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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

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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? And, further, that these same mistaken ideas also block our ability as a society to understand and respond constructively to the threats?

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.

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 two decades ago – 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%.²

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, 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.

² See Kiyoyasu Tanaka, “Trade Collapse and International Supply Chains: Japanese Evidence,” *Vox*, Centre for Economic Policy Research, November 27, 2009.

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. 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*.³

But despite the fact there are clear limits to what individual companies can accomplish on their own, national governments and multilateral organizations have only barely begun to analyze how such events might affect human society as a whole, let alone how to limit the dangers they pose. The exceptions can be counted on one hand. This includes a team of WTO economists who studied how supply chains transmitted and amplified the Lehman stock market crash.⁴ 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.⁵

From these private and public studies – and from the occasional speculation in the press – we 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

³ Yossi Sheffi, *The Resilient Enterprise: Overcoming Vulnerability for Competitive Advantage* (Cambridge: MIT Press, 2005).

⁴ Hubert 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).

⁵ In 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 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.

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 widely discussed factor is the rise of “just-in-time” and “lean” production techniques designed to increase the efficient use of the material and capital that flow 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 managers both to extend geographically and to speed up dramatically such systems. One result has been to reduce sharply the inventories of both raw and processed materials that until recently were available to cushion supply chain disruptions.

A third factor, increasingly noted by private managers and public officials, is the rapid concentration of industry in the United States and across much of the world over the last 25 years. (Japan’s METI recently reported that more than half of industrial companies depend on single sources of supply for key inputs.) Thanks to a period of rapid economic consolidation, many industrial production activities that a few years ago were spread around the world are increasingly concentrated in a few keystone factories, in one or another of the world’s main industrial nations. This concentration of capacity, in turn, concentrates physical risk and financial risk. Worse yet, as a World Trade Organization economist wrote in a 2010 paper, this concentration of production has an “inherent magnification effect” on shocks. 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.⁶

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 an extreme concentration of risk that leaves production managers with little or no ability to respond to even predictable disruptions.⁷

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

⁶ See 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.

⁷ For a more detailed explanation of the structure and history of this system, see my articles “Built to Break” and “How Detroit Went Bottom Up.”

systemic risk) by extremely “tight coupling.”⁸ Our new global industrial commons is a system in which a relatively small disaster in one place can result in a massive disaster every place. It is a system that is “Built to Break.” And yet it is a system that is not merely entirely ungoverned but, other than the few musings mentioned above, is largely unstudied and even unnoticed.

Despite these revelations – indeed despite the fact that 14 years have passed since that first modern industrial crash in Taiwan in September 1999 – the United States and Europe have entirely failed to address the fact that industrial activity is now organized into a common, networked system that is increasingly unstable. Similarly U.S. and European officials have entirely failed to address the political implications of such extreme industrial interdependence among nations, hence of such extreme forms of industrial dependence. What does it mean, for instance, to rely completely on foreign sources of supply even for such basic goods as pharmaceuticals, foods, and electronics?

Given the fundamental nature of our industrial production and distribution systems to all human activity, any coherent strategy for managing political and economic risk over the next 20 years must address these dangers. The good news? Almost any effort to do so offers huge opportunities to reestablish our political economy on a far more resilient foundation.

Political Origins & Ideological Obstacles

For nigh on 400 years, since the days of Francis Bacon, the next question would have been, “so how do we fix the problem?” Today, however, we find a remarkable divide between those able to perceive this grave and growing physical danger and those who don’t. And we see a second divide among those who do see the danger but who disagree as to whether human beings have the ability to restructure the international production and financial systems on which we depend so completely.

On one side stand the systems engineers (and members of the public) who use scientific method and common sense to perceive and act in the world. For these men and women, the basic assumption is that the international industrial system is a human creation, one that people may have structured in unwise ways, but one that people can now reshape along safer lines.

The basic response of these engineers⁹ was simple; in building these new international industrial systems we had violated one of the most basic rules of engineering, to build in redundancy. The fix they advocated was similarly simple – create real-time redundancy by geographically distributing all keystone industrial capacities. At that same time, I also began to seek out the insights of economists and sociologists who study industrial activity. Here I immediately found

⁸ Charles Perrow, *Normal Accidents: Living With High-Risk Technologies* (Princeton, 1999).

