

The Next Catastrophe: Reducing Our Vulnerabilities to Natural, Industrial, and Terrorist Disasters

Charles Perrow

(New Jersey: Princeton University Press, 2007)

Reviewed by Paul N. Stockton

This is an important book. Based on an in-depth analysis of four especially vulnerable components of U.S. infrastructure, Charles Perrow (author of the sociological classic *Normal Accidents*) proposes “target reduction” as a means to help the nation better survive the catastrophes to come. Understanding what the author means by target shrinkage requires the reader to do a bit of digging, especially since Perrow features a number of policy recommendations only loosely related to target size. Perrow also recognizes that his proposals will generate powerful political opposition because of the regulatory activism they would require and their potential conflict with market incentives that continue to foster target vulnerabilities. To limit political influence exerted by the corporate owners of critical infrastructure, and thereby facilitate regulatory change, Perrow suggests far-reaching structural reforms of the U.S. electoral system. Those reforms are unlikely to occur anytime soon. Interestingly, however, Congress is already pushing ahead with some of the regulatory measures endorsed by *The Next Catastrophe*. The process by which that effort is going forward raises broader questions for homeland security policymaking, and makes Perrow’s book all the more timely.

The Next Catastrophe goes beyond the existing literature on critical infrastructure protection.¹ As in Stephen Flynn’s *America the Vulnerable* (2002) and *The Edge of Disaster* (2007), Perrow makes a persuasive case that the United States should invest more heavily in reducing infrastructure vulnerability, rather than strengthening prevention and response capabilities alone. As in Ted Lewis’ *Critical Infrastructure Protection in Homeland Security* (2006), Perrow examines infrastructure sectors as functional networks, enabling him to identify vulnerabilities and propose solutions beyond those derived from more traditional approaches to infrastructure protection. Perrow carries this analysis into realms that have yet to receive adequate attention in the homeland security literature, including the Internet. Rather than following the more common emphasis on terrorism and natural hazards, Perrow also pays unprecedented attention to the problems of industrial accidents, and brings his path-breaking theory of “normal accidents” to bear on what is – more than any other book in the field – a truly all-hazards analysis of homeland security.

The first section of this review examines why Perrow’s proposals are so potentially valuable for reducing the damage caused by terrorist attacks, natural hazards, and industrial accidents, and analyzes his broader argument on behalf of target reduction. The second section explores how, despite the lack of electoral reform Perrow considers so necessary, legislators have recently enacted

infrastructure regulations opposed by industry. In particular, I will examine how legislators are seeking to politically advantage their regulatory initiatives by framing them as essential for U.S. security, and thereby advance broader public safety objectives that would otherwise be more difficult to achieve. As those regulatory efforts go forward, *The Next Catastrophe* will offer a roadmap for protecting the United States that is both innovative and enormously valuable.

“SHRINK THE TARGETS”

The Next Catastrophe addresses a wide range of problems in homeland security, including an insightful analysis of the unintended consequences of centralizing so many disparate programs and organizations in the Department of Homeland Security. I will focus on one especially important theme of the book: the need for target reduction. Perrow urges that “instead of focusing on preventing disasters and coping with their aftermath – which we must continue to do – we should *reduce the size of vulnerable targets*” (emphasis in the original).² What exactly does Perrow mean by target shrinkage, and how would his approach differ from those already envisioned in the *U.S. National Infrastructure Protection Plan* and its seventeen sector-specific plans?³

Some of Perrow’s recommendations clearly illustrate what target shrinkage would entail and why it offers such potentially significant benefits for vulnerability reduction. For example, Perrow would reduce (and to the extent possible, reverse) the growth of population centers in flood plains, coastal areas, and other regions vulnerable to catastrophic storms and other natural hazards, and by doing so reduce the number of people and structures at risk to such catastrophes. (pp. 9, 14-40)

Perrow would also shrink the concentration of chemical plants and hazardous materials storage facilities, and minimize the shipment of hazardous materials on rail lines that transit major urban areas. He makes a compelling case as to the potential threat that chemical facilities and the shipment of hazardous materials pose. Perrow argues that

