

Chapter 8

Shock Therapy: Building Resilient International Industrial Systems in 2030

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The “globalization” of industry and commerce, we are often told, is the surest path to universal peace and prosperity. If so, this would mean the world should be a far safer and richer place than two decades ago, when world leaders largely unleashed the business corporation to operate across national borders. Yet the “global” *systems* of industry and finance built by the masters of these institutions are increasingly the source of both political conflict and economic disruption. Indeed, the world today—although in some respects richer—is in many ways a far more perilous place than before we established the World Trade Organization (WTO) regime in the 1990s. And it grows more so by the day.

Shock after shock, and political showdown after political showdown, threaten to trigger wide if not global-scale catastrophe. Perhaps it is a natural disaster, like the Tohoku Quake of March 2011—events that are entirely outside the power of any rational actor in any state to control. Perhaps it is a contagion like the avian flu scare of 2009, or a financial panic like the Lehman Brothers crash of 2008. Perhaps it is a crude territorial face off, such as the ongoing conflict over the Senkaku/Diaoyu Islands south of Japan. Whatever the triggering event, where only 15 or 20 years ago the result would have been a merely local disruption or local discord, today we see crashes that cascade swiftly across the whole face of the earth.

Worse, many if not most of us believe these problems derive from forces largely or even entirely beyond our control. For some, the culprit is technology. For others, it is the mechanics of the marketplace or something in the nature of capitalism. For yet others, “globalization” itself is a “force” that has largely determined this fragility. And

so, as a society, we stumble from one crisis to the next, wavering between moments of bafflement and terror. Why, we wonder, is our world so much more dangerous than only a few years ago? And what new risks have we missed? What new events—like cyber attacks or crop failures—loom in the offing?

But what if we could trace both the source of these dangers and our confusion to a relatively simple set of intellectual mistakes? What if the problem is merely that we have used the wrong ideological frames, hence the wrong principles, to establish the rules that guide the actions of our bankers, executives, and engineers? Further, that these same mistaken ideas also block our ability as a society to understand the problem and act to fix it?

As this chapter makes clear, we possess all the skills and tools we need to solve the problem. We can for instance easily identify—and at least in theory enact—a simple set of fixes that would greatly reduce the likelihood of almost all conceivable sudden crashes of vital, cross-border flows of goods, money, and information. Once identified, enacting these changes is a matter of political will only.

If anything, the immensity of this new threat actually presents us with an immense opportunity—to lay a foundation for a more cooperative, more inclusive world political economy. This is a pertinent task as we look towards 2030. Perhaps, indeed, we can achieve exactly what the founders of today's global system expected to achieve seven decades ago, at the end of the Second World War, which is to build a truly perpetual peace and prosperity, one made to last through our 21st century.

An Entirely New Threat

In recent years we have witnessed numerous cascading “crashes” of industrial activity, in which a small and local breakdown in the flow of physical goods or finance triggers a shutdown of systems across the world.

The most dramatic of these “supply chain” crashes took place after the Tohoku earthquake in March 2011 off the north coast of Japan. The event shuttered Japanese industrial giants like Toyota and Honda for nearly half a year, and resulted in extremely powerful economic

downdrafts across Asia, Europe, and North America. (In the United States, the Philadelphia Federal Reserve reported the largest three-month drop in industrial activity ever.) Similarly, we saw unprecedented levels of industrial disruption from the “demand shock” after the collapse of Lehman Brothers in September 2008. Within weeks this financial crash brought the entire U.S. automotive industry to the verge of physical paralysis, and resulted in a truly phenomenal drop off of industrial activity in Japan and other Asian nations, with activity often plunging more than 50%.¹

These were but two of many similar events. We saw cascading shutdowns of industrial activity after the Thai floods of 2011, the Icelandic volcano blast of 2009, the Niigata earthquake of 2007, the SARS epidemic of 2003,² and the September 11, 2001 attacks in New York, among others. We have also seen many near misses, in which a natural or political disaster that threatened to disrupt some complex system simply failed to reach critical state. This includes the avian flu epidemic of 2009 and the two near wars between India and Pakistan a decade ago.

Although we have known since the second half of the 19th century that financial collapses can swiftly cascade from country to country, these *industrial* crashes are largely a new phenomenon. The first major international supply chain crash took place in September 1999 after an earthquake in Taiwan cut off the flow of highly specialized semiconductors from foundries concentrated in the city of Hsinchu. Within days this resulted in the sudden closure of factories across Asia and the United States.³ Within the business community, these crashes have resulted in a boom industry devoted to identifying ways to lessen the impact of a sudden supply shock on individual companies. One of most sophisticated such efforts is run out of the Massachusetts Institute of Technology by the systems engineer Yossi Sheffi, author of the book *Resilient Enterprise*.⁴

¹See Kiyoyasu Tanaka, “Trade Collapse and International Supply Chains: Japanese Evidence,” *Vox*, Centre for Economic Policy Research, November 27, 2009.

