

## ARTICLES

### CROSS-CULTURAL INTERNATIONAL RESEARCH: SOCIOLOGY AND DISASTER\*

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*Early cross-cultural studies of disaster responses are summarized to provide a context for recent collaborative efforts. Many of these have been initiated by researchers from the United States who have joined colleagues in numerous other countries to standardize measurement instruments and assess aspects of the public response. These efforts have highlighted definitional, theoretical, and methodological difficulties which are being addressed in current studies. Finally, current policy developments are described that may encourage future research that is cross-societal in focus and collaborative in implementation.*

When one initiates a survey of cross-cultural research on disasters, there are immediate difficulties. "Disaster" is not well-integrated into those standard "sociological" vocabularies which have become transnational in character. Other terms, such as community, ethnic relations, organization, stratification and migration, can provide the basis for a rather universal discussion so that scholars from somewhat different sociological traditions could communicate ideas and terms. Such terms provide a "common sense" starting point which would lead to a more complex and subtle discussion. On the other hand, there is considerable

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agreement that "disasters" are events, occurrences, situations which are socially disruptive and thus should have some sociological significance. If the prime focus of sociology is on repetitive and patterned behavior, the significance of disaster for sociological study is brought sharply into focus only when one takes a cross-cultural and international view. Thus, such events are transformed from isolated idiosyncratic non-social misfortunes into important, shared, patterned and properly "social" phenomena, appropriate for sociological understandings. Earthquakes in China, Mexico, Turkey, Iran and Alaska tell us much about those unique social systems but, more importantly, inform us about some common themes of behavior and certain continuities of social structure. In one sense, one can argue that the study of disaster provides a unique opportunity to cut through the "morass" of tradition and ideology more directly to observe basic social consequences. In that way, research in disasters provides a natural bridge for communications among scholars in different countries and from different traditions.

The starting point, here, will use as its comparative base research in the United States. This starting point is chosen for two reasons. First, there is a considerable volume of cumulative research on disasters in the United States within the sociological and social science traditions and scholars elsewhere use that as a basis for testing and for hypothesis regeneration in other societal contexts. Second, the continuity of research on disasters within the United States has created a degree of stability of both researchers and topics so that it became a focal point for others to use as a basic frame of reference.

By using the research tradition in the United States as an initial reference point, this should not imply that there are "national" schools of the sociology of disaster. Perhaps the late development of sociological attention to disaster has precluded the creation of insular assumptions which can be perpetuated by geographical and intellectual isolation. In any case, the two "founding" fathers of the sociology of disaster exemplify the diversity of scholars and topics which confuse easy "national" identification. The first empirical study of disaster can be attributed to Samuel Henry Prince (1920) on an explosion in Halifax and the first theoretical work, *Man and Society in Calamity* (1942), was written by Pitirim Sorokin, an international scholar par excellence. Both of them, a Canadian graduate student and a Russian emigre, made the

point that disaster, or calamity in Sorokin's terms, was an appropriate topic for sociological understanding.

### CROSS-CULTURAL AND INTERNATIONAL RESEARCH IN THE INITIAL RESEARCH TRADITION

There are several available summaries of research in disaster: Barton (1969), Dynes (1970), Mileti et al. (1975), Drabek (1986), and Dynes et al. (1987).<sup>1</sup> In addition, there have been two evaluative summaries of research published in the *Annual Review of Sociology*, Quarantelli and Dynes (1977) and Kreps (1984). Within the universe which these studies have summarized, it will be the task here to highlight studies which were cross-cultural and international in scope.

Much of the earlier work on disaster in the United States was encouraged by the Committee on Disaster Studies, which was a part of the National Academy of Sciences - National Research Council. The Committee was set up to aid in the development of a field of scientific research on the human aspects of disasters and, during the 1950s, it maintained a clearinghouse on disaster research and made modest grants to encourage research. Several of the activities of the Committee are worthy of note here.

