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DISASTER IN ANTHROPOLOGICAL PERSPECTIVE

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"WHAT IS A DISASTER?": ANTHROPOLOGICAL PERSPECTIVES ON A PERSISTENT QUESTION

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INTRODUCTION

DISASTERS HAVE BEEN STUDIED FROM A SOCIAL SCIENTIFIC PERSPECTIVE FOR roughly seven decades. During this span multiple conceptual and thematic foci emerged from a variety of origins, each contributing in different ways to the overall development of the field. Ranging from Prince's (1920) early study of a munitions explosion in Halifax harbor to studies of populations experiencing wartime bombardment to the social impacts of natural hazards and a myriad of operational definitions used in emergency assistance and reconstruction, there has been little consensus on the definition of disaster. In some circles, the lack of consensus has caused concern regarding the intellectual health of the field (Quarantelli 1985, 1995).

However, the intellectual vitality of a field of research does not necessarily depend on a conceptual or definitional consensus. In anthropology, for example, Kroeber and Kluckhohn, after surveying the literature, found 164 different definitions of culture, the discipline's core concept (1952). Since Kroeber and Kluckhohn's time, debate on the concept of culture has raged over such central elements as the material or ideological bases of culture, appropriate methodologies for cultural research, and the nomothetic versus the ideographic nature of the study of culture. Those debates generated markedly different approaches to research topics and methodologies. Although anthropologists probably ascribe to fewer definitions of culture today, total consensus on the concept has hardly been reached. Still, lack of complete conceptual uniformity or consensus has not resulted in intellectual stagnation. Indeed, such debate is the substance of both scientific and human-

istic endeavor in general. The continuing discourse surrounding the discipline's core concept has hardly, in my view, been damaging to the integrity of the field, nor has it undermined the discipline's research enterprise. While there are those who would disagree with me, I see the current foment in anthropology as a sign of health and vitality. The intense self-examination that anthropology frequently becomes involved in revitalizes and stimulates new theoretical, methodological, and research questions.

Despite the fact that the lack of consensus about either culture or disaster is not a particular source of concern to me, I do not wish to dismiss the question "What is a disaster?" as insignificant. The definitional debate regarding disaster is significant because it prompts an exploration of past and emerging dimensions of disaster in an increasingly hazardous present, as evidenced in the appearance of new forms of hazard and rapidly changing human-environment relations and conditions. Definitional consensus may be less important than stirring discussions in which conflicts may not be totally resolved, but important issues will be clarified, new perspectives and problem areas developed, and, most importantly, new potentials for practice explored. In effect, multiple definitions are not necessarily injurious to a field if they can be operationalized through appropriate intellectual and methodological procedures to advance orderly and systematic research (Rocha 1995: 5). In this chapter, I intend to review some of the inherent difficulties in defining disaster, as well as the issues central to definitional debates. Further, I outline the contribution of anthropology to the conceptualization of disaster and argue for the development of a political ecology of disaster.

DISASTERS: VARIABILITY AND COMPLEXITY

Why has it been so difficult to reach a consensus on the concept of disaster? On the one hand, disaster is a term that is used fairly liberally in popular parlance. Many events or processes are colloquially referred to as disasters—everything from a failed social event to a regionwide hurricane. The varied popular and literary uses of the term embrace such a wide array of phenomena, concepts, metaphors, and allusions that attempts at precision, clarity, and, perhaps most importantly, simplicity by scientific interests are challenged. By the same token, popular usages and interpretations of the term also on occasion reveal significant dimensions of disasters that escape the perspective of the purely objective stance (Kroll-Smith 1998).

Since disasters are characterized by external variability and internal complexity, the conceptual challenge presented by disasters is doubly problematic. External variability refers to the wide range of "objective" phenomena in natural and technological domains that generate or trigger disasters and produce very different kinds of physical impacts. Covering them all, the word *disaster*

is used to characterize events/processes that range from slow-onset processes such as droughts and toxic exposures to rapid-onset phenomena such as earthquakes and nuclear accidents. External variability also encompasses the range of effects of such disasters, extending from immediate destruction and death from, for example, tornados, to impacts not perceived or experienced physically for perhaps many years, as in the case of toxic exposures. External variability alone thus almost defies analysts' abilities to establish a set of common definitional characteristics that can encompass the vast array of phenomena that generate and occur in disasters.