²Michael T. Osterholm, “Preparing for the Next Pandemic,” *Foreign Affairs*, July/August 2005.

³Barry C. Lynn, *End of the Line: The Rise and Coming Fall of the Global Corporation*, Doubleday, 2005.

⁴Yossi Sheffi, *The Resilient Enterprise: Overcoming Vulnerability for Competitive Advantage* (Cambridge: MIT Press, 2005).

What became clear from these early studies is that there are sharp limits to what individual companies can accomplish on their own. Every large and structurally important company today depends on outside suppliers for many key components and materials. Competitive pressures—and the actions of mercantilist governments and monopolistic corporations intent on concentrating a particular industrial capacity—can make it difficult or even impossible for even the most safety-minded of management teams to keep an alternative source of supply always at the ready.⁵

What is also clear is that, despite the fact that 15 years have passed since the first modern industrial crash, and despite the evident limitations on what private sector actors can accomplish on their own, national governments and multilateral organizations have only barely begun to analyze how a major industrial crash might affect national communities or human society as a whole. Even less effort has been devoted to the study of whether and how nation states and other political actors might seek to exploit these structural flaws for political ends, or how to limit the dangers they pose.

***The Proximate Sources of the Threat—
Mercantilism, Monopolism, and Speed***

There are a few important exceptions to this all-but-willful effort to ignore the new phenomena of cross-border industrial crashes. This includes a team of WTO economists who studied how supply chains transmitted and amplified the Lehman stock market crash.⁶ It also includes Japan's Ministry of Economy, Trade, and Industry, which in 2012 published a groundbreaking study that introduced a new concept, that of "diamond structure" manufacturing systems.⁷

⁵Peter Marsh, "Industry Left High and Dry." *Financial Times*, April 12, 2011.

⁶Hubert Escaith, Nannette Lindenberg, and Sebastien Miroudot, "Global Value Chains and the Crisis: Reshaping International Trade Elasticity?" in *Global Value Chains in a Post-Crisis World* (World Bank, Washington, DC, 2010).

⁷In 2012, Japan's Ministry of Economy, Trade, and Industry became the first state institution to acknowledge publicly that this revolutionary new structure of industrial activity poses fundamental and grave dangers to society. METI also provided a useful image to illustrate the problem. Whereas until recently production was organized in the structure of a pyramid, with the products of many companies feeding up towards a single chokepoint, METI officials say the earthquake "revealed" that the manufacturing industry today "has a 'diamond structure' in which parts/material supply at tier 2 or deeper in the supply chain is concentrated in a certain

From these private and public studies we see a growing consensus that the fragility of these systems poses a potentially “existential” problem for human society, in the words of Tomas Ries. To be sure, no industrial crash has yet resulted in the complete shut down of an entire global production system for more than a few days. But, obviously, the mere fact that a catastrophic event has not happened yet does not mean that such a system-wide collapse is not entirely possible today or even likely to occur in the near future. We also see a general consensus forming as to what factors are most responsible for these cascading, cross-border industrial crashes.

The most obvious factor is international industrial integration. It is plainly evident that the radical liberalization of trade in the mid-1990s cleared the way for private firms to tie nation states together industrially in far more intimate ways than ever before. Well into the 1990s, every large industrialized nation remained largely self reliant. The only exceptions were for low-end products, like apparel, and very high-end technological devices and software, the production of which was carefully regulated by the governments themselves. Today by contrast, we see a single immensely intricate world-spanning industrial system, on which all peoples now depend for almost all day-to-day necessities, including drugs, food, and information, but over which no group of businesses nor any group of nations exerts control.

A second factor is the rapid concentration of production capacity in most industrial systems over the last 25 years. Many factors have played a role in this concentration—including the emergence of digital technologies. Most important, however, is the radical relaxation of antimonopoly law beginning in the early 1980s in most industrial nations, especially the United States. The concentration of ownership that has resulted does not necessitate concentration of capacity; governments could require industrial monopolies to build redundant plants. But absent such regulation, the real-world result in industry

supplier.” It is no surprise that Japan was the first state not merely to recognize the problem but to publicize it. For one thing, METI employs one of the world’s most sophisticated teams of industrial experts. For another, in recent years Japan has been the site of some of the most dramatic industrial disasters. This gives officials there the ability to, say, compare the lessons of the Aisin brake valve fire of 1997 to the lessons of the Riken piston ring shut down of 2007, or the lessons of the Kobe earthquake of 1995 to those of the Tohoku Earthquake of 2011.

