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Disaster vulnerability in anthropological perspective

In the study of disasters, the concept of vulnerability has been primarily employed as a measure of the degree of the need for disaster relief of certain populations in particular. In environmental and technological hazards and an individual's or a group's ability to anticipate, cope with, resist, and recover from

politicizes disaster analysis by placing disadvantaged groups and disproportionate distributions of power and risk at the center of analysis.

Critics of the vulnerability concept argue that its measurement is often exceedingly complex and effective measures in one context do not often translate to others. Vulnerability-centered approaches, critics argue, also render disaster-affected people as passive, powerless victims (Hewitt 2000). They can portray entire regions of the world as unsafe and backward, justifying perpetual interventions into marginal populations (Bankoff 2003). In light of both the historical importance and the sustained critiques of the concept, this chapter looks to anthropological and related literature to explore several questions: is it possible that vulnerability has outlived its usefulness? Is it still analytically meaningful for anthropologists currently working in the area of risk, hazards, and disasters? And what are the potential consequences or benefits that could come with conveying the concept of vulnerability to policy and decision makers?

Conceptual background and four related frameworks

At the most basic level, we can conceive of vulnerability as the potential for loss (Cutter 1996: 4) or susceptibility to harm (Adger 2006: 3). Ben Wisner and colleagues elaborated on this to clarify that vulnerability can be taken to refer to “*the chance of a person or group and his or her ability to anticipate, cope with, resist, and recover from the impact of a natural hazard*” (Wisner et al. 2004: 1, italics in original). David Alexander (2002: 1) points out that vulnerability is socially constructed, “mainly the result of social, economic, political, and cultural factors in decision making.” Vulnerability can refer to the predisaster socioeconomic status of groups and individuals or the risks and hazards of particular geographical locations (Oliver-Smith 1996: 1). In many cases, exposure is actually a function of vulnerability; that is, people live in exposed localities because they are closed out of markets for more secure places.

Anthropologists and other social scientists grappled with vulnerability as we struggled to understand how and why disasters occur. The concept has been

other major resettlements built by the Ecuadorian state and U.S.-based Christian relief organization Samaritan's Purse were built on urban grids lacking in land for agriculture and without any locally available productive resources or economic oppor-

of corvee labor. When, in the early and mid-19th century, land reform legislation aimed at breaking up the hacienda political economy created a pathway to landownership for peasants, new groups of elites emerged, and consolidated larger landholdings among the majority smallholders in the region. These new elites often consolidated political power by serving as brokers of political patronage and access to institutional resources outside communities (Faas in press). Meanwhile, national and provincial political agendas at the end of the 18th and beginning of the 19th centuries could be characterized as exhibiting a malign ambivalence regarding smallholder lifeways. Government investment in services and infrastructure in the region had long been negligible and largely dominated by regional and local elites. After the eruptions, the largest state-funded resettlement programs placed erstwhile smallholding agropastoralists in landless urban grids, without land or any alternative economic resources (Faas 2012). Resettlers who alternated between their lands in the shadow of the volcano (the only viable livelihood strategy available to most) and their homes in the landless resettlements were subject to threats of eviction. Meanwhile, local elites occasionally organized their communities to report members of other communities for violations as they engaged in a sort of politics of deservingness in the resettlement environment in which productive resources were replaced by flows of aid as the principal objects of political competition.

One critique of the political ecology model—one that has been leveled against political ecology more broadly (Walker 2006)—is that environment is often bracketed out of analysis (Adger 2002; Wisner et al. 2004); though it is often considered a dependent variable, it is rarely, if ever, considered as a causal agent. While inequalities are produced by human systems, it is difficult to speak about risk, vulnerability, and disasters without factoring in human–environment entanglements, and some degree of ecological/material agency outside human action. One final model—one intimately related to political ecology—constitutes an attempt to resolve this enduring lacuna.

Wisner et al. (2004) developed a model of disaster vulnerability that spells out how social, economic, and political root causes, dynamic pressures, and unsafe conditions, combined with a hazard, produce a disaster. This model—known as the pressure and release model—comes from the field of ecology. Wisner and colleagues were concerned with

bringing the environment back into consideration along with the social construction of vulnerability. Here, as pressure on a system increases, “the more likely the system will collapse or be forced to change into something new. Risk (of disaster) in this model is an expression of vulnerability and hazard—articulated conceptually as $R \text{ (of D)} = V \times H$ ” (Marino 2006: 10). The idea is that disasters are a result of the interaction of both vulnerability and hazard. This is an express acknowledgement of the “internal conditions of vulnerability (e.g., lack of entitlements, lack of political will to demand government intervention) and the physical outcomes of [a given hazard] as a combined explanation for negative consequences” (Marino 2006: 10). This model compels us to examine the social factors of the production of vulnerability around Mt. Tungurahua discussed above alongside the exposure model, but with some added temporal depth. We can point also to the significant damage of eruptions in 1807, when the region was evacuated, and the devastation to the region wrought by further eruptions in 1860 and again from 1877 to 1878 (Hall et al. 2006). And yet, the 19th century saw an expansion of human settlements in the region—largely as a result of the dual processes of land reform and the scarcity of land available to poorer agropastoralists—with little in the way of prevention, aside from seismic monitoring by the Ecuadorian Geophysics Institute since 1906 (Whiteford and Tobin 2006). Though several volcanic tremors caught the attention of volcanologists in 1906, nothing rose to the level of emergency, and there was no official information on risks posed by the volcano publicly disseminated to the public before the 1906 eruptions. The events of the 1906 and 1907 eruptions were therefore the consequences of mounting volcanic and settlement patterns accumulating into a highly precarious situation.

It is important to note that the differences between the political ecology and pressure and release models of vulnerability are more of degree than kind. In fact, as Marino (2006) makes clear, all four primary models of vulnerability vary chiefly in terms of their relative emphasis on social and environmental factors as causal agents. Yet, the political ecology and pressure and release models thus far represent two of the best attempts to critically examine both the social and environmental production of vulnerability. Indeed, some years ago, Oliver-Smith outlined a political ecology of disaster in which

a necessary but not sufficient condition for a disaster to occur is the conjuncture of at least two factors: a human population and a potentially destructive agent. The society and the destructive agent are mutually constitutive and embedded in natural and social systems as unfolding processes over time (a:).

Today, many scholars share the perspective that it is essential to consider both social and environmental factors, while underlining that human actions deserve special consideration.

Measurements and perceptions

Though we can point to an enduring struggle for a common conception of vulnerability, the preceding section makes clear that the core domains of vulnerability are well established. Of course, one reason for a lack of uniformity in theoretical frameworks of disaster and vulnerability is that “there is no single universally acceptable way of formulating the linkages between human and natural systems” (Berkes and Folke : , cited in Adger

change outcomes were remarkably consistent with scientific models. However, local perceptions of changes were decidedly nuanced and shared little with the often breathless hyperbole expressed by mass media coverage of issues in Shishmaref (Marino : -). This leads us quite naturally to consider discursive cross-currents in vulnerability knowledge and imagination.

Vulnerability discourse and disaster risk
reduction

In Haiti, many people refer to the earthquake as

factors that create the conditions for disasters in the Philippines (Bankoff). Revealing the historical production of vulnerability in this way begs a reevaluation of the logic of merely technological solutions to reduce risk and vulnerability; instead, we are given to question the unequal and (spatially) uneven devel-

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