December, 2010

Between Market and State: Directions in Social Science Research on Disaster

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Governing after Crisis: The Politics of Investigation, Accountability, and Learning. Edited by Arjen Boin, Allan McConnell, and Paul 'T Hart. New York: Cambridge University Press, 2008. 336p. $32.99.

Learning from Catastrophes: Strategies for Reaction and Response. Edited by Howard Kunreuther and Micheel Useem. Upper Saddle River, NJ: Wharton School Publishing, 2010. 352p. $37.99.

The Next Catastrophe: Reducing Our Vulnerabilities to Natural, Industrial, and Terrorist Disasters. By Charles Perrow. Princeton: Princeton University Press, 2007. 388p. $29.95.

Developed and developing nations alike face low-probability but high-consequence exogenous shocks, including ice storms, chemical spills, terrorist attacks, and regional blackouts. Recently, "natural" disasters have dominated the airwaves; mega-catastrophes that claim more than 1,000 lives have become an almost yearly occurrence. In 2010, the Haiti and Chile earthquakes killed more than 200,000 people between them and felt all too familiar to many observers in the West. Before them were Cyclone Nargis in Burma, which took 130,000 lives in 2008; Hurricane Katrina, which killed more than 1,500 New Orleans residents and left 80% of the city flooded in 2005; and the Indian Ocean tsunami, which claimed roughly a quarter of a million lives in India, Indonesia, Sri Lanka, and Thailand in 2004.

Scientists emphasize that the frequency and intensity of disasters will continue to increase as the effects of global warming—such as rising sea levels and hotter temperatures—become more tangible (Hoyois et al. 2007). Anthropogenic climate change will cause more periodic flooding of coastal urban areas (whether Jakarta, Mumbai, New Orleans, or Rio de Janeiro) and more deaths from extended periods of extreme heat (such as the July 1995 heat wave that

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claimed 525 victims in Chicago and the August 2003 heat wave that killed close to 15,000 across France). Such deaths, damage, injury, and crisis—whether expected or not—bring political consequences. Catastrophes can shift participation venues for survivors (Sinclair, Hall, and Alvarez 2009), alter legislative priorities (Birkland 2006), bring down popular governments in democratic societies, and increase the likelihood of regime changes in developing nations (Albala-Bertrand 1993).

Given the ubiquity of crisis and its relevance to us both as citizens and scholars, we should heed Peter Haas's call to create and disseminate "usable knowledge" about disasters—knowledge that is both accurate and politically tractable (2004, 572). Social scientists possess deep knowledge of what has gone wrong in disasters, recognizing that the negative effects of disasters are concentrated in the most vulnerable populations—the poor, elderly, single mothers, minority groups, and the infirm (Cutter and Emrich 2006; Cutter and Finch 2008; Evans 2001, 138; Gill 2007). However, scholars have been less effective at providing theoretical frameworks for evaluating disaster recovery and at disseminating practical recommendations to government officials. The three books reviewed in this essay sit at the intersection of social science and disaster scholarship; two of them provide theoretical paradigms for mitigation and risk management while the third seeks to predict political outcomes following catastrophe. Their structures reveal a single-minded focus on the state and the market as the core mechanisms for developing both disaster-resistant societies and recovery schemes.

After reviewing their contributions, I propose a new disaster mitigation and recovery paradigm centered on social resources and social networks, rather than on states and markets. Social science has underscored social capital's role in creating effective governance structures (Putnam 1993, 1995, 2000) and common-pool resource-management mechanisms (Ostrom

1990), determining health and wellness outcomes (Christakis and Fowler 2007; Curtis et al. 2010) and lowering crime (Lee and Bartkowski 2004). Rather than centering recovery plans on external resources or governmental authorities, my approach builds on this growing body of research to illuminate the internal characteristics of the affected community as a critical factor in resilience. Neighborhoods and wards with deeper reservoirs of social capital can effectively mobilize, coordinate, and overcome collective-action problems to better recover after catastrophe. As social capital—like other types of capital—can be increased through both local activities and external interventions, decision makers should seek to increase levels of trustworthiness and connection in susceptible communities. As in other endeavors, though, social capital acts like a "double-edged sword" (Aldrich and Crook 2008) in that it can bring with it negative externalities for peripheral groups. Scholars and decision makers alike need to reorient their thinking toward the social networks within affected and vulnerable regions.