after industry has in fact been a dramatic concentration of physical capacity, hence of risk.⁸

A third factor is the rise of “just-in-time” and “lean” production techniques designed to speed the flow of materiel and capital through manufacturing systems. Although we can trace such techniques to the 1920s, the emergence of the internet and of modern data management systems over the last 20 years has enabled corporate managers both to extend such systems across much wider geographies and to speed them up dramatically. The key result for our purposes has been to enable production managers to reduce sharply the inventories of both raw and processed materials that until recently were available to cushion against supply chain disruptions.

In combination, the effects of these three changes upon the physical structure of most of our important industrial systems is economically and politically revolutionary. For millennia, groups of people have aimed at a general self sufficiency for most vital industrial goods, to ensure their independence of action in times of economic or political emergency. For most of the last century, the international distribution of productive capacity that resulted from this policy was reinforced by domestic antimonopoly law, which was used by many states to promote competition and to further distribute capacity. Yet what the Tohoku quake and the Lehman crash revealed was that, for all intents, many of our most important industrial activities are now organized into tightly integrated, world-spanning networks marked by great and growing degrees of concentration and specialization.⁹

Although concentration of ownership does not *necessitate* concentration of capacity, in industry after industry the real world result has in fact been a dramatic concentration of physical capacity. In many instances, the entire world supply of some keystone component now takes place in a single industrial zone, even a single factory. The immediate *and necessary* result of such physical concentration of production is

⁸Kei-Mu Yi, “The Collapse of Global Trade: The Role of Vertical Specialisation,” in *The Collapse of Global Trade, Murky Protectionism, and the Crisis: Recommendations for the G-20*, Centre for Economic Policy Research, 2009

⁹See Kei-Mu Yi, “The Collapse of Global Trade: The Role of Vertical Specialisation,” in *The Collapse of Global Trade, Murky Protectionism, and the Crisis: Recommendations for the G-20*, Centre for Economic Policy Research, 2009.

an extreme concentration of risk that leaves production managers with little or no ability to respond to even predictable disruptions.¹⁰

The ultimate result is a new global industrial *commons* that, from the point of view of a systems engineer, suffers from extreme if not fatal structural flaws. As a system, this new global industrial commons is characterized by numerous single points of failure, innumerable active tectonic and political fault lines, and (in the words of Charles Perrow, the pioneering expert on systemic risk) by extremely “tight coupling.”¹¹ It is, in short, a system that is not merely “built to break” but that is all but designed to ensure that a relatively small disaster in one place will one day result in a massive disaster every place.

The Ultimate Source of the Threat—Laissez Faire Politics

Ask almost any engineer how to eliminate the fragility in these cross-border systems and you will likely receive a simple answer—geographically distribute all keystone industrial capacities and create real-time redundancy in every important production systems. Ask most any member of the public, and the answer will be even simpler—don’t put all our eggs in one basket.

Nevertheless, as a society, not only have we failed to address this industrial fragility, we have largely failed to inquire whence it came and what it means. Before discussing what exactly to do, we therefore have to address why we as a society have so much difficulty seeing the problem. And why, among the few who do see the problem, there is little faith that we can fix it.

Much of the answer traces to a revolution in U.S. and European politics that began more than three decades ago. This was the rise of the corporate libertarian—or “estatist” movement.

¹⁰For a more detailed explanation of the structure and history of this system, see my articles “Built to Break: The International System of Bottlenecks in the New Era of Monopoly,” *Challenge*, March/April 2012; Barry C. Lynn, “How Detroit Went Bottom Up: Outsourcing Cleared the Way for a Discreet but Dangerous Monopolization of the Automotive Industry,” *The American Prospect*, October 2009.

¹¹Charles Perrow, *Normal Accidents: Living With High-Risk Technologies* (Princeton, 1999).

The first generation of industrial interdependence, established in early post-war Europe through the Marshall Plan and the Coal and Steel regime, is widely recognized as a grand political achievement. Not only did the generation that rebuilt Europe after the War use industrial interconnectedness to bridge the centuries-old divide that separated France from Germany, they used industrial interconnectedness to provide a foundation for a period of unprecedented peace and prosperity across much of the “Western” world.

That international economic regime required very close regulation of trade and investment flows. This regulation was provided by multilateral institutions such as the Organization for Economic Co-operation and Development. And it was provided by the U.S. government in Washington. As Geir Lundestad has written, although this first generation “global” system was entirely “imperial” in its nature. But it was also a uniquely liberal form of imperialism; the U.S. Executive’s vision of empire required it to work hard to distribute fairly among many nations not only skills and capital but also access to market. And, thereby, industrial capacity.