Weapons of Mass Destruction (WMDs) already litter our landscape; terrorists need not sneak them in, and they are more likely to be triggered by natural and industrial disasters than terrorists. Ninety-ton tank cars of chlorine gas are WMDs that travel daily through our cities; dispersing the deadly gas via a tornado or hurricane, an industrial accident, or a terrorist’s suitcase bomb would endanger up to seven million people. (p. 2)

Target reduction would help limit the potential destructiveness of the chemical industry. “By reducing the size of the concentrations of hazardous materials, and reduce their toxicity and potential for fires and explosions,” Perrow argues, “terrorist acts would have less effect,” as would industrial accidents and incidents by natural hazards. (pp. 176-77)

The Next Catastrophe extends this analysis to three other infrastructure sectors: nuclear power plants, the national electric power grid, and the Internet. Each of these case studies is rich in detail, engagingly written, and tied to specific policy recommendations. But what is really new here? Plenty, if we compare Perrow’s proposals with the critical infrastructure plans and accompanying

annexes issued by the Department of Homeland Security and other federal departments.

Rail transportation offers a case in point. *The Next Catastrophe* offers an array of specific proposals to reduce the casualties that might be caused by rail transportation of chlorine and other toxic chemicals, including keeping trains that carry such chemicals away from major urban areas, and reducing the volume of chemicals carried in individual shipments. None of those proposals are included in the *Freight Rail Modal Annex of the Transportation Systems Sector-Specific Plan* issued by the Department of Homeland Security.⁴ The *Rail Annex Plan* notes that industrial accidents or terrorist attacks on chemicals freight cars could cause “devastating and lethal consequences.”⁵ The plan offers a handful of proposals to reduce that potential devastation, including the establishment of secure storage areas for rail cars carrying toxic materials, expediting their movement, and minimizing the number of unattended, loaded tank cars holding such materials. (p. 6) These recommendations fall far short of those proposed by Perrow, however, and would be less costly in the near term and less disruptive to the rail industry’s ongoing operations.⁶

I cannot compare Perrow’s proposals for nuclear power plant and power grid infrastructure sectors with their counterpart U.S. sector-specific plans, because those plans (along with an additional eight of seventeen total plans and annexes) are classified “For Official Use Only.” Only one other unclassified plan covers an infrastructure sector that *The Next Catastrophe* examines as a case study: the *Information Technology Sector-Specific Plan*. Here, the gap between Perrow’s recommendations and those endorsed by the federal government are even wider than in rail security. Most notably, *The Next Catastrophe* proposes to reduce the dominance and “monopoly power” of the Microsoft Windows operating system, which he argues constitutes the key source of vulnerability for the Internet. No such recommendation is included in the *Information Technology Sector-Specific Plan*.⁷

That is hardly surprising. In the *National Infrastructure Protection Plan*, the Bush Administration has emphasized the need for the federal government to partner with industry in developing sector-specific plans.⁸ The *Information Technology Plan* notes that Microsoft Corporation will help federal officials build collaborative policies, strategies, and security efforts to advance information security.⁹ The *Rail Annex Plan* states that federal officials will continue to build “strong partnerships” with the private sector to “address the common vision of security in the Freight Rail Sector.” The *Plan* specifies that DHS and the Department of Transportation will coordinate with sixteen major railroad corporations and industry lobbyists such as the Association of American Railroads.¹⁰

Of course, is difficult to imagine how effective, practical plans to secure rail transportation could be devised without the active participation of the railroad companies themselves (or, indeed, the owners of chemical plants and other privately-held critical infrastructure). Moreover, as Perrow notes, industry has spent considerable money to lessen its vulnerability. The American Chemistry Council, for example, has played an active role in promoting safety among its

members, and reports that its members have spent two billion dollars on safety in recent years. (p. 190)

The Next Catastrophe argues that despite such spending, industry-led efforts to reduce infrastructure vulnerability will remain inadequate. Because spending on security hurts the bottom line of industry, at least from the near-term perspective of shareholders and many corporate executives, and because market forces continue to encourage dangerous concentration in the chemical industry and many others, Perrow argues that the private sector cannot be *relied* upon to remedy the vulnerabilities that he has identified. (pp. 32-33) “It will take tough legislation to capture the attention of the chemical industry,” he argues, and Congress will need to impose much more stringent regulations on such industries to reduce the dangers they pose.” (p. 200) Therein lies the problem. Perrow emphasizes that the chemical industry “is so well situated with their massive campaign financing [of congressional candidates] that it will be difficult to get Congress to act.” (p. 200)

