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June 2012

The Politics of Natural Disasters (Pre-Print)

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FORTHCOMING IN OXFORD BIBLIOGRAPHIES: THE POLITICS OF NATURAL DISASTERS

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INTRODUCTION

People around the world are far more likely to encounter death or harm because of mudslides, collapsed buildings, and flooding than front-page issues such as terrorism, riots, or insurgency. In response to the range of natural hazards, researchers of the politics of disasters have studied how individuals, communities, and states prepare for, respond to, and recover from catastrophes and crises. While some have defined disasters as events that cause 100 human deaths or injuries or $1 million in damage, they are more broadly understood as calamities that interrupt the routines of normal life and politics and cause widespread health and livelihood consequences. This working definition separates fender benders from city-wide flooding, but moving to further distinguish between “natural” and “man-made” disasters becomes quite difficult as political and social choices magnify the effect of these events, especially in the contexts

of increasing urbanization and anthropogenic climate change (see the Categorizing Disasters section within this article for more on this theme. Due to the broad effects of floods, tsunami, hurricanes, famines, earthquakes, and fires, scholars from all disciplines have written a tremendous amount on the issue. Writings on disaster and recovery date back to the earliest recorded history, including the Biblical story of a great deluge and the Sumerian narrative of Gilgamesh, and continue through the enlightenment with Voltaire's writings on the November 1755 Portugal earthquake and tsunami which destroyed much of Lisbon. Political scientists, sociologists, geographers, anthropologists, economists, and historians have studied disaster recovery, best practices in disaster response, the role of the government in rebuilding, and so forth. This annotated bibliography illuminates representative examples of the interdisciplinary work in this vast academic subfield. Most of the work that I have selected for inclusion comes from the end of the 20th century and early 21st century, but builds on the work of scholars such as Samuel Prince, who wrote about the 1917 Halifax harbor explosion three years later, and on mid-1950s and 1960s work sponsored by the National Academy of Sciences).

GENERAL OVERVIEWS

The texts in this section include some of the classics on issues of disaster outcomes, recovery, and community involvement. Dacy and Kunreuther's 1969 pioneering book focused on the 1964 Alaska earthquake, and, while intended to develop a comprehensive insurance system, set out an economic model of recovery based on historical evidence. Some scholars have seen the process of rebuilding home life and businesses as ordered and predictable (Haas et al. 1977), while other teams of scholars pictured communities as inherently resilient based on their quantitative data analysis (Wright et al. 1979). Rossi's 1993 text used more than 800 interviews conducted after an earthquake in southern Italy to struggle with broader sociological debates about structure and agency while Alexander 1993 hoped to bring together hard and social sciences into a single analytical framework. Peacock et al. 2000 showed how disasters interact with race, gender, inequality, and ethnicity in Miami-Dade County using integrated qualitative and quantitative methodologies and Alesch et al. 2009 used experiences from a large number of disasters to provide local community leaders and decision makers with a guide to long term recovery. Rodriguez et al (2006) bring together a series of subject matter experts on disaster-related topics from a variety of academic disciplines in a single volume.

Dacy, Douglas and Kunreuther, Howard. (1969). *The Economics of Natural Disasters: Implications for Federal Policy*. New York: The Free Press.

> Identifies various factors, such as the amount of damage from the disaster and the amount of aid provided by the government, which influenced the pace of recovery following the Alaska earthquake.

Haas, J. Eugene, Kates, Robert W., and Bowden, Martyn J., eds. (1977). *Reconstruction Following Disaster*. Cambridge, MA: MIT Press.

Looks closely at both business and family life reconstruction using data from the 1906 San Francisco earthquake, the 1964 Alaska earthquake, a 1972 flood in South Dakota, and the 1972 earthquake in Nicaragua.

Wright, James, Rossi, Peter, Wright, Sonia , and Weber-Burdin, Eleanor. (1979). *After the Clean-Up: Long-range Effects of Natural Disasters*. Beverly Hills, California: Sage.

Uses 10,000 census tracts and 3,000 counties to understand the effects of floods, tornadoes, and hurricanes from 1960 to 1970.

Rossi, Ino. (1993). *Community Reconstruction After an Earthquake: Dialectical Sociology in Action*. New York: Praeger.

With 821 interviews in 44 villages, the book is an ambitious effort that uses the recovery of households, villages, and provinces to advance broader sociological theories.

Alexander, David. (1993). *Natural Disasters*. New York: Taylor and Francis.

Interdisciplinary approach from sociological, natural science, and engineering perspectives on a wide variety of disasters, including fire, soil erosion, and volcanoes around the world.

Peacock, Walter, Morrow, Betty and Gladwin, Hugh, eds. (2000). *Hurricane Andrew: Ethnicity, Gender, and the Sociology of Disasters*. Miami: International Hurricane Center.

This book uses race, gender and ethnicity as core frameworks for understanding issues such as recovery outcomes, insurance settlements, and vulnerability using qualitative and quantitative data.

Rodriguez, Havidán , Quarantelli, Enrico L., and Dynes, Russell., eds. (2006). *Handbook of Disaster Research*. New York, NY: Springer.

A comprehensive treatment of of research in a variety of aspects of disasters and recovery, this interdisciplinary volume provides useful oversight of the field.

Alesch, Daniel, Arendt, Lucy, and Holly, James. (2009). *Managing for Long-Term Community Recovery in the Aftermath of Disaster*. Fairfax VA: Public Entity Risk Institute.

Written primarily for community leaders, local government officials, and mayors, this book brings together a wealth of findings on the recovery process with a strong emphasis on bottom-up planning and citizen involvement.

CENTERS AND DATA SOURCES

A number of university-based centers focus upon disaster research, preparedness, and disaster; many of these specialized institutions offer degree or certificate programs focused on disaster management while other centers work closely with local communities on pressing issues such as coastal erosion, flooding hazards, and rising sea levels. The University of Delaware Disaster Research Center has produced more than 600 studies in its 50 years of work and provides access to these and many other valuable resources online for free. The University of Colorado at Boulder Natural Hazards Center has hosted the annual Natural Hazards workshop for close to 40 years and sponsors a number of awards for cutting edge practices in the field. The University of Pennsylvania Wharton School Risk Management and Decision Processes has operated for 3 decades and engages a large number of research fellows to produce issue briefs, books, and working papers. Louisiana State University's Disaster Science and Management Program trains students, first responders, and engineers across the Gulf Coast on issues of vulnerability, construction practices, and resilience. With almost weekly training seminars, the University of Hawaii National Disaster Preparedness Training Center provides FEMA-certified classes on preparedness, response, and recovery in Hawaii and across the continental United States. Founded in 1988, the Texas A&M University Hazard Reduction and Recovery Center is a United Nations Collaborative Center which hosts the International Journal of Mass Emergencies and Disasters and carries out academic training along with outreach. The International Disaster Database from the Centre for Research on Epidemiology of Disasters, statred in 1988, seeks to rationalize decision making for disaster preparedness by maintaining one of the only open-source, international datasets on disasters, with data on more than 18,000 mass disasters to date.

University of Delaware Disaster Research Center[http://www.udel.edu/DRC/].

The Disaster Research Center website provides a gateway into the voluminous research produced by members of the center over the years (beginning with the pioneers Professors Quarantelli, Dynes, and Haas) along with connections with sociology and interdisciplinary undergraduate and graduate degrees in disaster-related fields.

University of Colorado at Boulder Natural Hazards Center[http://www.colorado.edu/hazards/].

Publisher of the Natural Hazards Digest, sponsor of the Annual Hazards Workshop, gateway to the Hazards Literature Library, and funder of the Quick Response Grant program, this center is a critical institution in the field.

University of Pennsylvania Wharton School Risk Management and Decision Processes Center[http://www.wharton.upenn.edu/riskcenter/].

Based in the Wharton School, the RMDPC produces regular reports on hazards and risk, runs a series of highly regarded seminars and conferences, and leads research on low probability, high consequence events.

Louisiana State University Disaster Science and Management [http://dsm.lsu.edu/].

Offering undergraduate and graduate degrees in Disaster Science and Management, and with a large number of faculty actively involved in post-Katrina and post-Rita field research in the area, this institution sits among the leading centers for disaster research.