In the 1970s and 1980s, however, first the Thatcher government in Britain and then the Reagan Administration in the United States reacted strongly against such intrusive regulation by the state. In this initial stage of the corporate libertarian movement, however, the main targets were purely domestic—such as labor unions and antitrust laws. The result was also mainly domestic—in the form of greater concentrations of economic and political power in private hands.¹²

Internationally, the U.S. government continued to use its power to break up efforts to overly concentrate wealth or power in a single country. This included successful efforts to revalue Japan’s currency and to place strict limits on how much control over the international computer industry Japan could acquire.

After the collapse of the Soviet Union in 1991, however, the corporate libertarians moved swiftly to extend their revolution into the international realm. The key tool for this revolution was the Uruguay Round of the General Agreement on Tariffs and Trade, which established the World Trade Organization.

¹²Barry C. Lynn, *Cornered: The New Monopoly Capitalism and the Economics of Destruction*, Wiley, 2010.

On the surface, the WTO regime was designed only to take the grand success of first-generation globalization to the next level, by extending the system to China, Russia, and the nations of Eastern Europe. More important for our purposes, the WTO regime was also designed to shift the power to regulate the international industrial and financial systems away from the U.S. government and institutions like the OECD, to the giant industrial corporation and banking estate.

In combination, the revolution in the governance of domestic political economies of the 1970s and 1980s, and the revolution in the governance of the international political economy in the 1990s, cleared the way for the rise of today's monopolists and mercantilists.

Perhaps even more damaging, these twin revolutions undid the public institutions, regulatory practices, and ways of thought that had enabled the United States and its European allies to ensure the safe distribution of industrial and other economic activity, and the stability of complex cross-border systems.

Political Origins & Ideological Obstacles

Our inability to see the threat and to respond practically is also due to ideological and intellectual factors. Some of these obstacles derive from the rapid rise in the influence of the economics academy over international trade and industrial policy, hence to the ideologies that shape the thinking of many professional economists. Other obstacles derive from the ways in which concentration of control and capacity has disrupted many of the traditional ways we manage risk in our political economy, and apportion responsibility and liability.

Of the many factors that have played a role in hiding the fragility of our industrial systems, the following four stand out.

The Fetishization of Efficiency

Economists believe their prime task is to promote the “efficient” use of natural and human resources. There is nothing new about this; we can trace this thinking far into the 19th century. What is new is the degree to which other academies have come to accept this same basic goal and have ceased to offer competing ideas of what we, as a society, might desire or require.

Consider competition policy, which for 200 years in the United States was the single most powerful determinant of industrial structure. From the founding of the nation, the goals of our many anti-monopoly laws and policies were the liberty of the individual citizen, the democratic distribution of voice and responsibility, the maintenance of a rough equality of opportunity, and the security of the nation. Efficiency, although it was sometimes taken into account, was never held to be the foremost goal.

This all changed in the 1970s and early 1980s when legal scholars of the “Chicago School,” led by Richard Posner and Robert Bork, succeeded in convincing policymakers to embrace an “economic analysis of law.” The result, almost overnight, was a radical simplification of competition policy around a single goal, “efficiency,” theoretically in order to better serve the interests of the “consumer.” The main consideration now became not the distribution of power, the maintenance of competition, the openness of markets, nor the stability of systems. Instead it was only whether any particular proposed “economy of scale” would drive down the price of a particular good or service.

One result of this radical change in competition policy and law (and I would argue, an intended result) has been a revolutionary concentration of power, especially in the United States but in other countries as well. Another (apparently unintended) result has been a rapid concentration of human thought around the goal of efficiency, in ways that have all but blinded us—as individuals and as a society—to the *physical* dangers posed by the extreme concentration and reorganization of human industrial activity over the last generation.

The Socialization of Risk

Economists assume, as a foundational principle of their system, that rational actors will always identify and mitigate risk. This assumption is entirely logical, given that economists also assume the existence of open markets in which multiple companies compete to deliver the same basic goods and service. When capacities and skills are compartmentalized in such a way, the failure of any one company is always an option society as a whole will be willing to accept. This enables a compartmentalization of responsibility, which leaves it entirely up to the individual owners and operators of these firms to guard against any failure—including the cut-off of supplies—that would destroy the value of their assets.

