

Catastrophe & Culture

The Anthropology of Disaster



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Theorizing Disasters

Nature, Power, and Culture

Anthony Oliver-Smith

Disasters have become a metaphor for many processes and events currently unfolding in the contemporary world. In scholarly and popular literature, the word “disaster” is frequently associated with a wide array of contemporary problems. Its use lends both relevance and urgency to the title of an article or book, particularly those dealing with social or environmental problems. Although the concept of disaster is often appropriately linked to undeniably important issues in these works, however, apart from a few notable exceptions, the disaster emanating from the problem discussed is rarely dealt with in any detail or depth. Part of the problem is that disaster is often considered an event rather than a process. But in focusing on an environmental or social problem, many of these books and articles are actually dealing with one dimension of the processual aspect of disaster—the social and technological construction of conditions of vulnerability.

Another reason why the discussion of disasters is often so cursory is that, despite the fact that “disasters are good to think,” as Stephen Kroll-Smith (1998) notes, they are also difficult to think, because of their multidimensionality. Disasters are all-encompassing occurrences,

sweeping across every aspect of human life, impacting environmental, social, economic, political, and biological conditions. Disaster research literature has been fragmented along disciplinary lines, with each field focusing on its own domain of interest, such as organizational behavior (sociology), the “hazardness” of a place (geography), or risk assessment policies and practices (political science). Common definitions have been hard to come by, prompting concern for the scholarly integrity of the field (Quarantelli 1985, 1998). Given its holistic perspective, anthropology is perhaps uniquely suited to tackle the theoretical challenges that disasters present.

Considering the diffractive use of the term and the multidimensionality of its expression, it has become ever more challenging to develop theory that has application or relevance to the expanding concerns disasters encompass. As the increasing occurrence of interactions of natural and technological hazards has made many disasters more complex, the theoretical challenge in turn becomes more complex. Also needed is a means to address the multidimensionality of the problem. Disasters exist as complex material events and, at the same time, as a multiplicity of interwoven, often conflicting, social constructions. Both materially and socially constructed effects of disasters are channeled and distributed variously within the society according to political, social, and economic practices and institutions.

Disasters come into existence in both the material and the social worlds and, perhaps, in some hybrid space between them. When we have a way of theorizing that hybridity, fundamental as it is to human life, disaster researchers will have achieved a great deal not only in our own work, but for the social sciences and humanities as well. It is to that theoretical challenge and to the implications of disaster research for anthropological theory that I wish to direct my attention in this chapter. Disasters offer a unique context in which to pursue such a theoretical breakthrough. Conversely, I wish to demonstrate as well what anthropology can offer to the field of disaster research and management.

Disasters occur at the intersection of nature and culture and illustrate, often dramatically, the mutuality of each in the constitution of the other. My initial goal is to explore the multidimensionality of disasters in terms of that mutuality. From that exploration I hope to address issues that might lead to the eventual formation of a coherent theoretic-

cal framework for disaster causation that encompasses both natural and social scientific perspectives. And finally, I hope to contribute to a more general theoretical discussion about how we understand environments as both socially constructed and biological/physical spaces. Disasters seem to be especially apt as contexts and processes that illuminate these complex relationships, particularly in the ways they challenge societies materially, socially, and ideologically.

THE MULTIDIMENSIONALITY OF DISASTER

Disasters are multidimensional because they are both physical and social event/processes. For heuristic purposes, I want to refer to the broad array of "objective" natural and technological phenomena that produce or trigger disasters and create a wide variety of physical impacts. The term "disaster" includes event/processes that range from slow-onset phenomena, such as droughts and toxic exposures, to rapid-onset events, such as earthquakes and nuclear accidents. In Kenneth Hewitt's (1997:26) view, disaster agents include natural hazards (atmospheric, hydrological, geological, and biological), technological hazards (dangerous materials, destructive processes, mechanical, and productive), and social hazards (war, terrorism, civil conflict, and the use of hazardous materials, processes, and technologies). While certain social hazards (war, terrorism, etc.) produce many of the features common to disasters (see Paine, this volume), I wish to limit my discussion to natural and technological hazards. The array of disaster impacts from natural and technological hazards, ranging from rapid destruction and death from earthquakes to effects that go unperceived or unexperienced in the physical sense often for many years, as in the case of toxic exposures, also encompasses wide variation. The variability of physical manifestations alone challenges our capacity to encompass the array of phenomena that generate and occur in disasters within a single theoretical framework.

Disasters are also both socially constructed and experienced differently by different groups and individuals, generating multiple interpretations of an event/process. A single disaster can fragment into different and conflicting sets of circumstances and interpretations according to the experience and identity of those affected. Disasters force researchers to confront the many and shifting faces of socially

imagined realities. Disasters disclose in their unfolding the linkages and the interpenetrations of natural forces or agents, power structures and social arrangements, and cultural values and belief systems. The many socially constructed facets of disasters form the basis for the idea that disasters disclose fundamental features of society and culture, laying bare crucial relationships and core values in the intensity of impact and the stress of recovery and reconstruction.

Indeed, disasters focus in uncommon intensity the widest possible variety of intersecting and interpenetrating processes and events of social, environmental, cultural, political, physical, and technological natures. As disasters develop and occur, all dimensions of a social structural formation and the totality of its relations with the environment become involved, affected, and focused. In disasters are expressed continuity and contradiction, cooperation and conflict, power and resistance. All are articulated through the operation of physical, biological, and social systems and their interactions among populations, institutions, and practices. There are few contexts in which the mutual constitutionality of the physical and the social are so starkly displayed as in a disaster.

