

ANTHONY OLIVER-SMITH<sup>1</sup>*Professor Emeritus, Anthropology Department, University of Florida*

## Disaster risk reduction and applied anthropology

*This article reviews the conceptual development of the disaster risk reduction perspective in research in general as well as its formalization as an instrument of policy and practice at the international level. I also review current programmatic applications of disaster risk reduction in research and policy fora and assay key anthropological contributions to risk reduction policies and practice. I also consider the links between disaster risk reduction and climate change adaptation, as the possible trajectories of these phenomena are as intimately bound to one another as are their root causes. Finally, I discuss some of the major critiques of the application or lack thereof of disaster risk reduction in the context of critical discussions of contemporary understandings of risk and development. [risk, disaster, vulnerability, indigenous knowledge, displacement and resettlement, development]*

### Introduction

**T**he discussion of disaster risk reduction in the panel organized by the Risk and Disaster Topical Interest Group at the 2015 Annual Meeting of the Society for Applied Anthropology in Pittsburgh focused largely around the essentially unrealized hopes that policies oriented by disaster risk reduction would lead to significant declines in losses of life and damages. While there have been some decreases in loss of life, particularly in the industrialized world, economic and other material losses, and all the entailed human losses of homes, livelihoods and social disruption and trauma have continued to grow. Moreover, it was noted by panel participants that the majority of resources continues to be dedicated more toward emergency management and reconstruction than to addressing disaster risk through policies and programs of sustainable development. Discussion also engaged the issue of the links between the expansion of exposure and vulnerability with the policies and practices currently enacted in the processes of economic development.

### Disaster risk reduction

Anthropological research has clearly established that people around the world through long experience and practice develop a deep knowledge of their environments and possess a number of elements—technologies, forms of work, organizations, and the like—which allow them to make use of the resources in the environment for social reproduction and sustainability, many of which are as well relevant to the management and reduction of disaster risk. In effect, strategies and practices that reduce risk of disaster are simply basic components of overall cultural adaptation. Moreover, according to the characteristics of their total environment, all cultures develop strategies, such as early warning systems, escape routes, identification of safe/unsafe locations, as well as many livelihood strategies such as crop diversification and housing design and form, which may reduce the risk of disaster as part of overall cultural adaptation. Indeed, traditional life was not, as Gideon Sjoberg once asserted, “a more or less continual ‘reign of terror’” (1962:361). However, risk is also produced in the shared

behavioral and interpretive repertoires we refer to as culture; this can be through error, misinformed or misplaced priorities, or imposition by external factors, many of them a function of inequality and power. Indeed, many traditional forms of disaster risk reduction were undermined by changes introduced by colonial regimes and the trend continues today under globalized, neoliberal frameworks, leaving people more exposed and vulnerable (Oliver-Smith 1999, 2013).

The concept of disaster risk reduction was also implicit in the emergence of approaches that reoriented thinking about disasters toward the concept of vulnerability in the 1970s (e.g., O’Keefe et al. 1976; see also Faas this issue). At this time, disasters began to be reconceptualized in the social science literature as anything but natural, basically with no independent existence as phenomena, but rather more as “moments of space-time compression within broader social and historical processes” (Maskrey 2016:5). However, despite becoming explicitly formulated in terms of policies and practices, the results of disaster risk reduction have been at best uneven, largely due to a failure to meaningfully address the question of causality of disasters.

Although the idea of reducing disaster risk seems implicit in the various formulations on disaster prevention and preparedness, including risk perception, communication, education, early warning systems, antiseismic technology, flood plain zoning, and the like, disaster risk reduction did not actually begin to take shape as an articulated perspective with implications for policy and practice until the mid-1990s. The International Decade for Natural Disaster Reduction (1990–2000) took a step toward disaster risk reduction in advocating for a safer environment, but still framed the problem from a hazard-centric perspective in terms of populations and places exposed to hazards and therefore at risk of a “natural disaster.” Midway through that decade, Blaikie et al. (1994, later Wisner et al. 2004) developed their “pressure and release” model for the progression of vulnerability, which framed the problem in terms of risk that was generated by root causes, dynamic pressures, and unsafe conditions that when combined with a hazard from the environment produced a disaster. Explicit in that approach was a set of principles concerning disaster risk reduction (Wisner et al. 2004:330). The perspective articulated in those and other publications led to widespread acceptance of the idea of disaster risk reduction in the 1990s, particularly in the developing world, where it resonated with views

that were developing among researchers in the Network of Social Research on Disaster Prevention (La Red de Estudios Sociales en Prevención de Desastres en América Latina).

A decade later, the United Nations Office for Disaster Reduction (UNISDR) adopted disaster risk reduction as a guiding principle, defining it as “the conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development” (UNISDR 2004). As a guiding principle, the United Nations’ definition focuses on systematic efforts to reduce the causal factors of disasters and includes within its portfolio of goals the reduction of exposure, decreasing the vulnerability of people and property, risk informed management of land and the environment, and enhancing hazard preparedness (UNISDR 2004).

Current perspectives on disaster risk reduction draw to a large extent on the pressure and release approach (Wisner et al. 2004) and share a focus on addressing root causes and risk drivers of disasters, but vary somewhat on definitions, scale, and policy prescriptions. For example, the General Assessment Report of the UNISDR (2015a) very clearly establishes the roots of contemporary risk in historic and contemporary policies and practices of development. Among others, the Forensic Investigation of Disasters (FORIN) working group of the Integrated Research on Disaster Risk (IRDR) program has developed a conceptual framework and guide to research on root causes, based on the premise that disaster risk reduction cannot take place without addressing the multidimensional issues of causality, including the deeply embedded systemic social roots of risk and vulnerability (Burton 2010; IRDR 2011; Oliver-Smith et al. 2016). The German Committee for Disaster Reduction has also developed a framework and analytical tool for practitioners that employs a similar perspective, but with a shift away from political economic analyses toward the role of context specific and local root causes (Birkmann et al. 2011; German Committee for Disaster Reduction 2012). The Center for Disaster Management and Risk Reduction Technology (CEDIM) adopted a “forensic approach” to disaster risk, but emphasizes “a near real time” analysis of causes and events as opposed to a more historical and developmental perspective (2012). The Stockholm Environmental Institute (2015) has also developed an

approach to causality that situates the drivers of disaster risk within a development perspective. In point of fact, these approaches distinguish themselves by addressing disaster risk at specific levels. Essentially, disaster risk reduction can be addressed at the level of local unsafe conditions in what might be termed first-order strategies. Second-order disaster risk reduction strategies, focusing largely on risk drivers, address risk drivers that may be local or regional in scale. Third-order strategies focus on root or underlying causes, effectively aimed toward neutralizing the ongoing effects of systemic processes and institutions that construct vulnerability, exposure, and disaster risk.

