuit City and Borders stores in strip malls across America.

The technology behind 3D printing is creating a technological infrastructure for localized production of an extremely wide range of products, out of an astonishing array of materials, from cake icing to cement to titanium. As one enthusiast summarized: "The Internet democratized publishing, broadcasting, and communications, and the consequence was a massive increase in the range of both participation and participants in everything digital--the long tail of bits. Now the same thing is happening to manufacturing--the long tail of things" (Anderson, 2010; see also Cascio, 2009). Put more tersely, "atoms are the new bits," and the tools for "cosmopolitan locavore" production are within reach in the coming months and years. (*The Economist* recently labeled this a "third industrial revolution" of digitally-enabled manufacturing. See "A third industrial revolution: special report on manufacturing and innovation," *The Economist*, 4/21/12).

For larger-scale projects, Local Motors' "build centers" potentially provide a locally-based alternative to mass production by shipping (or printing) parts in kit to local outlets for final assembly, perhaps Amish barn-raising style (Anderson, 2010). The plausibility of this model rests heavily on several assumptions, of course, but it is not outside the realm of possibility. These could be owned municipally or cooperatively, along the lines of grain elevators and dairy processors.

At the same time, some of the social technologies for collaboration and sharing are become better articulated thanks to the Web and smart phones. Zipcar is a car-sharing service with several thousand "outlets" (essentially reserved parking spaces with vehicles) in cities across the US that allows individuals to rent a car over the Web for short trips. RelayCar, Whipcar, and other similar services allow

individuals to rent their private vehicles to each other. This basic idea has expanded to renting accommodations in one's home (Airbnb.com) or giving them away (Couchsurfing.org), sharing baby clothes, renting out goods such as vacuum cleaners, and swapping goods, services, and real estate (BarterQuest.com). There are countless experiments in this broad domain--so much so that "collaborative consumption" startups have been declared the Next Big Thing in Silicon Valley ("New Valley trend: sharing for profit," *Wall Street Journal*, 10/6/11). It is trivial to adopt this model to local settings; a "community car share" (or vacuum cleaner share, or camping supply share) is eminently plausible with the right software.

The Web can also serve as an infrastructure for sharing designs and principles. For instance, Open Source Ecology (<http://opensourceecology.org/>) is an effort to post open-source designs for the 50 essential tools for civilization that can be built using readily-available materials. Examples include a tractor, a combine, and a compressed Earth block press that allows one to create bricks suitable for construction out of dirt available at one's construction site. Instructions for how to build the machine from scratch are freely available online.

This is a context in which social researchers can make a genuine contribution by documenting and facilitating forms of social organization as they are created and spread. The technology is already here; what are needed are better-documented organizational models of local collaboration. Scholars of worker ownership have already compiled a massive corpus of work on the pros and cons of different formats of "shared capitalism" (Kruse, Freeman, and Blasi, 2010). What is less well-understood is the internal workings of cooperation and how these might be facilitated with some of the new tools of collaboration. Here, some of the extant work on prior cooperative forms can provide a kind of intellectual seed bank. Marc Schneiberg's research suggests that collaborative forms tend to facilitate each other: communities that had dairy co-ops were likely to have mutual insurance companies, and so on, due to a diffusion process that crossed both industrial and geographic boundaries. "Some of this reflected direct transfers of templates, information, and legitimacy, as well as financial support, services, organizational experience, and already-formed collectives of cooperators" (Schneiberg, 2011: 1421). This is a highly familiar process from organization theory (e.g., Mark Suchman's work on the role of Silicon Valley law firms as compilers and replicators of successful forms for start-ups), and thus should

be easy to facilitate purposively. (I anticipate that the “Farmer’s Alliance app” might become the next big thing.)⁶

Conclusion

I have had two aims for this paper: to document and analyze the collapse of the large corporation in the US and its social implications, and to sketch outlines of a path forward. The latter draws on both a localist and collectivist strain in American history and some contemporary tendencies in production and information technology that militate in favor of the local. While the social welfare and economic security functions formerly provided by the corporation are best organized at an aggregated level, production of goods and services and the provision of employment are best suited for local organization, particularly in the face of pressing carbon constraints. I also suggest that this is a place where social research might be able to make a difference by documenting and spreading successful (and unsuccessful) experiments in local collective organization.

My “real utopia” is light on institutional details. Most of the ingredients are in hand, but the recipe is still sketchy. This may be a positive feature rather than a drawback, as it appropriately suggests room for experimentation. I welcome the dialog to come.

⁶ I have previously noted that macro (state or federal) solutions are the right level for large-scale projects such as infrastructure, defense, and remediating damage from climate change. These are also the right levels for activities that involve large-scale risk-sharing, such as income and health security. It is, however, well beyond the scope of this paper to engage with these topics, other than to note that it will no longer be feasible to rely on employers to provide them.

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