



ISSUES IN BRIEF

Complex Natural Disasters and the Role of the University



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The complexity and imminence of disasters and humanitarian emergencies demand multidisciplinary and innovative approaches. As we observe the fifth anniversary of Hurricane Katrina and approach the one-year mark of the 2010 Haitian earthquake, it has become evident that there is a wealth of knowledge and interest within and across universities to think critically about and work creatively on “natural” disasters. From earthquakes in the Caribbean to massive floods in Pakistan, disasters highlight the need to strengthen the formal and informal networks amongst faculty and researchers who work on different aspects of complex humanitarian emergencies.

In this context, there are two general challenges for universities:

1. Unveiling and connecting all of their institutional resources and capacities related to disasters and humanitarian emergencies; and,
2. Creating formal and informal networks and practices that can harness and sustain these resources and disparate initiatives on demand and over time.

With these challenges in mind, universities across the country are grappling with the overarching question: What is the potential and future role of the university in disaster mitigation and humanitarian emergencies?

It was this question that motivated a multi-disciplinary meeting of Boston University faculty and researchers working on the varied dimensions of complex natural disasters (see box on page 5). Reflecting on the rich and wide-ranging discussion at this meeting, this brief highlights how universities are addressing the challenges posed by extreme natural events and their impacts on human lives and systems. A key realization that emerged from the meeting was that despite the challenges, universities are in a privileged position to build a holistic

understanding of what disasters are, to generate the knowledge and vocabulary that serve as the foundation for action, to monitor human and ecological conditions and development over time, and to act on behalf of sustainable and equitable forms of development.

The Complexity of Disasters: Lessons from Home and Abroad

Five years ago, the United States was gripped by images of a hurricane-battered Gulf Coast. Despite the strength of Hurricane Katrina, little time passed before blame for the large number of deaths and extensive material loss focused on socio-political errors and outright failures within government and the market. Similarly, the January 2010 earthquake in Haiti shook more than that country's capital city. The near 300,000 person death toll and the chaotic response to the earthquake prompted serious questions about the complicity of Haitian and international institutions in the scope of the disaster, as well as the capacity of those very same institutions to respond effectively to it.

The core set of questions and debates triggered by such events revolve less around the geophysical and more around issues of governance, resource distribution, social equity, technical know-how, and politics:

- How did the Gulf Coast or Haitian socio-political context contribute to the scope of death and destruction following the hurricane and earthquake?
- What did the pattern of destruction and homelessness reveal about housing and socio-economic relations in both places?
- Who or what is responsible for recovery and reconstruction?
- What does recovery look like in the Gulf and Haitian context?

It is in this sense that Katrina, Haiti's earthquake, and the string of disasters that followed in 2010 (earthquakes in Chile, Turkey, and China; floods in the United States and Pakistan) reinforced what David Alexander (1997, 289) noted some time ago:

It is now widely recognized that 'natural disaster' is a convenience term that amounts to a misnomer. Neither disasters themselves nor the conditions that give rise to them are undeniably natural...There has been an increasing tendency to regard disasters as caused more by the social conditions they affect than by the geophysical agents that precipitate them...Every natural disaster involves a unique pattern of physical energy expenditure and human reaction.

Ben Wisner went further by linking geophysical phenomena with human and social vulnerability. Wisner (2001, 252) noted that "extreme events [such as earthquakes and hurricanes] kill and produce losses because human beings, their creations and livelihoods, are in harm's way. Risk is a function of the extreme event (hazard), combined with the degree of potential harm or loss (vulnerability)." Wisner's use of vulnerability builds off of previous articulations of the term within discussions of disasters:

By vulnerability we mean the characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard (an extreme event or process). It involves combination of factors that determine the degree to which someone's life, livelihood, property and other assets are put at risk by a discrete and identifiable event (or series or 'cascade' of such events) in nature and society (Blaikie et al 1994, 11, emphasis in the original)

As recent events have shown with force, dealing with disasters is both a technical and political enterprise. Yet, grasping that the “natural” in “natural disasters” has to do as much with human nature as it does with mother nature is not enough. Talk of disaster and the scope of its destruction inevitably turn into discussions about knowledge, history, and politics. The challenge with disasters, therefore, is to understand their socio-political complexities and ultimately act upon them in ways that minimize human vulnerability and material loss.