University of Hawaii National Disaster Preparedness Training Center[http://ndptc.hawaii.edu/].

Working from an "all hazards" perspective, the NDPTC provides training to thousands of professionals in the field of hazards for island and coastal communities focusing on issues such as tsunami awareness, coastal flood risk reduction, and resilience.

Texas A&M University Hazard Reduction and Recovery Center (HRRC)[http://archone.tamu.edu/hrrc/].

As a United Nations Collaborative Center, the HRRC puts out cutting edge research, offers degrees in Environmental Hazard Management, and works with extension specialists to diffuse knowledge of natural and technological hazards.

EM-DAT[http://www.emdat.be/]

The International Disaster Database from the Centre for Research on Epidemiology of Disasters (CRED) is the world's leading provider of data on disasters around the world; with a searchable and downloadable database, this is an invaluable and free resource for disaster researchers.

COMPARATIVE APPROACH

Comparative analysis allows scholars to explain the variation across cases by illuminating broader patterns of factors, outcomes, and policies that would not be visible from studies of single cases (Garrett and Moore 2010). Dynes 1989 warned his colleagues about the dangers in reading uniqueness into single cases of disasters and advocated for cross-national and comparative research to improve the generalizability of their conclusions and the accuracy of their arguments. Olshansky et al. 1995 took an explicitly comparatively approach in their side-by-side studies of the Northridge and Kobe earthquakes. Similarly, Vale and Campanella's 2005 edited volume examined Mexico's 1985 earthquake alongside China's 1976 Tangshan earthquake, Tokyo's multiple recoveries, the Oklahoma City Bombing and 9/11 in Manhattan. Özerdem and Jacoby 2006 highlighted multiple types of vulnerability and the role of civil society organizations vis-a-vis the state in India, Turkey and Japan following the Gujarat, Marmara, and Kobe earthquakes. Savitch 2007 built a comprehensive, urban dataset from metropolitan areas

worldwide to highlight robust patterns in recovery process following disasters. These last four volumes would work especially well in undergraduate or graduate classes.

Dynes, Russell. (1989). Conceptualizing Disaster in Ways Productive for Social Science Research. Seminar on Research in Socio-Economic Aspects of Disaster, Bangkok, Thailand, March 22-24. Available at http://dspace.udel.edu:8080/dspace/bitstream/handle/19716/1231/WP80.pdf.

This paper sought to set a research agenda for social scientists working on the field of disaster, and argued that too much focus has been placed on Western nations and not enough on cross-national, comparative research.

Olshansky, Robert B., Johnson, Laurie A., and Topping, Kenneth C. (1995). **Opportunity in Chaos: Rebuilding After the 1994 Northridge and 1995 Kobe Earthquakes*[http://www.urban.uiuc.edu/faculty/olshansky/chaos/chaos.html]*. Web-published by Department of Urban and Regional Planning, University of Illinois, Urbana-Champaign.

With the goal of understanding the recovery after a catastrophic urban earthquake in the United States, this comparative study of Japanese and North American experiences looks at issues including property ownership and land tenure, financing, planning, and government intervention.

Vale, Lawrence and Campanella, Thomas, eds. (2005). *The Resilient City: How Modern Cities Recover from Disaster*. New York: Oxford University Press.

With 14 case studies, this edited volume looks at narratives of real and imagined disasters, symbolic dimensions of recovery, and political conflicts over recovery and resilience and would be ideal for an undergraduate seminar.

Özerdem, Alpaslan and Jacoby, Tim. (2006). *Disaster management and civil society: earthquake relief in Japan, Turkey and India*. London and New York: I. B. Tauris.

Illuminating the recovery processes in Kobe, Turkey and Gujarat, this book tackles theoretical questions of the relationship between civil society and the state while showing the ways in which historical events impacted the functioning of non-state actors

Savitch, H.V. (2007). *Cities in a time of Terror: Space, Territory, and Local Resilience*. M.E. Sharpe Publishers.

Using comparative data from Jerusalem, London, and New York alongside data on 1000 cities across the world, Savitch shows the resilience that cities under threat from terrorists have displayed over time.

Garnett, Jeffrey D. and Moore, Melinda. (2010). Enhancing Disaster Recovery: Lessons from Exemplary International Disaster Management Practices. *Journal of Homeland Security and Emergency Management* 7(1): 1-20.

Focuses on exemplary practices from United States international disaster management responses in cases including Bangladesh, Honduras, India, Mexico, Mozambique, and Vietnam.

CASE STUDIES OF INDIVIDUAL DISASTERS

Scholars have produced excellent, in-depth investigations of individual disasters over the past few decades, such as Klinenberg's 2005 study of the Chicago heat wave. Erikson's 1976 book on the aftermath of the 1872 Buffalo Creek flood in West Virginia, based on interviews and depositions from around 140 residents, focused on the ways in which the community had responded en masse to the event. Davis' 1998 book describes both past disasters and future hazards for the city of Los Angeles in his investigation of how natural disasters and sociopolitical choices intersect. Seidensticker's 1991 lyrical and meandering perspective on the cultural and social processes of rebuilding after the 1923 Tokyo Earthquake, which leveled nearly half of the city, is best paired with Clancey's 2006 interdisciplinary investigation of the same period in which he looks closely at the intersection of European science, engineering and architecture with indigenous Japanese practices and the hazards of earthquakes. Telford, Arnold, and Harth's 2004 book looked closely at the role of NGOs in building resilience during disaters. Kage's 2011 book used detailed case studies of voluntary organizations, such as the YMCA and judo clubs, across Japan along with large-N datasets of information on prefectural recovery to show how civil society proved a critical pillar in the rebuilding process after the destruction of WWII, guiding government recovery efforts and providing critical, bottom up information and coordination along the way.

Erikson, Kai. (1976). *Everything in Its Path: Destruction of Community in the Buffalo Creek Flood*. New York: Simon and Schuster.

This empathetic, anthropological approach to the coal mining community's disaster of 1972 was written when Erikson was employed by a law firm and able to draw on thousands of pages of transcripts for much of his evidence; despite its many awards, scholars have challenged its claims as being far from objective.

Seidensticker, Edward. (1991). *Tokyo Rising: The City since the Great Earthquake*. Cambridge, MA: Harvard University Press.

In what has been called an "elegy" to Tokyo, Seidensticker uses Japanese authors, poetry, literature and anecdotes to trace Tokyo's recovery after the 1923 earthquake.

Davis, Mike. (1998). *Ecology of Fear: Los Angeles and the Imagination of Disaster*. New York: Metropolitan Books.

Davis sees The City of Angels as a somewhat exceptional example of man's failure to engage in balance with nature; through mountain lion attacks, large scale wildfires, earthquakes, and other natural disasters, he traces how city planning collided with ecosystems nearby.

Klinenberg, Eric. (2002). *Heat Wave: A Social Autopsy of Disaster in Chicago*. Chicago: University of Chicago Press.

Investigation of the July 1995 heat wave when the heat index rose above 120 and more than 700 people succumbed to heat related deaths, especially those isolated, alone, and reluctant to depart their sweltering homes.

Telford, John, Arnold, Margaret, and Harth, Albert. (2004). *Learning lessons from disaster recovery: the case of Honduras*. Washington, D.C.: World Bank.

Focused on the 1998 arrival of Hurricane Mitch, and envisioning disaster recovery as a development issue, this study shows how many victims of the storm relied on social networks and remittances to survive in the aftermath.

Clancey, Gregory. (2006). *Earthquake Nation: The Cultural Politics of Japanese Seismicity, 1868–1930*. Berkeley: University of California Press.

This award-winning book shows how science, technology, and engineering altered the broader trajectory of state building following the Meiji restoration and Japan's developmental drive.

Kage, Rieko. (2011). *Civic Engagement in Postwar Japan: The Revival of a Defeated Society*. London and New York: Cambridge University Press.

Cleverly utilizing extensive cross-national and Japanese-based quantitative data alongside case studies of the YMCA and judo clubs in Japan, Kage demonstrates that a combination of compulsory national service along with pre-war civic activities created more mobilized and engaged citizens.

