

BOOK REVIEWS

Soziologie der Prognose von Erdbeben: Katastrophensoziologisches Technology Assessment am Beispiel der Türkei. ("Sociology of Earthquake Prediction: Disaster Sociology Technology Assessment—the Case of Turkey.") By Elke M. Geenen. Berlin: Dunker und Humbolt GmbH, 1995. 395 pp. \$95.00.

Robert A. Stallings

Book Review Editor
School of Public Administration
University of Southern California
Los Angeles, CA 90089

This monograph (written in German) is the author's doctoral dissertation in sociology at Christian Albrechts University, Kiel. It reports on an empirical study of earthquake and earthquake prediction awareness and knowledge carried out as part of the German-Turkish Earthquake Prediction Research Project. This seven-year project involved intensive scientific monitoring of suspected earthquake precursors in a seismically active region of northwest Turkey east of Istanbul. Data were gathered in the spring and summer of 1985 on a random sample of 767 persons in the provinces of Bolu ($n_1 = 276$) and Sakarya ($n_2 = 491$). Five hundred sixty-four of the instruments were self-administered, while the author and a Turkish colleague interviewed the remaining 203. In addition, they interviewed 39 village officials in the two provinces. The provincial capitals had both experienced major earthquakes, Bolu (Bolu Province) in 1957 (7.1 Richter magnitude) and Adapazari (Sakarya Province) in 1967 (7.2 Richter magnitude).

Geenen's monograph consists of three somewhat separate parts. One part is a careful and extensive review of the literature on earthquakes, earthquake prediction, and disaster warning (pp. 78–141). Another (pp. 43–78) is a thorough description of the FAKKEL model of social change developed by Lars Clausen (1983; 1992), who also chaired the dissertation project. FAKKEL is a six-stage process model of social differentiation whose name derives from the first letters of the names for each stage: *Friedensstiftung* (a stage in which a peaceful foundation for society is laid); *Alltagsbildung* (everyday routines develop); *Klassenformation* (the emergence of class

struggle, especially between experts and laypersons); *Katastropheneintritt* (disaster strikes); *Ende kollektiver Abwehrstrategieen* (the unconditional surrender of the collective defenses); and *Liquidation der Werte* (evaporation of common values). Geenen grounds the earthquake process loosely within this framework, but her findings can easily be grasped without an understanding of the FAKKEL model.

The largest portion of the book (pp. 143–339) is a description of the study results. Sample characteristics were about what one would expect for this mostly rural part of Turkey: 73 percent of the respondents were born in the region; only 16 percent had a gymnasium or high school education (average years of formal schooling was 5.6); and 45 percent were farmers. Nevertheless, 86 percent of the respondents had a radio in the household and 60 percent had a television. When asked to explain the causes of earthquakes, respondents gave both secular (e.g., earthquakes occur because underground cavities form) and religious (e.g., only Allah knows) answers. Unfortunately, Geenen provides no frequencies or percentages for these explanations. She does explain that magical and rational elements exist side-by-side in the world of these respondents and points out the extent to which science-related ideas have been incorporated into people's "everyday hypotheses." The extensiveness of fatalism within the sample is also clear: only 16 percent *did not* believe that events like disasters were due to fate; 62 percent believed that disasters occurred because of people's sinfulness.

Half of the respondents (51 percent) reported witnessing or hearing from others who had witnessed changes in animal behavior just before an earthquake, but 43 percent were unaware of such behavioral changes. More men than women were aware of changing animal behavior as a precursor to earthquakes (the difference was statistically significant), and, interestingly, the (relatively) more educated respondents were more aware of this supposed anomaly than less educated respondents (also statistically significant). Despite the fatalism noted above, two thirds believed that earthquakes could be controlled, either completely or in part; this belief was statistically independent from a belief that earthquakes were God's punishment for sin. Ninety-five percent of the respondents felt that they and their families were personally at risk from future earthquakes, but only 63 percent believed that it was possible to protect themselves from harm, and only 25 percent reported having family conversations about the threat. Over 60 percent reported receiving information about earthquakes through either television or radio or a combination of the two. Forty percent had heard of the earthquake research going on in the area. The remaining analyses are of responses to questions about likely future behavior asked in the context of

hypothetical earthquake warning scenarios (e.g., "If in the future officials were to come and say that a serious earthquake will occur in this area within a week, ...").