The main problem with this theory is that it no longer reflects the reality of today's industrial and financial structures. Over the last two decades we have witnessed a revolutionary reorganization of industrial activity around the world. In addition to the extreme consolidation of control over many marketplaces already noted, this restructuring also includes the *dis-integration* of many industrial systems that for the last century were highly vertically integrated. In sector after sector, managers have chosen to "outsource" key production activities to outside suppliers, many of which in turn have captured control over the production of vital components, and which have also often concentrated the capacity to produce these components.

The practical result is that where once we had many companies competing in real time to, say, manufacture windshield wipers or piston rings, today we increasingly see one company managing the bulk of such production. This in turn entirely alters how the managers of top-tier companies view risk. When production of vital components is the responsibility of each company individually, and that company faces robust competition, managers of that company are all but compelled to guard against supply chain disruptions. By contrast, the *pooling* or *communalization* of production largely eliminates any impetus to invest time and resources in identifying and mitigating supply chain risks. Such pooling of capacity affects the incentive for any one corporate actor to devote time to identifying and mitigating potential bottlenecks.

The Resurrection of Metaphysics

One of the key ideas of the Enlightenment is that all economics is political, hence human beings enjoy the capacity to restructure all economic relationships within society and all economic relationships among different peoples. In America, over the last generation, we have witnessed a phenomenal—yet all but unaddressed, even unremarked—resurrection of the belief that our economy is shaped by powers largely or completely outside human control. The basic idea here is that some force—such as "technology" or the "market" or "capitalism"—mechanically drives actors within the economy towards certain ineluctable outcomes.

Most important for this discussion is the belief that "globalization" itself is a natural, even inevitable force, rather than a carefully structured product of political decisions.

Over the years, many actors have sought to inject deterministic thinking into political debate. A century and half ago, the richest man in United States, Andrew Carnegie, literally imported Herbert Spencer to preach the metaphysics of “Social Darwinism” to voters who might otherwise be tempted to view Carnegie’s assets as ill gotten. In the 20th Century, the economist Joseph Schumpeter promoted a form of biological determinism that owed much to Spencer’s teachings

What is new, and directly pertinent to our problem, is how fully such metaphysical thinking and analysis has come to dominate not merely the social sciences but the thinking of policymakers. Nowadays, we see such deterministic thinking not only in popular works of journalism such as the books of Thomas Friedman. We also see such deterministic thinking in the statements of important politicians; U.S. President Barack Obama recently defined “globalization” as a “force” that shapes us at least as much as we shape it. And we see such deterministic thinking in the economics academy and throughout the social sciences.

What is also new is how dangerous such thinking can be. A century ago the main dangers of believing in such metaphysics was that some would-be plutocrat would use such tales to concentrate economic and political power. Today, such metaphysical thinking—by hiding the political acts of the human builders of these systems—can also prevent us from acting in pragmatic and practical ways to ensure the stability of even our most vital systems.

A Flawed Understanding of InterDependence

Among those who do understand the fragility of systems, many argue that such extreme industrial interdependence forces political leaders to walk peaceful paths in any dispute. Perhaps the best known purveyor of this argument is *New York Times* columnist Thomas Friedman, especially in his 2005 book *The World is Flat*. The basic thesis of Friedman and similar thinkers is that the dangers of systemic disruption are more than counterbalanced by the ways in which such mutual dependence on the same systems forces different peoples to avoid conflict and to cooperate harmoniously.¹³

¹³Thomas, Friedman, *The World is Flat* (New York: Farrar, Straus and Giroux, 2005).

But there are two large problems with Friedman's line of thinking. First, such extreme industrial interdependence is simply not necessary to keep the peace. There are many other very potent checks against armed conflict among industrial nations today—such as the fear that any hot conflict might lead to the use of nuclear weapons. Further, as we learned from the first half century of America's postwar empire, the main political benefits of industrial interdependence can be achieved with a far more limited sharing of capacity—in energy, metals, and advanced electronics for instance.¹⁴

Second, today's extreme industrial interdependence poses dangers that in many respects far outweigh even the potential benefits imagined by Friedman and other "globalists." And these dangers grow worse by the day. It is, indeed, all too easy to imagine "normal," everyday disasters that would effectively end economic—and hence political—life as we know it.

The most obvious flaw is that the structure of the system leaves us entirely exposed to natural disasters, which obviously are entirely outside the power of any rational actor in any state to control. Two of the biggest industrial crashes—in September 1999 and March 2011—were triggered by earthquakes. Similarly, the incipient shut down of trade flows during the SARS scare of 2003 was averted only when the disease suddenly ceased to spread.¹⁵

Third, the structure of today's system leaves us entirely exposed to political disasters in third states, as well as within states. Even if leaders in Beijing and Washington forged the most perfect of ententes, they would not be able to exert complete control over the human beings who control other states. They would not, for instance, be able to guarantee that North Korea would never disrupt South Korea's highly concentrated DRAM industry, for instance. Nor could they guarantee that Pakistan will never disrupt the flow of processed information from India to the back offices of corporations in the United States, Europe, Japan, and China.

