



Mapping
Vulnerability

Disasters, Development & People

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First published by Earthscan in the UK and USA in 2004

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ISBN: 1-85383-964-7 paperback

1-85383-963-9 hardback

Typesetting by MapSet Ltd, Gateshead, UK

Printed and bound in the UK by Creative Print and Design (Wales), Ebbw Vale

Cover design by Ruth Bateson

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A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

Mapping vulnerability : disasters, development, and people / Greg Bankoff, Georg Frerks, Dorothea Hilhorst.

p. cm.

Includes bibliographical references and index.

ISBN 1-85383-964-7 (pbk.) – ISBN 1-85383-963-9 (hardback)

1. Disaster relief—Case studies. 2. Natural disasters—Case studies. 3. Human beings—Effect of environment on—Case studies. 4. Political ecology—Case studies.

I. Bankoff, Greg. II. Frerks, Georg, 1961- III. Hilhorst, Dorothea.

HV553.M27 2003

363.34'2—dc21

2003008344

Earthscan publishes in association with WWF-UK and the International Institute for Environment and Development

This book is printed on elemental chlorine-free paper

Chapter 1

Theorizing Vulnerability in a Globalized World: A Political Ecological Perspective¹

Anthony Oliver-Smith

INTRODUCTION

Vulnerability is fundamentally a political ecological concept. Political ecology blends a focus on the relationship that people have with their environment with close attention to the political economic forces characteristic of the society in which they live that shape and condition that relationship. At least from the perspective of hazards and disasters, vulnerability is the conceptual nexus that links the relationship that people have with their environment to social forces and institutions and the cultural values that sustain or contest them. Thus, combining elements of environment, society and culture in various proportions, the concept of vulnerability provides a theoretical framework that encompasses the multidimensionality of disasters. Disasters as multidimensional, all-encompassing occurrences sweep across every aspect of human life, impacting environmental, social, economic, political and biological conditions. Vulnerability can become a key concept in translating that multidimensionality into the concrete circumstances of life that account for a disaster (Blaikie et al, 1994; Comfort et al, 1999; Cutter, 1996; Hewitt, 1983b).

Considering the multiple uses of the terms vulnerability and disaster, and the multidimensionality of their expression, today it has become ever more challenging to develop theory that has application or relevance to the ever expanding concerns they encompass. As the occurrence of interactions between natural and technological hazards increases, making disasters more complex, both the practical and the theoretical challenges in turn become more complex. The multidimensionality of disasters is at the crux 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 channelled and distributed in the form of risk within society according to political, social and economic practices and institutions. This is the essence of vulnerability.

The concept of vulnerability expresses the multidimensionality of disasters by focusing attention on the totality of relationships in a given social situation which constitute a condition that, in combination with environmental forces, produces a disaster. In that sense, conceptually it contains a wealth of linkages and relationships to explore for advancing and testing new approaches to fundamental issues of disaster causation and management, as well as social and cultural theory.

Wilches-Chaux (1989) identifies 11 different forms of vulnerability, including natural, physical, economic, social, political, technical, ideological, cultural, educational, ecological and institutional vulnerability (pp20–41). The model Blaikie et al (1994) present subsumes these different forms of vulnerability 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. They identify these ideologies as among the root causes of disaster. However, the linkages of ideologies to specific dynamic processes and unsafe conditions, as they readily admit, become less definite and difficult to pinpoint in the causation of specific events (Blaikie et al, 1994, pp29–30). The socio-cultural forms through which these linkages (tying ideologies, dynamic processes and unsafe conditions into causal chains) 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.

Vulnerability is conceptually located at the intersection of nature and culture and demonstrates, often dramatically, the mutuality of each in the constitution of the other. Disasters seem to be especially apt as contexts and processes that illuminate these complex relationships, particularly in the way that they challenge societies materially, socially and ideologically.

