ment. The author's analytic method does not allow him the possibility of distinguishing the two. It seems relevant that, as he notes, a county ballot initiative to restrict facilities for off-shore drilling passed by only a 53 to 47% margin. Although Beamish attributes the closeness to a campaign spending advantage on the part of the oil interests, the result hardly seems to confirm his attribution of a deep, widespread, and generalized environmental distrust in the community.

Some of the author's arguments also seem inconsistent. He concludes, for example, that "it would be misleading to seek a purely 'objective' point from which to make decisions concerning the spill or its cleanup. Environmentally based hazards must be perceptually processed and problematized before they are seen and acted on as such." Yet at the same time, Beamish argues that "[t]he real consequences that we and the environments we inhabit face from instances such as the Guadalupe spill should not be seen as relative even if they are, in part, socially constructed....Increasing our understanding of the interpretative processes that surround ignorance and acknowledgment of threats is a necessary step toward remediation." One wonders how it is possible to understand such "ignorance" regarding threats without some objective truth against which to identify it. What standpoint is available to the analyst freed from a "social construction" in order to gain the distance from which to understand it?

The problem Beamish faces is one encountered by others who apply a postmodern or deconstructivist framework to their analyses of modern society and its institutions. They simultaneously wish to have some of their own arguments elude this same analytic perspective. The author argues that "it is misguided to give special privilege to technical-expert appraisals of risk...thus, decisions of risk should be made democratically so that the subjectivity of laypersons as well as that of experts is a part of the decision-making process." Nonetheless, he wishes (as others have) to assert definitive judgments about risk, particularly when subjective assessments might underestimate the "true" risks at hand. Risk assessment might be subjective, but Guadalupe Dunes "exemplifies a genre of environmental catastrophe that portends ecological collapse." Individuals may selectively choose what to attend to, but implicitly the correct perception is that of the author, who claims we are facing "a pandemic" of environmental crises. It is a subjective world, but we can still identify the "routinization of evil."

Despite its postmodern paradox, the book provides a very useful analysis. Beamish raises a number of important questions about our ability to manage environmental risks, and he is particularly insightful about the weakness of the regulatory process in the face of crescive events. The book quite accurately reflects our current knowledge base about technological accidents. This knowledge does not constitute a science of accident prevention, but it offers important critical and cautionary perspectives. Although they cannot offer design-based safeguards against technological accidents, works like *Silent Spill* call into question approaches to technological design that ignore social or organizational factors, or that seek a "damned fool–proof" standard of safety. This, in itself, is an essential first step for the mitigation of technological risk.

References

1. B. M. Turner, *Man-Made Disasters* (Wykeham, London, 1978).
2. J. Reason, *Human Error* (Cambridge Univ. Press, Cambridge, 1990).
3. D. Vaughn, *The Challenger Launch Decision* (Univ. Chicago Press, Chicago, 1996).
4. C. Perrow, *Normal Accidents* (Princeton Univ. Press, Princeton, NJ, 1999).

BOOKS: ANTHROPOLOGY

Dealing with Disaster

Robert McC. Adams

Disasters may be perceived by their victims as sudden, unexpected events. But in any larger view, they unfold over longer (often much longer) periods of time. Human societies evolving in scale and complexity encounter, or generate, new and unanticipated vulnerabilities—including exacerbated instabilities of the ecosystems in which we live. On a global scale, as interdependencies across great distances interact with previously unnecessary rigidities of scheduling, these vulnerabilities have themselves become increasingly complex and unpredictable. As a result—or is this only a subjective impression?—disasters grow in the scale of their effects and become more frequent, threatening to match efforts to develop new technological means of managing or overcoming them.

Catastrophe & Culture
The Anthropology of Disaster
Susanna M. Hoffman and Anthony Oliver-Smith, Eds.
School of American Research Press, Santa Fe, 2002. James Currey, Oxford, 2002. 324 pp. $60. ISBN 1-930618-14-X. £45. ISBN 0-85255-925-9. Paper, $24.95. ISBN 1-930618-15-8. £16.99. ISBN 0-85255-926-7.