In 1953, there was major flooding in several European countries, especially in the southwestern part of The Netherlands. The flooding was a result of the combined forces of the spring tide and a heavy storm. The region, Zeeland, where the floods were most serious, was an area which was just rebuilding its infrastructure after World War II and where transportation and communication facilities were minimal. The floods resulted in massive search and rescue efforts as well as the evacuation and relocation of large numbers of people. That event was the occasion for members of the Committee to seek out Dutch sociologists to encourage them, through research support, to study various aspects of the flood. They made contact with the Institute voor Sociaal Onderzoek van het Nederlandse Volk and with its then-director Sjoerd Groenman. After consultation, a research project was agreed upon which included three different facets. The first would describe the breakdown and restoration of the normal communication system; the second would study the evacuation process and the hosts of evacuees; the third would do an in-depth analysis of three communities, focusing on a view of social dis-

organization and reintegration of their communities on the communal level. The result was a three-volume work with a fourth summary report (1955), in which the names of J.E. Ellemers, who authored the summary volume, and C.J. Lammers, who authored the evacuation volume, have become ensconced in the bibliographic references. A similar effort to develop international cooperation was attempted in England since the same weather conditions produced extensive flooding in the southeastern coast of England. The record of that effort by the Committee is found in an article on the role of the extended family by Michael Young (1954) and a more general article by J.P. Spiegel (1957). A later attempt to develop an international perspective by the Committee on Disaster Studies was a study of floods which took place in Tampico, Mexico in 1955 (DeHoyos, 1956).

The first rather explicit comparative study was conducted by Roy Clifford in 1954. There was a major flood from the Rio Grande River that affected Eagle Pass, Texas, and Piedras Negras, Mexico. Clifford was interested in the way in which organizations responded in each of these two communities. Clifford documented the ways in which the different values of these two communities, separated by the river, persisted after the disaster. In other words, he underscored the importance of knowing pre-disaster behavior as a guide to post-disaster behavior, a conclusion which contradicted the usual assumption that disasters produce new, different and usually antisocial behavior. Clifford pointed out the greater importance of the family and of informal groups within the Mexican community which tended to undercut the more universalistic and rationalistic efforts of formal organization. While Clifford used an analytical scheme which was based on Talcott Parsons "pattern variables," the lasting results of the study has been to underscore the importance in understanding pre-disaster social conditions as a guide to post-disaster behavior.

The first deliberate, as opposed to accidental, cross-cultural study of disaster was that of Benjamin McLuckie's *A Study of Functional Response to Stress in Three Societies* (1970). The study in the form of a dissertation at The Ohio State University analyzed the effect of the structure of society on the nature of response to comparable stress situations in Italy, Japan and the United States. The response to an earthquake and two water-induced disasters were studied in each society.

McLuckie's study involved field work in the three societies where he examined a number of variables which conditioned the responses which were made. Of particular interest here was his conclusions relating to the degree of political and administrative centralization with the United States exemplifying decentralization while Japan and Italy were characterized by different degrees of centralization. McLuckie concluded that the frequency of centralized decision making was less during the emergency period of disaster response than it is for the pre-impact and restoration period. In addition, he concluded that the frequency of centralized decision making made lower-level officials hesitant to take the initiative, since there is reluctance to risk overstepping authority. This resulted in passing along decisions to be made at higher levels of bureaucracy. This referral to higher levels of authority converged at those levels and slowed down the decision-making process when its speed needed to be increased, not delayed. McLuckie's pioneering effort to deal with structural variables was an innovative attempt to assess their significance in disaster response. Future replications depend on the development of standardized and generally accepted macromasures of centralization. Such measures are more likely to be developed in fields other than disaster in a larger comparative societal context. (For a more recent attempt to look at political variables in Africa and Latin America in relation to disaster, see Seitz and Davis 1984.)

#### MORE RECENT COLLABORATIVE AND COOPERATIVE STUDIES

Several factors have led to an increase in comparative and international research. One of these factors is that some scholars are familiar with one area of research and then can make certain informed judgments about that same area in another country. For example, Ralph Turner, who has done extensive work on the consequences of an earthquake threat in California, was able to make some informed judgments and comparisons about the earthquake prediction as it was developed in China (1978). Similarly, Dennis Mileti, also with experiences in earthquake prediction in the United States, has been able to draw some interesting conclusions concerning the organization's response to those predictions in the United States and Japan (1983). Ronald Perry and

Hiroto Hirose (1983) have been able to combine their interest and knowledge of disasters in Japan and the United States to develop some conclusions about the relationship of volcanic eruptions and functional change.