RECOVERY

As residents and companies seek to rebuild damaged homes, businesses, and lives, scholars have debated whether or not the process of recovery can be divided into easily identified periods or phases (Rubin 2009). Some scholars envisioned the process of post-disaster recovery as one which can be formally divided into clearly recognizable steps, as in Haas et al.'s 1977 work that argued for a logarithmic progression of response, restoration, reconstruction, and commemorative reconstruction (with each stage

taking 10 times longer than the previous one). Other scholars have strongly disagreed, such as Quarantelli's 1982 work that underscored the non-linear progress in housing post-disaster, and Berke and Beatley 1997 and Rubin 2009 which found little support for such phases across crises. Berke et al. 1993 similarly argued that there are no distinct phases in the recovery process, as did Bates and Peacock 1989, which underscored the social context as a key factor in the process of recovery; Neal 1997 pushed for a recasting of the recovery cycle approach using multidimensional, mutually inclusive phases which take the social context of recovery seriously. The field has reached some consensus that different social and demographic groups go through the recovery process at different speeds and that predicting recovery speeds may be impossible.

Haas, J. Eugene, Kates, Robert W. and Bowden, Martyn J., eds. (1977). *Reconstruction Following Disaster*. Cambridge: MIT Press).

With data drawn from both business and family recovery across four large scale disasters, this book set in place a research agenda seeking to trace the existence (or lack thereof) of a recovery cycle.

Quarantelli, E.L. (1982). *Sheltering and Housing after Major Community Disasters: Case Studies and General Observations*. Columbus, Ohio: The Ohio State University.

This study differentiates between emergency sheltering, temporary sheltering, temporary housing, and permanent housing and uses the Wilkes-Barre flood, the Xenia tornado, and the Grand Island tornado cases to suggest future directions for research.

Bates, Frederick and Peacock, Walter Gilis. (1989). Long Term Recovery. *International Journal of Mass Emergencies and Disasters*. 7(3) pp. 349-366.

Distinguishes between independent and dependent recovery, focuses on collective units in the recovery process, and emphasizes social organization in the recovery process.

Berke, Philip R., Kartez, Jack, and Wenger, Dennis. (1993). Recovery after disasters: Achieving sustainable development, mitigation and equity. *Disasters*, 17(2), 93–109.

This article critically investigates the interaction between vertical integration (coordination between local and outside organizations) and horizontal integration (collaboration between community based groups) in communities recovering from disaster.

Berke, Philip R., and Beatley, Timothy. (1997). *After the Hurricane: Linking Recovery to Sustainable Development in the Caribbean*. Baltimore, MD: The Johns Hopkins University Press.

This book links sustainable development and post-disaster recovery through mechanisms such as coordination, monitoring, enforcement, and the recognition of the rights of local residents.

Neal, David. (1997). Reconsidering the Phases of Disaster. *International Journal of Mass Emergencies and Disasters*. Vol. 15. No. 2 pp. 239-264.

Argues that past ways of dividing disasters into discrete periods lacks clarity and that phases should reflect, social, not objective, time.

Kates, Robert, Colten, C.E., Laska, S., and Leatherman, S.P. (2006). Reconstruction of New Orleans after Hurricane Katrina: A Research Perspective. *Proceedings of the National Academy of Sciences*, Vol. 103, No. 40: 14653-14660.

Using historical examples as a base, this paper seeks to predict the length of the restoration, reconstruction I, and reconstruction II phases in New Orleans, while admitting that the outcome is complicated by other factors.

Rubin, Claire B. (2009). Long term recovery from disasters -- the neglected component of emergency management. *Journal of Homeland Security and Emergency Management* 6, 1: article 46.

Identifies long-term recovery as the least understood aspect of disaster management based on Rubin's 30 years of experience in the field.

NATURAL, MAN-MADE, AND Natural / Technological **DISASTERS**

While casual observers may argue that disasters such as floods and hurricanes are "natural" disasters or "acts of God," that is, events over which decision makers have no control, scholars have come to understand that the political and social environments create and magnify the impact of those events. Oliver-Smith and Hoffman's 1999 edited volume set the stage for this approach and argued that one must recognize the role of environment, society, and technology in calamities. Vaughn 1999 demonstrated that government agencies and private firms alike create cultures which make catastrophic outcomes likely, while Steinberg 2000 pointed to governmental policies under successive US presidential administrations as heavily responsible for outcomes which disproportionately impact minorities and the poor. Albala-Bertrand 2000 sought to disentangle complex emergencies and technological crises from natural disasters because of the strong role of societal and institutional weakness in the former. Picou 2009 envisioned recent crises, such as Hurricane Katrina, as combined natural-technological (*natech*) events in which natural processes such as hurricanes cause the release of hazardous, man-made materials (including oil and other toxins) into the environment. Perry and Quarantelli 2005 distinguished between disasters and catastrophes, arguing that the latter require a different set of planning strategies than the former.

Oliver-Smith, Anthony and Hoffman, Susanna, eds. (1999). *The Angry Earth: Disaster in Anthropological Perspective*. New York: Routledge.

Using a variety of cases, including an earthquake in Peru, fires in Oakland, Bangladesh vulnerability, and Bhopal, India's gas leak, this edited volume looks at disasters from historical, political, and sociocultural perspectives.

Vaughn, Diane. (1999). The Dark Side of Organizations: Mistake, Misconduct, and Disaster. *Annual Review of Sociology* 25: 271-305.

Vaughn underscores how public and private entities create adverse societal consequences through her investigation of the systematic products of complex, often internally contradictory, processes and structures.

Albala-Bertrand, J.M. (2000). Complex Emergencies versus Natural Disasters: An Analytical Comparison of Causes and Effects. *Oxford Development Studies* 28 (2): 187-204.

This article argues that complex emergencies arise from competing identity groups (such as those in Yugoslavia) while natural disasters come from the inability of structures and processes to handle extreme events.

Steinberg, Ted. (2000). *Acts of God: The Unnatural History of Natural Disaster* in America. Oxford University Press.

This book is strongly critical of government agencies and insurers for, in Steinberg's opinion, neglecting to recognize humans' roles in creating disasters, which ultimately strongly injure vulnerable groups.

Perry, Ron and Quarantelli, Enrico Louis, eds. (2005*). What Is a Disaster? New Answers to Old Questions*. Philadelphia: Xlibris Books. 2005.

This edited volume brings together a variety of researchers to answer the question from disciplinary perspectives and ends with an extended view of a social science research agenda for the field.

Picou, J. Steven. (2009). Katrina as a Natech Disaster: Toxic Contamination and Long-Term Risks for Residents of New Orleans. *Journal of Applied Social Science* 4(3), 39-55.

Suggest that Hurricane Katrina was both a natural and technological disaster, which created concerns about environmental contamination due to releases oil, ammonia, benzene, fuel, and other toxics into the city's floodwaters.

MITIGATION, PREPARATION, AND INSURANCE

Government authorities and disaster planners regularly hope to reduce the effect of future disasters through mitigation strategies, individual household and business disaster preparation schemes, and

federally funded insurance programs (Smith 2011). Despite these good intentions, researchers have illuminated a number of factors that prevent effective long-term planning in the general population and have resulted in large number of un- or under-insured victims of disaster. Kunreuther and Useem's 2010 edited volume, for example, described behavioral and cognitive biases that preclude people from undertaking calculated, long-term strategies, pointing out that decision making is affected by our bounded rationality, status quo bias, and the fact that many of us prioritize immediate gratification and understate risks that we voluntary assume. Kaplow 1991 argued that government insurance policies themselves distort insurance-purchasing incentives and individual behavior by allowing individuals to avoid bearing the full cost of their actions. In response, Lewis and Murdock 1996 suggested the auctioning of excess-of-loss contracts to better spread out disaster risk in the insurance market and Auersward et al. 2006 advocated public-private partnerships and new insurance programs to reduce overall vulnerability to hazards. Beyond the narrow field of mitigation through insurance, Perrow 2007 argued that planners should work to reduce unnecessary and preventable hazards, such as 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. In contrast to researchers who find hope in top-down government planning for catastrophe, Clarke 1999 deeply criticized disaster response plans which attempt to change unknowable risk to acceptable risk and convince the public that that experts are in charge as "fantasy documents."

Louis Kaplow. (1991). Incentives and Government Relief for Risk. *Journal of Risk and Uncertainty* 4 167-175.