Making Political Hay: Political Responses to Crisis

Arjen Boin, Allan McConnell, and Paul 'T Hart's edited volume investigates why some governments gained credibility and popular support following crises whereas others found themselves out of office at the next election. It also highlights why certain crises altered standard operating procedures for some administrations—the 9/11 attacks, for example, brought about an "overhaul of the U.S. intelligence sector" (p. 5)—while others resulted in the status quo (such as the collapse of a poorly constructed banquet hall in Jerusalem, which left 23 dead and 400 wounded but did not alter regulation of the Israeli construction industry). Focused on the "course and outcomes of crisis-induced politics and governance" (p. 288), Governing after Crisis defines a common framework for a number of case studies on postevent political outcomes. The

contributors envision three potential outcomes for political leaders: *elite reinvigoration* (as seen with Mayor Rudolph Giuliani following the 9/11 terrorist attacks), *elite escape* (as the Norwegian government did following its uneven attempts at repatriating victims of the Indian Ocean tsunami), and *elite damage* (as observed with the case of Prime Minister José María Aznar in Spain following the 3/11 Madrid bombings). Elected officials who wish to stay in office must struggle with close surveillance from highly critical media outlets and their political opponents over cause and blame; the authors describe these fights as "contests between frames and counterframes" (p. 286). Factors that can influence the outcome include the style of leadership (George W. Bush, for example, is described as having low sensitivity and a limited need for information; p. 43), the scope of the crisis, the historic record of leaders (that is, their reputation and credibility among the wider public), the nature of risk, the political context, and stakeholder pressure (pp. 19, 220).

The case studies throughout the volume use a variety of methodologies—including content analysis, process tracing, and quantitative time series models—and multiple sources of data—ranging from interviews to archival research—to track the factors that affect political leaders and organizations. These studies work well because each chapter brings at least two cases structured as a pairwise (or occasionally trichotomous) comparison; hence, there is a robust context for checking causal mechanisms. One chapter centers on the electoral downfall of Prime Minister Aznar's Popular Party in Spain following the March 2004 train bombings, which Aznar initially blamed on the ETA (the Basque separatist movement) despite a lack of clear evidence. While he "doggedly kept with the ETA narrative" during the investigation that followed the tragedy (p. 73), the opposition parties used new technologies, such as text messaging services and flashmobs (demonstrations that are quickly organized solely through communication via the

Internet), to successfully frame the event as one caused by Spain's support for the Iraq war (p. 82). Another study shows how the August 2002 floods in Germany brought about increased support for the incumbent coalition of Social Democrats and Greens; here, symbolic images of the recovery work carried out by the administration—more than deliberate attempts at framing their responses—helped the government come away from the crisis more solidly in power (p. 107). One chapter describes how the governments of Sweden, Finland, and Norway sought to repatriate their citizens in Southeast Asia following the 2004 Indian Ocean tsunami; the Swedish government suffered more criticism for its rescue attempts than other Scandinavian nations. The authors surmise that this occurred because Swedish leaders faced a larger crisis (with 30,000 citizens trapped abroad) than did neighboring countries.

The editors do an excellent job in the concluding chapter of tying together the various case studies into a theoretical framework because authors were conscientious about referencing it throughout their empirical studies. The different "shadows" cast by crises—whether *incomprehensible*, such as the 9/11 attacks and the uncovering of a serial killer in Belgium; *mismanaged*, such as the U.S. government's response to Hurricane Katrina; or *agenda setting*, such as the near-meltdown at Three Mile Island—lead to different outcomes for incumbent politicians (pp. 289–91). The authors also look at the factors that influence whether governments learn through fine-tuning (incremental changes in existing policy), policy reform ("key changes in entrenched policies and policy sectors"; p. 296), or paradigm shift (a new approach to the problem). They propose that the closer crises fall to elections, the more severe the blame games that follow, and that the shorter the tenure of officials before the event, the less likely they are to be damaged by events. Finally, given that most governments establish fact-finding commissions following crises (such as the Rogers Commission following the space shuttle Challenger

disaster), the volume suggests three paradigms that influence expectations and outcomes. A *just world* approach, where the committee is independent, brings more critical findings and higher political and policy impact. The *garbage can* paradigm underscores that "anything can happen" following a catastrophe, while the *perverse effects* approach sees politics "as such a tough and mean game that it devours crisis committees trying to operate" (p. 308).