At the operational level there has been a general reluctance to engage with these formulations, particularly regarding second and third order strategies. The major institutional focus is still on disaster management and emergency response, although there have been increased arguments and calls for disaster risk reduction by addressing the root causes and risk drivers of disaster risk. Despite a variety of international institutional initiatives, including the aforementioned International Decade for Natural Disaster Reduction (1990–99), the Yokohama Strategy and Plan of Action for a Safer World (1994), the Hyogo Framework for Action (UNISDR 2005), and most recently the Sendai Framework for Disaster Risk Reduction (UNISDR 2015b), integration of the basic aspects of disaster risk reduction into national policy and practice, much less development policy and programs, has been slow and far from comprehensive (Cutter et al. 2015). Indeed, of the five priorities of the Hyogo Framework for Action, it was recently reported that little progress had been made on Priority 4, specifically addressing underlying causes of disaster (UNISDR 2007:2).

While there are significant advances in the recent Sendai Framework on Disaster Risk Reduction (Briceño 2015), the focus on root causes and risk drivers has shifted from being one of five priority issues of the HFA to being 1 of 15 basic principles. This is one of several indicators that the recognition of the social roots of disasters in formal institutional contexts has actually had little effect in the actual practice of disaster risk reduction, with the result that there has been a general failure to address the root causes and risk drivers of disaster. Indeed, there are strong indications that disaster risks are being generated by uninformed policies and practices of development faster than any efforts of disaster risk reduction to actually diminish them (UNISDR

2015a). Disaster risk reduction has therefore largely been framed as a strategy to protect development, suggesting a somewhat schizophrenic effort to shield development from the socially constructed consequences of its own contradictions (Maskrey 2016). It is notable that the U.S. delegation went to some lengths in the Sendai negotiations on disaster risk reduction to protect the interests of private sector development (Mission of the United States-Geneva 2015). Nonetheless, the recent UNISDR Science and Technology Advisory Group conference designed to further the implementation of the Sendai framework, foregrounded the issue of root and underlying cause analysis, including the role of development, as an important research gap to be addressed (2016).

Currently, large-, medium-, and small-scale disasters are actually becoming more frequent, and damage and loss continue to increase at a rapid rate (UNISDR 2009, 2011, 2015a) driven by social and economic processes now at work around the world that lead to disaster risk. Approaches to development that privilege economic growth over social and environmental values and priorities are key factors in the proliferation of disasters. Risk drivers such as population growth and narrowly defined economic development in exposed locations, pressures on land and water resources, poorly planned and managed urban growth, the loss of ecosystem services, and climate change are themselves driven by contemporary neoliberal models of economic growth, resulting in a magnification of disaster risk around the globe (Lavell and Maskrey 2014). Moreover, the current fossil-fuel based, growth-driven model of economic development is the driving force behind the challenges, including intensified hazards and more acute risks, which climate change is now presenting to the world (IPCC 2013). However, climate change policy has been dominated by largely technocratic, top-down emissions reductions strategies such as emissions trading mechanisms, or national carbon taxes rather than reframing the “problem” of climate change with all its social and political complexity, as culturally driven and requiring multiple solutions at different scales (Fiske et al. 2014).

The question of disaster risk reduction is inextricably tied to the question of causality and understanding both the hard truths and the complexities of this should be seen as a basic objective for disaster risk research and in advancing disaster risk reduction practice (Burton 2010, 2015). At the core of the problem is a reluctance to confront the fact that disasters are not external and unforeseen

shocks to an allegedly properly working economic and social system. Unfortunately, in the policy realm risk is still seen as an externality that requires management and preparation rather than as a socially constructed problem created by root or underlying causes that continue to be ignored despite their continuous manifestations in the workings of society. Most resources thus are still focused on emergency management and preparedness aimed toward reducing damage and compensating for losses rather than avoiding risk by addressing the underlying socially embedded causes and risk drivers that generate risk in the first place (Lavell and Maskrey 2014).

It is clear that applied social scientists need to advocate a more critical stance to advance necessary transformations in disaster risk management. Such a critical stance builds upon the fundamental notion that disaster risks are socially constructed: that is, they are the results of human decisions and actions (Oliver-Smith 2013) or perception (Jones et al. 2013). The processes involved are often diffuse and are deeply embedded in societal histories. The issue of scale is particularly pertinent in this regard. Disaster risk reduction can take place—and, indeed, it *must* take place—at multiple scales: local, regional, national, and global. However, addressing root and underlying causes of disaster entails engaging with issues that are far beyond the portfolio of tools and instruments of disaster risk management and fall more squarely within the framework of development.

### **Disaster risk reduction, policy, and anthropology**

Anthropological participation in the advancement of disaster risk reduction policy evolved with the overall perspectives on vulnerability and risk as they emerged and developed in the general multi- and interdisciplinary and multisectoral discourse of disaster research, policy, and practice (see Faas this issue). In some sense, it is difficult to survey anthropological disaster research largely because of the increasing artificiality (or perhaps porosity) of disciplinary boundaries. Themes and topics as well as areas of the world that were once the purview of anthropology are now being explored by other social science disciplines and anthropologists have likewise borrowed extensively from other disciplines as well. The trends of cross-fertilizing concepts and conceptual frameworks and sharing methods are also now commonplace among the social sciences (Faas

this issue; Barrios this issue). For example, there is general recognition that ethnographic methods are extremely effective in capturing the processual dimensions of disaster risk construction, vulnerability, disaster events, and postdisaster processes of recovery. For better or for worse, lots of people are doing ethnography today, although the time frames for such research in most cases have been vastly reduced. By the same token, some anthropologists do very quantitative, survey-based work based on short-term fieldwork as well.