Similarly, neither China nor the United States is itself a monolith, and there is no guarantee whatsoever that leaders in either Beijing or

¹⁴Lynn, "The Industrial Policy that America Has Forgotten," *Europe's World*, Autumn 2013.

¹⁵Michael T. Osterholm, "Preparing for the Next Pandemic," *Foreign Affairs*, July/August 2005.

Washington can always prevent factions within their nations from disrupting vital industrial and financial flows. In 1989, the Tiananmen uprising had little effect on any economic activity outside China. Any similar event today would conceivably shut down business as usual through much of the industrialized world.

Worse, in some cases extreme industrial interdependence appears actually to tempt powerful factions within a state to various forms of adventurism. This is certainly one way to view China's cut off of shipments of rare earth minerals to Japan in 2010, following a flareup of tension over the Senkaku/Daiyudao islands.

Such High Noon-style political face-offs between two nations joined at the industrial aorta pose two huge dangers to the United States and Europe. First is that one of the parties will miscalculate and make a military or political move that triggers exactly the sort of catastrophic industrial shut down we most fear. The second danger is that China (or some other nation) will manipulate the face off in a way that forces the United States (or one of our key allies) to back down politically, much in the way the United States forced Britain and France to retreat from the Suez in 1956. The political and economic effects of such a humiliating loss of prestige—and such a complete demonstration of the impotence of military power—are almost incalculable.

Finally is the fact the hyper concentration of capacity we see in so many of today's international industrial system also provides numerous highly tempting targets for non-state actors like terror groups as well as factions within a state who are playing for power. In September 2001 al-Qaeda struck at what it viewed as the symbolic heart of the capitalist system—Wall Street. Today, if al-Qaeda or some other group really wanted to wreck havoc, it need merely strike some vital concentrations of industrial capacity located somewhere around the world, in Hsinchu, or Seoul, or Bangalore, or maybe Shenzhen. Last, there is the danger that the United States, or one of our allies, might respond to some provocation in an unwise or untimely fashion.¹⁶

¹⁶Barry C. Lynn, "Glitch in the Matrix: Why the Pivot to Asia Has No Clothes," *Foreign Policy*, September 2012.

Toward Simple Rules

Human societies can be highly flexible and resilient, and often adapt with remarkable speed to new physical realities. So too the human mind, which can swiftly turn the truths of today into the stuff of ridicule tomorrow. That's why, despite the fact that economic power and thought have been so fantastically concentrated, we can still look to the day when the perils we face will become starkly clear. The only question is whether this truth will reveal itself via insight or catastrophe.

Our most immediate practical challenge then is twofold: to determine what sorts of rules would result in a safe physical distribution of keystone industrial capacities; and to determine how to begin a political discussion that will prepare us for this task before a truly devastating crash does the work for us.

In any discussion of making rules, it helps to clarify up front exactly what role government would play. I myself am very confident of the ability of private sector actors to work out the basic details all on their own. The task they face is actually quite simple. The constituent pieces of these systems—be it machines, or servers, or debt—are all man-made, and can be arranged however we wish. For such a challenge, today's industrial engineers and corporate managers have all the technical expertise our society requires.

That said, governments will have to set basic ground rules that ensure that all these private actors are treated alike. Regulators do not need to figure out every last detail of our supply chains. But they do have to establish an environment that empowers engineers to secure these systems, without fear of putting their individual companies at competitive risk.

The following three observations may be of use in helping policymakers set such rules. These three observations address the three factors that—as noted in the first section of this chapter—are widely regarded as the primary sources of the growing fragility of our international industrial systems. They are based on 15 years close study of supply chain crashes and of the history of interdependence among nations, and distill much of the reporting I have done elsewhere.¹⁷

¹⁷See, for example, Barry C. Lynn, *End of the Line: The Rise and Coming Fall of the Global Corporation*, Doubleday, 2005; Barry C. Lynn, "War, Trade, and Utopia: Economic Interdependence Leads to Peace, say the Globalists. Think Again, and Examine the U.S.-China Connec-

***Just-In-Time Logistics Practices Are Not
a Fundamental Source of Fragility***

After the Tohoku quake, many in the news media and in the investment community blamed the subsequent disruptions on overly “lean” supply chain practices. But we also know from previous industrial crashes that JIT practices can themselves be compartmentalized, hence that even in extremely lean systems, disruptions can be kept local.¹⁶ Further, focusing too much attention on JIT practices poses dangers of its own. It will likely lead us to aim at the wrong fixes; bigger inventories of components, for instance, may cushion the shock, but the effects are at best only temporary. Worse, placing too much blame on JIT may lead us to discount the role that information technologies can play in providing more supply chain transparency.