Wittgenstein counsels us regarding the linguistic difficulty of absolute precision, particularly when dealing with categories that encompass widely ranging phenomena. For such categories or concepts, he suggests using the term "family resemblances." Following his discussion of the concept of games, I suggest that disasters form a family, in that what emerges from a consideration of their wide array of phenomena is "a complicated network of similarities, overlapping and criss-crossing: sometimes overall similarities, sometimes similarities of detail" (Wittgenstein 1973: 32e). Wittgenstein employs the metaphor of spinning a thread in which there is a continuous overlapping of fiber upon fiber, but no one fiber that runs through the entire thread. The common feature of the thread, as well as—to extend the metaphor—its strength, lies in the continuous overlapping of the filaments through the whole strand. Furthermore, there is no need to establish definitional criteria limits to make such a set of family resemblances usable as a concept. This is not to say that boundaries cannot be drawn, as they frequently are for special purposes, but boundaries are not necessary to make the concept usable, except for that special purpose (Wittgenstein 1973: 33e).

Multiple, yet similar, definitions of disasters arise exactly according to the specific purposes or goals of various disaster endeavors. Researchers focusing on behavior will define disaster differently from those exploring societal-environment interactions. Organizations involved in disaster management or reconstruction set operational definitions that allow their participation in events and processes that meet the criteria. Thus, the term *disaster* constitutes a set of family resemblances rather than conforming to a minimum list of definitional criteria. The concept has "blurred edges," as Wittgenstein says, but the inexactness of a definition hardly makes it unusable.

Also central to the definitional debate is the internal complexity of disaster. In a disaster a collectivity of intersecting processes and events—social, environmental, cultural, political, economic, physical, technological—transpiring over varying lengths of time are focused. Disasters are totalizing events. As they unfold, all dimensions of a social structural formation and the totality of its relations with its environment may become involved, affected, and focused. These dimensions express consistency and inconsistency, coher-

ence and contradiction, cooperation and conflict, hegemony and resistance. They reveal the operation of physical, biological, and social systems and their interaction among populations, groups, institutions and practices, and their concommitant sociocultural constructions. Like few other phenomena the internal complexity of disasters forces us to confront the many and shifting faces of socially constructed reality(ies). The complexity is embodied in the multiplicity of perspectives as varied as the individuals and groups impacted or participating in the event and process. The multiple forms, enactments, and constructions that a disaster may take also elicit multiple interpretations from many disciplinary approaches, each with widely varying methodological tools and theoretical and practical goals.

The external or objective variability and internal or subjective complexity of disasters are largely responsible for the contested nature of the concept. As Gallie, writing some ten years after Wittgenstein, asserted, ". . . there are concepts which are essentially contested, concepts the proper use of which inevitably involves endless disputes about their proper uses on the part of their users" (1955: 169). Similarly concepts such as "art" or "democracy" are disagreed on by differing parties as to their use and also to their application to particular situations or contexts, with each faction maintaining the correctness of its interpretation with equally compelling arguments and evidence.

I submit, then, that disaster is a contested concept, with "blurred edges," more a set of family resemblances among a wide array of physical and social events and processes rather than a set of bounded phenomena to be strictly defined.

ELEMENTS OF A DEFINITIONAL DEBATE

The discussion regarding the definition of disaster was most intently engaged in by sociologists and geographers, beginning with efforts by Fritz (1961), Baker and Chapman (1962), and Barton (1969). In surveying the literature of the previous three decades, Quarantelli expressed concern over the lack of definitional consensus in the field (1985), noting that disasters had been variously defined in terms of 1) physical agents, 2) the physical impact of physical agents, 3) an assessment of physical impacts, 4) the social disruption resulting from an event with physical impacts, 5) the social construction of reality in perceived crisis situations which may or may not involve physical impacts, 6) the political definition of certain crisis situations, and 7) an imbalance in the demand-capability ratio in a crisis situation (Quarantelli 1985: 43–44). More recently, Quarantelli noted that the overall situation has not changed substantially since his earlier assessment (1995: 222).

To a certain degree, this relative stasis in the debate engaged in largely by sociologists and, to some extent, by geographers and political scientists is true.