Interestingly, despite the fact that 40 percent of the respondents had been made homeless in either the 1957 or the 1967 earthquake, when asked "Which are the greatest difficulties in your everyday life?" Only four respondents listed the risk of earthquakes (less than one percent of the problems nominated). Insufficient diet was cited most frequently (29 percent of nominations) and lack of income and money was mentioned second most often (21 percent of nominations). Earthquakes were not nominated at all when the same question was put to a sample of 72 headmasters and teachers in villages in the region.

These survey data from western Turkey should be of interest to a variety of disaster research specialists. One hopes that Dr. Geenen will soon share her findings with non-German readers.

References

- Clausen, Lars. 1983. "Übergang zum Untergang: Skizze eines makrosoziologischen Prozeßmodells der Katastrophe." *Zivilschutz-Forschung* 14: 43-79.
- . 1992. "Social Differentiation and the Long-term Origin of Disasters." *Natural Hazards* 6: 181-190.

New Perspectives on Uncertainty and Risk. By John Handmer, Bevis Dutton, Bernard Guerin and Michael Smithson. Center for Resource and Environmental Studies, Australian National University, Canberra and Australian Counter Disaster College, Natural Disasters Organization, Mt. Macedon, 1991. vii and 160 pp.

Lynn T. Drennan

Department of Risk and Financial Services
Glasgow Caledonian University
Glasgow G4 0BA, Scotland, UK

This collection of papers derives from a multidisciplinary workshop on Risk Perception and Response organized by the Australian Counter Disaster College, in conjunction with the Center for Resource and Environmental Studies of the Australian National University. The workshop focus was on the ways in which individuals, and society, respond to the uncertainty generated by risk—both in terms of the impact it has on decision-making prior to an event taking place and on actual response following a major incident.

The papers range in theme for the conceptual, where "uncertainty" and "ignorance" and the ways in which these concepts have changed over time are examined, to the linguistic, where the origins and current usage of words such as "hazard," "risk," and "safety" are traced and defined.

Two of the papers explore the psychological aspects of risk. One, by Bernard Guerin, argues that it is not sufficient to focus solely on people's perception of risk as an explanation or determinant of future behavior in a risky situation, but that other factors such as past experience and the effect of verbal mediation by oneself or others should also be examined.

Public perception of risk is always a crucial factor in determining the level of protest surrounding new proposals for industrial development and Geoffrey Syme and Blair Nancarrow describe a survey of the risk perception of residents living in an area of heavy industrial development. In particular, their paper focuses on the ways in which the public may be involved in the decision-making process and thereby ease the conflict between planners and the public.

Since "risky behavior" is not only a function of the individual but may arise from systems or organizational failures these issues too are explored. Nick Pidgeon, in his paper on the management of sociotechnical hazards,

highlights the need to take an interdisciplinary approach to safety management, and approach which embraces both the human and technological risk factors and ensures that any risk assessments carried out are comprehensive and do not rely solely on traditional statistical risk analysis techniques. The need for concepts of risk management to be placed at the heart of corporate culture, and for organizations to be proactive, rather than reactive, when making decisions about risk within industrial and commercial organizations, is well argued.

Finally, a theme linking a number of the papers and explicitly addressed by Lee Wilkins is the issue of communication of risk, and in particular the influence of the media on risk perception and response. This is an important area for research in view of the speed of communications today and the ways in which the media may present or perhaps misrepresent a major incident.

The book is clearly laid out with useful references at the end of each chapter. While the focus of one or two of the papers is on the Australian situation this should not put the reader off, since the principles of uncertainty, risk and disaster management know no boundaries. The variety of topics covered by the papers makes this a useful text for students and researchers in these areas to dip in and out of, rather than read from cover to cover.

Desastre en Guadalajara: Notas Preliminares y Testimonios. By Jesus Manuel Macias and Georgina Calderon Aragon. Mexico, DF: Centro de Investigaciones y Estudios Superiores en Anthropologia Social, Ediciones de la Casa Chata, 1994.

B. E. Aguirre

Department of Sociology
Texas A & M University
College Station, TX 77843

The Guadalajara gasoline explosion of April 22, 1992 was a massive calamity. Hundreds of people died or were injured and the landscape of Analco (the oldest neighborhood in the city) was transformed by the destruction of thousands of buildings. The enormity of the devastation was examined in the *International Journal of Mass Emergencies and Disasters* (volume 13, March issue), and in the monograph under review.