In this fashion, different interpretations of disasters emerge for specific purposes or goals of various disaster projects. Those who focus on behavior approach disaster differently than those examining societal-environment interactions. Agencies involved in disaster management or reconstruction establish operational definitions that serve to activate and demarcate their involvement in events and processes. Although the multidimensionality of disasters presents a complex challenge to researchers, it also provides researchers an important opportunity to ask synthetic questions. Mining this rich vein that disasters bring into intense focus is the real challenge presented to theory as well as practice, and it is little wonder that researchers noting the disastrous nature of crucial problems prefer only to mention their potentiality rather than to engage in in-depth discussions. As disaster researchers, we need to tackle this multidimensionality and probe the multiple linkages and relationships they reveal for sociocultural theory and, by the same token, establish what anthropology can offer to the study of disaster.

CHANGING PERSPECTIVES IN DISASTER RESEARCH

There is no question that great strides have been made in concep-

tualizing disasters since the emergence of the field half a century ago, when it focused primarily on individual and group behavior in disaster. The most important departure from the hazard/event/behavior focus that had characterized the field since the 1950s was the refinement of the concept of vulnerability, which looks at those aspects of society that reduce or exacerbate the impact of a hazard. Earlier perspectives had allowed for a certain "passive" form of generation of vulnerability to hazards and disasters largely resulting from what were considered inappropriate human actions, such as building on flood plains and fault lines, driven by irrationality, ignorance, and misjudgment. In the 1970s, however, anthropologists and cultural geographers working in the developing world found that mainstream disaster studies brought little of value to the task of analyzing disasters in third-world contexts. These researchers criticized the essentially passive role prior investigators had assigned to society in risk etiology and the scant attention paid to local, national, and international factors in creating or exacerbating both risk and impact. Anthropologists concerned with advancing the field of cultural ecology urged researchers to focus on hazards from an ecological and social organizational perspective (Vayda and McKay 1975). Researchers from and in the third world called for a rethinking of disasters from a political-economic perspective, based on the high correlation between disaster proneness, chronic malnutrition, low income, and famine potential, which led to the conclusion that the root causes of disasters lay more in society than in nature.

The most explicit formulation of the new approach was outlined in Hewitt's *Interpretations of Calamity* (1983). Rejecting the dominant view that disaster is basically the collapse of the productive functions of the social order, Hewitt posited that most natural disasters are more explainable in terms of the "normal" order of things, that is, the conditions of inequality and subordination in a society rather than the accidental geophysical features of a place. This perspective shifted the focus away from the disaster event and toward the "on-going societal and man-environment relations that prefigure [disaster]" (Hewitt 1983:24-27).

This more acute version of the vulnerability concept linked general political economic conditions to very particular environmental forces to understand how basic conditions such as poverty or racism

could produce susceptibilities to very specific environmental hazards. Vulnerability thus integrated not only political-economic forces but environmental forces as well, defined in terms of both biophysical and socially constructed risk. The working definition provided by Blaikie et al. (1994:9) is currently among the most utilized:

By vulnerability we mean the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist, and recover from the impact of a natural hazard. It involves a combination of factors that determine the degree to which someone's life and livelihood is put at risk by a discrete and identifiable event in nature or in society.

Vulnerability is generated through a chain of root causes embedded in ideological, social, and economic systems, the dynamic pressures of a demographic, socioeconomic, or ecological nature, and specific sets of unsafe conditions that, when combined with a natural hazard, produce a disaster (Blaikie et al. 1994). This more complex understanding of vulnerability enables researchers to conceptualize how social systems generate the conditions that place people, often differentiated along axes of class, race, ethnicity, gender, or age, at different levels of risk from the same hazard and of suffering from the same event. By incorporating specific political, economic, and social variables in combination with specific environmental features, the cause of disasters is situated in the interface of society and environment. In that sense, in addition to serving metaphorical purposes, disasters also function metonymically. The linguist Jacobsen (1956) distinguishes between metaphor and metonym. Though both concepts are figures of equivalence, they are generated by different processes—metaphor according to similarity between things otherwise different, metonym according to continuity or associations between part and whole, cause and effect, thing and attribute. Thus, Hurricane Mitch is a metonym for the actual disaster, which encompasses all the technological and social constructions of vulnerability that brought about such devastation in Honduran society and environment.

Vulnerability expresses the multidimensionality of disasters by focusing attention on the totality of relationships in a given social situation and the formation of a condition that, in combination with envi-

ronmental forces, produces a disaster. Wilches-Chaux identifies eleven different forms of vulnerability—natural, physical, economic, social, political, technical, ideological, cultural, educational, ecological, and institutional vulnerability (1989:3:20-41). The model Piers Blaikie et al. (1994:29-30) present subsumes these different forms into causal chains. Blaikie et al. situate ideologies of political and economic systems as they affect the allocation and distribution of resources in a society in the chain of explanation and identify these ideologies as among the root causes of disaster. The linkages of ideologies to specific dynamic processes and unsafe conditions, they readily admit, become less definite and difficult to pinpoint in the causation of specific events. The sociocultural forms through which linkages are established and maintained remain to be explored in depth. These linkages become further complicated in the context of increasing globalization of natural and social systems and their mutual interaction. Basically, the concept of vulnerability needs to be unpacked, not necessarily in terms of its variety of forms, as Gustavo Wilches-Chaux has already ably done, but theoretically for its ecological, political-economic, and sociocultural implications. Unpacking vulnerability requires that a number of crucial theoretical tasks be undertaken to disclose the deep sociocultural and political economic underpinnings of events that are usually understood as environmental disturbances.