But the concept of vulnerability needs to be unpacked – not necessarily in terms of its variety of forms, as Wilches-Chaux (1989) has already ably done, but rather in theoretical terms in order to disclose its broader ecological, political, economic and socio-cultural implications. Unpacking vulnerability requires that a number of crucial theoretical tasks are undertaken to disclose the deep socio-cultural 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. In particular, vulnerability – while linking social and economic structures, cultural norms and values and environmental hazards (and disasters) in causative chains – does little to advance our understanding of the role of those forms, organizations and beliefs in producing that environment. In that context, I want to address three questions that are relevant to the eventual formulation of a coherent theoretical framework for disaster causation, which encompasses both natural and social scientific perspectives. The first question focuses on the general contributions of the cultural construction of nature to the social production of disaster. A second question addresses how the cultural,

political and economic forms and conditions that characterize vulnerability are inscribed in an environment. And a third question explores the relationship between cultural interpretation and the material world of the risk, threat and impact of disasters. Finally, a fourth question, how do we theorize the linkages among the three issues, particularly in the context of current patterns of globalization?

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 the concept of vulnerability for meeting that challenge that this chapter is directed. Disasters, like few other phenomena, offer a unique context in which to pursue such a theoretical breakthrough. The concept of vulnerability may prove to be key in this effort. In addition, it will be important to bear in mind the practical implications for disaster management that can be mined from these conclusions.

CONSTRUCTIONS OF NATURE AND SOCIETY

The first question we need to ask 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. The concept of vulnerability developed by Blaikie et al (1994), while linking cultural and social structures and the environment in causal chains, would assign this construction to the category of ideological root causes. The relationship between society and nature is one of the fundamental, if often unexamined, pillars of any ideological system. Anthropologists have documented that society–nature relationships are expressed cross-culturally in a wide variety of forms. Although it is hard to characterize local models of nature, it is clear that many are not based on the separation of the biophysical, human and supernatural worlds. Essentially, many cultures do not construct a clear dichotomy between nature and culture as Western societies do (Escobar, 2001, p151).

Due to its historical hegemony and continued expansion, the model of society–nature relations that are dominant in the West merits special attention. The dominant Western constructions of the relationship between human beings and nature place them 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 of as in partnership with humanity (Harvey, 1996). Although the Christian church was elaborating theological doctrine that set humans, like God, in transcendence over nature as early as the third century, local people were oriented by persistent pagan forms of animism that held that trees, streams, hills and other natural formations had their own guardian spirit. Before one altered anything in nature, the place spirit had to be placated (White, 1967, p1205). Human beings were seen as part of nature, part of God's creation, whose goal was to know both nature and God (Williams, 1980, p73). Many of these essentially more integrative or conservationist attitudes are sustained in Western

culture over time to the present. However, Christian abolition of pagan animism altered human environment relations from mutuality between sentient beings to indifference towards the impact of human action on nature, paving the way for a more utilitarian perspective towards the natural world that eventually became dominant in the 17th and 18th centuries (Redmond, 1999, p21).

The ideological return to society's opposition towards nature and, ultimately, to society's domination over, and control of, nature reflected changes that took place both in ideology and local practice that were more compatible with the emerging global economic 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 (Horigan, 1988). It is important to note here that a category composed of human beings was characterized by its association with the phrase 'in a state of nature'. Now, as then, certain people are 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 and forced displacement.

Furthermore, in the West, this nature as object, detached and external to humanity was constructed as a fund of resources into which human beings, regardless of social context, have not only a right to dip, but a right to alter and otherwise dominate in any way they deem fit. Moreover, the enlightenment ideal of human emancipation and self-realization was closely linked to the idea of control and use of nature (Harvey, 1996, pp121–2). Locke, for example, asserted that God had given the Earth to humanity, and since each individual was the embodiment of all humanity, each had the right to the fruits of his or her own labour in the natural world (Locke, 1965, pp327–8). 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 vision of 'nature, red in tooth and claw' was particularly 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 the human world. Its bounty or its savagery notwithstanding, nature is seen as plastic – ultimately vulnerable or malleable to the purposes of humankind.

The 'plasticity myth', as Murphy 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 (Murphy, 1994). The application of human reason is believed to impose 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, p5). The subjugation of disorderly nature to human rationality is epitomized in the regimentation imposed on forests by German forestry during the 18th century. The clearing of species of low commercial value, the weeding and the orderly files of trees all led to the reduction in diversity of insect, mammal and bird populations, rendering the forest more vulnerable to storm felling, fire and pests (Scott, 1998, p20). 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 humans 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 lying in bringing the human world back to harmony with the natural order. While in some general fashion 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 presented in terms of human beings developing the proper ways to act upon, or to act 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. The result of such a conceptualization in the case of disasters, among other issues, may be policies and practices that address symptoms, even effectively, but do little to address causes, condemning us to constantly repeat the exercise since 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 never-to-converge parallel alleys, as far as advancing human ecological theory, much less disaster mitigation, goes.