This article, written from the perspective of an economist and based on various formal models, argues that public policies create moral hazards because survivors and residents do not experience the full cost of their choices.

Lewis, Christopher M. and Murdock, Kevin C. (1996). The Role of Government Contracts in Discretionary Reinsurance Markets for Natural Disasters. *Journal of Risk and Insurance* 63 567.

This detailed, technical article sets out a new policy mechanism for the federal government which would help losses in the 25 to 50 billion dollar range through auctions of spread options.

Clarke, Lee. (1999). *Mission Improbable: Using Fantasy Documents to Tame Disaster*. Chicago: University of Chicago Press.

This excellent book argues that managers and experts seek to convince the broader public, insurance companies and regulators that everything is under control and that dangerous systems are, in fact, safe.

Mileti, Dennis. (1999). *Disaster by Design: A Reassessment of Natural Hazards in the United States*. Washington DC: Joseph Henry Press.

This general overview of hazards and recovery process, which would work well in an undergraduate classroom, focuses on hazard mitigation and notes the need to conduct collaborative research in the field.

Kunreuther, Howard, and Useem, Michael, eds. (2010). *Learning from Catastrophes: Strategies for Reaction and Response*. Saddle River, NJ: Wharton School.

While this volume lacks a coherent framework, it brings together experts on topics such as the failure of AIG, climate change, and China's emergency management system to show commonalities of short-term planning and bounded rationality.

Auerswald, Philip, Branscomb, Lewis, La Porte, Todd, and Michel-Kerjan, Erwann, eds. (2006). *Seeds of Disaster, Roots of Response: How Private Action Can Reduce Public Vulnerability*. New York: Cambridge University Press.

This edited volume emphasizes that private sector organizations and companies can work in partnership with state and federal government agencies to reduce hazards and their impact on society as a whole.

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

Building on the premise that we cannot expect much from our organizations, this book argues for the need to reduce the size of our vulnerable targets and the creation of decentralized, flexible systems.

Smith, Gavin. (2011). *Planning for Post-Disaster Recovery: A Review of the United States Disaster Assistance Framework*. Fairfax VA: Public Entity Risk Institute.

Smith's book stresses the role of pre- or post-disaster recovery planning as a means of bringing together a disaster recovery assistance network to address recovery fundamental problems.

VULNERABILITIES

The effects of disaster do not impact all members of society equally. Instead, the poor, minority groups, the infirm, and the elderly are most vulnerable to harm and death from shocks like flooding, tornadoes, and other disasters. Cutter et al. 2003 and Cutter and Emrich 2006 created a social vulnerability index with socioeconomic, demographic, and GIS data to demonstrate that certain locations across the US remain most vulnerable to future disasters; as a result, they argue, standard, uniform approaches to

disasters across geography will not be effective. Tierney 2006 emphasized underlying patterns of social inequality which planners and disaster managers must take into account when thinking through disaster response. Using census tract data from three hurricanes in four regions the 1990s, Pais and Elliott 2008 demonstrated divergent post-disaster development patterns, with black, Latino, and elderly populations actually increasing but often along pre-existing geographic lines, which reinforced economic inequalities. Finch, Emrich, and Cutter 2010 investigated how less damaged and vulnerable areas recovered more quickly post-Katrina with highly *and* moderately vulnerable areas lagging behind. Caste systems along with institutionalized racial and ethnic discrimination may create additional vulnerability in peripheral groups, as Louis 2005 discovered when it found that thousands of victims of the 2004 Indian Ocean tsunami across India were excluded from relief provision because of their caste and/or gender. Subervi 2010 found that, while community safety is contingent on being well-informed, government agencies and institutions serving Spanish-speaking areas of Texas lacked capacity to provide necessary information to their constituent population. The Brookings-Bern Project on Internal Displacement 2008 has developed guidelines for international assistance to try to minimize human rights violations in the aftermath of disasters.

Cutter, Susan, Boruff, Bryan, and Shirley, W. Lynn. (2003). Social Vulnerability to Environmental Hazards. *Social Science Quarterly* 84 (2): 242-261.

This article explains that 11 factors – including wealth, age, race, and housing stock – account for 76 percent of the variance in levels of vulnerability, and maps out vulnerable areas in Texas and along the Mississippi Delta Region.

Tierney, Kathleen. (2006). Social inequality, hazards, and disasters. In R. J. Daniels, D. F. Kettl, and H. Kunreuther. *On risk and disaster*. University of Pennsylvania Press, Philadelphia, PA.

This chapter, which would be on-target for an undergraduate course on disaster, underscores how social class, race, and ethnicity structure vulnerability to disasters.

Cutter, Susan, and Emrich, Christopher. (2006). Moral Hazard, Social Catastrophe: The Changing Face of Vulnerability along the Hurricane Coasts. *Annals of the American Academy of Political and Social Science* 604: 102–12.

Focused on the susceptibility to and ability of groups to recover from hazards, this article uses scores from the social vulnerability index to investigate Hurricane Katrina's impact along the Gulf Coast.

Louis, M. (2005). Study on Discrimination and Exclusion in State Relief. People's Watch–Tamil Nadu, Madurai, India.

An excellent and under-utilized resource, this study identified roughly 8,000 individuals in in Tamil Nadu who were affected by the 2004 Indian Ocean tsunami but did not receive aid due to caste and gender discrimination.

Brookings-Bern Project on Internal Displacement. (2008). *Human Rights and Natural Disasters: Operational Guidelines and Field Manual on Human Rights Protection in Situations of Natural Disaster*. Washington, DC: Brookings Institution.

Recognizing the need to protect residents from formal and informal discrimination during the relief process, this manual tries to ensure that NGOs and governments alike will ensure the protection of human rights even during the chaos that is recovery.

Pais, Jeremy, and Elliott, James R. (2008). Places as Recovery Machines: Vulnerability and Neighborhood Change after Major Hurricanes. *Social Forces* 86 (4): 1415-1453.

Looking at the recovery growth machine, residential elites, non-elites, and immigrants, this paper shows how hazards may actually encourage growth but often in the form of elite entrenchment.

Subervi, Federico. (2010) An Achilles Heel in Emergency Communications: The Deplorable Policies and Practices Pertaining to Non-English Speaking Populations. Final report of the Emergency Communications Project, funded by the McCormick Foundation.

Despite the prevalence of Spanish-speaking communities across the South and Midwest, this investigation underscores that government agencies responsible for emergency communications lack staff and capacity to disseminate materials in Spanish (and other languages).

Finch, Christina, Emrich, Christopher, and Cutter, Susan. (2010). Disaster disparities and differential recovery in New Orleans. *Population and Environment* 34: 179-202.

The authors use the damage caused by the levees breaking following Hurricane Katrina to show how “in between” neighborhoods – those areas in New Orleans without strong governmental or NGO support but also without their own extensive financial resources – have been lagging in the recovery process.

EVACUATION

While decision makers have worked hard to provide early warning and evacuation systems, especially to coastal and vulnerable communities, and it is clear that evacuation serves as the most effective way to prevent loss of life and injury from predictable disasters, reactions to evacuation information vary widely by perceived risk, past experience, income, race, and gender. Baker’s 1979 meta-analysis of past studies criticized them for inappropriate measurement of evacuation outcomes and poor indicators; the follow-up study Baker 1991 argued that risk level from the storm, public authorities’ actions, housing,

perception of risk, and disaster-specific threats accounted for most of the variation in behavior. Aguirre 1991 demonstrated that respondents' evacuation decisions were not correlated with demographic, social network, or socioeconomic status, and instead were strongly a function of their belief in the viability of their housing under hurricane conditions. In the study of the evacuation responses of residents of Hilton Head and Myrtle Beach following the hurricane season, Dow and Cutter 1998 found that perceived lack of reliability from gubernatorial warnings caused people to rely on alternative sources (such as the Weather Channel) and self-assessments of risk. Whitehead et al. 2000 used a survey of 900 to show that mandatory evacuation orders (in contrast with voluntary ones) from authorities were most likely to trigger evacuation, as were risk factors such as occupancy in trailer homes. Bateman and Edwards 2002 used a survey of 1000 households to explain why women are more likely than men to evacuate, which they explained primarily as a function of women's care-giving roles and exposure to risk. Hasan et al 2011 found a number of factors to be critical in predicting evacuation behavior, including source of the news about the impending disaster, demographic information (such as having children under 18, income, and education), and previous disaster experience.