If, as vulnerability theorists maintain, disasters are more a product of a society than of a specific nature, certain questions concerning the conjuncture of culture, society, and nature arise. What are the general outlines of how the social production of disaster takes place? A second question should address how the cultural, political, and economic forms and conditions that characterize vulnerability are inscribed in an environment. And a third question should explore the relationship between cultural interpretation and the material world of risk, threat, and impact of disasters. Finally, how do we theorize the linkages among the three issues?

CONSTRUCTIONS OF NATURE AND SOCIETY

The first theoretical task involves the analysis of the implications of the cultural construction of nature-society relations for the production of the conditions of vulnerability and the occurrence of disaster.

Vulnerability, while linking cultural and social structures and the environment in causal chains, leaves implicit a fundamental feature of that causation, namely the relationship between society and nature, which is one of the basic pillars of any ideological system. Anthropologists have documented that society-nature relationships are expressed cross-culturally in a wide variety of forms.

Due to its historical hegemony and continued expansion, the model of society-nature relations dominant in the West merits special attention. This model places human beings and nature in opposition to each other. It was not always so. Although the opposition can be traced to classical Greece and Rome, in the medieval period nature was commonly conceived as in partnership with humanity (Harvey 1996). Human beings were seen as part of nature, part of God's creation, whose goal was to know both nature and God (Williams 1980:73). Many of these essentially more integrative or conservationist attitudes have endured in Western culture to the present, but a more utilitarian perspective toward the natural world also became more evident and eventually dominant in the seventeenth and eighteenth centuries (Redmond 1999:21).

This ideological shift reflected both changes taking place in local practices and the emergence of a nascent global system. Scientific and philosophical discourses of the time began to see humans as ontologically distinct from nature. Indeed, nature provided a contrasting category against which human identity could be defined as cultural rather than natural in the work of Hobbes, Locke, and Rousseau. It is important to note here that a category of humans, now recognized by the term "the other," was characterized by its association with the phrase "in a state of nature." Now, as then, certain people get relegated into the "nature" category as the need arises. The nature/culture dichotomy thus becomes important in terms of vulnerability in that those put into the nature category are frequently the most vulnerable to disasters such as epidemics, genocide, forced displacement, and so forth.

Descartes also conceived of nature as "other," detached and external to humans and the world of thought, thus reifying nature as a thing devoid of meaning in itself (Harvey 1996:134). From this position of separation or detachment, Western human-natural relations have been constructed in terms largely of subject-object (Bird-David 1993:121).

Nature has been constructed as a fund of resources that human beings have not only a right to dip into, but also a right to alter and otherwise dominate in any way they deem fit. Moreover, the enlightenment ideal of human emancipation and self-realization were closely linked to the idea of control and use (Harvey 1996:121–22). Locke, responding to changing systems of production and property relations in seventeenth-century England, emphasized the natural individual rights of life and liberty. He asserted that God had given the earth to humanity and that since each individual was the embodiment of all humanity, each had the right to the fruits of his or her own labor in the natural world (Locke 1965:327–28). Locke's assertion is only one of the clearest expressions of the linkage between an unfettered exploitation of nature and the self-realization of human beings. Indeed, it was considered that one 'of the tyrannies from which humankind would be emancipated was that of nature. This doctrine of natural liberty would soon become the cornerstone of Adam Smith's thought linking self-realization and societal benefit to the specific institution of the market.

The belief in social domination further specified that nature would also benefit from human action. Western ideology frequently summons up images of nature replete with savagery and violence. Tennyson's image of "Nature, red in tooth and claw" was nourished by Christian theology that saw nature as fallen and evil. From the disaster perspective, such a vision also implicitly juxtaposed the violence and disorder of nature with the order of human culture and civilization. This has led to a construction of hazards as disorder, as interruptions or violations of order, by a natural world that is at odds with a human world. Its bounty or its savagery notwithstanding, nature is seen as plastic, ultimately dominable or malleable to the purposes of humankind.

The "plasticity myth," as Murphy (1994) has termed it, is based on the idea that the relationship between humans and their environments can be reconstructed at will by the application of human reason, which imposes order on a disorderly, but essentially malleable, nature, to bring it into line with human purposes. Following the separation of humans and nature, human rationality is not subject to the limitations of nature, because the exercise of our rationality over nature has both subjugated nature and emancipated humans. Thus, humans are "capable of manipulating, domesticating, remolding, reconstructing, and

harvesting nature" (Murphy 1994:5). The subjugation of disorderly nature to human rationality is epitomized in the regimentation imposed on forests by German forestry in the eighteenth century. The clearing of other species of lesser commercial value, the weeding, the orderly files of trees, all led to the reduction of diversity of insect, mammal, and bird populations, rendering the forest more vulnerable to storm felling, fire, and pests (Scott 1998:20). Nonetheless, in both the market and the command economy, the enthusiastic application of human rationality, motivated by individual or collective productionist goals, is the primary means by which nature will be dominated and human beings emancipated.