Much of contemporary anthropological disaster research, like that of other social sciences, is concerned with the operative relations and interactions among individuals and groups, both formal and informal, through the various stages of impact, emergency, relief, and reconstruction, with an emphasis on the role social relations and cultural orientations, knowledge, values, norms, and beliefs as they are re-established, re-invented, renegotiated, discarded, or renewed in the process of recovery. But today these characteristics do not only pertain to the work of anthropologists; anthropologists work inter- and trans-disciplinarily with colleagues and stakeholders on disaster-related issues across many boundaries. What is becoming true in general today is that social scientists, particularly those that engage in large problem-focused research, become defined much more by the problem they work on than by their discipline. Themes and specific topics are explored regardless of discipline, and theories and methods are employed for their utility regardless of origin. We welcome this trend and see it as critical for the advancement of progress on disaster risk reduction and other hard problems in the social sciences.

However, what is equally true, especially from the perspective of disaster risk reduction, is that anthropology anticipated long ago, particularly in its work on community organization and development, the fundamental requirements for effective risk reduction, namely the need for an integrated perspective that situates local realities within larger regional, national, and global policy and practice contexts. This entails understanding local risk perception and interpretation, local participation, and the inclusion of local knowledge and appropriate technology, effective capacity building at the local level, and the essential attention to culture (see Maldonado this issue; Hoffman this issue; Zhang this issue). In addition, certain salient characteristics of anthropological research on disasters—in particular, the longitudinal, integrated, and processual

orientation—focus not solely on catastrophic *events*, but on the risk and vulnerability that preceded the event(s), which orients the anthropological lens toward those features that contribute to the social construction of risk and vulnerability. This also establishes the inequalities that inhere in the distributions of risk among individuals, groups, and geographies as a central focus of research. Consequently, this approach, from an applied perspective, focuses on understanding disaster risk from an integrated perspective to frame responses that reflect community values and priorities. Anthropological research therefore frames disasters as much more than ruinous events. They are instead examined as processes that unfold through time and their beginnings are deeply embedded in societal history and culture and responses to threat as well as impact must be framed with that understanding in mind.

Thus, we arrive at a crucial contribution that anthropologists make toward an integrated approach to disaster risk management. Until recently, disaster research and management have focused largely on the infrastructural, demographic, political ecological (i.e., local and global power dynamics that inhere in human–environment relations), and socioeconomic aspects of disaster, from pre-event vulnerability to impact and through reconstruction. This approach has largely considered this set of problems from a technocratic and bureaucratic perspective, in the process almost totally ignoring until quite recently the cultural aspects of disasters (Hoffman 2002; Kruger et al. 2015). Anthropological research has emphasized the importance of culture in addressing the multifaceted dimensions of disasters. It is clear and increasingly recognized by other fields (see IFRC 2014) that neglecting the deep cultural roots of every aspect of a given disaster scenario leaves troubling gaps in research and tragic outcomes in disaster praxis (see ACAPS 2015:12). The problem has been exacerbated by traditional disciplinary compartmentalization leading to a disengagement of culture conceptually from economy, society, politics, and the environment when in fact all human constructions are based on culturally framed symbolic representations.

This shared symbolic meaning is the foundation of culture, which in turn is the basis of moralities and values, and conditions social organization and social reproduction co-constructed with an environment, replete with resources and hazards. It is clear that a fully integrated research methodology on disaster risk reduction must include culture (International

Council for Science 2008). Social constructions of meaning (culture) need to be integrated with analyses of hazard risks. While disaster practitioners and policy makers can promote adjustments at the local level to the physical/material components of hazard risks, such changes for local people may be profound if local knowledge, values, and beliefs are devalued (Crane 2010). The cultural nature of most human adaptation requires that livelihoods that fulfill material, moral, and spiritual needs in the context of major environmental, social, cultural, economic, or political changes must be maintained if livelihoods and a sense of continuity of meaning and coherence are to endure (Crane 2010; Marris 1975). This is particularly true if the disaster risk reduction oriented changes are to gain local acceptance and longer term reduction of risk. Technocratic impositions focused solely on physical/ material threats stand little chance of permanence without a reasonable consonance with local culture. The attention to culture can disengage disaster risk reduction from a dependence on the conventional technocratic policies, forms of governance, and practice that have currently informed disaster risk reduction and have reduced the opportunity that could be provided by the deep cultural knowledge about risk and environments in local communities. While culture is part of and relevant to all domains of disaster management and disaster risk reduction, two domains of applied anthropology, indigenous knowledge and displacement and resettlement, can serve as examples.

### Indigenous knowledge

Although anthropologists began to stress the importance of indigenous knowledge for development in the mid-1970s (Brokensha et al. 1980; Warren 1976), the heavily technocratic bias in disaster management and the emphasis on emergency management and reconstruction inhibited its recognition until the beginning of the 21st century. Indigenous knowledge can be defined as the sum of experience and knowledge in local circumstances that provides the basis for decision making in dealing with familiar and unfamiliar problems and challenges (Brokensha et al. 1980). In fact, that definition comes fairly close to being a reasonable characterization of adaptation itself (see Oliver-Smith 2013). Thus, indigenous knowledge is the foundation of local adaptation to a total environment. Ben Wisner (2006), for example, sees one aspect of vulnerability as a devaluation

of local knowledge and urges its restoration to empower the community and reduce vulnerability. Anthropological documentation of such traditional knowledge has now given it greater visibility and their relevance to disaster risk reduction is now increasingly recognized (Mercer et al. 2010).

Coastal peoples must be consistently alert to the signs from their environment of potential climatological and meteorological hazards in the form of storms, storm surges, king tides, and earthquake-triggered tsunamis (see Marino 2015). Their strategies for dealing with hazards are derived from deep and extensive knowledge of their maritime environment about water conditions, currents, waves, weather patterns, and animal behavior. The knowledge of how to deal with such hazards is often embedded in and transmitted through songs and stories that are passed from generation to generation. One such story from the Hoh tribe from Washington State in the United States revolves around a central character, a young boy, who sees a canoe in a tree. His father explains how one day the bears began roaring and a large earthquake happened, followed by the tsunami that floated the canoe into the tree. His father warns him that when he hears the bears roaring, or feels an earthquake, he should run to higher ground. One day the boy hears the bears roaring and runs to tell the chief, who alerts the villagers to run to higher ground. The boy is congratulated for saving the villagers from the tsunami and is called "the brave one" from then on (Becker et al. 2008). The effectiveness of such stories and legends was further demonstrated on the island of Simeulue off the north coast of Sumatra during the 2004 tsunami. The islanders' specific knowledge passed down to them from their ancestors through stories and songs enabled them to respond quickly to the tsunami and only seven people from a population of 78,000 perished (McAdoo 2006). On the U.S. Gulf coast, multigenerational experience with and knowledge of the behavior of currents in the bayous traditionally enabled fishing communities to protect and secure their boats during hurricanes. This knowledge has been deferred to by hydrologists as superior to the models they develop to describe these currents (Button and Peterson 2009).