***Industrial Integration Among Countries Is
Also Not a Fundamental Source of the Danger***

After every industrial crash, a staple of news coverage is that “globalization” has put us in danger. Yet there is no sound basis whatsoever for such a conclusion. We can in fact imagine many forms of highly complex international industrial systems that would be, from an engineering point of view, all but fully safe against both natural and political disaster. As we saw during the first era of globalization between 1947 and 1993, it is possible to engineer systems that promote high degrees of international cooperation, yet also do not bind peoples so tightly that disaster in one place instantly becomes disaster everywhere. Worse, blaming integration poses perils of its own. The fix it implies—i.e. a retreat from “globalization”—means abandoning a policy that at least in its first iteration proved immensely successful. Further, blaming integration for fragility runs the risk of exacerbating tensions between nation-states in ways that threaten to spin out of our political control.

tion,” *The National Interest*, Winter 2005/2006; Barry C. Lynn, “How Detroit Went Bottom Up: Outsourcing Cleared the Way for a Discreet but Dangerous Monopolization of the Automotive Industry,” *The American Prospect*, October 2009; Barry C. Lynn, “How Detroit Went Bottom Up: Outsourcing Cleared the Way for a Discreet but Dangerous Monopolization of the Automotive Industry,” *The American Prospect*, October 2009; Barry C. Lynn, *Cornered: The New Monopoly Capitalism and the Economics of Destruction*, Wiley; Barry C. Lynn, “Built to Break: The International System of Bottlenecks in the New Era of Monopoly,” *Challenge*, March/April 2012; Barry C. Lynn, “Glitch in the Matrix: Why the Pivot to Asia Has No Clothes,” *Foreign Policy*, September 2012.

Geographic Concentration of Keystone Production Capacity Is, In Fact, a Fundamental Source of Fragility

My reasoning here is simple. This is the one factor that is entirely new; we have never before seen such high degrees of concentration of vital capacity. We can clearly measure the effect of concentration by comparing two events that took place in the 1990s—the Kobe earthquake and the Aisin fire—to two events that took place more recently—the Niigata and Tohoku earthquakes.¹⁸ The principles here are the same ones responsible for the growing fragility of our financial system, where much of the problem is the over concentration of debt of storage and processing capabilities. Perhaps most important, not one of these industrial crashes would have happened had alternative sources of production been available in real time.

If these three observations are in fact true, the key to ensuring the resiliency of our international production systems is to build up real-time redundancy by physically distributing the capacity to produce keystone components, be they electronics chemicals or information. This, in turn, points us immediately to all sorts of pragmatic, practical rules and laws that would promote such distribution. We could, for instance, require that all firms dual source supplies in real time. We could, for instance, require firms to report all bottlenecks and potential bottlenecks to investors, governments, and the public. We could, for instance, alter the goals of competition policy (which, properly understood, includes trade policy) to ensure that the resiliency of vital systems is a main goal.

The one thing we need never do is adopt protectionist policies designed specifically to shift production to our own home countries. The fragility of these systems derives not from the fact that production is located off shore, but from the fact that all production of many keystone components is located in one or a couple places only. It is, if anything, a direct product of our failure to deal with such protectionist and mercantilist policies—in places like Beijing, Tokyo, Taipei, and Berlin—in a realistic fashion.

¹⁸See my comparison of the disruptions caused by the Aisin fire of 1997 and the Niigata earthquake of 2007 in Barry C. Lynn, “Built to Break: The International System of Bottlenecks in the New Era of Monopoly,” *Challenge*, March/April 2012, pp. 94-96.

Looking to 2030—Fragility and Volatility.

The Atlantic Community faces a choice as it looks forward towards 2030. We can stumble numbly on towards an economic and/or political disaster of the first magnitude. Or we can work, honestly and realistically, with the leaders of the dominant nation-states and dominant corporate and banking estates to reestablish these systems on a more stable and resilient footing.

This is not a problem that will “heal” itself; nor will some new technology emerge to solve the problem for us. The origins of the problem are entirely political in nature, hence can be fixed only through political action. Absent such political will, the fundamental structural flaws in the industrial system will, in many cases, simply grow more dire. To make matters worse, the concentration of political and economic power that is the source of this danger poses many other closely related threats to our political and economic wellbeing.

