Introduction

Michael J. Kelly

The rise of humanity is inextricably linked with the ability to harness nature – whether by agriculture, hunting, exploration, settlement, or civilization. But the natural world is not so easily yoked. Nature is powerful. Despite all the efforts of humanity, the Earth remains a dynamic planet. As such, dynamic events like earthquakes, tsunamis, storms, hurricanes, wildfires, and drought are visited upon us time and again. Indeed, catastrophe is a part of human history, filled with surprise episodes that become historical endnotes such as the Pompeii eruptions and the 1755 tidal wave that hit Lisbon.

As unsettled as we are by catastrophes, humans understandably attempt to respond in an effort to reduce human suffering and environmental loss. Legal frameworks help coordinate such responses. Increasingly, collaborative efforts are undertaken by state and non-state actors to address pre- and post-catastrophe conditions. Some of these have led to the creation or revision of national law; others have resulted in sui generis international frameworks. Both have profound implications for the evolution of international law as a tool for disaster response.

Given the scientific and increasingly dire forecast for new and challenging catastrophes stemming from climate change, there is a growing need for cooperative international response to disaster relief. Some responses may come in the form of a yet to be fully articulated international disaster law. The international law of disaster relief is not well developed. It exists in unsystematic state practice, partial codification, and best practices guidance documents. Significant gaps remain.

Consequently, there is an urgent need to substantiate and solidify this law. Human action, incorrectly taken, or inaction can easily exacerbate already challenging circumstances in the wake of disasters. Tons of foreign relief aid can sit moldering on docks as government agencies wrangle over visa and import issues while people starve. Critical medicines can be intercepted by warring rebel groups if intergovernmental and non-governmental groups are not protected in their disaster relief efforts. Millions of dollars in construction equipment to build up

levees, drain flooded areas, or rescue people from collapsed buildings can be irrevocably damaged if something as simple as local fuel additives are not compatible with engines.

But human activity can also contribute to the occurrence of disasters as well. As an Organization of American States 1991 Report on natural hazards and disasters noted:

> Although humans can do little or nothing to change the incidence or intensity of most natural phenomena, they have an important role to play in ensuring that natural events are not converted into disasters by their own actions. It is important to understand that human intervention can increase the frequency and severity of natural hazards. For example, when the toe of a landslide is removed to make room for a settlement, the earth can move again and bury the settlement.
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> Human intervention may also cause natural hazards where none existed before. Volcanoes erupt periodically, but it is not until the rich soils formed on their eject are occupied by farms and human settlements that they are considered hazardous. Finally, human intervention reduces the mitigating effect of natural ecosystems. Destruction of coral reefs, which removes the shore's first line of defense against ocean currents and storm surges, is a clear example of an intervention that diminishes the ability of an ecosystem to protect itself. An extreme case of destructive human intervention into an ecosystem is desertification, which, by its very definition, is a human-induced "natural" hazard.

Understanding this is the key to developing effective vulnerability reduction measures: If human activities can cause or aggravate the destructive effects of natural phenomena, they can also eliminate or reduce them.[1]

Of course, the world did not fully appreciate in 1991 the negative impacts of human activity on climate change. Now, more than twenty years later, science has proven a direct correlation between industrial pollution and global warming and discovered another direct correlation between global warming and more intense and more frequent weather-related natural disasters.[2] By definition, the wealthiest nations produce the most gases contributing to climate change.[3] These states also have the largest capacity to respond to natural disasters in the developing world. As the chief contributor to worsening weather, the industrialized world has a clear

[1] Department of Regional Development and Environment Executive Secretariat for Economic and Social Affairs Organization of American States (OAS), "Natural Hazard Management in Integrated Regional Development Planning," (1991): see chapter 1, accessible at: www.oas.org/dsd/publications/unit/oea66e/begin.htm#Contents.

[2] Stephanie Paige Ogburn, "Climate Change Exacerbates Some Extreme Weather: Global Warming Played a Role in Half of 2012's Litany of Extreme Weather Events, from Heat Waves to Storm Surges," *Scientific American* (September 6, 2013).