Similarly, highland peoples have developed long-term adaptations to environmental hazards principally of drought, frost, hail, flood, volcanos, and earthquakes. In the Andes, these adaptations revolve around the exploitation of multiple ecological tiers, complex water management systems, dis-

persed settlement patterns, environmentally appropriate building materials and techniques, communal labor systems, interregional exchange and distribution systems, surplus storage and preparedness, and ideological modes of explanation and meaning formulation for frequent environmental disturbances (Oliver-Smith 1999). Multiple ecological niches, often in close proximity, enabled farmers to both diversify production and spread both risk and resources over wider areas, diminishing the impacts of localized floods, hail, mudslides, and frosts, while at the same time producing a varied diet (Murra 1972). Although some of these disaster risk relevant adaptations have been undermined by external forces, highland peoples continue to deal with a wide range of environmental variability and relatively high levels of uncertainty (Gobel 2008) through deep knowledge of their ecologically complex environment in which they both diversify consumption and spread risk against climate variability. Equally important are longstanding traditions of communal or cooperative labor that enable households to call on resources from the community in times of need (Faas 2015). Although some of these strategies have been eroded by external pressures (Faas in press), efforts to revive traditional practices and materials for disaster risk reduction have been undertaken, such as the use of antiseismic building materials and practices, land and settlement planning by the Intermediate Technology Development Group, and food preservation practices and community organizational forms that had fallen into disuse by Practical Solutions (Ferradas et al. 2010; Maskrey 1995). By the same token, it must be recognized that indigenous knowledge is hardly a fixed category and disaster risk reduction strategies may often combine local and global knowledge productively, always bearing in mind the power disparities that may be involved in such amalgams (Shaw et al. 2009).

#### **Disaster, displacement, resettlement, and disaster risk reduction**

The Internal Displacement Monitoring Centre recently reported that 184.6 million people were displaced by disasters between 2008 and 2015 largely due to the increase in exposure and vulnerability on a global scale (2015). Anticipating this increase, resettlement of both disaster victims and people at risk of hazard impact is being seriously considered

as a viable form of disaster risk reduction. Anthropologists working on displacement and resettlement beginning in the mid-20th century and on to the present have arguably made the single strongest, tangible, and internationally documented and recognized contribution to development policy and practice over the last quarter century (Oliver-Smith 2006). Since displacement and resettlement affect virtually every domain of individual and community life, anthropology's inductive approach equips it well to address the inherent complexity of the resettlement process. In the 1970s, the problems experienced by people impacted by development-induced displacement and resettlement were linked to those of people displaced by conflicts and disasters triggered by natural hazards (Hansen and Oliver-Smith 1982). Since the 1980s, the resettlement of communities located in high-risk zones for disaster risk reduction has gained greater attention (Correa 2011a, 2011b; Ferris 2012; Oliver-Smith 1991; Perry and Mushkatek 1984).

Although the initial focus in climate change adaptation tended to see resettlement relatively unproblematically as a solution to intensified storms, sea-level rise, and desertification, the findings of research on development-induced displacement and resettlement, largely by anthropologists, have now brought the complexity of the process into a more realistic perspective. In effect, the lessons learned in development-induced displacement and resettlement research are now being used to expand the array of approaches and methods that address the challenges presented by disasters and climate change displacement and resettlement at the local community and project level, in national and international political discourse, and in the policy frameworks of multilateral institutions. Roberto Barrios' (2015) study of the impacts of Hurricanes Manuel and Ingrid on the Pacific Coast of Mexico in the fall of 2013 indicates the importance of interrogating the discursive entanglement of disasters, development, and climate change. As has become common in Mexico and elsewhere, official sources pointed to climate change as the culprit of the disasters. But Barrios finds that climate change is not merely a material phenomenon, but also a discourse that obscures the development failures at the root of disaster. The discursive power of climate change narratives lies in the ways they are invoked as diversionary tactics to buttress Mexican narratives of statecraft and create a climate change imaginary that is an externality, the product of failings elsewhere in the world.

Whatever the root causes of displacement, communities that have been displaced and resettled are communities that must be reconstructed, either by themselves or with assistance (Birkmann et al. 2012; Oliver-Smith 2005;). In either case, an infrastructure has to be built to replace the one that has been lost and a community, as a social body, has to reconstitute itself. Resettlement project-affected people are confronted with a complex, cascading sequence of events and processes most often involving dislocation; homelessness; unemployment; the dismantling of families and communities; adaptive stresses; loss of privacy; political marginalization; a decrease in mental and physical health status; and the daunting challenge of reconstructing one's ontological status, family, and community (Cernea 1990, 1997; Colson 1971; Scudder 1982; Turton 2006). All suffer the endangerment of structures of meaning and identity, and all must mobilize social and cultural resources in their efforts to reestablish viable social groups and communities and to restore adequate levels of material and cultural life (Bennett and McDowell 2012). Given the disruption and trauma that may be generated by displacement, the resettlement of either disaster victims or people at risk should be undertaken only in the case of risks that under no circumstances can be mitigated or reduced.