Baker, Earl J. (1979). Predicting Response to Hurricane Warnings: A Reanalysis of Data from Four Studies. *Mass Emergency* 4(1):9–24.

Trying to understand what motivated residents to stay home (or leave) in response to hurricane warnings, Baker re-analyzed four studies from the 1960s and 1970s to better tease out potential explanations.

Baker, Earl J. (1991). Hurricane Evacuation Behavior. *International Journal of Mass Emergencies and Disasters*, 9, 287–310.

This article reviews three decades of evacuation studies to argue that standard demographic factors, hurricane experience, education, sex, and family status have little impact on evacuation decisions.

Dow, Kirstin, and Cutter, Susan L. (1998). Crying Wolf: Repeat Responses to Hurricane Evacuation Orders. *Coastal Management* 26(4):237–52.

With data from two communities in South Carolina (Hilton Head and Myrtle Beach) following Hurricane Fran in 1996, this article posits that official warnings have less weight than information from non formal sources due to diverse sets of concerns relevant to potential evacuees.

Aguirre, Benigno E. (1991). Evacuation in Cancun during Hurricane Gilbert. *International Journal of Mass Emergencies and Disasters*, 9, 31-45.

Drawing on a random sample of more than 400 people, this article focused on the respondents' evaluations of their environmental context and the physical characteristics of their homes in making their decisions to leave Cancun.

Whitehead, John C., Edwards, Bob, Van Willigen, Marieke, Maiolo, John R., Wilson, Kenneth, and Smith, Kevin T. (2000). Heading for higher ground: Factors affecting real and hypothetical hurricane evacuation behavior. *Environmental Hazards Review*, 5, 115-120.

With a telephone survey of roughly 900 North Carolina residents across eight coastal counties as the core dataset, holding storm intensity constant, this article states that risk factors, and not income, best predict evacuation behavior.

Bateman, J.M. and Edwards, B. (2002). Gender and evacuation: A closer look at why women are more likely to evacuate for hurricanes. *Natural Hazards Review*, 3(3), 107–117.

Based on surveys of more than 1000 North Carolina households affected by Hurricane Boone, this study argued that, given equal risk, men are more likely to evacuate than women because of socially constructed gender roles.

Hasan, Samiul, Ukkusuri, Satish, Gladwin, Hugh and Murray-Tuite, Pamela. (2011). Behavioral Model to Understand Household-Level Hurricane Evacuation Decision Making. *Journal of Transportation Engineering May*, 341-348.

Using a mixed logit model on household surveys after Hurricane Ivan, this article showed that mobile home dwellers, information provision from in-network sources, and previous evacuations made people more likely to evacuate.

EMERGENT GROUPS

The "first responders" to disaster may not necessarily be professional firefighters, police officers, and military personnel who have been trained for such events; instead, neighbors and local residents often serve as the first wave of help for victims, as seen in the response to the 1985 Mexican earthquake (Poniatowska 1995). Early on, Parr 1970 recognized how new organizations - known in the disaster literature as "emergent groups" - rose up to handle responsibilities and problems not covered by existing associations after disaster. Deepening this line of inquiry, Stallings and Quarantelli 1985 reviewed how these new, non-institutionalized, informal groups pursued collective goals in a variety of policy arenas; Hollingshead et al 2007 suggested ways of coordinating these groups after disaster using cognitive models of knowledge sharing. Dow 1999 showed how established social relationships in a Malaysian fishing community helped residents withstand the impact of a large scale oil spill which deeply impacted their ocean-based livelihoods.

Parr, Arnold. (1970). Organizational Response to Community Crises and Group Emergence. *American Behavioral Scientist* January Vol. 13 no. 3 423-429.

Using 11 disasters as a universe of cases, this article argued that interorganizational coordination, authority structure, and organizational demands were strongly related to group emergence.

Stallings, Robert and Quarantelli, E.L. (1985). Emergent Citizen Groups and Emergency Management. *Public Administration Review* 45, pp. 93-100.

Stallings and Quarantelli detailed a number of different policy matters undertaken by emergent groups, including planning evacuations from hurricanes, replanting trees destroyed by tornadoes, and bringing action against officials for not preventing disaster.

Poniatowska, Elena. (1995). *Nothing, Nobody: The Voices of the Mexico City Earthquake*. Philadelphia: Temple University Press.

Series of interviews with survivors of the 1985 Mexico City earthquake who fended for themselves in the absence of a government response to the disaster.

Dow, Kirstin. (1999). The Extraordinary and the Everyday in Explanations of Vulnerability to an Oil Spill. *Geographical Review* 89 (1): 74-93.

Looks at response of vulnerable, poor, small-scale fishers in the Strait of Malacca through more than 120 household surveys to understand role of networks in resilience.

Hollingshead, Andrea B., Majchrzak, Ann and Jarvenpaa, Sirkka. (2007). Coordinating Expertise Among Emergent Groups Responding to Disasters. *Organization Science*, Vol. 18, pp. 147-161.

Uses “transactive memory systems theory” from organization science this article to focus on knowledge coordination based on memory, credibility, and task coordination.

DISASTER MYTHS AND BEHAVIOR

After Hurricane Katrina, the media reported regularly on horrific environmental conditions in the ad hoc shelters set up by the city government and on the supposed inhumanity of survivors in their relations with each other. Fischer 1988, Tierney et al 2006, and Quarantelli 2007 have pushed to dispel claims about social disorder, rape, and looting, conditions that they label “disaster myths.” Further, with longitudinal data on more than 100 respondents in Potsdam, NY after an ice storm in 1998, Sweet 1988 demonstrated that after a major disaster, rather than decreasing, social cohesion among residents actually increased (eventually returning to pre-disaster levels a year or more after the event). Similarly, Solnit’s 2009 popular press book underscored that the elite, not common citizens, tend to panic after disaster, while residents themselves often bond together in the face of crisis (thus building a “paradise” in hell). Not all scholars agree; Frailing 2007 argued that looting following catastrophe is in fact not a myth,

and that planners and law enforcement personnel should instead create disaster policies which anticipate it.

Fischer, Henry. (1998). *Response to Disaster: Fact versus Fiction and Its Perpetuation*. Boston: University Press of America.

Using, among other cases, the evacuation from a wide-scale fire in Pennsylvania and an area in Texas where a hurricane did not make landfall, this book argues that society is not disrupted by the arrival of a disaster.

Sweet, Stephen. (1998). The Effect of a Natural Disaster on Social Cohesion: A Longitudinal Study. *International Journal of Mass Emergencies and Disasters* 16 (3): 321-331.

Using two studies over time – one three years before the ice storm, and the second a month after – this quantitative study argues that any increased social cohesion was short lived.

Tierney, Kathleen, Bevc, Christine and Kuligowski, Erica. (2006). Metaphors Matter: Disaster Myths, Media Frames, and Their Consequences in Hurricane Katrina. *The Annals of the American Academy of Political and Social Science* vol. 604 no. 1 57-81.

Argues that the media left indelible impressions on the public through stories that had little connection to the empirical realities in New Orleans and nearby.

Quarantelli, E.L. (2007). The Myth and the Realities: Keeping the "Looting" Myth in Perspective. *Natural Hazards Observer* 31 (4):2-3. Available at http://www.colorado.edu/hazards/o/archives/2007/mar07/mar07.pdf

Distinguishes disasters from civil disturbances to argue that looting – the mass theft of goods – is rare in most disasters in many societies.

Frailing, Kelly. (2007). The Myth of a Disaster Myth: Potential Looting Should Be Part of Disaster Plans. *Natural Hazards Observer* 31 (4):3-4. Available at http://www.colorado.edu/hazards/o/archives/2007/mar07/mar07.pdf

Brings examples of looting from a variety of disasters, including 1906 San Francisco earthquake, the 1972 Buffalo Creek flood, 1976 Tangshan earthquake, and New Orleans.

Solnit, Rebecca. (2009). *A Paradise Built in Hell: The Extraordinary Communities That Arise in Disaster*. New York: Viking.