With clearly defined case parameters and hypotheses, this book will set the research agenda for post-crisis politics in the future. While this volume focuses on ex post attempts to construct narratives of responsibility and blame, the next two books concentrate instead on altering citizen and decision-making behaviors and policy ex ante.

Mitigation and Risk Management

Howard Kunreuther and Michael Useem's edited volume grew out of meetings at the 2008 World Economic Forum's Council on Mitigation of Natural Disasters. In it, experts give overviews of a variety of fields, ranging from the global recession to risk analysis. One chapter discusses climate change while another walks readers through the policy and institutional changes in China's emergency management system. A contribution on pandemics and catastrophic biological events drives home the point that small-level decisions—such as the overprovision of antibiotics to patients and livestock—can have devastating consequences on ecosystems. On the basis of documented cases of bioterrorism and the rapid, global spread of infectious diseases, the authors of the chapter put forward a plan for a new international organization that would "minimize the impact of infectious diseases on national and international health" (p. 231). Another stand-out contribution underlines leadership principles that have guided corporations such as American International Group (AIG) to failure and the

pharmaceutical firm Merck to success. Long-term strategic thinking assisted the drug manufacturer in investing in a poorly profitable but vital medicine that essentially cured river blindness, a disease that strikes some 20 million people in West Africa. Through doing so, Merck improved its reputation (and perhaps as a result was able to weather future storms over the problems with Vioxx), recruited top scientists for future projects, and built its name in the developing world. On the other hand, overconfidence and lack of recognition of behavioral biases doomedAIG, which once sat among the 20 largest publicly traded firms in the world.

Unlike the Boin, McConnell, and 'T Hart volume, *Learning from Catastrophes* suffers from the lack of a coherent framework that could have organized its disparate chapters. A number of authors provide similar overviews of the behavioral and cognitive biases that preclude people from undertaking strategic, long-term strategies, pointing out that decision making is affected by our bounded rationality (p. 70), status quo bias (p. 90), and the fact that many of us "prioritize immediate gratification" and "understate risks that we voluntary assume" (p. 78). Contributors underscore a number of seemingly "irrational" choices, such as the empirical fact that those few disaster survivors who invest in flood or disaster insurance do so only after a catastrophe, but not beforehand. All evidence points to the fact that "individuals are likely to deviate considerably from the rational model [of decision making], often employing the use of mental shortcuts" (p. 85).

Regrettably, the book has no broader framework and the chapters are not well integrated. A concluding chapter that drew broader lessons from the work done by the contributing scholars would have strengthened the book's messages; unfortunately, it ends without one. Further, some of the essays stretch the very definition of "catastrophes." Should financial crises that result from the necessary bursting of a real estate bubble, mismanagement, and slack regulation really

be lumped in alongside cyclones, tsunami, and widespread flooding? Most definitions of "crisis" center on events that break down the standard societal order and overwhelm the capacity of authorities to respond; asset price collapses and bank failure do not disrupt an entire society in the ways that a biological attack or hurricane might. Perhaps the most consistent and relevant message threaded throughout these chapters is that in the private and public sectors, decision makers underinvest in mechanisms that could dampen the effects of future disasters. To counter this trend, authors propose more clearly transmitting risks about potential crises (p. 62), "conscientious assessment of current risk conditions" (p. 98), alternative risk transfer mechanisms such as industry loss warranties and catastrophe bonds (p. 146), and investments in multihazard warning systems for poorer countries (p. 119). A number of essays overlap in advocating that decision makers should "eliminate or reduce the probability of the event or reduce its negative impacts if it does occur" (p. 24), a process known as risk or hazard mitigation. It is precisely this approach that Charles Perrow's newest book advances.

The Next Catastrophe builds on the premise that "we cannot expect much from our organizations" (p. 54); given that they are inevitably inadequate for the job (p. 291), Perrow predicts that they will often fail due to deliberate, industrial, or natural disaster (p. 3). To drive home his point, he devotes two chapters to the Federal Emergency Management Agency's organizational failures, arguing that FEMA "could screw up a two car parade" (as Representative Norman Mineta [D-CA] waxed poetically; p. 57). This is because FEMA had become a "dumping ground" for political appointees (p. 50) and faced the simultaneous problems of high turnover, low morale and lack of coordination (p. 117). As such, rather than ignoring the inevitable crises on the horizon or waiting until after the disaster for the national government to

intervene, the author posits, planners should work to "reduce the size of vulnerable targets" (p. 1), which exist in "energy, populations, economic, and political power" (p. 6).