[3] Intergovernmental Panel on Climate Change (IPCC), Working Group I Contribution to the IPCC Fifth Assessment Report, *Climate Change 2013: The Physical Science Basis* (Summary for Policymakers), September 27, 2013, available at: http://news.bbc.co.uk/2/shared/bsp/hi/pdfs/27_09_13_ipccsummary.pdf.

moral duty to not only provide disaster relief, but also to take the lead politically in crafting a workable legal framework for the delivery of that aid.

Law seeks to anticipate issues and resolve them before such damage can happen by providing essential guideposts to institutional and human behavior. However, in the law of international disaster relief, sensitive issues of sovereignty and local cooperation are perhaps more prominent than in other fields of law and may stymie successful codification efforts. The sensitivity becomes particularly acute if local states suffering the effects of catastrophes somehow contribute to further damage. Yet the urgency of legal development in this area remains.

As with any inchoate area of law, efforts to determine the most effective and efficient legal regimes are essential. This volume comprises that effort for this subject. As a new field of study for a very old problem, there are as yet few scholarly contributions. The American Society of International Law (ASIL) on behalf of the Four Societies of International Law (ASIL, the Japanese Society of International Law, the Australian and New Zealand Society of International Law, and the Canadian Council of International Law) convened a symposium in September 2012 at the University of California, Berkeley on the international law of disasters. Scholars with both academic backgrounds and international organization experience shared innovative papers on the law of international disaster prevention and disaster response.

The chapters in this book cover a span of significant topics for delineating vital new subfields of international disaster law, including disaster relief as a general international legal principle, international funding for disaster prevention, the changing relationship between sovereignty and disaster relief, the relationship between humanitarian law and disaster law, the need for harmonization of laws for international search and rescue teams, and the growing role of law in facilitating geographic information system (GIS) technology in responding to international disasters.

Notably, Professor Daniel A. Farber from the University of California, Berkeley, one of the early scholars to approach this field, provides a commentary essay on the evolution of disaster law and Ms. Akiko Ito from the UN Secretariat on the Convention on Disability provides a commentary essay on the relationship between disaster and the Convention, focusing on how disasters specially affect the disabled. These essays demonstrate that the content of the international law of disaster relief matters not just for the relations between states but also for community risk assessment and already vulnerable individuals.

It is the intent of the editors and contributors that this work become not only an essential component of the global discussion on disaster relief occurring in capitals around the world, but also a standard reference for agencies providing disaster relief as well as a thought-provoking inquiry that will spur further academic research to drive the formation, integration, and adoption of progressive laws designed for the betterment of mankind.

PART I

The Legal Theory of International Disaster Relief

FIGURE 3 **The Eruption of Mount Vesuvius in 79 A.D.** Painting by Pierre-Jacques Volaire (1777), courtesy of the North Carolina Museum of Art.

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International Law and the Disaster Cycle

Daniel A. Farber

This chapter introduces the "disaster cycle" as a framework for organizing national and international emergency responses. Each stage in the cycle of disaster – mitigation, emergency response, insurance/liability compensation, rebuilding – is part of society's risk management portfolio that will include both pre-disaster preparation and post-disaster reconstruction. A holistic review of disaster response as reflected in the disaster cycle is essential if states are to plan effectively for future disasters.

THE NEED FOR DISASTER LAW[1]

This volume reflects an increasing recognition of the role that the legal system plays in disaster prevention, response, and recovery.[2] Attention to these issues expanded after two dramatic events: Hurricane Katrina in 2005 and the Indian Ocean tsunami of 2004.

Attention to disaster issues has been renewed by the Japanese tsunami and Fukushima nuclear accident. On March 11, 2011, in an event that is now known in Japan as 3/11, a 9.0 magnitude earthquake struck off the east coast of Japan, about a hundred miles east-northeast of Fukushima and two hundred miles northeast of Tokyo.[3] The earthquake also triggered a large tsunami that overwhelmed seawalls

[1] This article was originally given as the Keynote Address at the conference on "Disasters and International Law" at Berkeley Law School, September 27, 2012.