Even much of the current criticism of ecological degradation is based on the conception that society must learn to care for and safeguard nature. Other critical perspectives construe the human world as out of step with some supposed natural order, with solutions to be found in bringing the human world back to harmony with natural order. Although it is hard to disagree with the spirit of these positions, they are still flawed in that they are constructed from a fundamentally dualistic perspective in which society exists as a collection of human constructs and relations, and the environment is "out there," waiting to be acted upon in the cause of sustaining human life. The problem is couched in terms of human beings developing the proper ways to act upon or in concert with the environment. The relationship is still expressed in dualistic terms of two separate entities in some kind of interaction, whether healthy or distorted. In the case of disasters, such a conceptualization may lead to policies and practices that address symptoms but not causes, condemning us to repeat constantly the exercise as both causes and symptoms evolve with our attempts to address them. Furthermore, the inherent dualism in such a construct leads down a blind alley, or perhaps down two parallel alleys, as far as advancing human ecological theory goes.

THE HAZARDS OF DOMINATION

There is now good evidence that many catastrophes traditionally attributed to natural causes were more than likely generated, at least in part, by human practices, both collectively and cumulatively. The rise and fall of many ancient civilizations, from the Mediterranean to

Mexico, were closely linked to long-term patterns of human exploitation and misuse of the environment resulting in agricultural and societal collapse. Recent archaeological research clearly shows that human environmental impacts, some with extreme consequences, are far from exclusively modern (Redman 1999). The lessons that might have been learned from prehistory and history, however, were obscured by the rapid expansion of the Western system and its seeming capacity to dominate nature (Weiskel and Grey 1992:15–16). Indeed, the entire field of disaster research, anthropological and otherwise, could benefit significantly from a historically informed approach to the analysis of vulnerability (Redman 1999; Tainter 1988; see García-Acosta, this volume).

There is increasing evidence that many disasters today are intimately connected to current conditions of environmental degradation (Varley 1994; Fernandez 1996). In effect, social and material practices in combination with natural processes frequently evolve into novel forms of hazards and potential and actual disasters. The degradation of the environment, in some cases driven by the quest for profit and in others created inadvertently by those subsumed disadvantageously in that quest, now accounts for conditions of accentuated vulnerability to both natural and technological hazards around the world. Much has been written of late about the inappropriate forms of natural resource exploitation engendered by Western conceptions of the nature-society relationship. However, the actual nature of the problem is not always agreed upon. Green Movement critics have castigated the Western economic system for its inability to come to terms with the natural limits of environments, continually exceeding them in a relentless pursuit of economic profit. Ecological anthropologists and other social scientists contend that the relationship between humans and their environment is bound up with relationships among humans themselves through the double nexus of production. They argue that environmental destruction is ultimately not a question of exceeding natural limits but is socially constructed, an expression of systems of production and social exploitation (Collins 1992:179). To what extent does this debate have relevance for furthering our understanding of disasters? Do disasters instruct us in environmental limits? Or do they rather inform us only of specific instances of conditions of vulnerability created and imposed by human social arrangements structured in and by the production

process? How can the study of disasters clarify the question of environmental versus socially defined limits?

There are limits, although variably elastic ones, in natural systems (Holling 1974, 1994), but they can only be experienced by human beings in social systems in culturally constructed relations with nature. Ecological crises and disasters (if not identical) are produced by the dialectical interaction of social and natural features. Socially constructed production systems that impoverish the essential and absolute level of resources sustaining an environment will create environmental crises and perhaps disasters, impacting a human population. An earthquake as a feature of nature may represent a universal and timeless challenge to human welfare, but it becomes a disaster only in the context of a specific society and a characteristic pattern of vulnerability. Although environmental limitations or challenges are natural features, they are experienced only as the result of human social, economic, and cultural arrangements. The inadequacy of purely ecosystemic approaches for understanding major environmental disasters such as the Sahelian drought of the 1970s convinced many of the necessity of analyzing environmental problems in the framework of large-scale political and economic systems (Vayda and McKay 1974; Lees and Bates 1990:264). McCabe (this volume) provides an excellent example of this type of analysis in his discussion of Turkana adaptation to drought and the intervention of national and international aid agencies. A finer-grained understanding of both environmental conditions and disasters must be based on an approach that can include the dialectical interaction of the agencies of nature and society, recognizing that the environment is a socially mediated force and context experienced by people both positively and negatively, just as society expresses itself environmentally.

To explore how socially produced vulnerabilities are expressed environmentally, the links between the increase and expansion of disasters and the dominant ideas, institutions, and practices of the contemporary world must be established. It is necessary to recall that, along with the detachment of nature and society achieved by eighteenth-century philosophy and political economy, the fortunes of humanity were specifically linked to a set of material practices largely structured by market exchange. The market, its ego-centered ideology

rapidly transforming itself into the discipline of economics, thus became constructed as the principal vehicle for individual self-realization and societal welfare. Thus, individuals were not only free but virtually obliged to better themselves with the means that God had provided, namely the natural world. With the reduction of nature to the status of means to the goal of human welfare and the rapid expansion of market exchange driven by a productionist ethic, both the ideological justification and the institutional means were available for a relatively unfettered mastery over and unrestrained exploitation of the natural world. Furthermore, the mutually reinforcing pairing of ideology and science (economics) produced a set of institutionalized material practices through which human beings engaged the object of their domination for their new purposes of emancipation and self-realization.