#### **Disaster risk reduction and climate change adaptation**

The lack of attention to local knowledge in disaster risk reduction has been replicated in the field of climate change adaptation. It is now fairly well agreed that climate change will in most cases exaggerate the effects and frequencies of existing hazards, the impacts of which are largely conditioned by existing patterns of exposure and vulnerability (see Marino 2015; Marino and Lazrus 2015). Indeed, climate change effects will also increase the vulnerability of people to geological and other hazards not related to climate change. Even in cases where the climate change driven hazard is novel, its impacts will still be expressed through local vulnerability patterns. Regardless, it is fairly clear that the outcomes of many climate change effects will be seen and felt as disasters by the affected populations. Consequently, both climate change adaptation as well as disaster risk reduction must be framed and designed to address those social and economic features that render people vulnerable to environmental hazards in general. Climate change effectively adds to the array

of hazards experienced by people and thus climate change adaptation constitutes a subset of disaster risk reduction and must therefore address systemic vulnerabilities as well as the hazards posed by specific climate change effects (Kelman and Gaillard 2010). Conversely, it is also possible to say that disaster risk reduction can be a subset of climate change adaptation, which addresses many more policy objectives, going beyond risk reduction and framing the challenges more systemically in dominant development paradigms (Oliver-Smith et al 2016).

At local and regional levels, disaster risk reduction and climate change adaptation share common goals in addressing the risks that communities face and attempting to assist in their reduction. However, climate change in general also shares an unfortunate focus on “extreme events” with disaster risk reduction, tending to deflect the social construction of risk and reverting back to the pre-1970s hazards paradigm. Rather than a focus on “extreme events” in a physical sense, the central concern should be on high impact events and contexts, where analysis of the social conditioning factors associated with risk should be a priority. Truly, an “extreme” event is not one where there is the greatest discharge of physical energy, but rather one where there is more associated damage and loss (Lavell 2011). This should be in the center of both disaster risk management and climate change adaptation and implies a consideration of the social, economic, political, historical, and cultural conditions that lead to the vulnerability that affects very large numbers of people and their livelihoods, principally the poor. The holistic framework of anthropology provides for the analysis of the links between climate and weather events to permit the analysis of common variables that affect both risk and disaster impacts. The focus on root causes provides a unifying perspective that brings to the fore issues of risk construction as opposed to biophysical impacts, which in effect constitutes a return to a “physicalist” emphasis on hazards (Hewitt 1983). The analysis of the root causes of risk can play a role in redefining development options at the national and local levels by informing the identification, elaboration, promotion and implementation of policies, strategies, instruments, and actions that enable society to recognize and anticipate climate change extremes and anomalies as well as the cumulative effects of many nonextreme events (Lavell 2011).

The disaster research and management community has developed strategies or particular types of

instruments for disaster risk reduction. Moreover, few significant differences exist between the strategies for reducing disaster risk and those for adaptation to climate change effects. Cannon et al. (2003) locate such strategies within five basic domains: (1) improvements in social living conditions, (2) livelihood strengthening and increases in resilience, (3) self-protection, (4) social protection, and (5) governance factors. Work in these domains may involve more specific strategies appropriate to the context. Principal among these instrumentalities are natural resource and environmental services management, land-use planning, protective infrastructure; new and traditional technologies and science; strengthening and promotion of sustainable livelihoods, financial mechanisms (e.g., microcredit, insurance); integrated sector and territorial planning; environmental, social monitoring, and early warning systems; education, training, and participation; and mechanisms and processes that increase risk governance in general (Lavell 2011). It is abundantly clear that these initiatives and strategies involve a significant shift in societal priorities and the active participation by the public sector at a variety of levels. However, pressure on and by the state (and the conditionality of multilateral development institutions) to reduce social services, privatize, and deregulate significantly reduces the capacity of the public sector to engage with these strategies.

#### **Disaster risk reduction and development**

Despite attention of international development agencies to disaster risk reduction, contemporary forms of development planning generally do not give it a high priority in programs and projects. Notwithstanding insistence on the importance of addressing the underlying causes of disasters and disaster vulnerability within or without the context of disasters, political focus and funding are still largely centered on emergency management. Indeed it may be reasonably argued that the continued focus on emergency management is based on a reluctance to grapple with the issues of disaster risk reduction, which requires confronting the fundamental contradictions of the social and environmental relations of our current system.

Generally speaking, the development process and specific development projects take place largely without these inputs because the neoliberal world view, privileging growth and gain over any other



considerations, informs development policy and planning. Thus, as Bender asserts, in the name of development, for failing to include disaster risk reduction in our development initiatives, we continue to put more and more people in harm's way, engendering disasters of development and development disasters (Stephen Bender, personal communication 2009). If we want to address the underlying risk factors called for in the Hyogo Framework for Action (UNISDR 2007), we need to address the inconsistencies and contradictions in current neoliberal policies and models of development as well as the huge imbalances in power. However, the question remains as to whether the political and economic institutions of any nation can, even confronting enormous loss and destruction, effectively address a hegemonic cultural construct that determines and controls the terms on which the forms and practices of human and environmental relations are organized.

Indeed, most development policies and practices today foster approaches that more deeply embed current environmental relations, power and wealth differences, and exploitation (Cannon and Müller-Mahn 2010; Felli and Castree 2012). Disaster risk management policies and strategies that do not contest current systemic practices may actually promote or exacerbate vulnerability. Thus, root cause analysis is a virtual necessity if development informed by disaster risk reduction is to have any transformational potential. As currently practiced disaster risk reduction, or for that matter, the development process itself rarely question the beliefs, values, and interests that create and perpetuate the structures, systems, and behaviors that drive disaster risk (O'Brien 2012). Indeed, most disaster risk management interventions are aimed more at emergency management than at contesting the causes and drivers, leaving current development approaches essentially unquestioned and unchallenged (Pelling 2011).

Anthropological disaster research and practice can, does, and most certainly should continue to work across disciplinary and stakeholder lines to identify policy and practice changes for not only authentic disaster risk reduction, but also to hasten the process of transformation of the systems that are generating the risk. These goals involve changes in the basic features of a socio-ecological system in terms of altered approaches, priorities, and values. Such a set of tasks is clearly beyond the reach of disaster risk management and thus falls squarely within the development portfolio. It is not suggested here that wholesale cultural change can happen quickly

or easily. Some nations and communities, perhaps some private corporations and state enterprises, may engage with the challenge and benefit from doing so. Others will tenaciously resist change. Nevertheless, the social character of disasters and social vulnerability as their main cause must be fully and widely recognized for any authentic and effective application of disaster risk reduction.

## Notes

1. This special issue and each contribution within it is based on a question considered in the plenary panel, *Continuity and Change in the Applied Anthropology of Risk Hazards and Disasters*, at the 75th Annual Meeting of the Society for Applied Anthropology in Pittsburgh in 2015.