However, current debate has been sharpened by the emergence of both the political economic and cultural ecological perspectives that have spread across the social sciences since the 1960s. In the 1970s many anthropologists and cultural geographers started both to broaden the focus of disaster research and embed it in deeper time frames. In so doing, they opened up new theoretical and practical (political) questions and began to reconsider disasters as less the result of geophysical extremes (earthquakes, hurricanes, droughts, etc.) and more as functions of ongoing social orders, human-environment relations, and historical structural processes. The issues they introduced appear in greater current emphasis upon the roles intrinsic qualities of society play in disaster than on the facts of disruption and devastation. The definitional debate now revolves around how key social factors are to be weighted or applied in definitions and from that, how research questions are to be formulated. Thus, in substance, out of Quarantelli's earlier list of understandings of disaster, a set of common concerns relating to defining what a disaster is did arise. Rather than a wildly disparate set of defining characteristics producing contradictory understandings of a disaster, the discussion now centers around the varying emphases (and in some cases labels) the specific issues have (see Quarantelli 1995).

Objectivity versus Subjectivity

Still of concern in the definitional debate is the issue of disaster as an objectively identifiable phenomenon or a subjective, socially constructed process. That is, is a disaster a set of physical impacts or a set of socially constructed perceptions? Rather than a fixed entity, identifiable by certain concrete material characteristics and time dimensions, some researchers see disaster as a relative matter, that is, varying according to the multiple perspectives of the different affected groups (Quarantelli 1985: 45; Kroll-Smith 1998). Such a formulation permits the application of the term "disaster" to a social construction of conditions and/or events in which no destruction, but considerable social disruption, has occurred, leading to the question of what kinds of phenomena should, therefore, be included within the rubric of disaster and what kinds should be excluded.

Definitions that frame a disaster as a socially constructed crisis, in which modes of interpretation and significance rather than physical structures are endangered, are implicitly broad. Such approaches focus far more on the psychocultural impacts as the crucial characteristics of disasters, and assert that emphasis on issues of material or infrastructural damage fails to address the essential elements of disasters. The kinds of material destruction that other definitions emphasize figure in these approaches as perhaps only triggers of the fundamentally sociopsychological or psychocultural essence of disaster. These definitions emphasize the dislocating and disrupting effects on human

cognition and culture of a wide variety of phenomena that would include the effects of everything from a level five hurricane, a chemical oil spill, a terrorist attack, an epidemic, or a plant closing. Broad and cognitively based, they can include such phenomena as a structural adjustment program, the AIDS epidemic, the Oklahoma City bombing, Three Mile Island, the Watts riots, and the savings and loan crisis along with the 1985 Mexico City earthquake, Hurricane Andrew, and Bhopal. These definitions enhance the possibilities of comparison among many classes of events and processes. By the same token, including a wide variety of phenomena under the rubric of disaster may also tend to obscure significant distinctions across classes of phenomena (Kroll-Smith and Couch 1991).

Other approaches that attempt to balance social disruption, physical harm, and psychological dislocation as characteristics defining disaster are less inclusive. They emphasize physical impacts but still incorporate a wide array of events/processes. Kreps (1995) explicitly wants to include a wide array of phenomena that "involve social disruption and physical harm . . . keeping the boundaries broad to include environmental, technological and sociopolitical events." Therefore, civil strife of various sorts would be included under the rubric of disasters in addition to natural and technological events/processes. Kreps, however, would hold to definitions that would exclude such social phenomena as economic crises, plant closings, or perhaps computer/high technology failures unless they occasioned specific forms of destruction or mortality.

Nonroutine versus Socially Embedded Events

A further issue in discussions of definitions of disaster involves the nonroutine nature of disasters. Disasters in general are portrayed as nonroutine, destabilizing, causing uncertainty, disorder, and sociocultural collapse. In such descriptions there is clearly an emphasis on distinguishing disasters from ordinary, everyday realities that are characterized explicitly and implicitly as possessing a higher degree of predictability. Disasters disrupt routine life, destabilize social structures and adaptations, and endanger worldviews and systems of meaning (Horlick-Jones 1995).

While the stress on the nonroutine dimension of disasters seems close to common logic, these descriptions seem to incorporate an almost functionalist assumption of general societal equilibrium prior to disaster onset. Such an assumption dangerously ignores that most disasters are ultimately explainable in terms of the normal order. That is, the risks that people run in their natural environments are by and large manageable, but the forms and structures of ordinary life, particularly those associated with the disadvantages suffered by third-world societies, accentuate the risk and the resulting disaster impact. There is, as Hewitt points out, a "tacit assumption of an unexamined normality" (1995: 322).