THE HAZARDS OF DOMINATION

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 18th-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-centred ideology rapidly transforming itself into the discipline of economics – thus became constructed as the principle vehicle for individual self-realization and societal welfare. Thus, individuals were now 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 ensuring human well-being, 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 the science of 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 exploitation of 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 results of embracing the rationality of essentially short-term gain have been unprecedented extremes of material wealth and poverty, unprecedented levels of environmental destruction and the rapid amplification of socially constructed vulnerability.

However, socialist economies have also 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 in order 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 implementing collective labour with their own expressions of the goals of human emancipation and self-realization. In effect, both capitalist enterprise and the socialist state have proceeded under the premise that nature was plastic and capable of domination by human reason. In doing so, both have rendered pollution, depletion of resources and other forms of environmental change subordinate to production goals (Murphy, 1994, p5).

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 are also conducive to continued social reproduction, therefore inscribing particular systems of social relations in the environment (Harvey, 1996, p183). This process of inscription will reflect materially those contradictions that are inherent in both the social system and the relationship between the society and the environment (Cronon, 1983, pp13–14 as cited in Harvey, 1996, p27). Thus, contradictions in the social relations are expressed through material practices as contradictions within the environment (Harvey, 1996, p185). 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 or transportation) in the modified and built environments, and one of the many ways in which 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 complicate 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 resources from use by the general population. Furthermore, the rich, in the continued reproduction of their wealth, are frequently involved in despoiling public goods such as the air and the oceans, thus engendering further vulnerabilities for the general population. 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.

Many disasters today are also closely linked to current conditions of environmental degradation (Varley, 1994; Fernandez, 1996). Social and material practices combine with natural processes and evolve into novel forms of hazard – both potential and actual disasters. Environmental degradation, driven by the quest for profit or by people subsumed disadvantageously in that quest, is now linked with accentuated vulnerability to both natural and technological hazards around the world. Much has been written recently about inappropriate natural resource exploitation that has been rationalized 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. Political ecologists and economic anthropologists contend that the human–environment relationship is generated in social relations through the double nexus of production. Environmental destruction, then, is ultimately not a question of exceeding natural limits, but is socially constructed – an outcome of systems of production and social exploitation (Collins, 1992, p179). This debate clearly has relevance for furthering our understanding of disasters. Disasters instruct us in environmental limits and inform us, as well, about specific instances of conditions of vulnerability that are created and imposed by human social arrangements, structured in, and by, the production process. The study of disasters and the concept of vulnerability can contribute to clarifying the question of environmental versus socially defined limits.

There are limits, although variably elastic ones, in natural systems (Holling, 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 that sustain an environment will create environmental crises and, perhaps, disasters, impacting upon human populations. However, when humans are present, an earthquake as a feature of nature may represent a universal and timeless challenge to their welfare, regardless of how that goal may be organized in a social system. It becomes a disaster only in the context of a specific society and a characteristic pattern of vulnerability. Environmental imitations or challenges are natural features, but are experienced only as the result of human social, economic, and cultural arrangements. The inadequacy of purely ecosystemic approaches for understanding such major environmental disasters such as the Sahelian drought of the 1970s convinced many of the necessity of analysing environmental problems in the framework of large-scale political and economic systems (Vayda and McKay, 1975; Lees and Bates, 1990, p264). A finer-grained understanding of both vulnerability and disasters must 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.

CULTURAL CONSTRUCTIONS OF CALAMITY

In many ways, any theoretical inquiry into the nature of vulnerability and disasters inevitably involves the tangle of ontological and epistemological questions that deal with the nature of cultural versus material realities. In some sense, this brings us full circle back to the nature–culture debate. Some scholars in disaster research suggest that disasters are entirely socio-cultural 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 is the public perception that either a hazard threat exists or an impact has taken place for a disaster to have occurred. 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, p48). This might be termed a form of ideological vulnerability.