[2] These issues are the subject of Daniel A. Farber, Jim Chen, Robert R.M. Verchick, and Lisa Grow Sun, *Disaster Law and Policy* 2nd ed. (New York: Aspen Publishers, 2010). For a perspective on disaster law in a major developing country, see Michael Faure and Andri Wibisana, eds., *Regulating Disasters, Climate Change and Environmental Harm: Lessons from the Indonesian Experience* (Northampton: Edward Elgar Publishing, 2013).

[3] USGS: Earthquake Hazards Program, Magnitude 9.0 – Near the East Coast of Honshu, Japan, http://earthquake.usgs.gov/earthquakes/eqinthenews/2011/usc0001xgp/

and contributed to massive destruction.[4] As a direct result of the earthquake and tsunami, more than 15,000 people were killed and 340,000 displaced.[5] About forty-six minutes after the quake, the first waves of an enormous tsunami reached the Fukushima Daiichi power station. The immediate result was to shut down emergency generators, resulting in loss of coolant and eventually in loss of containment and radioactive releases.

All three of these events revealed a disturbing lack of preparation to handle disasters. Building on earlier efforts, such events have catalyzed a growing community of scholars around the world focusing on disaster law. The importance of this field is obvious. Considering just a single country, the United States, disaster costs have averaged $12 billion per year over the past half-century.[6] From 1980 to 2004, the United States experienced sixty-two weather events causing a billion dollars or more in damages.[7] Averages are misleading, however: Hurricane Katrina alone caused about $100 billion in direct damage.[8] Losses are highly skewed, with the top 20 percent accounting for 80 percent of the damages.[9] These mega-disasters pose unique challenges to legal systems, not just in the United States but around the world. This emerging legal field seeks to inform and improve disaster-related decision making, as evidenced by a spate of recent books[10] and a rapidly expanding number of law review articles.[11]

When national governments lack the ability to respond to large- scale disasters, the international system as a whole is challenged to respond. Such responses are an expression of human solidarity. They may also be based on a recognition of the international impacts that large-scale disasters may have, due to their economic repercussions, effects on migration, and impacts on political stability.

[4] "Seawalls Offered Little Protection Against Tsunami's Crushing Waves," *New York Times*, March 13, 2011, www.nytimes.com/2011/03/14/world/asia/14seawalls.html?pagewanted=all.

[5] Katherine Harmon, "Japan's post-Fukushima earthquake health woes go beyond radiation effects," *Scientific American*, March 7, 2012, www.nature.com/news/japan-s-post-fukushima-earthquake-health-woes-go-beyond-radiation-effects-1.10179.

[6] Carolyn Kousky, "Informing Climate Adaptation: A Review of the Economic Costs of Natural Disasters, Their Determinants, and Risk Reduction Options" (Resources for the Future Discussion Paper No. 12-28), Washington, D.C., 2012. Kousky discusses the data and methodological issues involved in such estimates in detail. Ibid., 11–13.

[7] James Miskel, *Disasters Response and Homeland Security: What Works, What Doesn't* (Palo Alto: Stanford University Press, 2008), 25.

[8] Ibid., 99. [9] Kousky, "Informing Climate Adaptation" 16.

[10] Farber et al., *Disaster Law and Policy*; John Nolon and Daniel Rodriguez, *Losing Ground: A Nation on Edge* (Environmental Law Institute, 2007); Robert R. M. Verchick, *Facing Catastrophe: Environmental Action for a Post-Katrina World* (Cambridge: Harvard University Press, 2010); Nan D. Hunter, *The Law of Emergencies: Public Health and Disaster Management* (Oxford: Butterworth-Heinemann, 2009).

[11] We can get some sense of the expansion from a Westlaw search for "flood insurance," "levees," "oil spill," "forest fire," and "natural disaster." For 2000–2005, the search produced 23 documents; for 2007–2012, the search produced 131 documents (search of JLR database on August 1, 2012). A search for "Hurricane Katrina" in the same database on August 1, 2012 produced 3,997 documents, of which 128 had the term in their titles.

Indeed, businesses are increasingly concerned about disruption of global supply chains due to disasters.[12]

Thus, international as well as domestic law becomes relevant to disaster issues. Although some disasters can be handled adequately at the national or even local levels, others exceed local capacities. As we will see, the current legal regime is underdeveloped, characterized by large gaps and a general lack of hard legal standards. But increasing global connectedness, combined with rising levels of global risk due to climate change, is likely to lead to increasingly global structures for disaster management.