ELECTORAL INCENTIVES AND VULNERABILITY REDUCTION

The influence that industry exerts over Congress lies at the heart of a larger critique *The Next Catastrophe* offers, of the U.S. electoral system and the effects of that system on efforts to reduce infrastructure vulnerability. In each of the sectors that Perrow examines, he finds that industry has effectively lobbied Congress to weaken the regulations imposed on those sectors and head off the vulnerability-reduction efforts that he recommends.¹¹ According to Perrow, the source of that lobbying influence lies in the need for legislators to raise vast amounts of funding for media advertising and the ability of industry to provide for that funding. The result of congressional dependence on such campaign contributions: “Every attempt to reduce our vulnerabilities will be compromised by our flawed electoral system.” (p. 315)

To remedy this root cause of failure, *The Next Catastrophe* calls for structural change in the U.S. electoral system. In particular, Perrow advocates legislation to reduce the reliance of congressional candidates on industry campaign contributions; this would weaken the stranglehold that he views industry as exerting over vulnerability-reduction issues. Perrow argues that “Full public financing of campaigns or at least serious spending limits, is probably the most important reform that could lead to the changes needed to reduce our vulnerability that I have been advocating.” (p. 316)

Despite the absence of such far-reaching electoral reform, however, Congress has recently enacted regulatory changes in the face of initial industry and Bush Administration opposition. Regulatory efforts in the chemical sector have been especially notable and contentious. Perrow notes that for the five years preceding the publication of his book, Congress repeatedly enacted legislation to limit or strip the ability of states to impose regulations on industry stricter than those adopted by the federal government. The resulting federal preemption of state standards helped industry ward off tighter regulation, especially as the Bush Administration and Congress weakened federal-level standards. Perrow writes that “the federal floor, below which states cannot fall,” has been replaced by “a federal ceiling, below which they must operate.” (pp. 317-18) State leaders in New

Jersey and other states with heavy concentrations of chemical plants and toxic materials storage sites decried such federal preemption and demanded the right to enact regulations that would protect their own citizens' health and safety. DHS rejected their demands and issued draft regulations in December 2005 that gave the Department the authority to pre-empt state laws.¹²

The House and Senate have now voted to overturn that authority. In the summer of 2007, months after publication of *The Next Catastrophe*, both the House and Senate adopted provisions to prevent the federal government from preempting stricter chemical industry regulations adopted by states. The Bush Administration and chemical industry lobbyists were strongly opposed to the initial congressional effort to bar federal preemption in the chemical sector. As Senator Frank Lautenberg (D-NJ) crowed when the Senate approved legislation permitting stronger state standards, "We fought the chemical industry lobbyists and won."¹³

How did that happen? Part of the explanation lies in the 2006 shift of control of Congress from Republicans to Democrats, and the attendant shift in control over the committees (and in the House, a broader legislative agenda) critical to advancing regulatory legislation. In the Senate, however, the margin of Democratic control is razor thin. My hypothesis is that Lautenberg and his allies prevailed not by making partisan appeals to his colleagues, but by framing chemical industry regulation as an issue critical to national security. Lautenberg gained lobbying support for his legislative effort from interest groups far beyond those associated with national security. Environmental groups such as the National Environmental Trust and workers' safety associations such as the New Jersey Work Environment Council, avidly backed Lautenberg's effort.¹⁴ In his remarks to his Senate colleagues, however, Lautenberg stressed the importance of tighter chemical industry regulations as essential for national security and (after the Senate approved his initiative) declared that legislators had "put national security ahead of special interests."¹⁵

The battle over federal preemption is not over. As this review goes to press, the House and Senate have yet to hammer out the differences in their proposed language, and President Bush may still veto the final bill sent for his signature. Further research is also needed before accepting the hypothesis that framing preemption as a security issue was critical to the success of Lautenberg and his allies. Already, ample evidence exists that the administration and its Republican allies have successfully "securitized" issues (that is, framed them as essential to national security) across a broad range of policy realms and helped accomplish policy objectives that they had failed to achieve prior to 9/11.¹⁶ Federal preemption in chemical industry regulation suggests that securitization has become a bipartisan, two-way street. Democrats, as well as Republicans, can wrap their favored issues in the mantle of homeland security to accomplish objectives that were heretofore out of reach. The vulnerability-reduction proposals that Charles Perrow so effectively advocates may well benefit in the process, as traditional health and safety concerns become part of an all-hazards approach to protecting the United States.