The linkages between concrete material circumstances and ideological structures may be directly observed as people attempt to come to terms with disasters, to construct meanings and logics that enable them, as individuals or groups, to understand what has happened to them, and to develop strategies to gain some degree of control over what is transpiring. All of the social characteristics that significantly structure people in a society will play a role in the way that those meanings and explanations are constructed, giving broad disclosure to the internal variance of a community and underscoring the difficulty in determining an absolute or objective determination of the nature of the disaster. The perception of risk and vulnerability, and even impact, is clearly mediated through linguistic and cultural grids, accounting for great variability in assessments and understandings of disasters. There is no question that the variability of interpreting the threat or the impact of disaster is extremely wide

and is largely a function of social and cultural characteristics of individuals, primarily related to degrees of integration and group power relations (Douglas and Wildavsky, 1982).

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 became not only a shaper of perception but – as the essential ground in which social life was embedded, ordering all social relations – acquired determinate power over all social life. Language in this approach became hegemonic and non-referential, to the extent that the world was reduced to a text from which only relativist understandings could be drawn (Palmer, 1990, p3). More recently, there has been significant criticism of pure, idealist semiotics (Gottdiener, 1995), and a call for greater attention to exo-semiotic 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 detach 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, exo-semiotic agents that operate according to physical processes that are, ultimately, prediscursive, ‘outside’ the text, no matter how many texts may be constructed about them after the fact.

Disasters, because of their material expression, their emergence from human–environment mutuality and their cultural construction, belong, perhaps, to that class of phenomena that are neither purely natural, nor cultural, and that are situated between the opposing epistemological points: between the natural and social sciences (Gandy, 1996, p35). They are, perhaps, 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 says, of ‘incommensurabilities, predicated on the fact that human life lies “betwixt and between”, neither nature nor culture, but precisely both’ (Biersack, 1999, p11).

Thus, in a directly physical as well as symbolic sense, disasters emerge out of contradictions in the mutual construction of societies and environments. And, as Henri Lefebvre (1991) notes, ‘space 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’ (cited in Harvey, 1996, p87). 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 cannot eradicate (or 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 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 – if we stop discussing them – will cease to exist (Radder, 1992). Hazards and disasters demonstrate the exo-semiotic agency of nature. However, on the other hand, this is a nature that is mutually implicated in its construction with society through material practices and ideological discourses.

DISASTERS AND THE RE-ENVISIONING OF NATURE AND CULTURE

In the introduction to this chapter, I posed three questions that explored the relationship between nature and society, the hazards of domination of nature and the cultural construction of disaster. A fourth question addressed the need to link these three issues. To do this, we must recognize that the concept of vulnerability, with its interpretation of social forces and environmental conditions, is part of a larger effort to rethink the relationships between society, economy and nature. As mentioned earlier, alternative views of the relationship between nature and culture have begun to discard the dualism in human–environment constructs in efforts to create more synthetic approaches that can address the mutuality of nature and culture (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 that humans have taken in shaping, as well as being shaped by, nature by conceptualizing a ‘bio-cultural synthesis’ (Goodman and Leatherman, 1998).

The integration of ecological and social theory, however, does not signify 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 that are 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 in

which disasters occur and the material needs that they evoke are socio-historical 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 them or not, as the case may be, and choose to take their chances. However, despite being basic elements of nature, many hazards do not pose sufficiently frequent threats or do not produce consistently frequent disasters, so that they may not be perceived as dangerous and therefore are often not integrated within human environments. Paine (2002) notes that risks can be culturally (and perilously) negated if realistic assessments amount to overwhelming threat. However, even when they are perceived and even frequently 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.

Indeed, vulnerability is one concept that allows us to bring nature in from 'out there' and facilitates reconceptualizing nature–society relations from a duality to mutuality. As Ingold (1992) asserts, environmental history and human history are inseparable, each implicated in the evolutionary life of the other, and 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 eco-systemic activity collapses, transforming a relation of difference into a relation of mutuality between the natural and social worlds. The concept of vulnerability provides one means by which to accomplish this.