Based on, among other disasters, the 1906 San Francisco earthquake, the 1917 Halifax explosion, the 1986 Mexico earthquake, and September 11, this well written and clearly argued

popular press book – which would be ideal for undergraduate courses – argues strongly against narratives of post- disaster looters and thieves.

HUMANITARIAN RESPONSE

Post disaster, national governments and NGOs alike rush in to assist victims with search and rescue, food, water, and medical supplies, temporary shelter, and even law enforcement guidance in stabilizing damaged areas. Many observers have criticized the often poorly thought- out provision of massive amounts of aid; in India, for example, local community activists called the influx of aid a "second tsunami." Similarly, Hyndman 2011 labeled the post-2004 Indian Ocean tsunami a "dual disaster" due to the humanitarian problems the response induced in Southeast Asia, and Aldrich 2010 showed how aid was not apportioned solely according to need. Similarly, there has been strong criticism about the role that nongovernmental organizations can play in the mitigation and recovery processes. Chandra and Acosta's 2009 paper used interviews with NGO leaders after Hurricane Katrina to illuminate problems faced by civil society organizations as they responded to disasters, including a lack of clarity on which models of recovery should undergird recovery efforts and a lack of consensus on operationalizing roles and responsibilities. Allen 2006 used data from the work of the Philippine National Red Cross to warn that, although many hope to use community based disaster preparedness as a way of mitigating calamity, and hence reducing the scope of necessary interventions, this may place untenable burdens on the local communities. Benson et al. 2001 posited that while NGOs may be well placed to assist in post-disaster recovery, barriers to participation, including a lack of institutional memory among the NGOs along with a lack of guidance for their leadership, have often stymied effective action.

Benson, Charlotte, Twigg, John, and Myers, Mary. (2001). NGO Initiatives in Risk Reduction: An Overview. *Disasters* 25(3) pp. 199–215.

Details the many problems that need to be overcome before nongovernmental organizations can be "mainstreamed" into post-disaster rehabilitation programs.

Allen, Katrina M. (2006). Community-based disaster preparedness and climate adaptation: local capacity-building in the Philippines. *Disasters* 30(1) pp. 81–101.

Focuses on community based disaster preparedness (in contrast with the dominant top-down interventional approach) but warns that we must develop the autonomous capacity of local organizations.

Chandra, Anita, and Acosta, Joie. (2009). The Role of Nongovernmental Organizations in Long-Term Human Recovery after Disaster. RAND Occasional Paper.

Pushes for an integrated state and federal system which would support human recovery (restoring social and daily routines and support networks) over the long term.

Aldrich, Daniel P. (2010). Separate and Unequal: Post-Tsunami Aid Distribution in Southern India. *Social Science Quarterly* 91(4): 1369-138.

With quantitative data on 62 villages in Tamil Nadu, this paper demonstrates that, while many envision aid as a technocratic process, discrimination and pre-disaster financial resources strongly determine aid receipt.

Hyndman, Jennifer. (2011). *Dual disasters: humanitarian aid after the 2004 tsunami*. Sterling, VA: Kumarian.

Focused on Sri Lanka and Indonesia, this book underscores the geopolitics at work in responses to the 2004 Indian Ocean tsunami.

GOVERNANCE DURING AND AFTER

As our cultural understanding of disasters places sees them as unguided and unintended, politicians and the public must struggle to establish broad agreement over the best course for public policy, wrangling over causal stories and narratives connected to the event (Stone 1989). Local governments in the United States and elsewhere lack the financial and administrative resources to handle large scale disasters, and must rely on assistance from the federal government. As Rubin and Barbee 1985 argue, the inter-governmental relationship is often strained and can be categorized into top-down, confusion, and bottom-up models, with the best results coming from locality-driven strategies (Schneider 1990). Given that responses to disasters are truly political events, Sobel and Leeson 2006 point out the decision makers can fumble because of short-sightedness, glory seeking, and the structures inherent in federalism. Burby 2006 suggested that with sufficient planning, local government and federal governments can overcome these kinds of obstacles through adjustments to existing programs such as the National Flood Insurance Program. Boin et al.'s 2008 edited volume showed why some national governments gained credibility and popular support following crises whereas others found themselves out of office at the next election; outcomes for politicians include elite reinvigoration, elite escape, and elite damage. Birkland 2007 argued that that citizens expect government officials to learn from past events, and that, as focusing events, disasters may serve as the catalysts for either policy change or agenda change depending on contextual factors.

Rubin, Claire and Barbee, Daniel. (1985). Disaster Recovery and Hazard Mitigation: Bridging the Intergovernmental Gap. *Public Administration Review* 45, pp. 57-63.

Argues that ability to act, reason to act, political awareness, and knowledge of what to do alter intergovernmental relations post-disaster.

Stone, Deborah. (1989). Causal Stories and the Formation of Policy Agendas. *Political Science Quarterly* 104(2): 281-300.

Describes how the narratives used by decision makers determine, for example, whether or not to provide flood insurance which assists victims but may create a “moral hazard” in the process. Also looks at the active and strategic manipulation of images by the actors involved.

Schneider, Saundra. (1990). FEMA, Federalism, Hugo, and ‘Frisco. *Publius* 20 (3), pp. 97-115.

This article posits that the US intergovernmental disaster response system is designed for normal, smaller scale disasters, such as tornadoes and floods, and thus the Federal government is less prepared when immediate responses are required.

Boin, Arjen, McConnell, Allan, and ‘T Hart, Paul, eds. (2008). *Governing after Crisis: The Politics of Investigation, Accountability, and Learning*. New York: Cambridge University Press.

This well-crafted edited volume brings together a series of chapters built on the same framework, arguing that leadership styles, scope of the crisis, and stakeholder pressure influence political outcomes following disaster.

Sobel, Russell and Leeson, Peter. (2006). Government’s response to Hurricane Katrina: A public choice analysis. *Public Choice*. 127: 55–73.

Based on the theory that politicians and bureaucrats are self-interested, utility-maximizing individuals, the article lays out obstacles to effective disaster response.

Burby, Raymond J. (2006). Hurricane Katrina and the Paradoxes of Government Disaster Policy: Bringing About Wise Governmental Decisions for Hazardous Areas. *The Annals of the American Academy of Political and Social Science* 604 (1):171-191.

Analyzes paradoxes at the federal and local levels, namely that that federal policies intended to make areas safely have made them more vulnerable to disaster, and that local public officials regularly fail to take action to reduce vulnerability.

Birkland, Thomas A. (2007). *Lessons of Disaster: Policy Change After Catastrophic Events*. Washington, DC: Georgetown University Press.

Argues that three types of learning – instrumental, social policy, and political – can take place, but that various political obstacles can prevent progress.

SOCIAL CAPITAL IN DISASTER RECOVERY

Over the past decade, scholars have incorporated a recognition of the role of social networks and social capital in their study of disaster mitigation, search and rescue, and recovery. Moving away from models focused on characteristics external to the community - such as governance, damage from the disaster, and aid from the state or nongovernmental organizations - these experts have illuminated how the ties that bind residents to each other provide resilience to crises through information, the ability to overcome barriers to collective action, and mutual aid. In their study of the 1997 Red River Flood in Manitoba, Canada, Buckland and Rahman 1999 found that among the First Nation, Mennonite, and Francophone communities, localities with higher levels of social capital were better prepared for and more efficiently responded to the flood. Beggs et al. 1996 showed that, after Hurricane Andrew, individuals embedded in dense networks of relationships had a better chance of receiving informal support than those with fewer ties. Klinenberg 2002 documented the ways in which social networks in communities across Chicago made the difference in survival and mortality rates during a heat wave there. Nakagawa and Shaw 2004 showed Indian and Japanese communities with higher levels of social capital had higher levels of satisfaction and faster recovery rates, while Adger et al. 2005 argued for the critical nature of local social networks in reinforcing existing institutions and building mitigation. Yasui 2007 used in-depth process tracing of two similar neighborhoods in Kobe to show how Mano - which had deeper reservoirs of social capital - recovered more effectively than nearby Mikura after the earthquake, and Tatsuki 2007 used large scale, longitudinal surveys of survivors of the same earthquake to demonstrate how social ties transformed survivors' narratives about recovery. Envisioning post-disaster environments as collective action problems, Chamlee-Wright 2010 posited that communities access social institutions and socially embedded networks that provide norms, tools, and networks to survivors in the recovery process. In their cautionary tale about social capital's role in recovery, Elliott et al. 2010 illuminated how poorer residents in post-Katrina New Orleans neighborhoods were less able to tap into translocal social resources through their networks during displacement.