An important and continuing project has been spearheaded by Fred Bates at the University of Georgia, U.S.A. The project was initiated by a study of the 1976 Guatemala earthquake in which three institutions collaborated--the University of Georgia, the University of Colorado and the Institute for Nutritional Research for Central America and Panama, which is a part of the Pan American Health Organization. The study also had an extensive binational advisory group. The objectives of the study were to evaluate the reconstruction program effectiveness and also to examine the relationship between disasters and social change. The research design was "quasi-experimental," using a control group of unaffected communities and an experimental group, consisting of heavily damaged communities. In the 26 communities, there were three waves of interviews, conducted by Guatemalan interviewers, which obtained data on five points in time concerning households and how their living conditions were affected by the disaster and the disaster-aid process. Among other findings, Bates suggested that there was widespread change in the housing patterns after the earthquake in the direction of modernization and reduced earthquake vulnerability. He suggested that pre-disaster cultural preferences for housing, which centered on adobe construction, were much more open to change than expected. People were willing to change if they had alternatives. He also found that the speed of recovery at the household level was dependent on the type of aid given. Families that received no aid often recovered faster and more completely than those receiving other kinds of assistance. In fact, the provision of temporary housing seemed to retard recovery efforts on the part of households to expend their own resources. Bates also examined the effects of aid programs on the existing stratification system as well as the effect of massive food aid on the country. He pointed out that food aid arrived too late for it to be of use in the emergency but did help alleviate a long-standing nutritional problem within the country. In addition, he found that earthquake recovery created increased structural complexity within impacted communities. He also found some indication that there were faster recovery rates in those communities which

were better integrated into the national political and economic structure.

Bates' findings have moved him in the direction of seeking to develop more standardized measures of the variables he used in the Guatemala study. He developed a domestic assets scale to measure living conditions at various stages of the disaster process which could be used to measure damage and loss as well as levels of recovery. With other scholars from Peru, Mexico, Italy, Yugoslavia, Turkey and California, U.S.A., all area with high earthquake risk, he has moved to develop measures which would be standardized and comparable cross-culturally. The six collaborators, representing countries which range along the development continuum, jointly developed the research, including common interview schedules and sampling plans. Each collaborator has conducted a field survey, consisting of up to 350 interviews in a city selected to be similar in each country. The data are currently being analyzed and a joint report will be drafted this fall. The development of comparable measures would, of course, be a tremendous boost to future comparative studies. (For more details, see Bates 1982.)

Another international effort has been initiated by Rocco Caporale and Ino Rossi of St. John's University, U.S.A., to examine the reconstruction process after the 1980 earthquake in Southern Italy. Both of the researchers have been members of the American academic community for some time but are Italian born and speak Italian as their mother tongue. They designed their study to examine the impact of the earthquake on the local community, known as *paese*. In each *paese*, plans were developed to interview 29 individuals who occupied the most commonly recognized positions in some 36 communities which suffered heavy damage. These communities were to be compared with a sample of 17 lightly damaged communities. The intent of the study was to use the communities, differentiated by the amount of damage, to look at the general pattern of recovery and reconstruction and to link several structural, cultural and ecological conditions to the scope and pace of recovery. The researchers have extensive contacts and collaboration with Italian social scientists. The completion and publication of this research is still in progress. (For a preliminary report, see Capporelli 1988.)

Increasingly, major disasters are being viewed as opportunities for learning. Shortly after the 19 September 1985 Mexico earthquake, a joint

report was prepared by the Consejo Nacional de Ciencia y Tecnologia, Mexico, and the National Research Council in the United States on a request from the National Science Foundation. On the basis of that report, NSF set aside certain funds for cooperative projects. Since the Disaster Research Center had had previous contact with Mexican authorities in the development of a new disaster law subsequent to the earthquake, it was decided to utilize those initial contacts to develop a joint proposal for research. The final proposal included a two-fold study on the public and organizational response to the earthquake. The first part, involving the public response, was based on a survey which had been conducted by the Instituto de Investigacion de la Communication a week subsequent to the earthquake on a probability sample of Mexico City residents. That survey included a number of attitude items as well as self-reporting of volunteer behavior of the residents in the emergency period. On the basis of that initial survey, a second survey was implemented on the first anniversary of the earthquake. That survey used the first survey as a base-line to indicate changes in attitudes and evaluation. The significance of that aspect of the study is the fact that probability samples of disaster areas are rare, and it will allow the projection of certain results to be placed in a context of the total population of Mexico City. The second part of the research was focused on the organizational response to the earthquake and that aspect of the study was centered on Delegacion Cuauhtemoc, a section of Mexico City, close to the center of the city where there was extensive damage. With the assistance of the Facultad Latinoamericana de Ciencias Sociales and its Director, Dr. Jose Luis Reyna, an interview schedule and a sampling plan of organizations and organizational officials was determined and staff members at FLASCO carried out some 80 interviews on organizational action during the emergency period. That organizational action was especially complex. Mexican law at the time of the earthquake gave emergency responsibility to the Army, but since the disaster occurred in the capital which is a Federal District, adaptations were quickly made and inter-governmental problems became significant. This research, which is in its completion stages, now provides one model for international research. While the initiative was taken by American sociologists, the development of the proposal and especially the subsequent research design was jointly planned by meetings in Mexico and the United States, the survey