## References cited

- Assessment Capacities Project (ACAPS)  
 2015 Ebola Outbreak, Liberia: Communication: Challenges and Good Practices. <http://reliefweb.int/sites/reliefweb.int/files/resources/liberia-ebola-outbreak-communications-challenges.pdf>, accessed March 2, 2016.
- Barrios, Roberto  
 2015 Climate Change and Simulacrum: The Political, Discursive, and Material Life of Disasters in Mexico. Paper presented at the International Anthropology Workshop—Comparative Study of Disasters and Upheavals: Perceptions and Responses, Chengdu, China, October 16–18.
- Becker, Julia, David Johnston, Heather Lazrus, George Crawford, and Dave Nelson  
 2008 Use of Traditional Knowledge in Emergency Management for Tsunami Hazard: A Case Study from Washington State. *Disaster Prevention and Management* 17(4):488–501.
- Bennett, Olivia, and Chris McDowell  
 2012 *Displaced: The Human Cost of Development and Resettlement*, New York: Palgrave MacMillan.
- Birkmann, Jörn, Denis Chang Seng, and Dora-Catalina Suarez  
 2011 Adaptive Disaster Risk Reduction. Enhancing Methods and Tools of Disaster Risk Reduction in the light of Climate Change. DKKV Publication Series

43. Bonn: German Committee for Disaster Reduction.
- Birkmann, Joern, Matthias Garschagen; Nishara Fernando, Vo Van Tuan, Anthony Oliver-Smith and Siri Hettige  
2013 *Dynamics of Vulnerability: Relocation in the Context of Natural Hazards and Disasters. In Measuring Vulnerability to Natural Hazards*. 2nd edition. Joern Birkmann, ed. Pp. 505–550. Tokyo: United Nations University Press.
- Blaikie, Piers, Terry Cannon, Ian Davis, and Ben Wisner  
1994 *At Risk: Natural Hazards, People's Vulnerability and Disasters*. New York: Routledge.
- Briceño, Sálvamo  
2015 Looking Back and Beyond Sendai: 25 Years of International Policy Experience on Disaster Risk Reduction. *International Journal of Disaster Risk Science* 6:1–7.
- Brokensha, David, Dennis Warren, and Oswald Werner  
1980 *Indigenous Knowledge Systems and Development*. Washington DC: University Press of America.
- Burton, Ian  
2010 Forensic Disaster Investigations in Depth: A New Case Study Model. *Environment: Science and Policy for Sustainable Development* 52(5):36–41.  
2015 The Forensic Investigation of Root Causes and the Post-2015 Framework for Disaster Risk Reduction. *International Journal of Disaster Risk Reduction* 12:1–2.
- Button, Gregory, and Kristina Peterson  
2009 Participatory Action Research: Community Partnership with Social and Physical Sciences. *In Anthropology and Climate Change: From Encounters to Actions*. Susan A. Crate and Mark Nuttall, eds. Pp. 327–340. Walnut Creek, CA: Left Coast Press
- Cannon, Terry, and Detlef Müller-Mahn  
2010 Vulnerability, Resilience and Development Discourses in Context of Climate Change. *Natural Hazards* 55(3):621–635.
- Cannon, Terry, John Twigg, and Jennifer Rowell  
2003 *Social Vulnerability, Sustainable Livelihoods and Disasters, Report to DFID Conflict and Humanitarian Assistance Department (CHAD) and Sustainable Livelihoods Support Office*. [http://www.benfieldhr.org/disaster\\_studies/projects/soc\\_vuln\\_sust\\_live.pdf](http://www.benfieldhr.org/disaster_studies/projects/soc_vuln_sust_live.pdf), accessed March 2, 2016.
- Center for Disaster Management and Risk Reduction Technology (CEDIM)  
2012 Annual Research Report 2012 Focus on Forensic Disaster Analysis in Near Real-Time Jochen Zschau, ed. Potsdam: CEDIM.
- Cernea, Michael  
1990 *Poverty Risks from Population Displacement in Water Resources Development*, Development Discussion Paper No. 355. Harvard Institute for International Development.  
1997 *The Risks and Reconstruction Model for Resettling Displaced Populations*. *World Development* 25(10):1569–1587.
- Colson, Elizabeth  
1971 *The Social Consequences of Resettlement, Kariba Studies IV*. Manchester: Manchester University Press.
- Correa, Elena  
2011a *Populations at Risk of Disaster A Resettlement Guide*. Washington, DC: The World Bank.  
2011b *Preventive Resettlement of Populations at Risk of Disaster*. Washington, DC: The World Bank.
- Crane, Todd A.  
2010 *Of Models and Meanings: Cultural Resilience in Socio-Ecological Systems*. *Ecology and Society* 15(4):19.
- Cutter, Susan L., Irasema Alcántara-Ayala, Orhan Altan, Daniel N. Baker, Salvano Briceño, Harsh Gupta, Ailsa Holloway, David Johnston, Gordon A. McBean, Yujiro Ogawa, Douglas Paton, Emma Porio, Rainer K. Silbereisen, Kuniyoshi Takeuchi, Giovanni B. Valsecchi, Coleen Vogel, and Guoxiong Wu  
2015 *Global Risks: Pool Knowledge to Stem Losses from Disasters*. *Nature* 522(7556): 277–279.
- Faas, A. J.  
2015 *Disaster Resettlement Organizations, NGOs, and the Culture of Cooperative Labor in the Ecuadorian Andes*. *In Disaster's Impact on Livelihoods and Cultural Survival: Losses, Opportunities, and Mitigation*. Michele Companion, ed. Pp. 51–62. Boca Raton, FL: CRC Press.  
In press *Reciprocity and Vernacular Statecraft: Changing Practices of Andean Cooperation*