The author, formerly secretary of the Smithsonian Institution, is at the Department of Anthropology, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093–0532, USA. E-mail: rmadams@ucsd.edu

By their nature, most disasters involve unexpected combinations of properties and consequences, at several levels of aggregation. Both in responding to them and in studying them, there are obvious advantages to a holistic approach that fully embraces the social as well as the natural setting. The contributors to *Catastrophe & Culture* stress social factors. Although they exclude "processes that result from human intentionality," one senses the rather odd assumption that disasters can reasonably be approached as the domain of anthropology alone. Yet on the evidence supplied, anthropology's involvement with the subject has been rather slender and heretofore focused largely on disasters faced by subsistence farmers or pastoralists at relatively low levels of integration. The authors seem not to recognize the fundamental need for an interdisciplinary approach that involves collaboration among practitioners and specialized researchers from different backgrounds.

The volume also lacks acknowledgments of the responsibility or suitability of anthropologists for active roles in disaster anticipation, management, reconstruction, or rehabilitation. With rare exceptions, what the discipline is seen to offer is primarily a "nuanced understanding" and "more holistic perspective." And unfortunately, this more comprehensive overview is "rarely asked for and more rarely appreciated."

To counter this, Susanna Hoffman and Anthony Oliver-Smith offer a spacious and compelling outline of what is needed of research on the subject. Like the processes leading to disasters, responses to catastrophes extend over time. They are shaped by complex interactions among individuals, groups, and organizations that have disparate needs and interests. Effective study of the processes of adjustment and recovery requires observations of and discussions with the victims. To understand disasters, the editors advocate a pairing of "multisite ethnography with quantitative methods capable of accessing greater levels of aggregation."

Many chapters highlight the discordant effects of disasters on their victims such as the interplay among social and environmental variables and particular natural hazards. Oliver-Smith notes that vulnerabilities are "often differentiated along axes of class, race, ethnicity, gender, or age, at different levels of risk from the same hazard and of suffering from the same event." In an eyewitness account of the 1991 fire

Signs of a fire. In a discussion of responses to the fire storm that devastated her own community, Hoffman argues that symbols and metaphors provide "an ethnological picture of how disaster is seen, interpreted, and utilized...."

CREDIT: GEORGE HALL/CORBIS

storm that caused widespread destruction in Oakland, California, Hoffman describes finding a rich array of images and metaphors that she believes "implements cultural and personal survival." She argues that such imagery helps orient thinking about calamity and "how to cope with and survive it." But, as she notes, the victims held contrasting views of nature as a benevolent mother wounded by human abuse or as a vengeful monster.

Discordant accounts and images frequently receive further distortion at the hands of the media. Writing of the *Exxon Valdez* oil spill in Alaska, toxic wastes at the Love Canal in New York, and groundwater contamination in Woburn, Massachusetts, in the 1970s, Gregory Button finds that "who is to blame, who is to be compensated, who suffers disproportionate risk exposure, and who should be involved in essential decisions...pivot on whose voices are heard." He concludes that the narrow frame of most news stories around motive precludes the search for causes of disasters in broader social patterns. One common oversight is to rely on only official or professional sources, while failing to record the voices of the victims. Another is preoccupation (as in the *Exxon Valdez* case) with the ecological impacts but very little follow-up on the complex and long-continuing losses of local communities. Nor are the media alone in their myopic concern; as Christopher Dyer writes (again of the *Valdez*), "a powerful legal system can deny or delay justice until the victims of the event are reduced to a nonrecoverable state of cultural and spiritual despair."