The material practices were oriented by a form of value obtainable only through the institution of the market. The quest for this surplus value is unending and limitless both by definition and by necessity, due to competition in the market. Since the creation of value at least starts in the appropriation from nature, capitalist economies require the justification supplied by concepts of domination over nature and the plasticity of nature, enabling the elevation of exchange value over any values that might be ascribed to nature. The result of embracing the rationality of essentially short-term gain has been unprecedented extremes of material wealth and poverty, unprecedented levels of environmental destruction, and the rapid amplification of socially constructed vulnerability.

Socialist economies as well have been deeply affected by both the myth of plasticity and the productionist ethos. Although the dialectical relationship between humans and nature was a central feature in Marx's thought, he was also deeply impressed with the powers of human rationality expressed in capitalism to mobilize the forces of production to bring nature under control (Murphy 1994). Socialist economic policies, though hardly a faithful enactment of the little that Marx actually said about what socialism would be like, have participated in the attempt to subjugate nature through the implementation of collective labor with their own expressions of the goals of human emancipation and self-realization. In effect, both capitalist enterprise and socialist state have proceeded under the premise that nature is

plastic, capable of domination by human reason. In so doing, both rendered pollution, depletion of resources, and other forms of environmental change subordinate to production goals (Murphy 1994:5).

The material practices of engaging the natural world, and their supporting cultural value systems, are enacted and expressed in and through social relations that are themselves inscribed in the natural world. Material practices transform the natural world. They produce ecological conditions and environments that not only enable survival on a day-to-day basis but also are conducive to continued social reproduction, therefore inscribing particular systems of social relations in the environment (Harvey 1996:183). This process of inscription reflects materially those contradictions that are inherent in both the social system and the relationship between the society and the environment (Cronon 1983:13–14, as cited in Harvey 1996:27). Thus, contradictions in social relations are expressed through material practices as contradictions within the environment (Harvey 1996:185). Disasters are perhaps the most graphic expression of those contradictions.

Since human environments are socially constructed, the positive and negative effects of these practices are distributed as a reflection of systems of social relations. Therefore, the instantiation in nature of certain forms of social relations creates effects that are specific to them. Social, political, and economic power relations are inscribed through material practices (construction, urban planning, transportation) in the modified and built environments, and one of the many ways they are refracted back into daily living is in the form of conditions of vulnerability. In general, environmental security is a premium enjoyed predominately by the beneficiaries of the social relations of production and distribution, but there is not always a perfect relationship. Cultural values can distort the relationship, convincing the wealthy that it is safe to live on hurricane coasts and on fault lines with spectacular views. Even then, superior engineering, generally only available to the well off, reduces that vulnerability significantly. Insurance also buffers loss and induces people to occupy risky places. But both the wealthy and the poor are implicated in the construction of vulnerability. The wealthy, through the excessive consumption of market-accessed resources such as secure land and water, withdraw large quantities of them from use by the general population. Moreover, in the continued

reproduction of their wealth, they are frequently involved in despoiling public goods such as the air and the oceans, thus engendering further vulnerabilities for the general population (Murphy 1994). The majority poor, through their desperate and sometimes inappropriate use or overuse of the few resources available to them, both degrade their environments and place themselves in harm's way, largely through the lack of reasonable alternatives for daily survival.

CULTURAL CONSTRUCTIONS OF CALAMITY

In many ways, any theoretical inquiry into the nature of hazards and disasters inevitably thrusts us into the tangle of ontological and epistemological questions that deal with the nature of cultural versus material realities. This brings us full-circle back to the nature-culture debate, which replicates many of the issues of the materialist-culturalist debate (Biersack 1999). Some scholars in disaster research suggest that disasters are entirely sociocultural constructions—that is, the presence or activation and impact of a hazard are not necessary for a disaster to take place. All that is necessary for a disaster to have occurred is the public perception that either a hazard threat exists or an impact has taken place. This position is based on the social-psychological principle that if something is defined as real, whether it is a disaster or, for example, witchcraft, its “reality” is established by its social consequences (Quarantelli 1985:48). In this sense, whether or not one believes in witchcraft, the fate of the hanged victims of Salem is hardly up for debate. Even where a threat or impact is socially recognized, constructions of the disaster vary widely according to social identity and circumstance. Kroll-Smith interviewed a nineteen-year-old man from a small Wyoming town that was experiencing the expansion and contraction of methane plumes in its subsurface. Asked what his family thought about this, he said,

My dad says this is a disaster. He goes on and on about his business losing money and the government not doing much to help...Mom? She thinks it's a disaster, but not like Dad does. She thinks we could all end up dead or something if one of those plumes explodes...[And you?] I don't know. It seems to me like a flood or earthquake like in San Francisco is a disaster...I did say yesterday or some time that if my fiancée moved

because of the gases, it would be a big disaster. I don't have a car right now. (Kroll-Smith 1998:165)

Even each individual in this particular family was constructing the concept and perception of a disaster from a different framework of reference, varying from economic losses to physical danger and death and, rhetorically speaking one would imagine, to the potential uprooting of a significant other.