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. Furthermore, social and cultural elements, such as commodities, land markets and money flows, must be seen as functioning ecologically (Harvey, 1996, p392). 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

Current trends appear to indicate that, indeed, an increase in the impact and scope of hazards and resulting disasters, already complex and multidimensional, is taking place through the combined effects of economic, social, demographic, ideological and technological factors. These effects are, furthermore, 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 also created new forms of disaster agents. Technology always has the capacity to malfunction, often with catastrophic effects; but the second half of the 20th 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). 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 a decade of technological catastrophes, including *Exxon-Valdez*, Bhopal and Chernobyl, to name only a few of the most prominent. The decade has also seen the effects of dominating nature in the expanded vulnerability to the impacts of natural hazards such as hurricanes Hugo, Gilbert, David, Andrew and Mitch, the earthquakes of Northridge, Mexico City, Gujarat and Colombia, as well as the droughts of Ethiopia, Senegal and Sudan – to name only the headline events among the myriad small- and medium-sized disasters afflicting the disadvantaged around the world on a daily basis. However, blaming any particular approach to the economic problem for the construction of vulnerability requires ignoring the distressing environmental record of both capitalist and socialist economies, as well as the deeply implicated role many ancient societies played in their own destruction by supposedly natural calamities (Weiskel and Grey, 1992; Redmond, 1999; Tainter, 1988).

The general culpability of human systems notwithstanding, the world is now a global system organized for the vast majority by capitalist markets. There are serious implications resulting from global capitalist expansion and the globalization process, in general, for levels of vulnerability. Markets gained pre-eminence with the rise of private property and were 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, have not been successful in protecting the atmosphere, the seas, rivers or, in many cases, the land (Murphy, 1994, p58). 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 (Holling, 1994).

Despite the unquestionable effects of human environmental alterations, the question of whether the processes attributed to globalization represent simply the logical playing out of the basic characteristics of capitalism, or something fundamentally new that alters the structure of the world, will affect the way in which societies currently address their vulnerability to hazards. A related question addresses the issue of the point at which the pace and intensity of quantitative change actually trigger a qualitative change to a fundamentally new condition, obliging a reassessment of all previous adaptive forms.

To those who have been concerned with issues of imperialism, dependency, world systems, structural adjustment and migration for some time, globalization

seems a bit like a new bottle for old wine. On the other hand, the issue that the rapid accumulation of quantitative changes has produced a qualitative leap into a fundamentally different state of affairs must be taken seriously, particularly for our purposes, as it affects people's vulnerability to hazards. Assessing the relevance of globalization processes to increases in vulnerability and disaster impact is both conceptually and empirically a challenging task. To address this task, a few basic questions need to be asked:

- How do we recognize the elements of globalization that are, in fact, new?
- What processes of globalization intensify or create vulnerabilities?
- To what degree does globalization create or exacerbate systemic as opposed to specific local vulnerabilities?
- What features of globalization contribute to the reduction of vulnerability?

While a fully adequate response to these questions is beyond the scope of this chapter, I will attempt to suggest some of the areas that such a task might address. Globalization is comprised of an array of mutually constitutive economic, social and ecological flows of energy, information, material and people, intersecting densely at various points and less densely at others around the globe. These flows or currents encircle or encompass the globe; but they are not distributed evenly, particularly in terms of outcomes or impacts. They disperse according to very specific logics (Hoogvelt, 1997). The availability of advanced communication and transportation technology permits these flows of energy, information, material and people to intersect or disperse at vastly reduced time scales and space scales, producing a set of impacts that are both the logical outcomes of longstanding systems and relationships and, in many ways, fundamentally new (Appadurai, 1996; Holling, 1994).

In terms of economics, one of the more balanced approaches to globalization is offered by the sociologist Ankie Hoogvelt (1997). According to Hoogvelt, the contemporary global market is differentiated from that of earlier moments in the 20th century by the adoption of geographically dispersed productions systems by multinational corporations that exert new forms of discipline on domestic supplies of capital, labour and resources. In effect, national boundaries no longer serve to protect workers, companies or the environment, particularly in the core nations, from the competitive discipline of the global market, thus undermining their capacities to address vulnerabilities to both natural and technological hazards. Furthermore, transnational corporations are now able to organize production through subcontracting or outsourcing of both services and assembly in ways that fundamentally alter the capital–labour relation. Outsourcing all of their production activities enables them to develop 'forms of production in which capital no longer needs to pay for the reproduction of labour power' (Hoogvelt, 1997, p113). Under these forms of production, wages are pressured downward and the benefits associated with permanent employment are eliminated, thus decreasing disposable resources and the resilience of individuals and households to deal with hazards.