questionnaire and the interview guide was jointly planned, data collection was primarily carried out by "local" staff and the conclusions and final report of the study, now in process, will be done jointly.

Another similar cooperative effort has occurred between American and Japanese researchers. Under a grant from the NHK Foundation in Japan, researchers from the Disaster Research Center in the United States and from the Institute of Journalism and Communication at the University of Tokyo understood a cooperative research study on the operation of the mass media in disaster. Using a common field design developed jointly ahead of time, teams of researchers in both countries carried out studies in their own societies. The Japanese studied the local and national mass media response to the flood and landslide at Nagasaki in 1982 and to the earthquake and tsunami in Tohoku in 1983. The Americans focused upon the mass media response to Hurricane Alicia in Houston, Texas, in 1983 and to extensive flooding in Tulsa, Oklahoma, in 1984. After the field work and initial analysis was done, the Japanese and American researchers met in the United States to initiate a comparative analysis. Later the completed analyses were exchanged and a manuscript was prepared for publication in both Japanese and English with publication projected by the University of Tokyo Press in late 1988 (Ohta and Quarantelli forthcoming).

The comparative analysis discovered more similarities than differences in the mass media operations in disasters in the two countries. There was, for example, a diminution of the gate-keeping process, the lack of accurate information in the early stages of disasters, the use of a command post perspective of the disaster, parallel intramedia style differences in reporting, the use of mass media outlets for personal messages, the absence of disaster planning on the part of mass media organizations and similar operational problems as well as changes in organizational media structures at the height of the emergency period. The greater similarities and differences seems attributable to the fact that the mass media sector is more universalistic in structure and functions in modern industrialized and urbanized societies than in more traditional sectors, such as the family which tends to be more culturally specific to a given society. This research would seem to provide an optimum model for collaborative and cooperative research on comparative issues. It was jointly planned and conclusions were collectively discussed, while the field

work within a common research design was carried out by scholars in their own country. Such efforts will be increasingly possible as the critical mass of scholars is developed around the world.

While the previous sections have concentrated on the identification of specific studies which were comparative in nature, the section which follows tried to identify the predominant theoretical and methodological approaches within disaster research. The position taken here is that there are no distinctive theoretical approaches in the field, except the focus of much of the research is at the organizational and community levels and thus theories applicable to those levels of analysis are more frequent. Too, on a methodological level, the range of past and current sociological methods have been used. It is true that some general assumptions about the "distribution" of some effects within a population are undercut by disaster impact so that "random" sampling is generally irrelevant for non-random events. The unexpected nature of such events often makes research planning opportunistic and data collection efforts conflictual with academic schedules. But the theoretical and methodological approaches to disaster are dependent on the standard sociological tradition.

Also, there follows a discussion of the organization of disaster researchers. It is asserted that that community is multidisciplinary in nature and, compared to most subfields of sociology, is much more closely related to applied and policy issues. That means it is often funded to study pragmatic policy problems. The characteristics of diversity makes organizing that community difficult but the ISA Research Committee has been a convenient location for such activity since ISA has been interested in encouraging the development of a research community rather than in drawing disciplinary and geographical lines. Some attention will be given to the key role over the years which the Disaster Research Center in the U.S.A. has played in developing this now thriving research community. The fact, however, that there is no necessary consensus on the concept, disaster initiates the discussion which follows.