The Environmental versus the Social Location of Disasters

The next, and arguably the most important, of these debated issues is the "location" problem; that is, are disasters located in society or in the environment? Among social scientists, there is now a fairly clear consensus that definitions focusing on agents (e.g., hurricanes or oil spills) from the natural or technological environment, described by Hewitt as the "hazards paradigm," divert attention from the fundamentally social nature of disaster and impede generalization and theory building (1995: 319). However, the hazards paradigm is still seen as particularly tenacious, persistently influencing sociological approaches even while being rejected.

The debate over the social versus the environmental nature of disasters brings up a side matter that might be called the "what–why" question, although some might prefer the terms "effect" and "cause." That is, is the task of the definition to clarify what disaster is or what a disaster does rather than to explain why a disaster takes place? Some researchers would reject the concept of vulnerability as relevant to defining disasters. For them, the concept of vulnerability, which centers on understanding disaster in the total social and environmental context, is more appropriate for explaining the origin and causes of disaster rather than defining it (Porfiriev 1995). Quarantelli advises that "we should stop confusing antecedent conditions and subsequent consequences with the characteristics of a disaster" (as cited in Porfiriev 1995: 292). Rather, they require that definitions be framed in terms of the behavior of people and groups at a temporally and spatially specific moment. Community perception and response, including organizational involvement, therefore become the crucial issues for defining a disaster (Dynes 1993). Disaster is thus seen largely as a behavioral phenomenon, and the focus of the definitional problem is primarily the behavior of human beings and groups in a specific context of disruption and/or damage as expressed in individual, group, or institutional terms. In this approach, a disaster becomes an array of socially derived effects.

DISASTERS AND DEBATES IN ANTHROPOLOGICAL PERSPECTIVE

Although anthropologists have been involved in disaster studies since the field gained recognition as a substantive research area in the 1950s (Drabek 1986), they were, for the most part, fairly atheoretical and uninvolved in definitional issues. They preferred to focus on the responses of traditional peoples to specific events (Belshaw 1951; Keesing 1952; Schneider 1957). Firth (1959) and Spillius (1957) were somewhat more concerned with disasters for revealing issues of theoretical importance for social organization. Wallace, however, in his study of the Worcestor tornado, constructed a time-space model of disas-

ter as a type of behavioral event (1956). In his analysis, Wallace posits that a disaster is an event characterized by a series of time stages and spatial dimensions, each associated with different activities and roles embedded both in the predisaster system and the conditions imposed by the event itself (1956: 1–3). Defining what a disaster was appears not to have been particularly problematic to these early researchers. However, anthropology, while rarely specifically addressing the definitional issue, has shared many of the same foci and problematics in researching disasters as have other social sciences, to the effect that many features of the debate are not foreign to the field.

From my perspective as an anthropologist, defining disaster in behavioral or social psychological terms and applying it to a broad array of phenomena, provided the definitional criteria being used are made explicit and the event/process specificities detailed, is not particularly problematic. Indeed, basically behavioral definitions generate interesting and significant research on aspects of behavior of individuals, groups, and organizations as well as social theory, a theme I explore in chapter 8. Such research also has important implications for disaster practice. However, recently I have found that essentially behavioral definitions provide less a starting point than, perhaps, a midpoint to most of the issues about disaster that I, as an anthropologist, find most compelling. These issues concern what disasters reveal about society in: 1) its internal social and economic structure and dynamics in relation to 2) its external social and environmental relations, 3) the nature of its overall adaptation, and, finally, 4) how this knowledge can be employed to reduce disaster vulnerability and damage. Implicit in my approach is the assumption that disasters are as deeply embedded in the social structure and culture of a society as they are in an environment. In a sense, a disaster is symptomatic of the condition of a society's total adaptational strategy within its social, economic, modified, and built environments.

Adaptation has been and continues to be a central concept in understanding the human use of the physical environment. Basic anthropology texts frequently present the concept in terms of strategies of a sociocultural nature adopted by individuals and groups (communities, societies) to cope with the conditions presented by the physical and cultural environments in a way that enables them to survive and/or prosper (Bennett 1996: 253; Peoples and Bailey 1997). The sociocultural system is seen as the primary means by which a human population adjusts to its environment. It enables a community to extract from its surroundings food, shelter, water, energy, and other necessities and to confront and reduce to some relative degree the uncertainty and vulnerability experienced in interaction with environmental conditions and forces that threaten the population (Bates and Pelanda 1994: 149). There are two fundamental features that human beings must address in their relationship to their environments: the natural resources that enable people to meet

their needs, and the set of challenges that people must adjust to in order to survive. In other words, if people are to survive and reproduce they must exploit resources efficiently and deal with environmental problems effectively. Environmental problems include abiotic forces (temperature, precipitation, terrain, water, etc.), biotic forces (basically flora and fauna), and the challenge of other human beings who may compete or cooperate with any given population present (Peoples and Bailey 1997: 117).