In disasters the linkages between concrete material circumstances and ideological structures may be directly observed as people attempt to come to terms, to construct meanings and logics that enable individuals and groups to understand what has happened to them and to develop strategies to gain some degree of control over what is transpiring. The extreme conditions created by disaster occurrence frequently challenge people's worldviews with profound existential questions for which meanings consistent with circumstances must be elaborated. All the social characteristics that significantly structure people in a society will play a role in the way those meanings and explanations are constructed, giving broad disclosure to the internal variance of a community and underscoring the difficulty of reaching an absolute or objective determination of the nature of the disaster. Hoffman's (this volume) exploration of the differential construction and experience of different groups in the Oakland firestorm illustrates the enormous variability of interpretation generated in disaster. The perception of risk, vulnerability, and even impact is clearly mediated through linguistic and cultural grids. There is no question that the range of interpretation of threat or impact of disaster is extremely wide and largely a function of social and cultural characteristics of individuals, primarily related to degrees of integration and group power relations (Douglas and Wildavsky 1982; Hoffman, this volume).

For a time cultural theory sought to extend this entirely valid conclusion reached at one level of social analysis to empower the phenomenon of language at a much higher level. Language not only became a shaper of perception but, as the essential ground in which social life was embedded, acquired determinate power over all social relations. In this approach language was hegemonic and nonreferential, to the extent that the world was reduced to a text from which only relativist

understandings could be drawn (Palmer 1990:3). More recently, there has been significant criticism of pure, idealist semiotics (Gottdiener 1995) and a call for greater attention to exosemiotic domains such as economic development and political conflict (Biersack 1999). This "reformed" semiotics explores the sign within social context and links it to the historical, political, and economic domains of the world.

Hazards and disasters, constituted as they are in the society-environment nexus, offer a context in which to pursue these more synthetic understandings of the mental and the material. On the one hand, to say that disasters are social constructs to be read does not disembed them from the materiality of the world. Indeed, the physical reality of disaster explicitly challenges theoretical currents that hold that nature is a purely social construction at the ontological level (Woolgar 1988; Tester 1991, as cited in Gandy 1996). The physical existence of disasters establishes an agency of nature that exists independently of human perception. However, human beings are deeply implicated in the construction of the forms and scale in which that agency expresses itself. The impact of these hazards, when they are perceived and cognized, rapidly confirms this agency, but just as rapidly constructs a social text around it that may either reduce or accentuate the impact. We may "read" the disaster as a social text as it unfolds in its particular context, but the natural forces that created it, or even hazard processes set in motion by technology, exist as independent, exosemiotic agents operating according to physical processes that are ultimately prediscursive, "outside" the text, no matter how many texts may be constructed about them after the fact.

Even where, for the sake of argument, the disaster is purely in the perception of the community, its construction is in reference to the physical operation of the material world. The flight and evacuation behavior precipitated by a false rumor of a dam break above a town was not seen to be distinguishable from the behavior of the people who fled the actual break of the Teton Dam; both were viewed as disasters (Quarantelli 1985:47). The people in the first town responded to a rumor, generated a social text about a disaster, and based their behavior, flight, and evacuation on that text. But the hazard processes they were referencing to construct their text were ultimately independent of their interpretation. That the dam existed was certainly part of a social

text, as well as a material object. If the dam had broken, it would have been because of certain physical processes, "outside the text," indeed, even in opposition to the text, so to speak, and certain physical results, equally outside and opposed to the text, would have taken place, subsequently to be included in a text. This particular case perhaps speaks to the need to draw a distinction between a disaster and a more general category called "crisis," some of which may occur in purely cultural frames and others, like disasters, in a domain that blends both the material and the cultural. Disasters, because of their material expression, their emergence from human-environment mutuality, and their cultural construction, belong to that class of phenomena that are "neither purely object (nature) nor subject (social discourse)...which lie between the opposite epistemological poles, frozen into the dichotomy between the natural and social sciences" (Gandy 1996:35). They are less frozen into a dichotomy than expressive of the fact that the reality that emerges from the conjuncture of nature and culture is anthropocentric, and thus both material and symbolic. That reality is based on an ecology, as Biersack (1999:11) says, of "incommensurabilities, predicated on the fact that human life lies 'betwixt and between,' neither nature nor culture, but precisely both."

Thus, in a directly physical sense as well as in a symbolic sense, disasters emerge out of contradictions in the mutual construction of societies and environments. And, as Henri Lefebvre (1991; quoted in Harvey 1996:87) notes, "[S]pace was produced before being read; nor was it produced in order to be read and grasped, but rather in order to be lived by people with bodies and lives." Undoubtedly, our cultural life is deeply implicated in the construction of our material life and vice versa, but life does have to be produced before it can be read. Our values and orientations regarding shelter, nourishment, security, and relationships both reflect and affect the material practices and systems of social relations through which they are produced and condition our relative vulnerability within an environment that is mutually constituted by nature and society. Cultural readings can neither eradicate nor create the existence of a natural hazard. If a cultural reading apprehends the existence of a hazard, it may or may not alter practice in such a way as to either reduce or exaggerate the risk of disaster. History is littered with the rubble of societies that could not culturally come to

terms with either natural hazards or the forces they themselves partially instituted in their environments through the material practices of production. Natural hazards do not exist primarily as social constructions, nor are they in some essential fashion merely the product of social discourse, which will cease to exist if we stop discoursing about them (Radder 1992). Hazards and disasters demonstrate the exosemiotic agency of nature, but, on the other hand, it is a nature that is mutually implicated in its construction with society through material practices and ideological discourses.