### THEORY, METHOD, AND ORGANIZATION

There is, and continues to be, some concern and confusion about the concept of disaster. This concern and confusion, however, is part and

parcel of the development of a research tradition. In general, most scholars within the tradition would feel comfortable with Kreps' elaboration of an earlier definition by Charles Fritz. Disasters are "events, observable in time and space, in which societies or their larger sub-units (e.g., communities, regions) incur physical damages and losses and or disruption of their routine functioning. Both the causes and consequences of these events are related to the social structures and processes of societies or their sub-units" (Kreps 1984, p. 312). At face value, such a definition is useful sociologically. Quarantelli recently (1987) has raised a series of questions about such a definition which undoubtedly will become a part of the research tradition of the future, but that definition provides some descriptive ordering of the research that has been done--a flood results in an impact which affects some social unit, a community, a family--and that unit responds in some way. In addition, it has become common to analyze disasters as a process over time along a response continuum which starts mitigation efforts, preparedness, emergency response and, finally, recovery and reconstruction. Using those parameters, Drabek (1986) recently developed a typology of system response cross-classified with disaster phase (preparedness, response, recovery and mitigation) with system-level variables (individual, group, organizational, community, society and international). While Drabek's typology was used to order existing sociological findings, it will be used here to suggest the overall focus of past research in disaster.

Within the preparedness phase, studies of planning most often occurred at the organizational and community level, while studies of warning occurred most frequently at the individual and group level. Within the response phase, studies of evacuation centered on individual and group levels while studies of the emergency focused on the organizational and community level. Studies of the recovery phases focused on the group and community level while reconstruction studies centered on individual and international levels. Mitigation studies which centered on perceptions were evident in the individual and international levels while adjustment studies tended to be societal and international.

With the classification, Drabek was able to compare his current findings with a previous inventory published in 1975 so that he was able to identify new research directions. He suggested that there was some increase in research on hazard mitigation, regarding both perceptions and

attitudes toward adjustment, a trend somewhat complicated by the greater inclusion of work by social geographers in the 1986 inventory. He also noted some increase in research on the longer term disaster impact on individuals and on organizational responses during the emergency period. He suggested that the differences between the two inventories revealed continuity, especially in research on the emergency phase, as well as the emergence of new areas of inquiry, especially on the recovery process and on studies dealing with aspects of mitigation. He also noted that, on the international system level, there were increases in studies of restoration and recovery as well as mitigation but much smaller increases in studies which dealt with preparedness and response. These differences in research interest and effort require some explanation, and we will return to that later.

## Theory

Since the scope of disaster research is broad, there should be no reason to expect that there is any distinctive theoretical approach. Quarantelli (1987a) has concluded on the basis of making a summary of recent writings that there are some common assumptions which guide research. He states them as follows:

1. A disaster is a social phenomena and distinguishable in sociological terms.
2. As such, disasters have to be identified and explained in social terms, not physical dimensions or non-social factors.
3. The most useful social terms are structural or social organizational ones rather than social psychological or psychological ones.
4. The structural features which can be used are the same as those that can be applied to other social phenomena.
5. Therefore, there is no need for special or unique characterizations or explanations for disaster phenomena.
6. What sociology can account for generally, it can account for in particular disaster phenomena.
7. The major difference is that in the disaster area, there are more ephemeral, emergent and social aspects that need to be explained.

8. And ... one consequence is that disaster research has contributed most to explain the dynamics of social life. (Quarantelli 1987a, pp. 407-408)

Quarantelli's summary suggests that no "special" theory is necessary in disaster but that there is a need for special attention to conceptualizing "emergent" social phenomena while there is agreement there that this is an accurate evaluation there have been certain innovative theoretical efforts. For those not familiar with the field, there is Kreps' (1987) very interesting attempt to develop "structural" sociology as an alternative paradigm in sociology to positivist and interpretive interpretations. He has developed a taxonomy on the forms of human association grounded in disaster research but he sees his paradigm as central to classic issues within sociology--the relationship between order and action. In addition to Kreps' macrosociological efforts, there have been other efforts to incorporate disasters into more macrotheoretical systems--such as Dombrowsky's (1987) attempt to place disaster within "critical" theory and Pelanda's effort to develop an evolutionary and social systems theory based on disaster (1972). Other than these attempts and some others, most disaster research is guided by "middle-range" theory appropriate to the specific problem studied. One should note also criticisms which have been made of the field on the part of Torry (1979) which is based on a slighting of third world research.