⁹ An important part of my early research on industrial crashes after the Taiwan earthquake of 1999 was spent speaking with such engineers. This included George Scalese, a former Vice President at Apple who was then head of the Semiconductor Industry Association. It also included Wim Roelandts, the CEO of the pioneering “fabless” semiconductor company Xilinx; Robert Mao, CEO of China Region operations at Nortel; Christopher Gopal, the supply chain pioneer who designed Dell’s first trans-Pacific system; and Ralph Gomory, the former head of R&D at IBM who was then head of the Sloan Foundation.

something I did not expect, which was an almost universal inability and/or unwillingness to realistically examine and pragmatically respond to these industrial crashes.

I have neither the space nor the writ in this chapter to critique either the economics academy or the social sciences. But I do think it vital – after nearly 15 years of interaction and arguments with both engineers and economists – to list what I believe are three of the main factors that shape these competing and often quite opposite ways of seeing and acting in the world. Indeed, given the immense influence economists wield over the policymaking community, the following three factors will also help to explain both how we as a society got into this mess and why we’re having such a tough time getting 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 cutoff 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

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 of human control. The basic idea here is that some force – such as “globalization” or “technology” or the “market” or “capitalism” – mechanically drives actors within the economy towards certain ineluctable outcomes.

We see this kind 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. We also see such deterministic thinking in popular works, such as the highly influential writings of *New York Times* columnist Thomas Friedman. In his 2005 book *The World is Flat*, Friedman argued that extreme industrial interdependence among nations forces political leaders always to pursue peaceful paths in any dispute.¹⁰ And there is in fact little doubt that many leaders are increasingly aware that conflict among industrial nations would immediately cripple many of our most vital production and distribution systems.

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

¹⁰ Thomas, Friedman, *The World is Flat* (New York: Farrar, Straus and Giroux, 2005).

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.

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.¹¹

Similarly 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 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.

¹¹ Michael T. Osterholm, "Preparing for the Next Pandemic," *Foreign Affairs*, July/August 2005.

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.

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.¹²

¹² See, 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 Connection," *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

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.¹³ 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.

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.¹⁴ 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.

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.

¹³ See 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.

¹⁴ For more detail, see *Ibid.* pp. 100-101.

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.

Of Fear & Political Will

Which brings us to politics and power. Every one of the potential fixes listed above carries us into collision with the people who benefit from the structure of today’s system and want to continue to benefit. This includes both the “plutocrat” here at home and the mercantilist government abroad. And, as we saw with so many of the reforms proposed after the Lehman Crash of 2008, these entrenched powers often have more than sufficient wherewithal to stay entrenched even after their actions cause massive harm to all sectors of society, and indeed, nearly crashed vital international systems.

Yet I strongly believe we have two real reasons for hope today. 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 Wall Street 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 Israel, where the Knesset recently voted to break up the country’s conglomerates.

The second, and frankly more important reason for hope is that we have a new, grave, but entirely transparent, and *hence easily understood* threat to the stability of the system, in the form of the ongoing face-off over control of the Senkaku/Diaoyu islands, between China on one side and Japan and the United States on the other. This immensely perilous argument provides us with our single greatest opportunity to transform our thinking about what must be done to ensure the stability of systems, and what we actually have the power to achieve.

It is easy and wrong to dismiss the potential effects of any conflict over control of these islands. Yes they are barren and lie half a world away. But the Senkaku/Diaoyu islands also sit at the symbolic center of our new world-spanning Just-In-Time factory. Over and around these tiny specs of land 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.

Catastrophe here does not 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.

Analogies are always somewhat inexact, and can distort or hide more than they illuminate. But the political challenge we face in managing our new global industrial commons is in many respects similar to the challenge we faced in learning how to manage our nuclear weapons *interdependence* two generations ago. As Intel's former CEO Andy Grove made clear at the time of the Spy Plane crisis of 2001, the threat we face today is in fact a form of "Mutually Assured Destruction." The main and important difference is that any intentional effort to paralyze our industrial commons would be followed by days of negotiation, during which the people and the machines would remain in perfect order. Yet the window for action would be highly limited, as any intentional embargo would also almost immediately trigger financial panic.