Buckland, Jerry and Rahman, Matiur (1999). Community Based Disaster Management during the 1997 Red River Flood in Canada. *Disasters* 23 (2), pp. 174-191.

Qualitative study of dominant ethnicities in different communities in Manitoba, Canada, which shows how community social characteristics influenced response and recovery from the flood.

Beggs, John, Haines, Valerie, and Hurlbert, Jeanne. (1996). Situational Contingencies Surrounding the Receipt of Informal Support. *Social Forces* 75 (1): 201–22.

Well-designed quantitative study of informal, personal, and community network support, which demonstrated critical role for strong, dense homophilous ties in recovery.

Klinenberg, Eric. (2002). *Heat Wave: A Social Autopsy of Disaster in Chicago*. Chicago: University of Chicago Press.

Investigation of the July 1995 heat wave when the heat index rose above 120 and more than 700 people succumbed to heat related deaths, with a focus on the ways in which social networks and ethnic identities played a role in outcomes for local residents.

Nakagawa, Yuko, and Shaw, Rajib. (2004). Social Capital: A Missing Link to Disaster Recovery. *International Journal of Mass Emergencies and Disasters* 22 (1): 5–34.

Qualitative look at the role of bonding, bridging, and linking social in post-disaster Kobe, Japan and Gujarat, India.

Adger, W. Neil, Hughes, Terry P., Folke, Carl, Carpenter, Stephen R. and Rockstrom, Johan. (2005). Social-Ecological Resilience to Coastal Disasters. *Science* 309: 1036–39.

This oft-cited article argues that local networks and institutions serve as the key to mitigating the effects of disasters and shocks.

Yasui, Etsuko. (2007). Community Vulnerability and Capacity in Post Disaster Recovery: The Cases of Mano and Mikura Neighborhoods in the Wake of the1995 Kobe Earthquake. Unpublished Ph.D. diss. University of British Columbia.

Based on field work and qualitative analysis, this dissertation posits that long term community development and capacity building reduce vulnerability.

Tatsuki, Shigeo. (2007). Long-term life recovery processes among survivors of the 1995 Kobe earthquake: 1999, 2001, 2003, and 2005 life recovery social survey results. *Journal of Disaster Research*, 2 (6), 448-501.

Using 4 quantitative surveys (each of over 1000 respondents) this article shows how community solidarity, community participation, and family cohesion proved critical for life recovery processes.

Chamlee-Wright, Emily. (2010). *The Cultural and Political Economy of Recovery: Social Learning in a Post-Disaster Environment*. New York: Routledge.

Excellent analysis of post-Katrina recovery in New Orleans based on the premise that recovery is a collective action problem, communities have toolkits of providing norms and narratives to survivors, and that markets must send noise-free signals to local residents.

Elliott, James R.; Haney, Timothy J.; and Sams-Abiodun, Petrice. (2010). Limits to Social Capital: Comparing Network Assistance in Two New Orleans Neighborhoods Devastated by Hurricane Katrina. *Sociological Quarterly* 51 (4): 624-648.

Quantitative study that demonstrates that less-advantaged residents are less able to tap into extralocal networks during evacuation and recovery phases than are more-advantaged residents.

SHORT TO MEDIUM TERM POLITICAL OUTCOMES

A number of political scientists have used disasters as tragic "natural experiments" to illuminate how voters punish or reward incumbent governments for events which take place during their time in office. Many studies have also demonstrated why governments rarely invest ex-ante in pre-disaster mitigation and instead spend heavily on the less efficient post-disaster restoration process. Healy and Malhotra 2009 argued that short-sighted voters are willing to reward the incumbent presidential party for post-disaster relief spending but not for mitigation and preparedness work done before such events; using data on tornadoes and election outcomes they have also found evidence that voters punish incumbents for economic damage done by disasters (but not fatalities) and also reward governments when they make disaster declarations (see Healy and Malhotra 2010). Where Roberts 2006 laid out FEMA's history, Chen 2011 argued that FEMA disaster aid mobilized turnout for the incumbent party while demobilizing turnout for the opposition party in elections following disaster. Bechtel and Hainmueller 2011 argued that concentrated relief efforts after the 2002 Elbe flooding in Germany resulted in medium-term, small-scale electoral support for the incumbent party, while Cole et al. 2012 found that voter gratitude for government spending was short-lived and as a result Indian governments provided most relief during election years. Finally, Sinclair et al. 2011 use long-term voting records and GIS-encoded flood data after Hurricane Katrina to show the residents with very high levels of water damage were more likely to turn out to vote than individuals experiencing less flooding.

Roberts, Patrick. (2006). FEMA and the Prospects for Reputation-Based Autonomy. *Studies in American Political Development* 20: 57-87.

Provides detailed history on budget, media coverage of, and political attempts to control this well-known US government agency since the 1950s. Argues that bureaucratic autonomy was created through partnerships and alliances with other agencies and state and local organizations.

Healy, Andrew, and Malhotra, Neal. (2009). Myopic Voters and Natural Disaster Policy. *American Political Science Review*, 103(3), 387-406.

Using county level data across the US, this article shows that governments spend less on preparedness because of the strong electoral incentives from spending post-disaster funds instead.

Healy, Andrew and Malhotra, Neal. (2010). Random Events, Economic Losses, and Retrospective Voting: Implications for Democratic Competence. *Quarterly Journal of Political Science* Vol. 5: No 2, pp 193-20.

Uses quantitative data from tornadoes to show that increases in damage from such natural disasters cause the incumbent party to lose electoral support.

Chen, Jowei. 2011. *Distributive Spending, Voter Partisanship, and Political Participation: A Theory of Voter Turnout as Retrospective Evaluation[http://www.umich.edu/~jowei/fema/chen.pdf]*. Working Paper.

Through a formal model and quantitative analysis, this working paper uses FEMA awards and pre- and post-hurricane voter turnout to show that government aid has different effects on population depending on their partisan orientation.

Bechtel, Michael M. and Hainmueller, Jens. (2011). How Lasting Is Voter Gratitude? An Analysis of the Short- and Long-Term Electoral Returns to Beneficial Policy. *American Journal of Political Science*, 55(4): 851–867.

Arguing against scholarship which sees voter gratitude as very short lived, this quantitative analysis demonstrates that voters rewarded post disaster aid for at least three years following the event.

Sinclair, Betsy, Hall, Thad E., and Alvarez, Michael. (2011). Flooding the Vote: Hurricane Katrina and Voter Participation in New Orleans. *American Politics Research* vol. 39 no. 5 921-957.

With 20 election cycles worth of GIS-coded voter data, this paper illuminates the complex relationship between voter turnout and damage from the disaster.

Cole, Shawn, Healy, Andrew, and Werker, Eric. (2012). Do Voters Demand Responsive Governments? Evidence from Indian Disaster Relief. *Journal of Development Economics*. DOI: 10.1016/j.jdeveco.2011.05.005

Focused on monsoon rains as exogenous shocks, this paper finds that incumbent governments are punished for natural disasters at the polls and that governments increase aid to victims hit by such events.

LONG TERM POLITICAL AND ECONOMIC IMPACT

Well-publicized disasters, including the 2004 Indian Ocean tsunami, the 2005 Hurricane Katrina, and the compounded 2011 Tohoku disaster in Japan captured the front pages for weeks around the world. Subject matter experts have disagreed on whether or not the tremendous devastation wrought by these mega catastrophes has long term economic and political impacts. Eckstein 1988 saw the response from local Mexicans after the 1985 as creative and vibrant but constrained by political institutions while Tavera-Fenollosa 1999 saw challenges to authoritarian rule and new pressures for decentralization emerging

from the disaster. Albala-Bertrand 1993 argued that there are few, if any, negative impacts from disasters on gross domestic product (GDP), and posited that overall GDP growth actually improved after the events (perhaps because of the destruction of the stock of older capital, the inflow of aid to the affected areas, and new construction). Horwich 2000 argued that economic recovery following the tremendous 1995 Kobe earthquake in Japan was quite rapid (with strong recovery within a year and a half) and was slowed only due to policy debates about land use. Strobl 2008 argued that between 1970 and 2005 there was no measurable negative national quarterly economic growth due to hurricanes. Chang 2000 and Chang 2010, in contrast, analyzed how the 1995 Kobe earthquake not only disrupted the regional economy and halted production at factories but also altered institutions and downgraded the role of foreign cargo shipment services.