There are two dimensions or axes that are crucial to how the process of adaptation is played out. The first involves the interplay between individual and group, or between differently constituted groups. What may be adaptive for the individual may be maladaptive for the group, and vice versa. That is, choices made by an individual in the use of resources—water, for example—may prejudice the welfare of the group. The converse is also true. How choices are made is not purely an issue of biological adaptation among human beings, but of a cultural or, specifically, a political nature, reflecting the power relations of the society and how power is expressed in the domains of wealth and prestige. The second involves the issue of choices and actions in a proximate time frame that may bear unanticipated longer-term adaptive implications (Bates and Plog 1991: 18). In essence, a society, as an interconnected network of individuals and groups seeking to satisfy both material and nonmaterial needs and wants, adapts to its physical and cultural environment. The society interacts and modifies its environment, engaging a series of processes over which it has incomplete control and incomplete knowledge, particularly over longer periods of time.

Despite flourishing in numbers and complexity, human societies have not been able to absorb or deflect all forms of hazards presented by the total environment over extended periods of time without impact. The forces and conditions in the built, modified, and/or natural environments that characterize disasters are forms of adaptational challenges to which the society must, but does not always, respond. Insofar as it is impossible to guard against every threat completely, all systems experience degrees of inherent vulnerability. For example, communities are often founded on the basis of proximity to resources, thus enhancing chances of survival, only to find over time that the same proximity to resources also involves proximity to hazards. The hazards must then be responded to in a way that enables the community to withstand their effects. Furthermore, the sheer complexity of our own social and technological systems generates dangers often simply out of slippage among the multiplicity of elements composing the system (Perrow 1984). Disasters, and how well or poorly systems fare in them, are a gauge of the success or failure of the total adaptation of the community. In the way we structure consciously and unconsciously, intentionally and unintentionally, our interactions with the environment, we can frequently be the cause of our own hazardous situation.

The problem presented by hazards and disasters must therefore be framed within the overall pattern of societal adaptation to the total environment.

Traditionally, in cultural anthropology such practices as hunter-gatherer migration patterns, postpartum taboos on intercourse, and band fragmentation (Steward 1955; Sahlins 1972; Lee 1979) were seen to be effective adaptive strategies for hazards in specific environments. Indeed, anthropology has a long tradition of studying among populations living in stressful and hazardous environments and framing research from an adaptational perspective (Torry 1979). However, the source of hazards is no longer necessarily found in the environment. Increasingly, the levels of environmental stress and vulnerability to hazards are being exacerbated by political, economic, and social forces, obliging people to adapt to an institutional environment as well as a natural one (Vayda and McKay 1975).

Viewing disasters from the perspective of adaptation both permits and obliges us to reconsider questions of the adaptive fitness of all societies, particularly those which have traditionally been perceived as having controlled or dominated their natural environments. The question of adaptation to hazards and disasters is paralleled currently by a similar concern about the long-term sustainability of resource use along with present levels of environmental degradation and pollution. The emerging relationship between increasing hazards and disasters and environmental degradation calls into question from the adaptive perspective the long-term sustainability, or, to put it another way, the adaptive fitness of industrial societies.

To return to an issue mentioned earlier, if we separate questions of cause from questions of effect (the "why–what" issue), basically we disengage hazards from disasters and environment from society. To separate the two matters is also to remove from the discussion the question of vulnerability or, that is, those features of society that do not favor survival of all or some of its members. The inadequacy or collapse of cultural adaptations, or "protections," as Dombrowsky refers to them, is certainly one of the core issues of disaster research and practice (1995). By separating hazard from disaster we disengage society from the physical world in which both are constituted. The "why" is implicit in every disaster because disasters either do not occur or are not severe if a community is successfully adapted to its environment. Occurrence and severity of disaster are one measure by which we can judge the success of adaptation to the environment.