The Challenges of Disasters and the 21st Century University

Managing the complexity of disasters is fundamentally an issue of knowledge, its production, organization, circulation, and application. This includes everything from defining what constitutes a disaster, to understanding the temporal-historic dimensions of human catastrophes, to identifying who and what shape our understanding of these events. Acting upon disasters means everything from translating knowledge into action — intervening in the socio-physical environment — to holding people and institutions accountable for their actions in the event of a calamity.

Alexander (1997, 298-300) cast the challenge of managing and acting upon the complexities of disasters as one of vision and connections:

There has been a general lack of holistic analyses that treat hazard, risk, and disaster as integrated phenomena. Many links between the various aspects of them remain poorly understood, including the connections between culture and architecture, structural design and social behavior, and land use and the application of technology...The challenge of the future of natural disaster studies is to be able to draw the connections between different contextual aspects of events as they occur, and to relate events that take place in different contexts.

Although Alexander wrote these words as part of a critique of the fragmented, often insular nature of academia, the role and contribution of universities to current debates on disasters are worth revisiting. If work on disasters means grappling with issues of knowledge, history and the politics of development, then universities are well positioned to take a leadership role beyond disaster studies. They can enter the realm of disaster mitigation and recovery. The university is by definition a premier site of knowledge production and it is ideally suited to monitor the history of relationships and events that are associated with disasters and human catastrophes. Even in the realm of politics and direct intervention in relief and development initiatives — fields of action from which universities have traditionally insulated themselves — universities are finding ways to act upon the world in a more direct and sustained fashion.

Information and communication technologies, as well as innovative institutional partnerships and collaborations (within and among universities, as well as between universities and non-academic institutions), are allowing faculty, researchers and students to be more than just producers and conduits of knowledge; they are permitting them to be present and participate in events near and far for long periods of time without unduly compromising educational missions and principles of academic integrity.

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Knowledge: defining and measuring disasters. What is a disaster? Alexander noted that “‘natural disaster’ clearly involves some rapid, sustained or profound impact of the geophysical world upon human lives and socio-economic means of support. But beyond that, the definition is likely to vary with the predilections of the researcher” (1997, 290-291). This predilection is not necessarily limited to what is observed (the impact of a geophysical phenomenon on human lives). It also comprises the threshold used to determine what is “profound” about a given impact. This is more than just about distinguishing between a “normal” state of affairs and a “disaster.” This carries over into ways disasters and their intensity are categorized (small/mega, rare/chronic) and prioritized (which disaster merits what amount of resources and funds).

Disaster categories raise important questions: what is being qualified, the intensity of the natural phenomenon or the scope of the impact on human lives? What are we measuring, lives or lost revenue? Whether the answer to the questions is “either/or” or “both,” the terminology establishes a hierarchy and typology of disasters that puts the issue of definition and conceptualization front and center in any effort to address them.

Together with the tendency to have researcher “predilections,” disaster categories and concepts provide a critical lens into how an epistemic, professional, or social-political community understands the problem and, by association, approaches its solution. Accordingly, one can also establish responsibility over the use of terms and criteria that ultimately mobilize limited financial and human resources. In the wake of the Haitian quake, many urban planners analyzed the disaster as a failure of regulation and development (land use, housing, building codes, economic activity). Disaster recovery and mitigation would therefore have to focus in large part on political-institutional capacity to regulate and manage the resources that shape the built environment. A seismologist would not necessarily disagree with this view, but he would emphasize other dimensions of the events or root causes of the vulnerability of the Haitian populace (constitution of fault lines). A sharper contrast can be drawn when comparing how a planner and a public health official see disasters. The longer-term vision of the planner clashes with the immediacy of the public health issues triggered by a disaster. For public health specialists and practitioners, a disaster is often a discrete event that requires immediate attention and resources.

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Noting these differences is neither a call for a universal definition of or approach to disasters, nor is it a claim that the differences are incompatible. Rather, this is a call for the convening of dialogues among and between communities engaged in disasters studies and intervention. If the event and concept of a disaster are socially constructed, we have to pay attention not just to the construct, but also to the way it is shaped and by whom.