Perrow underscores that the concentration of population in under-sea-level cities, the tremendous number of computers controlled by Microsoft's complex and tightly coupled operating systems, and the bottlenecks of the deregulated electric power industry create unnecessary and preventable hazards for society. His argument about the need to reduce the size of our vulnerable "targets" seems to make a lot of sense (what he calls the "all targets approach" in contrast with the Department of Homeland Security's "all hazards approach"), even though very few of his recommendations (including ones to alter electoral systems to reduce the regulatory capture power of corporations) are politically feasible. He argues for a New Orleans one-quarter the size of its pre-Katrina population (p. 28), reduction in the size of our inventories and toxicity of hazardous materials (p. 205), and reduction of the size of organizations that could cause harm when they fail (p. 295). The smaller the flood plain–located city, hazardous facility, or amount of political power in one place, he argues, the fewer the consequences if catastrophe damages that unit. He pushes for the creation of flexible, decentralized systems in the private and public sectors—metaphorically modeled on the Internet and theoretically based on his earlier research on networks of small firms—which can be coordinated, reliable, and efficient.

Perrow forces us to think creatively about decentralizing physical and political infrastructure to reduce vulnerability to likely future crises. As I will discuss shortly, I agree that the core mechanisms for building resiliency should be moved from large governmental agencies and organizations to more decentralized agents—specifically, local communities. However, deeper reflection reveals flaws in this reasoning and the inability of decision makers to take it seriously as a broader plan of action.

Powerful economic and social forces push companies to concentrate their hazardous projects in particular areas. Scholars of large-size facilities such as nuclear power plants have pointed out that decision makers regularly site such projects in "clusters," so that the Japanese village of Kashiwazaki-Kariwa in Niigata Prefecture holds seven nuclear power plants and the Palo Verde nuclear complex in Arizona has three reactors onsite producing 1.2 gigawatts of power. The 80-mile stretch of the Mississippi River from New Orleans to Baton Rouge, known as "Cancer Alley," has more than 40 gigantic petrochemical companies located often side by side. Why cluster such facilities? Authorities find it easier to purchase tremendous tracts of land—up to 4,000 acres in many cases—early and then construct multiple facilities in the same spot over many years (Aldrich 2008a). Purchasing additional greensfields sites—that is, land that has not been used for such "public bads" in the past for planned nuclear reactors, airport runways, or petrochemical complexes—would require decades of negotiations with multiple civil society groups, which could easily end in stalemate. Firms themselves, as Perrow points out (p. 182), recognize that economies of scale mean that "a doubling of plant capacity increases the capital costs by only about 60 percent, so bigger is cheaper." Given historical and current opposition to nuclear power, a growing awareness of the hazards of chemical and industrial waste, and the incredible capital costs necessary to plan, site, and construct such divisive facilities, "reducing" their concentration by building more, smaller versions of them seems unlikely.

Next, while Perrow is certainly correct in labeling terrorists as networked and decentralized, his underlying assumptions about their targeting strategies may not reflect empirical reality. The goal of reducing vulnerability to terrorist attack is premised on the idea that most terrorist attacks target large-scale facilities. Instead, terrorists choose targets because

of ease of access, number of victims, and familiarity with the target, not the size of the installation. Popular terrorist targets in democratic countries—such as England, Spain, Israel, and Russia—have been public transportation networks. Najibullah Zazi and his two codefendants, for example, stand accused of plotting to bomb New York subway trains at Times Square and Grand Central Stations. Taking Perrow's advice seriously, should we compel subway riders in the Big Apple to take alternative routes when rider density reaches a certain level? Or force the Metropolitan Transportation Authority to construct multiple routes to the same stations? Research on terrorism in Spain emphasizes that the majority of ETA attacks are "generic"—targeting random members or outposts of security forces—and not "selective," in which targets are chosen deliberately for their features (De la Calle and Sanchez-Cuenca 2006, 10). Further, the concentration of vulnerable populations, such as tourists in an area, does not lead to more terrorist attacks than areas with fewer such targets; rather, an attack anywhere in a country is sufficient to fulfill the attackers' goal of damaging the tourist economy (Enders and Sandler 1991, 50). Data from more than 3,000 municipalities in Spain showed that a high concentration of economic power or a tourist economy in a town did not increase the likelihood that the locality would be targeted; secondary sources showed that terrorists are recruited and perpetrate their attacks locally (Cleven 2010).