The stakes could not be higher. Failure to act now to restore coherent, rational, democratic, public institution-based control over our international political economy means that, as we look to 2030 we can expect:

More industrial and financial crashes. The present industrial system is already radically unstable. Every day the actions of monopolists and mercantilists—by promoting an ever greater concentration of keystone capacities—make it more so. Given that natural and political disasters are inevitable in our world, it is only a matter of time until some event triggers another cascading shutdown, perhaps far more damaging than any we have yet experienced.

An ever more provocative and assertive China. Factions within China have already proven willing to use various forms of embargo to project power on other nation states and on individual international corporations. They will continue to use this power until the United States, Europe, and Japan mount a coherent, coordinated response.

A sudden collapse of U.S. and European prestige and authority. The Iraq War, the financial meltdown, the eurozone crisis, and the revelations of NSA spying have all severely reduced U.S. and European standing in the world but have not destroyed it. However, another financial crash or a humiliating retreat before a Chinese provocation

has the potential to shatter the political foundations of the postwar system once and for all.

More economic volatility. Over the last decade, the increasingly giant companies that control the flow of grains, energy, and metals have become far more sophisticated at manufacturing volatility in commodity markets, mainly to drive up trading profits. This volatility will increasingly disrupt the ability of states, businesses, and individuals to plan and act in any coherent fashion.

Worsening economic stagnation. Over the last decade, a few increasingly large and powerful companies like Monsanto, Oracle, Google, Microsoft, GE have captured control over entire realms of technology. This concentration of control appears already to have reduced innovation and growth, and will only do so more dramatically over time.

Collapse of Checks and Balances. Today's regulators tend to respond to crises mainly by further concentrating power and by integrating state regulatory functions more intimately into theoretically "private" institutions. This blurring of public and private economic realms will increase the corruption of our democratic political system even while it greatly increases the likelihood of bigger crises in the near future.

A dis-integration of public information systems. One of the most important products of competition in open markets is trustworthy information that allows us—as a society and as individuals—to react and adapt to a constantly changing world. The monopolization of control over entire production activities by private corporations and foreign states radically reduces the flow of trustworthy information through our society, and hobbles our ability to understand and manipulate the world around us.

Towards a 21st Century International System

The greatest threat to the stability of the complex systems on which we all depend is posed not by any terrorist group or foreign state but by the corporate libertarian movement in the United States. It was their assault on competition policy that transformed the international industrial system from a source of resiliency and strength into what is now perhaps the single most powerful transmitter of shock from nation

to nation. It was their assault on the institutions of public knowledge and empiricism itself that has all but destroyed our ability—as individuals and as a society—to understand and respond to these dangers.

This is not only an American problem. The extreme and growing instability in our international industrial and financial systems, caused by this reckless dismantlement of the U.S. state's ability to police against efforts to concentrate industrial capacity and other forms of risk threatens all nations. The threat is not merely to the grand achievements of Monnet, Schuman, Marshall, and Eisenhower. It is to human society as we know it.

The good news is we have two reasons for hope. First is that the public attitude towards concentrated power is changing fast. We saw this in the United States with the Tea Party and Occupy movements. We see this among a growing number of experts and policymakers, in places like the Bank of England and the Federal Reserve. We see this increasingly around the world, such as in Brussels and Berlin, where competition authorities are taking more aggressive stances than in years.

The second reason for hope is that we now face an immanent and eminently understandable threat—in the form of renascent militarism. We see this in Europe, in Russia's adventures in the Ukraine. And we see it most dramatically in Asia, where China in recent years has engaged in military face offs with the United States, Japan, Vietnam, and the Philippines.

The stakes in Russia are relatively small, as few complex cross-border systems are threatened by sanctions there, or even hotter war. The South China Sea is another matter entirely. Across these waters pass the physical and digital components that go into making almost every device on which modern society depends, and to a large degree on which our international financial system stands.

China's growing belligerence, despite more than two-decades of phenomenal economic growth, is stark proof of the failure of the corporate libertarian vision to deal with real-world threats. And catastrophe here does not even require a hot conflict. Any showdown that results in a simple embargo of goods would inevitably, and almost immediately, result in the seizing up of vitally important cross-border flows of goods, cash, and information around the entire world.

Our opportunity, then, is to take advantage of the high and growing danger of some sort of conflict in the seas around China—and of the fact that such a conflict has the potential to wreck massive economic and social devastation across the entire world—to force a fundamental reassessment of the policies and ways of thinking responsible for today’s unstable cross-border systems. The promise is not merely to avoid disaster. It is also to reestablish our world on a foundation that truly helps to promote peace, widespread prosperity, and stability across the long expanse of this next century.