- in Post-Disaster Highland Ecuador. *The Journal of Latin American and Caribbean Anthropology*.
- Felli, Romain, and Noel Castree  
 2012 Neoliberalising Adaptation to Environmental Change: Foresight Or Foreclosure? *Environment and Planning A: International Journal of Urban and Regional Research* 44(1):1–4.
- Ferradas, Pedro, Sergio Tejada, and Dalia Carbonel  
 2010 *Redes de Gestión de Riesgo en el Perú*. Lima: Soluciones Prácticas.
- Ferris, Elizabeth  
 2012 Protection and Planned Relocations in the Context of Climate Change. UNHCR Legal and Protection Policy Research Series. Geneva: UNHCR.
- Fiske, Shirley J., Susan A. Crate, Carole L. Crumley, Kathleen Galvin, Heather Lazrus, Lisa Lucero, Anthony Oliver-Smith, Ben Orlove, Sarah Strauss, and Richard Wilk  
 2014 Changing the Atmosphere. Anthropology and Climate Change. Final Report of the AAA Global Climate Change Task Force, 137 pp. Arlington, VA: American Anthropological Association.
- German Committee for Disaster Reduction, ed.  
 2012 Detecting Disaster Root Causes—A Framework and an Analytic Tool for Practitioners. DKKV Publication Series 48. Bonn: DKKV.
- Gobel, Barbara  
 2008 Dangers, Experience and Luck: Living with Uncertainty in the Andes. *In Culture and the Changing Environment*. Michael J. Casimir, ed. Pp. 221–250. New York: Berghahn Books.
- Hansen, Art, and Anthony Oliver-Smith, eds.  
 1982 *Involuntary Migration and Resettlement*. Boulder, CO: Westview Press.
- Hewitt, Ken  
 1983 *Interpretations of Calamity*. Boston: Allen & Unwin.
- Hoffman, Susanna  
 2002 The Monster and the Mother: The Symbolism of Disaster. *In Catastrophe and Culture: The Anthropology of Disaster*. Susanna Hoffman and Anthony Oliver-Smith, eds. Pp. 113–142. Santa Fe, NM: School of Advanced Research Press.
- Hyogo Framework for Action  
 2005–2015 Building the Resilience of Nations and Communities to Disasters. <https://www.unisdr.org/we/inform/publications/1037>, accessed August 17, 2016.
- Integrated Research on Disaster Risk (IRDR)  
 2011 Forensic Investigations of Disasters: The FORIN Project (IRDR FORIN Publication No. 1). Beijing: Integrated Research on Disaster Risk.
- Intergovernmental Panel on Climate Change (IPCC)  
 2013 Summary for Policymakers. *In Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S. K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex, and P.M. Midgley eds. Cambridge: Cambridge University Press.
- International Decade for Natural Disaster Reduction (IDNDR)  
 1999 Programme Forum Proceedings. <https://www.unisdr.org/we/inform/publications/31468>, accessed August 17, 2016.
- Internal Displacement Monitoring Centre (IDMC)  
 2015 Global Estimates 2015. [http://www.internal-displacement.org/assets/library/Media/201507-global-estimates-2015/20150713-global-estimates-2015-en-vi.pdf](http://www.internal-displacement.org/assets/library/Media/201507-global-estimates-2015/), accessed March 13, 2016.
- International Federation of Red Cross and Red Crescent Societies (IFRC)  
 2014 World Disasters Report 2014—Focus on Culture and Risk. <http://www.ifrc.org/Global/Documents/Secretariat/201410/WDR%202014.pdf>, accessed March 13, 2015.
- International Council for Science (ICSU)  
 2008 A Science Plan for Integrated Research on Disaster Risk Addressing the Challenge of Natural and Human-Induced Environmental Hazards. Paris: ICSU.
- Jones, Eric C., A. J. Faas, Arthur D. Murphy, Graham A. Tobin, and Linda M. Whiteford  
 2013 Cross-Cultural and Site-Based Influences on Demographic, Individual Wellbeing, and Social Network Factors Predict Risk Perception in Hazard and Disaster Settings in Ecuador and Mexico. *Human Nature* 24(1):5–32.
- Kelman, Ilan, and Jean Christophe Gaillard  
 2010 Embedding Climate Change Adaptation within Disaster Risk Reduction. *In Climate Change Adaptation and Disaster Risk*

- Reduction: Issues and Challenges. Rajib Shaw, Juan M. Pulhin, and Joy Jacqueline Pereira, eds. Pp. 23–46. Bingley: Emerald Group Publishing Limited.
- Kruger, Fred, Greg Bankoff, Terry Cannon, Benedikt Orłowski, and E. Lisa F. Schipper, eds.  
2015 *Cultures and Disasters: Understanding Cultural Framings in Disaster Risk Reduction*. New York: Routledge.
- Lavell, Allan  
2011 Desempacando la adaptación al cambio climático y la gestión del riesgo: Buscando las relaciones y diferencias: Una crítica y construcción conceptual y epistemológica. [http://www.la-red.org/publicos/varios/2011/2011\\_UICNFLACSO\\_Lavell\\_Adaptacion\\_Cambio\\_Climatico.pdf](http://www.la-red.org/publicos/varios/2011/2011_UICNFLACSO_Lavell_Adaptacion_Cambio_Climatico.pdf), accessed March 2, 2016.
- Lavell, Allan, and Andrew Maskrey  
2014 The Future of Disaster Risk Management. *Environmental Hazards* 13(4): 267–280.
- Marino, Elizabeth  
2015 *Fierce Climate, Sacred Ground*. Fairbanks, AK: University of Alaska Press.
- Marino, Elizabeth, and Heather Lazrus  
2015 Migration or Forced Displacement? The Complex Choices of Climate Change and Disaster Migrants in Shishmaref, Alaska and Nanumea, Tuvalu. *Human Organization* 74(4):341–350.
- Marris, Peter  
1975 *Loss and Change*. Garden City, NY: Anchor Books.
- Maskrey, Andrew  
1995 *The Alto Mayo Reconstruction Plan, Peru—An NGO Approach. Developing Building for Safety Programmes: Guidelines for Organizing Safe Building Improvement Programmes in Disaster-Prone Areas*. London: IT Publications.  
2016 Preface in Oliver-Smith, Anthony, Irasema Alcantara-Ayala, Ian Burton, and Alan M. Lavell 2016 *Forensic Investigations of Disaster (FORIN): A Conceptual Framework and Guide to Research (IRDR FORIN Publication No. 2)*. Beijing: Integrated Research on Disaster Risk.
- McAdoo, Brian G., Lori Dengler, Gegar Prasetya, and Vasily Titov  
2006 How an Oral History Saved Thousands of Lives on Indonesia's Simeulue Island during the December 2004 and March 2005 Tsunamis. *Earthquake Spectra* 22(3):661–669.
- Mercer, Jessica, Ilan Kelman, Lorin Taranis, and Sandie Suchet-Pearson  
2010 Framework for Integrating Indigenous and Scientific Knowledge for Disaster Risk Reduction. *Disasters* 34(1):214–239.
- Mission of the United States–Geneva  
2015 Explanation of Position of the United States for the Sendai Framework for Disaster Risk Reduction 2015–2030 (as Delivered by Wilson Sumner March 18, 2015). <https://geneva.usmission.gov/2015/03/19/sendai-framework-for-disaster-risk-reduction-2015-2030/>, accessed March 2, 2016.
- Murra, John  
1972 El Control Vertical de un Máximo de Pisos Ecológicos en la Economía de las Sociedades Andinas. *In* *Visita de la provincia de Leon de Huánuco*. Ortiz de Zúñiga (visitador). Torno II, Huánuco: Universidad Hermilio Valdizán.
- O'Brien, Karen  
2012 Global Environmental Change II: From Adaptation to Deliberate Transformation. *Progress in Human Geography* 36(5):667–676.
- O'Keefe, Phil, Ken Westgate, and Ben Wisner  
1976 Taking the Naturalness Out of Natural Disasters. *Nature* 260(5552):566–567.
- Oliver-Smith, Anthony  
1991 Success and Failures in Post-Disaster Resettlement. *Disasters* 15(1):12–24.  
1999 Peru's Five Hundred Year Earthquake: Vulnerability in Historical Perspective. *In* *The Angry Earth: Disaster in Anthropological Perspective*. Anthony Oliver-Smith and Susanna M. Hoffman, eds. Pp. 74–88. New York: Routledge.  
2005 Anthropology and Development-Induced Displacement. *In* *Applied Anthropology: Domains of application*. Satish Kedia and John van Willigen, eds. Pp. 189–220. Westport, CT: Greenwood Publishing Group.  
2006 Displacement, Resistance, and the Critique of Development: From the Grassroots to the Global. *In* *Development-Induced Displacement: Problems, Policies, and People*. Chris de Wet, ed. Pp. 141–179. Oxford: Berghan Books.  
2013 Disaster Risk Reduction and Climate Change Adaptation: The View from