Finally, it is difficult to judge if Perrow's overall recommendation of minimizing targets will actually work, as the book presents no empirical evidence about the outcomes after such policy interventions. For example, we cannot tell if firms using decoupled, open-source software such as Linux face fewer security risks and intrusions than those running on Windows. The author states that in the chemical industry, firms substituted less toxic chemicals into their production lines and, hence, reduced the *potential* consequences of disasters (p. 208), but we see

no data about whether disaster outcomes were actually mitigated by minimizing the size of concentration of toxic chemicals, nuclear waste, terrorist targets, or population in flood sizes. Curiously, he makes his argument despite his own criticism of past advice givers that "it is easy to recommend actions as if they were costless" (p. 89), as well as his recognition that it is primarily market forces that have created concentrations of power, population, and so on (p. 300). Perrow admits that reducing the concentration of chemical industry facilities and nuclear power plants is simply not possible (p. 304), and seems to settle for reducing population in risky areas and reducing the size of concentrations of "power, telecommunications, chemicals, and transportation." While I favor reducing our vulnerability through approaches that favor local decision making, and believe that mitigation can be less costly than ex post recovery, his policy recommendations do not engage existing academic studies and, on the whole, seem unfeasible.

Between Market and State: Social Networks

All three books reviewed here invoke models of crisis in which the main actors are elected politicians and corporations (including the media and manufacturers) who act against the backdrop of the catastrophe itself. The market and the state stand out as the core forces at work, and the authors' recommendations and frameworks seek to alter behaviors through (dis)incentives and new legislative frameworks. Much ink has been spilled on new flood insurance programs and business disaster plans. However, such approaches overlook research on the role of social capital—the "resources embedded in one's social networks" (Lin 2008, 51)—in pre- and postdisaster situations. Rather than imagining that disaster mitigation and recovery are functions of characteristics external to the community—such as aid provided by the government or nongovernmental organizations, the amount of damage from the crisis, or the competency of local and national political leaders—scholars should recognize that the level of connectedness

and cohesion within the neighborhood is critical to recovery. Like two individuals exposed to the same disease, recovery from catastrophe may have more to do with the quality of the host than the nature of the illness (Aldrich 2008b).

A number of qualitative and small-n studies have underscored the potential role of social capital in explaining the speed of postcrisis recovery (Adger et al. 2005; Nakagawa and Shaw 2004). Shigeo Tatsuki (2008), for example, showed that individuals who developed deeper ties to, and more actively participated in, their local communities reported higher levels of personal recovery postcatastrophe. Russell Dynes (2005) has suggested that social capital may be a necessary element for creating resilience after disaster. The placement of temporary FEMA trailers in New Orleans after Hurricane Katrina was strongly correlated with neighborhood levels of social capital (Aldrich and Crook 2008). New studies involving both qualitative and quantitative methods demonstrate that higher levels of social capital bring with them better mobilization, coordination, and trust, and these in turn lead to more rapid and effective recoveries (Chamlee-Wright 2010; Kage 2010).

Three specific mechanisms allow areas with more social capital to implement a faster recovery following a disaster. First, social ties can serve as "informal insurance," allowing victims to draw upon ready-made support networks for financial, physical, and logistic guidance (Beggs, Haines, and Hurlbert 1996; Chamlee-Wright and Storr 2009). Disaster victims have used social network members "to reach support providers outside the core network" (p. 615); that is, they have found help through friends of friends (Hulbert, Haines, and Beggs 2000, 599). More broadly, signals from civil society—such as "who is coming back when and what services will be provided"—are critical for the decision-making processes of survivors, and these cannot be replaced by government pronouncements (Chamlee-Wright and Rothschild 2007, 2). Social

networks thus provide essential information, financial and administrative support, and guidance through weak and strong ties (Granovetter 1973).