THE DISASTER CYCLE AS AN ORGANIZING PRINCIPLE FOR DISASTER LAW

In making sense of the confused body of disaster law and the body of related scholarship, the most useful organizing principle is a simple idea called the disaster cycle, which is described in detail in the section that follows. The disaster cycle delineates a set of strategies for managing disaster risk, including mitigation, emergency response, compensation, and rebuilding, with rebuilding completing the circle by including (or failing to include) mitigation measures:[13]

THE CYCLE OF DISASTER LAW

Using the disaster cycle as a framework has the advantage of putting the emergency response, which usually gets the lion's share of attention, into context. Each stage of the cycle of disaster – mitigation, emergency response, insurance/liability compensation, and rebuilding – is part of society's risk management portfolio. The disaster cycle also highlights the interconnections between risk management strategies. Failures of risk mitigation often contribute to the impact of the later disaster, turning an otherwise manageable event into a more serious risk to life or property, or amplifying what would otherwise be a less significant risk to calamitous proportions. Post-emergency compensation mechanisms and rebuilding are as important as the emergency response in determining the severity of the impact on many victims.

The role of the international community may vary, depending on the situation and the stage of the disaster cycle. There are also likely to be variations depending on the status of the victim country. Developed countries are likely to be less often in need of international assistance than developing ones, but large developing countries may have a better ability to spread risks than small countries. Local capacity

[12] See United Nations Office for Disaster Risk Reduction, *Global Assessment Report on Disaster Risk Reduction 2013: From Shared Risk to Shared Value: the Business Case for Disaster Risk Reduction* (2013) www.preventionweb.net/files/1037_hyogoframeworkforactionenglish.pdf.

[13] Farber et al., *Disaster Law and Policy*, 3.

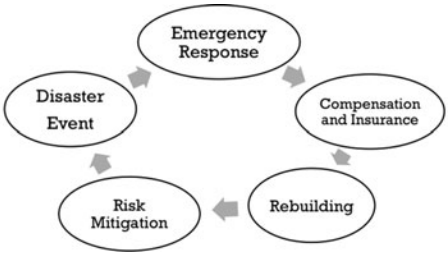

FIGURE 4 **The Cycle of Disaster Law**

building may be as important as direct assistance. The scale of the disaster is also clearly a relevant factor.

The remaining sections of this chapter work through the phases of the disaster cycle, followed by some brief closing thoughts. Institutionally, risk reduction, disaster response, financial compensation, and rebuilding may involve different international institutions and procedures. But none of them can be considered in isolation from the others in mapping disaster management strategies.

MITIGATION OF DISASTER RISKS

If we begin consideration of the disaster cycle in the lower corner of Figure 4, the first issue to consider is pre-disaster risk mitigation. Mitigation efforts attempt to lessen the potential impact or likelihood of disaster events before the fact, and successes and failures at this stage can spell the difference between a routine, manageable disruption and a major catastrophe. Hurricane Katrina would have been a much different story if the levees had not collapsed; an early warning system would have changed the impact of the Southeast Asian tsunami.

The damage wrought by a natural event – extreme weather or earthquakes, for example – is linked with human agency and manipulation of the natural environment, both at the site of the disaster itself and more generally with anthropogenic climate change. It is almost a cliché in the field that there is no such thing as a truly natural disaster. Physical "phenomena are a necessary component of risk, but they are only the starting point in addressing safety concerns" – calculating and planning for disaster risk must account for "acts of nature, ... weaknesses of human nature, and ... side effects of technology."[14]

Mitigation of disaster risks takes place across a broad range of settings. For instance, the Fukushima disaster has led to arguments to strengthen international regulation of nuclear energy.[15] Similarly, international law may be useful in

[14] Daniel A. Farber et al., "Reinventing Flood Control," *Tulane Law Review* 81 (2006): 1085, 1090.
[15] See Emily Benz, "Lessons from Fukushima: Strengthening the International Regulation of Nuclear Energy," *William & Mary Environmental Law & Policy Review* 37 (2013): 845.