- Applied Anthropology. Human Organization 72(4):275–282.
- Oliver-Smith, Anthony, Irasema Alcántara-Ayala, Ian Burton, and Alan M. Lavell  
 2016 Forensic Investigations of Disaster (FORIN): A Conceptual Framework and Guide to Research (IRDR FORIN Publication No. 2). Beijing: Integrated Research on Disaster Risk.
- Pelling, Mark  
 2011 Adaptation to Climate Change: From Resilience to Transformation. New York: Routledge.
- Perry, Ronald, and Alvin Mushkatel  
 1984 Disaster Management: Warning, Response and Community Relocation. Westport, CT: Quorum Books.
- Scudder, Thayer  
 1982 No Place to Go: Effects of Compulsory Relocation on Navajos. Philadelphia, PA: Institute for the Study of Human Issues.
- Sendai Framework for Disaster Risk Reduction <https://www.unisdr.org/we/coordinate/sendai-framework>, accessed August 17, 2016
- Shaw, Rajib, Anshu Sharma, Yukiko Takeuchi, and Noralene Uy  
 2009 Indigenous Knowledge and Disaster Risk Reduction. Hauppauge NY: Nova Science Publishers, Inc.
- Sjoberg, Gideon  
 1962 Disasters and Social Change. *In* Man and Society in Disaster. George W. Baker and Dwight W. Chapman, eds. Pp. 356–384. New York: Basic Books.
- Stockholm Environment Institute (SEI)  
 2015 The SEI Initiative on Transforming Development and Disaster Risk. <http://www.sei-international.org/transforming-development-and-disaster-risk>, accessed August 17, 2016.
- Turton, David  
 2006 Who Is a Forced Migrant? Risk, Complexity and Local Initiative in Forced Resettlement Outcomes. *In* Development-Induced Displacement: Problems, Policies and People. Chris de Wet, ed. Pp. 13–37. Oxford: Berghahn Books.
- United Nations Office for Disaster Risk Reduction (UNISDR)  
 2004 Living with Risk: A Global Review of Disaster Reduction Initiatives 17, Vol. 1. United Nations Publications.
- 2007 Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters. Geneva: United Nations International Strategy for Disaster Reduction.
- 2009 Global Assessment Report on Disaster Risk Reduction (GAR). Geneva: United Nations International Strategy on Disaster Reduction.
- 2011 Global Assessment Report on Disaster Risk Reduction (GAR). Geneva: United Nations International Strategy on Disaster Reduction.
- 2015a Global Assessment Report on Disaster Risk Reduction 2015. Geneva: United Nations International Strategy on Disaster Reduction.
- 2015b Sendai Framework for Disaster Risk Reduction 2015–2030. Geneva: United Nations International Strategy on Disaster Reduction. [http://www.unisdr.org/files/43291\\_sendai-frameworkfordrren.pdf](http://www.unisdr.org/files/43291_sendai-frameworkfordrren.pdf), accessed August 17, 2016.
- United Nations Office for Disaster Risk Reduction (UNISDR)-Science Technical Advisory Group  
 2015 Science Is Used for Disaster Risk Reduction. Group Report. Geneva: UNISDR. <http://www.unisdr.org/we/inform/publications/42848>, accessed August 17, 2016.
- Warren, Dennis M.  
 1976 Indigenous Knowledge Systems for Activating Local Decision-Making Groups in Rural Development. *In* Communications for Group Transformation in Development. Godwin C. Chu, D. Lawrence Kincaid, and Sayed A. Rahim, eds. Pp. 307–329. Honolulu, HI: The East West Center.
- Wisner, Ben, Piers Blaikie, Terry Cannon, and Ian Davis  
 2004 At Risk: Natural Hazards, People's Vulnerability, and Disasters. 2nd edition. New York: Routledge.
- 2006 Let Our Children Teach Us. United Nations International Strategy for Disaster Reduction (UNISDR).
- Yokohama Strategy and Plan of Action for a Safer World  
 1994 <http://www.ifrc.org/Docs/idrl/I248EN.pdf>, accessed August 17, 2016.