## Method

Just as the previous section suggests that the full range of theoretical approaches have been used in the study of disaster, the same conclusion can be derived from examining methodological approaches. Mileti concluded in a recent summary article "... from a methodological viewpoint, disaster research is hardly distinguishable from the general sociological enterprise. This is not surprising; disaster researchers are sociologists" (Mileti 1987, p. 69). Mileti goes on, however, to suggest some methodological lessons derived from disaster research, which would be applicable for general sociology. Mileti points out the case study character of all sample surveys, regardless of the rigorousness of the probability sampling techniques. Mileti indicates that a study of one

disaster is simply an N of 1, regardless of its methodological sophistication. He suggests that this is a point that would be remembered in all sociological fields--that the external validity of any study is limited by time, place and culture. This point, of course, underscores the importance of comparative research. He also goes on to suggest that "sociologists ... would do well to seek research schemes and designs that answer questions about cultural relativism of the range of behavior explored in the discipline" (Mileti 1987, p. 69). He also points out a persistent lesson derived from disaster research--"that what people say about behavior and how they actually behave are not the same thing." This implies a strong distrust of studies dealing with "attitudes" or behavioral intentions as accurate predictors of actual behavior. This underscores the importance of studying behaviors in emergency situations rather than collecting and perpetuating public attitudes and myths. Mileti also points out the fact that research cooperation is generally very high in disasters. For example, rates of responses to questionnaires are generally much higher than on surveys of other nondisaster-related behavior. In addition, there is greater research accessibility to organization and to policy decision making than is usual in sociological studies. This access reduces potential errors and increases the validity of such studies. Many of the usual problems of other research, such as low response rate, selected participation and restricted access, are much less significant in disaster research and, as a consequence, reliability and validity of such studies are probably greater than studies in other areas of sociology.

### Organization

As a discipline and a profession, sociologists often have been reluctant to create structures of their own to facilitate intellectual communication. And there are real dangers of disciplinary "over-specialization." For example, the proliferation of subfields, as evidence by Sections in the American Sociological Association or Research Committees in the International Sociological Association, can create insularity and thus reduce the "organic solidarity" of the discipline. Since the larger part of the "critical mass" of sociologists interested in disaster have been in the United States, some description of organizational tactics is in order.

There is no section in the ASA on disaster but there have been frequent, but not regular, sessions on disaster within the program of the Annual Meeting. The scope of each Annual Meeting is determined by a Program Committee, although sections have some program autonomy. Consequently, at each Annual Meeting, there might be a program session on a disaster-related topic, and there may be individual papers in sessions in the regular program or in section programs. Many of those who are interested in disasters are members of the Collective Behavior and Social Movement section or the Occupations and Organization Section. In addition to the ASA program, for the past several years, there has been an open meeting of the ISA Committee on Disasters where both organizational and intellectual discussions can take place since many of the Research Committee members are in attendance at the ASA meetings.

There has been little effort to seek section status in the ASA because the network of disaster researchers was international in scope. However, it was appropriate to seek research committee status in ISA. That status, granted at the New Delhi Meeting of ISA, was based on "informal" participation at previous World Congresses. The first set of meetings was organized at World Congress in Toronto in 1974. Many of the papers presented there were later published in *Disasters: Theory and Research*, edited by E.L. Quarantelli (1978) and appeared in the Sage Studies in International Sociology. A similar pattern was followed at the World Congress meeting in Uppsala (1978), in Mexico City (1982) and in New Delhi (1986). In 1982, a journal was established, *International Journal of Mass Emergencies and Disasters*, initially edited by Quarantelli (U.S.A.) and Orjan Hultaker (Sweden) and published in Sweden. This journal became the official journal of the Research Committee even before it had committee status. The journal is now in its sixth volume and is edited by Thomas Drabek (U.S.A.) and is published at Arizona State University. Other activity of the Committee has been the recent publication by Franco Angeli, Milan, of *Sociology of Disasters: Contribution of Sociology to Disaster Research* (1987), edited by Dynes (U.S.A.), DeMarchi (Italy), and Pelanda (Italy). The content of the book focused on the ways in which "standard" sociological concepts have been utilized in disaster research and the contributors included scholars from Australia, Italy, Germany and Japan, as well as the U.S.A.