Desastre en Guadalajara is the work of two Mexican anthropologists associated with the prestigious Centro de Investigaciones y Estudios Superiores en Anthropologia Social (CIESAS). It is divided into chapters on the failure of warning systems, the emergence of social movement organizations following the explosions, and the experiences of victims in the shelters. A second part presents testimonies of local officials and victims. Among the officials are a social worker, an executive from a national corporation concerned with victims and three directors of shelters. These reports are both colorful and effective. In them, the authors used the personal accounts of participants to illustrate analytically relevant questions.

The monograph includes many worthwhile insights, perhaps the most important of which is the linkage between the Mexican political system and disaster response and recovery. This theme informs the entire manuscript and is present, for example, in the authors' discussion of the emergence of social movement organizations structuring the popular mobilization and the associated countermovement activities of the state. The reactions of the Mexican state during this time of crisis reveal its prevailing techniques of mass domination and its use of resources to channel popular discontent. It is customary in American sociology to link the specialty of social movements and collective behavior to the study of disasters. However, it is seldom that we find in the literature such an extended treatment of the two.

In this light, the monograph also includes an important account of the linkages between the preexisting political system and the lack of official warnings to the neighbors of Analco. The failure to enact official evacuation warnings was a serious error contributing to the victimization of the neighbors. The authors document that the authorities had sufficient information to use an evacuation. However, there was apparently a break in the communication linkages between the technicians and other operational officials working the gasoline spill, and the political leadership that was responsible to issue the evacuation warning.

The work of Macias and Calderon Arango should be required reading for anyone with an interest in the international study of disasters. It offers a richly textured understanding of Mexican culture and its links to disaster reconstruction.

Household and Community Recovery after Earthquakes. By Robert Bolin.
Boulder, CO: Program on Environment and Behavior Monographs, Institute of Behavioral Science. 1994.

B. E. Aguirre

Department of Sociology
Texas A & M University
College Station, TX 77843

Understanding the short and long term effects of disasters on personality and social organizations, and the factors that minimize their effects are key topics of investigation for social scientists. Apart from the disciplinary value of such knowledge, it provides the basis for sound public policy regarding the amelioration and mitigation of future disasters. It is a contribution to this search that Professor Bolin's monograph presents the results of a three year (1989-1991) study of the recovery of victims, families, and the community of Whittier, California following the 1987 earthquake. The monograph includes an excellent review of the literature, covers many important topics and makes many useful recommendations.

The monograph describes some aspects of community reconstruction and recovery and identifies factors that affected them, such as the absence of community planning and difficulties formulating a plan following earthquake impact, time lapsed before disaster-related assistance could be secured, legal conflicts (between, for example, historic preservation groups and business interests), shortages of trained personnel and needed building materials, and bureaucratic snags in the issuance of building permits. This theme of community recovery is finalized in the last chapter in the form of 13 recommendations to policymakers. The discussion of community recovery profits from the longitudinal design and should be of interest to disaster planners, managers and social scientists.

The monograph also includes information about the experiences of 80 respondents regarding disaster-related losses, sheltering, receipt of aid, availability of insurance and home repair activities. This information is mostly presented in the form of univariate descriptive statistics. I would have wished for the author to use multivariate analyses. More complex models would have allowed the exploration of known empirical relationships among these experiences and other demographic and social characteristics of the respondents, such as the extent of losses and social class or

sheltering experience. The author also uses the survey information in the multivariate analysis of economic and emotional recovery.

The range of topics included in the work is enormous. Perhaps for this reason, some of the topics did not receive extended attention. This fact has a varying impact on the quality of the monograph's presentation. For example, while the treatment of community reconstruction reproduces prior knowledge and is quite comprehensive, the same may not be said of the discriminant function analysis of recovery. The interpretation of standardized discriminant function coefficients does not help us understand the socioeconomic background and modal experiences of respondents. Thus, recovery is a self-reported dependent variable with four categories: "not at all recovered," "some recovery," "mostly recovered," "completely recovered." DFA is performed to determine how the respondents in different categories differ among themselves in a set of predictors (income, damage sustained, etc.). The loading of the predictors in three discriminant functions are then presented and discussed. It would have been more informative if the author had presented the findings in terms of the four categories original values in the predictors, to help the readers visualize how people in one category ("not recovered") differ from another category ("completely recovered") in terms of household income and other predictors.