Second, more politically active and connected communities can more effectively mobilize to demand and extract resources from authorities (Olson 1965). Neighbors with greater levels of trust share information about bureaucratic procedures and upcoming deadlines, monitor public space to prevent dumping, and deter looting in their community. Following the 1995 Kobe earthquake, for example, even as officials sought to clarify rebuilding plans, local residents in several neighborhoods organized to plan the layout of their blocks, which would involve shared, cooperative housing (Olshansky, n.d.). In their comparative study of postearthquake rebuilding in Gujarat, India, and in Kobe, Yuko Nakagawa and Rajib Shaw (2004, 17) argued that individuals living in areas with higher levels of social capital were more satisfied with the process of town planning. Better organized and mobilized regions can more successfully access the loans, supplies, and other resources that may assist their rebuilding (DeFilippis 2001). Alternatively, citizens bound by fewer ties to their neighbors are more likely to engage in illegal and disruptive acts that can impede recovery efforts (Lee and Bartkowski 2004).

Finally, denser networks raise the cost of "exit" from a community—moving elsewhere—and increase the probability that residents will use "voice"; following a disaster, such residents are more likely to articulate their demands to authorities and work together to overcome obstacles to recovery (Hirschman 1970). In an area with high levels of social capital, local residents are more embedded in the locality and have more at stake should the neighborhood not recover successfully. Deeper social ties act as a barrier to exit—one of the potential responses to a crisis—and make it more likely that residents will work for a solution. Areas with fewer voices, which are plagued by low community involvement, will rebuild more

slowly if they rebuild at all (Kamel and Loukaitou-Sideris 2004; Nakagawa and Shaw 2004; Yasui 2007, 227).

As in other fields such as governance and public participation, however, high levels of social capital do not always function solely as a "public good" that distributes benefits to all (Berman 1997; Chambers and Kopstein 2001). Research on postdisaster recovery in a variety of contexts—including the 1923 Tokyo earthquake, the 2004 Indian Ocean tsunami, and the 2005 Hurricane Katrina—has shown that social capital acts as a "Janus faced resource" (Szreter 2002). Under certain circumstances, it benefits many survivors, but marginalizes others. In Tamil Nadu, India, following the tsunami, for example, while villages with institutionalized social capital in the forms of *uur panchayats* (caste/tribal councils) effectively connected to outside aid, survivors in those villages who were not members and had no connections received little, if any, help (Gill 2007). Many Dalits, women, and Muslims reported active discrimination during the recovery period as organized and connected ethnic groups blocked their progress (Louis 2005). In 1923 Tokyo, following the devastating earthquake that destroyed nearly half of the capital city of Japan, thousands of Koreans—an "out group" in mainland Japan—were targeted and killed by mobs acting on false rumors (Yoshimura 2004), while at the same time more mobilized communities displayed faster population growth rates (Aldrich 2008b). After Hurricane Katrina, many New Orleans communities recognized the need for temporary housing and FEMA trailers but simultaneously stigmatized these facilities, pushing them into less connected and coordinated neighborhoods (Davis and Bali 2008). Future research on social capital within disaster recovery must come to terms with its ability to further harm those already on the periphery of society while assisting those at its core.

With decision makers more likely to act after the fact, and politicians worried about the "blame game" after crises, governments regularly spend millions of dollars on the construction of sea walls, sand restocking for depleted coastal beaches, levees to hold back floodwaters, resident and house relocation, and other engineering projects. Research on social capital proposes a paradigm shift in public policy: Rather than pouring money into altering physical infrastructure (before or after a crisis), a more cost-effective policy may involve strengthening community ties (Aldrich 2010). Several cities in Japan, for example, have initiated programs that have been shown to increase community participation and trust by deepening the connections among residents (Doteuchi 2002; Lietaer 2004; Richey 2007), and field studies carried out in Nicaragua and in South Africa showed that programs can improve local trust and civic participation even in areas with low income and little education (Brune and Bossert 2009; Pronyk et al. 2008).

In the future, such low-cost policies may help communities around the world increase social capital and create the conditions for resilience before and after catastrophe. Social, not physical, infrastructure is the key to successful rebuilding. That it is also the foundation for more democratic political relationships is a truism that can never be repeated too often.

Notes

1 A number of scholars have pointed out that most so-called natural disasters or acts of God are better understood in the context of the human-based market and social forces that created the conditions for the tragedy (Steinberg 2000). Building cities in low-lying flood prone areas—and continuing to provide flood insurance for victims who stay in such areas—stands out as an avoidable hazard.

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