Eckstein, Susan. (1988). *The Poverty of Revolution: The State and the Urban Poor in Mexico*. Princeton NJ: Princeton University Press.

This quantitative and qualitative analysis focuses on the politics of urban reconstruction after the Mexico City earthquake, including details of the emergence of civil society organizations and their negotiations with the government.

Albala-Bertrand, J. M. (1993). *Political Economy of Large Natural Disasters With Special Reference to Developing Countries*. London: Oxford University Press.

This quantitative analysis argues that changing technology, government aid, and international responses result in disasters causing few negative economic effects on economies.

Tavera-Fenollosa, Ligia (1999). 'The Movimiento de Damnificados: Democratic Transformation of Citizenry and Government in Mexico City' in Cornelius, Wayne A. et al, eds. *Subnational Politics and Democratization in Mexico*. La Jolla, CA: Center for US-Mexican Studies, pp.107-131.

This chapter traces how the perception that the government was unaccountable in the context of the disaster led to pressures for subnational democratization.

Horwich, George. (2000). Economic Lessons of the Kobe Earthquake. *Economic Development and Cultural Change* 48 (3): 521-542.

This article underscores how the human capital in Kobe determined the rapid economic recovery in the city following the 1995 earthquake.

Chang, Stephanie. (2000). Disasters and transport systems: loss, recovery, and competition at the Port of Kobe after the 1995 earthquake. *Journal of Transport Geography* 8 (1) pp. 53–65.

This article traces how the port of Kobe lost business to Yokohama and other regional ports. Kobe's port did not return to pre-disaster levels because of these shifts.

Strobl, Eric. (2008). The Economic Growth Impact of Hurricanes: Evidence from US Coastal Counties. IZA Discussion Paper No. 3619. Available at http://ftp.iza.org/dp3619.pdf

This macro-economic perspective on hurricane damage suggests that while national growth rates initially drop after hurricanes, they recover quickly, with an overall negligible net effect.

Chang, Stephanie. (2010). Urban disaster recovery: a measurement framework and its application to the 1995 Kobe earthquake. *Disasters* Volume 34, Issue 2, pages 303–327.

This important article creates a standard quantitative framework for assessing disaster recovery and applies it to the case of the 1995 Kobe earthquake.

TEMPORARY HOUSING

After disaster, decision makers and residents alike agree that finding shelter for internally displaced people (IDPs) and workers alike is a critical mission, and research has found that delaying the process of providing housing delays other aspects of recovery, including business and public service provision (Peacock et al. 2006). Due to stigma attached to temporary shelters such as FEMA trailers, actually siting and constructing this critical resource has proven a challenge time and time again. Aldrich and Crook 2008, for example, found that, controlling for race, income, education, housing prices, and damage from Hurricane Katrina, communities with greater mobilization potential in New Orleans actually kept out FEMA housing, while Davis and Bali 2008 and Craemer 2010 found that racial composition of neighborhoods in New Orleans had a substantial effect on siting decisions for temporary housing.

Peacock, Walter, Dash, Nicole, and Zhang, Yang. (2006). Sheltering and Housing Recovery following Disaster. In Havidán Rodríguez, Enrico L. Quarantelli, and Russell R. Dynes, eds., *Handbook of Disaster Research,* 258-274. New York: Springer.

This chapter, grounded in a broad cross section of the literature, differentiates between temporary sheltering, emergency housing, and long term permanent housing.

Davis, Belinda, and Bali Valentina. (2008). Examining the Role of Race, NIMBY, and Local Politics in FEMA Trailer Park Placement. *Social Science Quarterly* 89 (5): 1175–1194.

This article found that neighborhoods (defined by zip codes) with more minorities and damage were more likely to be approved for FEMA trailer parks.

Aldrich, Daniel P., and Crook, Kevin. (2008). Strong Civil Society as a Double-Edged Sword: Siting Trailers in Post-Katrina New Orleans. *Political Research Quarterly* 61 (3): 378– 89.

Envisioning trailer parks as “public bads,” this article argues that zip codes with greater voter turnout were better able to keep away unwanted temporary housing facilities.

Craemer, Thomas. (2010). Evaluating Racial Disparities in Hurricane Katrina Relief Using Direct Trailer Counts in New Orleans and FEMA Records. *Public Administration Review* 70 (3): 367-377.

Using aerial photographs, this article compares the Ponchartrain Park and Lakeview neighborhoods and discovers large and substantial racial discrepancies.

RESILIENCE

Rather than focusing solely on the role of hazard mitigation infrastructure (such as the construction of additional sea walls, levees, and so on) or on the role of insurance programs and the provision of government aid, new work on disasters has focused on improving the social adaptive capacity of societies and communities to recover from disturbances in order to keep functioning after disaster (UNISDR 2005). Berke and Campanella 2006 argued that resilienceis more likely when local communities have recovery plans in place, take compact urban forms seriously as a vision for their localities, and undertake bottom-up involvement, which includes disadvantaged groups. McCreight 2010 similarly underscored the need for the recovery framework to integrate local leadership, norms, and bottom-up plans in order for it to successfully generate resilience. Comfort et al.'s 2010 edited volume focused on coordinating processes across federal, local, and nonprofit organizations and integrating a variety of technologies that will function during hazards to inform decision makers and improve outcomes. Liu et al. 2011 uses the well-publicized Hurricanes Katrina and Rita to show how achieving broad-based resilience requires the involvement of criminal justice, health care, land planning, and neighborhood organizations. Aldrich 2012 used quantitative and qualitative data at the neighborhood level from the 1923 Tokyo earthquake, the 1995 Kobe earthquake, the 2004 Indian Ocean tsunami to show how areas with higher levels of civic engagement and deeper reservoirs of social capital demonstrated more resilience after mega catastrophe.

United Nations International Strategy for Disaster Reduction (UNISDR). (2005). *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters*. Geneva: UNISDR. Available at http://www.unisdr.org/we/inform/publications/1037

Identifying gaps in governance, risk identification, knowledge management, reducing risk, and preparedness, this document put resilience in the spotlight of international agencies.

Berke, Philip, and Campanella, Thomas. (2006). Planning for Post disaster Resiliency. *Annals of the American Academy of Political and Social Science* 604:192-207.

Focusing on new urbanism, disadvantaged communities, and grassroots organization, this article suggested prioritizing the torn social fabric of disaster-stricken communities.

McCreight, Robert. (2010). Resilience as a Goal and Standard in Emergency Management. *Journal of Homeland Security and Emergency Management* 7 (1): 1-7.

This article articulates a clear vision of resilience involving robustness, resourcefulness, and rapid recovery.

Comfort, Louise K., Boin, Arjen , and Demchak, Chris C, eds. (2010). *Designing Resilience: Preparing for Extreme Events*. Pittsburgh: University of Pittsburgh Press.

This edited volume would fit well with undergraduate courses on emergency management and disaster and works through the application of resilience in the mitigation, prevention, preparation, and recovery stages.

Liu, Amy, Anglin, Roland, Mizelle, Richard, and Plyer, Allison. (2011). *Resilience and Opportunity: Lessons from the U.S. Gulf Coast after Katrina and Rita*. Brookings Institution Press.

This edited volume brings together historians, social scientists and city planners to show how policy, planning, and civil society are critical aspects of the post-disaster recovery process.

Aldrich, Daniel P. (2012). *Building Resilience: Social Capital in Post-Disaster Recovery*. Chicago: University of Chicago Press.

Bringing together qualitative and quantitative evidence from four disasters over the 20th and 21st century, this book demonstrates how social networks and social capital, more than commonly referenced factors such as disaster damage, aid, and socioeconomic resources, serve as the core engines for resilience and recovery.