The selection of the final set of predictors used in the DFAs was done using an algorithm that used the relative statistical significance of the predictors instead of any theoretical reasoning. I was troubled by this, because "automatic" statistical answers are not widely used. Moreover, controversy exists in the disaster literature that could have been used by the author to structure the analysis of recovery. Thus, for example, conflicting interpretations of the causes of emotional difficulties among victims exist. These range from Quarantelli's claim that many of these difficulties arise from victim experiences with bureaucracies, to psychologist's explanations based on the emotional effects of the destruction of social ties and the difficulty of reestablishing them. Rather than depending on statistical rules for selection of the final set of predictors of psychological (and other types of) recovery, the monograph would have made a much greater contribution to scientific knowledge if it would have developed tests of hypotheses derived from these contending explanations.

Disaster Evacuation and the Tourist Industry. By Thomas E. Drabek. Program on Environment and Behavior, Monograph No. 57, Boulder Colorado: Institute of Behavioral Science, University of Colorado, 1994. 268 pp.

Susan L. Bosworth
College of William and Mary
Williamsburg, VA 23187-8795

In *Disaster Evacuation and the Tourist Industry*, Drabek begins to explicate the forces that influence evacuation decisions made by business executives in tourist-oriented firms. The results of his study are of personal interest to those of us who stay in hotels, eat in restaurants, or visit tourist attractions. When and how would we be notified of risk? Would managers delay making evacuation decisions to keep customers? Is there a disaster plan? Has the staff even considered these questions? Drabek describes the birth of his research at the side of a hotel pool. From those early "moments of intellectual curiosity" (p. ix) developed a rigorous research project that begins to fill a void in the disaster literature. The findings are instructive and point clearly to the need for additional research on the tourist industry's preparation for, and response to, disasters. The results are intellectually engaging for disaster researchers and eminently practical for emergency managers and tourist-industry executives.

During the first phase of the two-phase study, interviews were conducted with 65 executives of tourist-oriented firms located in three areas where local governments had implemented evacuation planning initiatives. In the second phase, 120 executives were interviewed from six sites defined by two large-scale disasters: extensive flooding in the northwestern part of Washington State and Hurricane Bob that hit the East Coast. Emergency managers from each of the nine sites were also interviewed. Drabek uses the interview data, and information from questionnaires mailed to the executives (N=166, 90% response rate), to build multivariate models of disaster evacuation planning and disaster evacuation behavior. The research findings inform policy recommendations and calls for action.

In the first chapter, Drabek frames six specific objectives of the study within a "stress-strain" theoretical perspective. He presents a tight methodology and introduces managerial and firm characteristics that potentially constrain planning for, and decision-making behavior about, disaster evacu-

ation. In Chapter Two, Drabek examines general principles and analytic factors of the disaster research legacy to refine the study's research questions. The stress-strain theoretical framework is then juxtaposed against prior research. The resulting hypotheses relate to variation in the extent of evacuation planning and constraints on actual executive evacuation decision-making behavior. As Drabek suggests, the "hypotheses and research questions reflect a synthesis of the stress-strain theoretical framework and the disaster evacuation research legacy" (p. 38).

The next six chapters reflect how Drabek's theory-driven methodology results in a very rich data base and an extensive analysis of constraints on evacuation planning and decision-making by tourist business executives. Chapters 3, 4, and 5 assess the process and extent of disaster evacuation planning in tourist-oriented private firms and identify factors that account for variations in this planning. These foci represent the first two objectives specified in the study (pp. 1, 8). In chapters 6, 7, and 8, Drabek addresses his third and fourth objectives by describing information and behavior that lead to actual evacuation decisions made by business executives and by identifying factors that constrain those decisions. Expectations of the phase I executives are contrasted with what actually happened in the six phase II communities.

In these six chapters Drabek describes the social factors that contribute to inadequate preparation and response to disasters. He is very systematic in his introduction of methodological and conceptual issues and builds two predictive models that integrate individual, organizational, and community constraint. One integrative model suggests that the extent to which tourist business executives participate in evacuation planning is most constrained by such factors as managerial risk perception, size of the firm, and location in a community that has elements of a disaster subculture and a local emergency manager who actively encourages such planning (pp. 3, 121). This model "represents a new empirical base for policy considerations by both business executives and emergency government officials" (p. 125). Drabek's integrative model of decision-making behavior points to individual (e.g., managers who participate in more professional organizations, managers with a high perception of risk) and organizational (e.g., firms that provide lodging, firms with more levels of supervision) factors that lead to quick evacuation decisions or adaptive actions.

In Chapter 9, Drabek shifts from a behavioral emphasis to a focus on policy. In this movement from research to practice, he addresses the last two objectives of the study: "to describe established and emergent organizational policies designed to guide employee behavior regarding evacu-