DISASTERS AND THE REENVISIONING OF NATURE AND CULTURE

The interpenetration of forces and conditions posed by the concepts of vulnerability and disasters links disaster research to current efforts in anthropology and related fields to rethink the relationship between culture and nature. The opposition between the two has played a key role in the development of anthropology and other social sciences, enabling the demarcation of culture, as opposed to nature, as the focus of the proper study of humankind (Horgan 1988). Furthermore, the separation between culture and nature also permits a separation between observer (of nature) and observed (nature itself), which is the basis of, for example, the science of biology (Soule 1995:148).

As mentioned earlier, alternative views of the relationship between nature and culture have begun to create more synthetic approaches that can address the mutuality of the two (Biersack 1999). Some prefer to develop approaches that stress a kind of critical realism, emphasizing a balance between the social construction of nature and the natural construction of the social and cultural (Stonich 1993), while others pursue a more anti-essentialist stance, emphasizing the social construction of nature (Ingold 1992; Escobar 1999). These and other approaches are part of an effort to seek a fuller recognition of the role human beings have taken in shaping as well as being shaped by nature by conceptualizing a "bio-cultural synthesis" (Goodman and Leatherman 1998). The "new materialism," as Biersack (1999:11) dubs it, addresses the challenge of bringing nature into the cultural realm without "effacing nature's autonomy from the cultural realm."

The integration of ecological and social theory, however, does not mean the “culturizing” of the environment and nature to the point that they disappear in a haystack of discourses. Like those who “ecologize” culture, those who would “culturize” ecology risk obscuring as much as they illuminate, particularly in terms of the role of disasters in human-environment relations. Disaster researchers are all too well aware that the natural forces present in any environment have enormous power to affect society, but it is society that actualizes the potential of a hazard. This perspective strives to recognize that the objective circumstances that disasters occur in and the material needs they evoke are sociohistorical products.

Those features of an environment that represent dangers or losses, if they are perceived as such, are also organized into an environment in the human context, through choice. That is, some societies recognize risk, take steps to mitigate or not as the case may be, and choose to take their chances. Many natural hazards are not sufficiently frequent or do not produce consistently frequent disasters, such that they may frequently not be perceived as threats, and therefore often are not integrated into human environments. Paine (this volume) notes that risks can be culturally negated if realistic assessments amount to overwhelming threat. However, even when risks are perceived and experienced, some elements of a society still may not be in a position to take the necessary steps to mitigate or prevent the occurrence of a disaster. Such a situation is the essence of vulnerability.

Vulnerability is a concept that allows us to bring nature in from “out there” and facilitates reconceptualizing nature-society relations from a duality to a mutuality. As Ingold (1992) asserts, environmental history and human history are inseparable, each implicated in the processual life of the other, each contributing to the resilience and vulnerability of the other. Disasters are among those phenomena whose analysis requires that the barrier between human activity and ecosystemic activity be collapsed, transforming a relation of difference into a relation of mutuality of the natural and social worlds. If disasters cannot be defined exclusively in natural or social science terms, they may perhaps be seen more productively as a mode of disclosure of how the interpenetration and mutuality of nature and society, with all the consistencies and contradictions, are worked out (Robben 1989).

However, for disasters to be employed in this fashion, environmental features and ecological processes such as earthquakes, hurricanes, floods, and soil erosion must be recognized as features of social life; and social and cultural elements, such as commodities, land markets, and money flows, must be seen as functioning ecologically (Harvey 1996:392). Disaster researchers are uniquely situated to advance this understanding of the nature-culture relationship and, at the same time, employ it to reorient their own research agendas toward more processual and political-ecological explorations. In the most direct sense, this mutual construction of human beings and environments provides a theoretical basis for asserting that we construct our own disasters insofar as disasters occur in the environments that we produce.

GLOBALIZATION, VULNERABILITY, AND DISASTERS

A number of current trends would appear to indicate that an increase in impact and scope of hazards and resulting disasters, already complex and multidimensional, is taking place through combined effects of economic, social, demographic, ideological, and technological factors that are compounding their complexity many times over. Recent research indicates that greater numbers of people are more vulnerable to natural hazards than ever before, due in part to increases in population, but more so to their location in dangerous areas (Quarantelli 1985). In addition, we have created new forms of disaster agents. Technology always has the capacity to malfunction, often with catastrophic effects, but the second half of the twentieth century has seen the creation of completely new technologies, whose mere implementation, regardless of potential or actual malfunction, has had profound environmental and, in some cases, catastrophic impacts. Many of these new technologies, ranging from toxic chemicals to nuclear power plants, have added to the list of hazards that now threaten communities, not necessarily with material destruction, but with altogether novel biologically derived hazards, creating new forms of injury (Quarantelli 1991; see Stephens, Button, and Rajan, this volume). Human technological interventions, while in many cases providing more security, have in other instances added many degrees of complexity to existing natural threats. Furthermore, natural disasters have been shown to trigger subsequent technological disasters.

The implications of such a situation have been manifested in the technological catastrophes of the past two decades, including *Exxon-Valdez*, Bhopal, and Chernobyl, to name only a few of the most prominent. This period has also seen the effects of the domination of nature ethos in the expanded vulnerability to impacts of natural disasters in Hurricanes Hugo, Gilbert, David, Andrew, and Mitch, the earthquakes of Loma Prieta, Mexico City, India, and Colombia, and the droughts of Ethiopia, Senegal, and Sudan, again to name only the headline events. However, the linkage of any particular approach to the economic problem to the construction of vulnerability requires ignoring the distressing environmental record of both capitalist and socialist economies as well as the role many ancient societies played in their own destruction by so-called natural calamities (Weiskel and Grey 1992).