If cause is, in fact, an appropriate issue in the definition of disasters, then we need to develop an alternative to understanding why disasters happen and why they take the forms they do. In calling for a perspective that includes both cause and effect, I am not advocating a return to a simplistic environmental "hazards" approach and situating the origin of disasters in environmental forces, so appropriately criticized by Hewitt (1983, 1995). I am instead call-

ing for a more nuanced approach to the relationship between society and environment, underscoring their mutual constitution, interaction, and adaptation (Ingold 1992). In essence, the debate over situating disasters in nature or in society is a pointless dualism. In understanding and defining disaster, the focus should be on the intersection between society and environment in terms of societal adaptation to the total environment, including the natural, modified, and constructed contexts and processes of which the community is a part.

The reason for adopting an adaptational dimension in our understanding of disasters is grounded in the fact that human communities and their behaviors are not simply situated in environments. As Ingold notes, the interface between society and environment is not one "of external contact between separate domains" (1992: 51). Societies are founded and formed in nature themselves, just as nature is culturally constructed and physically altered by society. Nor is this mutual constitution static. Rather, it is an active, complex, and evolving interaction. Society and environment are not separate, but two interrelated and reciprocally formative entities. Environmental features and processes become socially defined and structured just as social elements acquire environmental identities and expressions. Societal development entails development of an environment, and the resulting interplay emerges from the many continual processes of exchange through the porous and shifting borders between them. Society and environment thus are interpenetrating, mutually constitutive of the same world, comprised basically of the possibilities for exchange and action provided by natural, modified, and built environments and of the abilities and capabilities of people and their cultural constructions (Ingold 1992: 52).

Accordingly, disasters occur in societies. They do not occur in nature. However, disasters do not originate exclusively in societies, but rather emerge from societal environmental relations and the institutionalized forms those relations take. The frame or context in which disasters occur is a set of interacting and mutually constituting processes of human society and material culture, each with its own internal autodynamics, and of nature, also with its own autodynamic and self-organizing processes. Disasters thus become defined as failures of human systems to understand and address the interactions of this set of interrelated systems, producing a collapse of cultural protections and a resulting set of effects called a disaster. Disasters can result from the interaction of social, material, and natural systems, producing a failure of human culture to protect. Since our understanding of the effects of our actions and about these autodynamic systems is far from complete, the risk of failure becomes very high (Dombrowsky 1995).

In terms of anthropology, then, disasters are best conceptualized in terms of the web of relations that link society (the organization and relations among individuals and groups), environment (the network of linkages with the phys-

ical world in which people and groups are both constituted and constituting), and culture (the values, norms, beliefs, attitudes, and knowledge that pertain to that organization and those relations).

A POLITICAL ECOLOGICAL APPROACH TO DISASTERS

The conjunction of a human population and a potentially destructive agent does not, however, inevitably produce a disaster. The society's pattern of vulnerability—or in other words, its adaptive failure—is an essential element of a disaster. A disaster is made inevitable by the historically produced pattern of vulnerability, evidenced in the location, infrastructure, sociopolitical structure, production patterns, and ideology, that characterizes a society. The pattern of vulnerability will condition the behavior of individuals and organizations throughout the life history of a disaster far more profoundly than will the physical force of the destructive agent.

The complex internal differentiation that characterizes all but the earliest levels of sociocultural integration may distribute the benefits of adaptational effectiveness in widely disparate ways in both the short and long term. From this perspective, the patterns of adaptation developed out of the social systems of the society may be effective generally, or effective only for those favored by the societal power relations or patterns of production and allocation and not effective for those not so favored. The same patterns of adaptation, while reasonably effective for some or many in the short run, may equally sow the seeds of future vulnerability and disasters in the long run.

To understand disasters in the context of the complex internal differentiation that is particularly characteristic of contemporary human societies thus requires the combination of an ecological framework with an analytical strategy that can encompass the interaction of environmental features, processes, and resources with the nature, forms, and effects of the patterns of production, allocation, and internal social differentiation of society. The fact that complex societies, as adaptive systems, are controlled by contesting interests within a society, privileging some sectors with enhanced security while subjecting others to systemic risks and hazards, must also be apprehended by any effective research strategy.