Consequently, there is a need for academic engagement that allows for the cross pollination of ideas and approaches that ostensibly generate innovations and insights into disaster mitigation, management and relief that a single discipline or set of actors would not be able to do on their own.

Boston University Dialogue: The University's Role in Dealing with Disasters and Complex Humanitarian Emergencies

In recognition of the range of disaster-related research being conducted across the Boston University campus, the BU Office of the Provost and the Frederick S. Pardee Center for the Study of the Longer-Range Future hosted a dialogue on “The University's Role in Dealing with Disasters and Complex Humanitarian Emergencies” on May 3, 2010. The dialogue convened faculty and representatives from departments and centers across all campuses of Boston University, including, among other disciplines, social work, medicine, public health, planning, geography, remote sensing, business, international relations, and information technology.

Designed as a platform for interdisciplinary conversations and engagement on complex humanitarian issues, the dialogue confirmed a shared sense of purpose within BU around broader issues of and projects

on human development and the physical-natural environment. The meeting highlighted the need for better coordination, information sharing and interdisciplinary enquiry on issues related to complex humanitarian emergencies.

The discussion highlighted the wide variety of relevant research already being undertaken all over Boston University, including on:

- how and when human and eco-systems adapt to change and shock;
- developing and adapting network theories to the natural and social sciences;
- harnessing information technology to manage complex systems;
- applying information technology to monitor human and ecological events and processes in real time;

- understanding the political, cognitive and technical processes that mediate knowledge and technology transfers;
- analyzing the interplay of international and domestic politics in relation to state and market capacities to plan and manage resources;
- designing health services and resource delivery tools that can adapt to diverse and shifting social and ecological conditions.

The participants viewed the dialogue as an initial conversation and agreed on the need to better map the full scale of expertise and interest on this topic at Boston University. The group committed to explore new and meaningful ways to keep the conversation going amongst BU researchers and also with colleagues at other universities.

Fortunately, this level of engagement is already happening across the United States. At several universities such as Tufts University and its Feinstein Center and at Columbia University and its Earth Institute, faculty and researchers across disciplines are engaged in conversations and initiatives that identify and explain different approaches to development and disasters studies, but not as simple exercises in education. At Boston University, the Center for Global Health merges research on public health, engineering, medical services, and poverty to combat health epidemics and chronic diseases in the developing world. As a flagship inter-disciplinary center within BU, the Center expands the notion of disaster to include disease-driven humanitarian catastrophes. The Center also acts as an intra- and inter-university site for debate and applied research on disease and humanitarian crises linked to poverty, governance and environmental degradation.

History: disasters, time, and the university. Time is an implicit, but poorly grasped, dimension in any discussion on disasters. Identifying when a disaster occurs is as challenging as trying to identify what one is. If disasters are the products of social relationships and events, it does not suffice to consider them as events that occur in a discrete moment in time. The human costs that immediately follow an extreme natural event are best seen as the

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symptom of a series of events and relationships — a history — that preceded the impact of the geophysical upon the human. Accordingly, the prevention of disasters and the reduction of vulnerabilities require more than mitigating the geophysical components of the disaster.

As with the discussion on the definition of disasters, this point is more than academic. It is relevant to the way we design, apply, and monitor policies and mechanisms meant to mitigate and respond to disasters. Of course, there is a humanitarian and economic immediacy to disasters that takes our attention and commands most of the resources dedicated to disasters studies and intervention. This approach, however, confuses disaster response with work on disasters, which entails acting on a more holistic, longitudinal understanding of these phenomena.

Harvard University provides one example of the holistic and longitudinal paradigm shift in disaster studies and humanitarian crises. In 2005, the Harvard Humanitarian Initiative (HHI) was established as a university-wide center to relieve human suffering from war or disaster by advancing the science and practice of humanitarian assistance. HHI works extensively with local and affiliated partners including Brigham and Women's Hospital and Partners in Health (PIH), which has had a presence in places such as Haiti and Peru for over 20 years. These relationships have allowed HHI to be active in a range of complex humanitarian crises across time and space, and with multiple partners (e.g. Pan American Health Organization, American Refugee Committee).