One factor which complicated the "organization" of those interested in disaster is the fact that intellectual interest in disaster transcends disciplinary boundaries.<sup>2</sup> In the United States, historically, sociologists have been the predominant social science discipline where there has been a critical mass of scholars. But there has been interest in other closely allied disciplines. For example, social geographers have developed a strong interest and tradition in "natural hazards." More recent concern for technological hazards has prompted research in what has been called "risk assessment" which has drawn multidisciplinary interest. Too, many scholars in management and administration have become interested in various aspects of "emergency management." These interests often overlap with more narrowly defined sociological concerns for disaster and thus the disaster community is broadly social science rather than narrowly sociological. This pattern of broad social science interest is even more evident outside the United States. In most countries, the present sociological tradition is not likely to include a significant interest in disaster so scholarly work is much more "accidental" and more likely to cut across disciplinary lines.

Such diversity is often enhanced by a rather close relationship of those who do research on disasters and policymakers. This has several consequences. Policymakers are oriented around disaster problems and disaster agents--for example, to develop policy on evacuations after hurricanes. With such interests, policymakers might draw on the expertise of sociologists/geographers/public administration researchers/others who have interest and expertise on the scope of the problem. One important implication of this is that such interest implies that social science knowledge is an important and useful base for policy decisions. This attitude on the part of policymakers is quite different from a more frequent view that sociological understanding is useless, disruptive or irrelevant. This also means that those engaged in research in the field are more closely involved in relevant policy decisions than are most sociologists with different research interests.

In effect, then, the disaster research community is multidisciplinary in composition with the disciplinary predominance in the United States being among sociologists. This interdisciplinary character creates some strain within organizations which are disciplinary in character, although the International Sociological Association has been an open and recep-

tive host as a locus of international activity. Within the larger sociological and social science community, it is asserted that scholars interested in disaster find a more receptive audience among policymakers than do others of their colleagues. That acceptance, however, is often not known by their own colleagues.

One final note should be made concerning the development of international activity and organization and that is to emphasize the critical role of the Disaster Research Center, now located at the University of Delaware, U.S.A. Two of the founders of the Center, E.L. Quarantelli and Russell R. Dynes, have been the first two Presidents of the Research Committee. Since the founding of the Center in 1963, they and other members of the Center staff have taken the position that the research field is broad enough and important enough that it should be open to many disciplines and, by its very nature, the research field is international in scope. The research program of the Center has included studies outside the United States in such areas as Japan, Italy, Iran, Greece, and Mexico. The Center has been host to a number of international scholars for varying stays. In addition, the Center has hosted bilateral meetings with scholars from Japan (1972) and Italy (1987). The first conference was supported by the U.S. National Science Foundation and the Japan Society for the Promotion of Science and the second by NSF and the National Research Council in Italy. Both conferences were the only social science conferences which occurred under such existing bilateral agreements which have been traditionally used to support the biological and physical sciences. The intent of such conferences is to facilitate scholarly communication across national boundaries as well as to encourage the continuity of research. Other activities of the Center over time have been to host a number of graduate students chosen by the Canadian Council and supported by the Emergency Measures Organization in Canada. Both the continuity of the Center and the international interests of the Directors have provided one rather stable point of reference for disaster scholars around the world.

#### CURRENT INTERNATIONAL RESEARCH

In examining current research around the world, some ordering principle is needed to keep the discussion from becoming a travelogue or a

simple listing. Let us suggest here a series of "reasonable" hypotheses which accounts for the emergence and development of disaster research. Let us first assert that both sociological and disaster research are somewhat of a social luxury. The emergence of such research is dependent on a number of conditions. These factors would include changes in cultural attitudes toward disaster which are in part related to stages of development within the society. Too, there are differences among societies as to their "objective" risk from disaster. There are differences among societies as to the ways in which responsibilities for disasters are institutionalized. There are also differences among societies as to the strength and to the position of the social science community as to the set of intellectual problems with which it is concerned.

The optimum conditions for the emergence and development of disaster research occurs in societies which take a position that the consequences of disaster are possible to reduce and those societies are able to allocate resources to such an effort. Such allocation is possible because the resources are not totally consumed by other more pressing "survival" problems. Research is also encouraged when members of a society do not view disaster as a system failure or the response to disaster as a major opportunity to validate ideology and nationalism. Research is also more likely to emerge in societies which experience a wide range of disaster agents. Research is more likely to emerge in societies which have institutionalized disaster responsibility in the civilian sector rather than being an integral part of the national security system. Research is more likely to emerge in societies where value is attached to social science knowledge; where a social science community is well institutionalized and supported; and where that intellectual community is interested in pragmatic problems. It is exceptional when all of the conditions which encourage research are present in an actual situation.