In substance, a political ecology of disasters must be developed. Political ecology situates an ecologically grounded social scientific perspective within a political economy framework by focusing on the relationships between people, the environment, and the sociopolitical structures that characterize the society of which the people are members (Campbell 1996: 6). A political ecology perspective on disasters focuses on the dynamic relationships between a human population, its socially generated and politically enforced productive

and allocative patterns, and its physical environment, all in the formation of patterns of vulnerability and response to disaster.

Human-environmental relations are largely structured and expressed through social relations and the value orientations that derive from the arrangements through which a population extracts a living from its surroundings. A political ecology approach recognizes that the social institutional arrangements through which human beings access and alter the physical environment in their quest for sustenance and shelter are key elements in the evolution of disasters. Political ecological analysis focuses on those conditions surrounding the disaster, either threatened or occurred, which shape its evolution. It most particularly emphasizes those structures that shape the developmental features that make the society vulnerable to both socioeconomically and environmentally generated hazards.

This perspective is consistent with recent formulations on development and environmental degradation (Peet and Watts 1993; Schmink and Wood 1987; Painter and Durham 1995) and similarly founded approaches to disaster (Blaikie et al. 1994; Bates and Pelanda 1994; Kroll-Smith and Couch 1991; Peacock et al. 1997). The basic view is that 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. Both societies and destructive agents are clearly processual phenomena, together defining disaster as a processual phenomenon rather than an event that is isolated and temporally demarcated in exact time frames.

If vulnerability is to be considered essential to the understanding of disaster, the question of time becomes fundamental. I suggest that the life history of a disaster begins prior to the appearance of a specific event-focused agent. Indeed, in certain circumstances disasters become part of the profile of any human system at its first organizational moment in a relatively fixed location or area. As a society develops through time, it may reduce or increase its vulnerability to selected hazards through sociocultural adaptations. A political ecological approach appears the most capable of encompassing the causation and production of disasters, their development as social and environmental processes and events, their sociocultural construction, and their implications for the overall sociocultural adaptation and evolution of the community (Bates and Pelanda 1994: 147).

CONCLUSION: DEFINING DISASTER IN THE CONTEXT OF GLOBAL CHANGE

The issue of success or failure of species within environments has traditionally been the focus of adaptation research, but the viability of the environ-

ment itself as a self-sustaining system must now also be included. Given the current changes in the nature and number of hazards and disasters, there is a certain urgency for appropriate reconceptualizations and approaches to hazards and disasters. From the anthropological perspective, the question of how well a society is adapted to its environment should now be linked to the question of how well an environment fares around a society. The issue of mutuality is at the forefront. Disasters now more than ever express most clearly imbalances in that mutuality.

Clearly, the continued expansion of certain activities in the world are straining the limits of both human adaptive capabilities and the resilience of nature. The violation of these limits is generating a wide variety of problems in our most basic natural resources, air, water, and land. While not immediately evident in the short run, these problems often slowly gather momentum until they evoke rapid changes in local contexts in ways that negatively impact the health of populations, the renewability of resources, and the well-being of communities. Thus, they lead to disasters of varying degrees of severity. The increasing globalization of biophysical phenomena intertwines socially with a similar globalization of trade and migration. Together both impel a process of intensification of linkages that is creating problems across greater scales in space and reduced spans of time. The root causes and triggering agents, and possibly the solutions of local problems today, may be located on the other side of the world. As Holling so cogently noted, these globalization processes have produced problems that are basically nonlinear in causation and discontinuous in both space and time, and, therefore, inherently unpredictable (1994: 80). Such nonlinearity and discontinuity preclude traditional human adaptive responses. Unable to observe a signal of change, people cannot develop strategies to deal with it. Contemporary societies and natural systems are moving into such basically new and unknown terrain that their novel forms of interaction are taking on evolutionary implications. Basically, people, society, and nature are opening a new chapter in co-evolution, due largely to human inputs on a far more global scale than ever before. Human beings, societies, and local and global environments are influencing each other in unfamiliar ways and in measures that challenge adaptive capacities as well as traditional understandings of structure and organization (Holling 1994: 79–81).

The implications of these conclusions for the study of disasters are profound. They emphasize that the nature of disaster is rooted in the co-evolutionary relationship between human societies and natural systems, and oblige us to intensify our efforts to specify the linkages, now on regional and global scales, that generate these destructive forces within our societies and environments. As we see environmental problems developing, how do we predict and mitigate the disasters they prefigure? Disasters are becoming sentinel events of

processes that are intensifying on a planetary scale. Our definitions and our approaches to studying them must now reflect these realities.

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