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¹ Recent books on U.S critical infrastructure and population protection include Clark Kent Ervin, *Open Target* (New York: Palgrave, 2006); Stephen Flynn, *America the Vulnerable: How Our Government is Failing to Protect Us from Terrorism* (New York: Harper Collins, 2004), and *The Edge of Disaster* (New York: Random House, 2007); Ted Lewis, *Critical Infrastructure Protection in Homeland Security* (Hoboken, N.J.: John Wiley and Sons, 2006); and Richard A. Posner, *Catastrophe: Risk and Response* (New York: Oxford University Press, 2004).

² Charles Perrow, *The Next Catastrophe: Reducing Our Vulnerabilities to Natural, Industrial, and Terrorist Disasters* (Princeton, NJ: Princeton University Press, 2007), 1.

³ Publicly available sector-specific infrastructure protection plans can be accessed at http://www.dhs.gov/xprevprot/programs/gc_1179866197607.shtm. Note, however, that ten of the seventeen sector-specific plans issued by DHS and other federal departments are classified "For Official Use Only," and unavailable to the public.

⁴ U.S. Department of Homeland Security, *Freight Rail Modal Annex Transportation Sector-Specific Plan* (Washington, D.C.: Department of Homeland Security, May 2007). [www.dhs.gov/xlibrary/assets/Transportation Freight Rail Modal Annex 5 21 07.pdf](http://www.dhs.gov/xlibrary/assets/Transportation_Freight_Rail_Modal_Annex_5_21_07.pdf).

⁵ *Ibid.*, 2-3.

⁶ Of course, the *Freight Annex Plan* is not the only source of federal planning guidance to the rail industry on security-related initiatives. In particular, the *National Rail Safety Action Plan* (issued by the Department of Transportation and its federal railroad administrations) proposes a broad array of security and accident-reduction programs. Again, however, they fall well short of the measures Perrow recommends. For an overview of those initiatives, see Michael Haley, Deputy Chief Counsel, Federal Railroad Administration, *Testimony before the Subcommittee on Transportation Security and Infrastructure Protection, Committee on Homeland Security*, U.S. House of Representatives, Hearing on "Update on Federal Rail and Public Transportation Security Efforts," U.S. Congress, 6 February 2006, 1-16, homeland.house.gov/SiteDocuments/20070206172402-34557.pdf.

⁷ U.S. Department of Homeland Security, *Information Technology Sector-Specific Plan* (Washington, D.C.: Department of Homeland Security, May 2007). www.dhs.gov/xprevprot/programs/gc_1179866197607.shtm

⁸ *National Infrastructure Protection Plan* (Washington, D.C.: U.S. Department of Homeland Security, 2006), 26-7, 754-5. http://www.dhs.gov/xprevprot/programs/editorial_0827.shtm

⁹ *Information Technology Plan*, 12-13.

¹⁰ *Freight Annex Plan*, 6.

¹¹ See Perrow, *The Next Castastrophe*, 126-7, 190-4 and *passim*.

¹² Eileen Sullivan, "Senate Passes Bill Allowing States to Trump Feds on Chemical Security Standards," *CQ Homeland Security*, March 29, 2007.

¹³ *Ibid.*

¹⁴ Chris Strohm, "Senate Bill Includes Disputed Security Provision," *CQ Homeland Security*, March 22, 2007, and Matthew Berger, "DHS Unveils Chemical Security Regulations Allowing States to Impose Stricter Standards," *CQ Homeland Security*, April 2, 2007.

¹⁵ Strohm, "Senate Bill Includes Disputed Security Provision."

¹⁶ The most notable example of such securitization lies in the realm of federal labor regulations. See Douglas A. Brook and Cynthia L. King, "Civil Service Reform as National Security: The Homeland Security Act of 2002," *Public Administration Review* (May-June 2007): 399-407.