Our opportunity, then, is to take advantage of the high and growing danger 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 demand that China, Japan, and the United States begin to work now to ensure the stability of this system. Such a discussion would force these three nations to recognize the fundamentally flawed structure of the industrial system, and the magnitude of the risks, hence would force them to begin to address the problem.

This is not a discussion these three nations can begin on their own. But it is a discussion that the world community can demand, by right, given the degree to which all peoples depend on these cross-border flows of goods, cash, and data.

The first generation of industrial interdependence, established in early postwar Europe, was a grand gift to the people of the world, from a generation that had walked through hell. The result was not merely to use industrial interconnectedness to bridge the centuries-old divide that separated France from Germany. Their actions also established a set of principles that provided the key to a period of unprecedented peace and prosperity in Europe, and indeed in the world as a whole.

On the surface, the second-generation "extreme" interdependence established in the 1990s was designed only to take this grand success to the next level. One central aim was simply to extend the system to China, Russia, and the nations of eastern Europe. Another was to further depoliticize commercial relationships between citizens of the countries within the system, by shifting more control from the nation-state to the industrial and banking estates.

The failure of this second generation "globalization" lies in the failure of the largely libertarian authors of the plan to recognize the role the U.S. state had played over the previous 40 years in

ensuring the safe distribution of industrial capacity across the face of the world.¹⁵ As Geir Lundestad has written, although the first generation system was in fact “imperial” in its nature, 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.

There are many potential explanations for this failure to publicly recognize the necessary regulatory the U.S. government had assumed for so long, and either to preserve it or transfer it to a new institution. My own guess is that it derives largely from the same thinking that led libertarians to subvert U.S. antimonopoly law in the late 1970s and early 1980s, mainly to enable greater concentrations of economic and political power in private hands.

For the international political system, it is hard to imagine a bigger disaster than this reckless dismantlement of the U.S. state’s ability to police against efforts to concentrate industrial capacity could hardly be more grave. It threatens not merely the grand achievements of Monnet, Schuman, Marshall, and Eisenhower, but human society as we know it.

Another way to understand our task, then, is to move as swiftly as possible toward a third generation “globalization,” a third generation of industrial interdependence, one that continues to promote amity and cooperation but also accounts structurally – hence politically – for the absolute inevitability of natural disaster and human discord. In this third-generation system, our prime goal will be to ensure the safe geographic distribution of capacity.

As it looks forward towards 2030, the Atlantic Community faces a choice. We can stumble numbly on towards an economic and/or political disaster of the first magnitude, one that as Tomas Ries has written, will quite possibly prove to be “existential” in nature. Or we can engage, honestly and realistically, with the leaders of the dominant nation-states and the dominant corporate and banking estates.

Once we make our case, we will surely find much good will, and much desire to loosen the chokepoints that so threaten the stability of these systems, even among the corporate and banking elites of the West, even within the highest levels of government in China. Most look for nothing more than rules that will enable them to go about their business safely. The promise is not merely to avoid disaster. It is to reestablish our world on a basis that truly ensures both peace and prosperity across the expanse of this next century.

Conclusion

At the end of the Cold War, the United States and Europe could have ensured that the international industrial system continued to buttress the export of economic stability and political liberalism, much as it had done over the half century after Coal and Steel. Instead, by ceding power to the monopolist at home and the mercantilist abroad, we ended up with a system that

¹⁵ See Barry C. Lynn, “The Industrial Policy that America Has Forgotten: enlightened U.S. policymakers once promoted economic interdependence as a key to world peace. But today that approach has been severely eroded,” *Europe’s World*, Autumn 2013.

guarantees only that we must import natural or political disasters – even when they take place on the far side of world – right into the heart of our society in real time.

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.

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 merely an American problem. The extreme and growing instability caused by this radical concentration of power, hence of risk, threatens every nation that depends on this international system of production. The good news is that human beings are very good at designing complex systems to absorb shock, once we set our mind to the task. We also have at hand many political economic models that worked well in the past and that we can easily update to meet today's challenges.

The better news is that in the very act of redistributing capacity and risk to ensure the resilience of our complex systems will also set us on the path to addressing many of the other threats that loom before us over the next twenty years. After all, any successful attack on the concentration of economic power will clear the way also for the integration of more people into the system, the engagement of more capital, the testing out of more ideas, and forging of more truly cooperative industrial relationships.

Indeed, unravel this one problem, and we will find that we have unraveled most.