The general culpability of complex human systems notwithstanding, the world is now a global system organized for the vast majority by capitalist markets. There are serious implications of capitalist expansion to global contexts for levels of vulnerability. Markets gained pre-eminence with the rise of private property and developed to enable the exchange of private goods, but not to regulate the use of private goods. Nor do they work especially well with public goods, and in general they have not been successful in protecting the atmosphere, the seas, rivers, or, in many cases, the land (Murphy 1994:58). The continued expansion of human activities in the world, now almost exclusively a function of the market, is straining both the limits of human adaptive capabilities and of the resilience of nature. The impacts of human-induced environmental change on air, land, and water are slowly exceeding the elasticity of natural systems until they trigger rapid alterations that impact the health of populations, the renewability of resources, and the well-being of local communities (Holling 1994).

Furthermore, the globalization of trade and migration has led to an increasing globalization of biophysical phenomena, intensifying linkages and creating problems across scales in space through reductions in heterogeneity. For example, cargo ships, taking on ballast water in one ecosystem and releasing it in another, are thereby introducing novel species, often with no predators or reproductive controls, and contributing to the creation of one global ecosystem with ecologically unpredictable results (Murphy 1994:18). Temporal scales have also been

altered. Natural systems possess a certain level of resilience, allowing for incomplete knowledge, mistakes, and recovery. However, natural resilience also provides a certain lag time during which greed or ignorance can escape responsibility. Increased levels of exploitation are reducing the natural elasticity of systems, shortening the lag time for response before irreversible damage takes place (Holling 1994:93). Both Dyer and Moseley (this volume) explore the serious implications for continuity, change, and survival of community and culture in situations in which resilience of culture and environment is reduced by disasters.

Today many local problems, including disasters, may have their root causes and triggering agents, and possibly their solutions, on the other side of the globe. Through this globalization process problems have become basically nonlinear in causation and discontinuous in both space and time, rendering them inherently unpredictable and substantially less amenable to traditional methods of observation of change and adaptation. Human-induced changes have moved societies and natural systems into essentially unknown terrain, with evolutionary implications for elements of both. As has been argued, societies and nature have always been in a process of coevolution in local, relatively discrete contexts. Now people, economies, and nature are in a process of coevolution on a global scale, each influencing the others in unfamiliar ways and at scales that challenge our traditional understandings of structure and organization, with serious implications for the adaptive capacities of people and societies (Holling 1994:79–81). These findings underscore the changing nature of disasters, emphasizing that they are rooted in the coevolutionary relationship of human societies and natural systems. The challenge is to specify the regional and global linkages that generate destructive forces within our societies and environments. In a sense, disasters are now sentinel events of processes that are intensifying on a planetary scale. The interpretation of the messages brought by these sentinels remains a crucial issue.

CONCLUSION: ANTHROPOLOGY AND DISASTER RESEARCH

As the world becomes increasingly integrated by expanding global systems of communication and commerce, technological or environmental changes in one locale may trigger radical events or change

processes resulting in disasters half a world away. Although legal responsibility for such calamity may be difficult to establish, the increase in technological disasters, and in particular those with lasting toxic impact, has an undeniable human agency and is seen by some to endanger faith in human institutions, placing in doubt or calling into question the validity of culture itself, if culture in some sense can be seen as a kind of implicit guarantee of limited predictability in life. Button's and Rajan's discussions (this volume) of the difficulties in assigning responsibility in Woburn and Bhopal, even where cause and effect were proximate, highlights this problem. Horlick-Jones (1995) suggests that modern disasters can even be thought of today as "outrage and betrayal" because they indicate a failure of institutions to live up to their intended mission. It is arguable that the expanded conditions and experiences of vulnerability constitute a significant component of these anxieties. Indeed, although somewhat reminiscent of Anthony F. C. Wallace's (1956a,b, 1957) focus in his landmark work linking the issues of disaster, cultural crisis, and response, Erickson (1994) has called the trauma engendered by such events and processes "a new species of trouble."

The new kind of trouble of which Erickson writes so eloquently seems emblematic of the challenges Roy Rappaport (1992) urged anthropologists to confront in their research and their lives when he spoke of "the anthropology of trouble." Rappaport echoes Vayda and McCay (1975), who called on ecological anthropologists to explore life-threatening hazards that people actually have to deal with rather than ecological issues that may not be locally problematic. The current increase and expansion of disasters and their profound effects upon individuals and communities, particularly in the context of globalization processes, however, are currently undertheorized and require an analytical approach that encompasses all the factors leading to their occurrence. Furthermore, there is a general tendency to confuse symptoms ("troubles") with causes, particularly when human agency is involved. In grappling with the problematics of disasters, anthropologists, working in the holistic framework that is the hallmark of the discipline, can clarify the important distinction between symptoms, the disaster events and processes themselves, and their underlying and largely systemic causes. The holistic perspective is uniquely capable of

capturing the multidimensionality of disasters and in doing so can enlarge anthropological theory as well as contribute to disaster mitigation and reconstruction.

Note

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