As disasters are subject to multiple constructions, so are perceptions of hazard, danger, and risk—and, for that matter, normalcy. Working rather loosely with an instance in which standards of protection against radiological hazard ("socially acceptable risk" levels) were arbitrarily set without regard for the variability of human subjects, Sharon Stephens suggests that largely self-appointed "experts" were able to hold the line against escalating public fears in the wake of the Chernobyl disaster. In a more tangential approach, Robert Paine discusses groups that choose (or have no choice but) to avoid the perception of facing risk altogether. These include Spanish deep-sea fishermen, who rely on a mystical concept of luck, and Peruvian villagers, who suffer from destructive avalanches but opt to remain together in a familiar place rather than face the disruption of relocation. In these and many comparable settings, "normalcy" emerges as a construction overriding and antecedent to any calculation of danger.

Using the Bhopal gas tragedy of 1984 as an example, Ravi Rajan devotes withering attention to the frequent deficiencies of bureaucracies in meeting the challenges of disaster. He notes the absence of "contingent expertise"; there were no effective warning systems, evacuation procedures, means to mobilize medical facilities and overcome paralyzing medical rivalries, or mitigation programs for victims and their families. Equally lacking was the "conceptual expertise" required to design, implement, and troubleshoot long-term rehabilitation strategies.

Bhopal was a case in which anthropologists from the University of Delhi reportedly played "a critical role in opening up civic space in which activist groups... could operate." Providing political cover for grassroots mobilizations and protests, they also helped "frame the public discourse on its meaning." Constructive as this contribution was, it raises questions: What should be the role of anthropologists in crises? Should they—as Rajan and, indeed, *Catastrophe & Culture* as a whole suggest—work largely outside of and in opposition to the establishment? Or are there greater benefits to be gained from some trained social scientists, if not anthropologists, serving inside institutions as active participants in amelioration and reconstruction?

BROWSINGS

Hydrogen. The Essential Element. *John S. Rigden.* Harvard University Press, Cambridge, MA, 2002. 288 pp. $28, £19.50, €32.20. ISBN 0-674-00738-7.

Composed of one proton and one electron, the universe's most abundant element is also its simplest. This simplicity has allowed very rigorous tests of the agreement between conceptual models and experimental results. Rigden discusses a series of episodes—from William Prout's 1815 claim that hydrogen was the building block of all heavier elements to the creation of Bose-Einstein condensates—in which the study of hydrogen has advanced our understanding of physics. The basic research has also led to technologies such as the atomic clock and magnetic resonance imaging. In addition, Rigden's narrative for the general reader offers a picture of the transformation of science into an activity often requiring the collaborative efforts of large groups.

Major Events in Early Vertebrate Evolution. Palaeontology, Phylogeny, Genetics and Development. *Per Erik Ahlberg, Ed.* Taylor & Francis, London, 2001. 432 pp. $135, £55. ISBN 0-415-23370-4. Systematics Association special volume, no. 61.

Drawing on evidence from the fossil record, genes, and developmental biology, the volume explores our current understanding of the origin and early evolution of animals with backbones. The contributors present summaries of their own research and reviews of recent work on questions such as the timing of the split between vertebrates and lancelets and the relationships among the various groups of vertebrates.

The Penguin History of Economics. *Roger E. Backhouse.* Penguin, London, 2002. 270 pp. Paper, £8.99. ISBN 0-14-026042-0.
The Ordinary Business of Life. A History of Economics from the Ancient World to the Twenty-First Century. Princeton University Press, Princeton, NJ, 2002. 379 pp. $35. ISBN 0-691-09626-0.

In this concise survey, Backhouse traces the development of economic thought. Claiming that economics does not have a beginning or a founder, he begins his story with the ancient Greeks and the Old Testament. He discusses contributions from theologians, lawyers, businessmen, and bureaucrats as well as the interactions among economics, philosophy, natural science, and culture. The author shows how particular concepts appeared at specific times and places, and how ideas changed as they were taken up for different purposes. Backhouse's very readable history offers economists and interested readers an excellent account of the evolution of economic ideas.