Finally, today, in the global market financial transactions far exceed the growth of the fundamental economic forms of production and trade, now constituting at

least double the value of global production (Hoogvelt, 1997, p128). More money is now being made by manipulating the circulation of currency, rather than commerce in actual goods. Furthermore, flows of capital and commodities are intensifying in core rather than peripheral nations, which are, in effect, not even worth exploiting in global financial operations (Hoogvelt, 1997, p86). In the words of John Reed, the chairman of Citicorps, one of the largest US banks:

There are 5 billion people living on Earth. Probably 800 million of them live in societies that are bankable and probably 4.2 billion (84 per cent) are living within societies that in some very fundamental way are not bankable (Hoogvelt, 1997, p83).

'Bankable' here refers to the probability of offering a safe return on investment. If societies are not bankable, investments of capital for growth and development will be made elsewhere in the global economy. Economically speaking, the societies of the developing world, roughly 85 per cent of the world's population, are rendered essentially structurally irrelevant and unlikely to warrant the kind of investments that vulnerability reduction requires (Hoogvelt, 1997, p84).

Among the salient social and cultural dimensions of globalization are increases in international migration and the intensification of the electronic mass media as key forces in the weakening of national identities, ideologies and institutions, as well as the emergence of what Michael Kearney has called 'polybians' – that is, individuals whose identities are formed out of their experiences in life spaces that the economic, socio-cultural and environmental features of globalization both oblige and enable them to inhabit (Kearney, 1996, p141). These are the people who are found in what Appadurai (1996) has called the globalized 'ethnoscape' of tourists, immigrants, refugees, exiles and guest workers. While such dislocated peoples might find themselves in extremely vulnerable circumstances, the rapidly circulating information and images facilitated by new media technologies, however, can enable them to organize. A transnational civil society is emerging, in part, through communication technologies that are developing productive social and cultural responses to the forces that displace and relocate people repeatedly across boundaries and to productive regimes that, in some cases, put them at greater risk to technological and natural hazards (Fox and Brown, 1998; Oliver-Smith, 2001).

Economic and social flows or currents expressed in the ways that human actions have impacted upon the environment have set in motion a set of ecological flows, reducing the diversity of ecosystems. This reduction in diversity contributes, according to Murphy, 'to breaking down nature's bioregional equilibrium of local ecosystems, thereby turning the planet into one big ecosystem, with ecologically (and perhaps long-term economically) irrational results' (Murphy, 1994, p18). Recently, the work of Holling (1994) has focused upon the implications of the globalization of ecological processes. He points out that the continued expansion of human activities in the world is straining the limits of both human adaptability and the resilience of nature.

Currently, a spectrum of problems is emerging, caused by human effects on air, land and water that slowly gather momentum until they trigger rapid alterations

in local systems that affect the health of populations, the renewability of resources and the well-being of communities.

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 – thereby introducing alien species who often have no predators or reproductive controls – are contributing to the creation of one global ecosystem with ecologically unpredictable results (Murphy, 1994, p18). 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, p93). There are serious implications for continuity, change and survival of both community and culture in situations in which resilience of both 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 non-linear in causation and discontinuous in both space and time, rendering them inherently unpredictable and substantially less amenable to traditional methods of observing change and adaptation. Human-induced changes have moved both societies and natural systems into essentially unknown terrain, with evolutionary implications for both social and ecological elements. As has been argued, societies and nature have always been in a process of co-evolution in local, relatively discrete, contexts. Now, people, economies and nature are in a process of co-evolution 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, pp79–81).

These findings underscore the changing nature of disasters, emphasizing that the nature of disasters is rooted in the co-evolutionary relationship of human societies and natural systems. The challenge is to specify the linkages, now on regional and global scales, that generate destructive forces within our societies and environments. In a sense, disasters are now becoming sentinel events of processes that are intensifying on a planetary scale. The interpretation of the messages brought by these sentinels remains a crucial issue.