At Boston University's Frederick S. Pardee Center for the Study of the Longer-Range Future, scholars are engaged in applied research with humanitarian agencies to monitor how, over time, information and technologies are developed, transferred and ultimately applied by people living in high-risk environments. Political history and disasters has also been a subject of research within Boston University at related departments as well as its many specialized research centers. Events such as the 2010 Haiti earthquake are the focal point for studies on the ongoing relationship between international development agencies, donor countries, and rentier states — relationships that help explain state and market capacity to prevent and respond to disasters.

If time-history is important, universities are institutionally designed to take on the challenge of monitoring disasters. The university's emphasis on education and research force upon it a need to focus on and process multiple streams of information in ways many other institutions are not capable of doing. The previous discussion on knowledge formation is the central case in point. As information technologies advance, however, universities will be able to move beyond archival sources of information by gathering and processing data in real time. Within Boston University conversations are underway about establishing global observatories that can monitor natural and human environments live.

Politics and ethics: knowing when and how to intervene in disasters. The complexity of disasters is not simply a matter of understanding the multiple components that shape these events. It also includes the challenge of acting upon disasters based on acquired and received knowledge. Acting in this sense is more than knowing what to do:

Lack of preparedness cannot be justified in an age in which the geographical pattern of disaster areas is well known, the recurrence interval of many disasters is estimable and relief methodologies have been globalised (Alexander 1997, 295).

With Hurricane Katrina and Haiti in mind, more people are arguing that individuals and

collectives do not do what they know they should be doing, which is not merely a cognitive issue, but a political and technical one. It is in this realm where the largest challenge lies for universities, deciding whether and how to apply their wealth of knowledge to disasters and complex humanitarian crises. On a technical level, the educational and research missions of universities constrain their capacity to act in immediate and proactive ways. Given the importance of history and the strength of universities in this domain, the irony is lost on a few. The technical issues around immediacy, however, can be surmounted, leaving universities with the thornier realm of choice.

Although technology and partnerships have allowed universities to expand their missions and spheres of influence, these changes have come along with a host of ethical issues that require attention. There is the issue of subject selection and exclusion. Given time and resource limitations, the holistic approach to disasters might force universities to focus on a specific geographic area or group of people, at the expense of others. In the realm of action and intervention, complex choices will have to be made about if, when and how to intervene in on-going processes that generate or mitigate vulnerabilities. Despite these challenges, faculty, research centers, and administrators across the United States have been engaged increasingly in activities that are shaping disasters studies and intervention.

Disasters and the Institutional Framework of the 21st Century University

The complexity of disasters precludes the dominance of any one institution or set of actors in the study and mitigation of these socio-physical events. The imminence of disasters and the human and financial costs that are associated with them, however, demand a level of introspection, coordination, and mobilization among a set of actors that arguably does not exist today in a level commensurate with the scope of vulnerabilities present at either the national or global level.

Nonetheless, universities are breaking new ground in all of these areas (introspection, coordination, and mobilization) in traditional and innovative ways. Through meetings, symposia, and multi-disciplinary initiatives university faculty, researchers and administrators are actively thinking about and discussing the role universities can play in understanding and acting upon disasters. The proliferation of multidisciplinary programs, symposia and research initiatives attest to the ways different units, disciplines and epistemic communities within and outside of academia are coordinating resources and insights to further discussion and innovations in disaster studies and intervention technologies. The proliferation of partnerships with non-academic centers, consultants, and first response agencies, among other partners, has allowed faculty and researchers to engage in real-time events and processes across the globe. Whether faculty are engaged in applied research or as consultants, their presence in areas that were once studied in retrospect is opening new avenues to think about, apply and extend the wealth of knowledge produced and stored in the university.

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Despite this progress, ethical, institutional and financial challenges remain. Greater work is needed to reconcile direct and indirect modes of intervention in extreme humanitarian emergencies with the ethical principles that guide academic research and funding. Institutionally, barriers once set up to bolster and protect the educational mission and academic disciplines housed within the university remain, namely the academic calendar, the models of instruction, and the processes through which academic and research standards are set within departments and institutes. Financially, collaborative academic initiatives and real time research require a reconfiguration of current modes of revenue generation, sharing, and distribution that are process-heavy and time-consuming.

Fortunately, as the Boston University meeting demonstrated, these are not untested challenges within some universities. The next steps are to see how current initiatives and trends can scale up and formalize in ways that address disasters studies and complex humanitarian crises more effectively. ●

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