Given the previous factors as conditions, the following judgments can be made about the status of disaster research. The most comprehensive bodies of disaster literature have been developed in the United States, Japan and Italy. These are all highly industrialized countries covering large land masses and subject to a wide range of disaster agents. There, response to disaster is civilian in nature and somewhat decentralized in approach. This means that both national and local authorities have an

interest in acquiring knowledge. All three countries have a social science community that is reasonably well institutionalized and supported. These communities have a somewhat pragmatic attitude toward research and have strong international connections.

Probably the next level would include Australia, Canada and the Federal Republic of Germany, closely followed by the United Kingdom, France, The Netherlands, Belgium and the Scandinavian countries, especially Sweden. The European countries have a narrower range of "natural" disaster concerns but in recent years have become increasingly concerned with technological disasters. Their smaller size have made these societies particularly sensitive to their interdependence with risks in other societies, as the concern has been reflected for Chernobyl, the Rhine River contamination and acid rain. The resources of these countries and the interests of the social science communities often allow social scientists to study disasters outside their own countries.

There has also been some sustained interest in disaster research in such countries as Greece, Turkey, Bangladesh, the Philippines, Taiwan, Mexico, Peru, Argentina and New Zealand. These are all rather highly disaster prone countries but with only modest support for a small social science community. Eastern European countries generally evidence a rather low level of activity and much of the effort is focused on issues relating to planning for the reconstruction of communities severely affected by earthquake damage. For example, the Anton Melik Geographical Institute of the Slovene Academy of Sciences and Arts of Ljubljana has monitored natural disasters in Slovenia, starting with the 1976 earthquake in the Soca River Basin. There is also a scattered literature from other earthquakes, especially on the reconstruction process in Skopje and the Montenegro earthquake.<sup>3</sup> In Romania, there has been interest in examining earthquake reconstruction in the larger context of social development. Dorel Abraham, Head of the Sociological Research Laboratory at the Design Institute for Typified Buildings, with other colleagues, including some from the University of Bucharest, have studied the reconstruction of Zimnicea, a small town destroyed in the March 4, 1977, earthquake. In general, in the U.S.S.R. and in several other Eastern European countries, because of the heavy involvement of the military in disaster-related activity, the opportunity for research often is limited, and even routine statistical information is very difficult to ob-

tain. The Chernobyl incident, however, received considerable attention, and there was an increase in interest among social scientists in the U.S.S.R. and surrounding countries in previous disaster-related research. Whether this incident will evoke subsequent studies which will be useful to the international community still remains to be seen.

The variations in the research activity in the various countries just mentioned perhaps do not suggest the long-term sustained effort necessary to develop truly comparative research. The picture is even more discouraging when looking at other countries, many of them very disaster prone, but are situations where there is lack of interest, a small social science community or a number of cultural and political barriers to research. There is very little research in Central and South America, with the exceptions of Mexico, Peru and Argentina mentioned earlier. However, major earthquakes in small countries, such as in Nicaragua in 1972 and in Guatemala in 1976, provide the opportunities for researchers outside the country to initiate research. The same is true for the Middle East, Africa and South Asia. In these areas, there may be the occasional study, opportunistically designed, or someone from outside the country might initiate a study with little contact with local social scientists. When such studies are initiated, they are, of course, valuable additions to the international literature, but they often are single, isolated studies which make them difficult to place in a comparative context.

Finally, two exceptions will be mentioned which might suggest the greater continuity of research in the future in two very disaster-prone countries, India and China. In India, there has been some past studies which have been important, but there seems to be an increasing effort to institutionalize research centers which would have the opportunity to provide greater continuity for research. For example, Nagarjuna University grew out of the post-graduate center of Andhra University and became a full-fledged University in 1976. In 1986 the University established a Disaster Mitigation Laboratory with finances from the University Grants Commission. It plans to provide a documentation center for disaster studies and to disseminate information on research. It also plans to stimulate research on disasters in the social and behavioral sciences and in engineering and to provide training facilities for personnel of government and nongovernmental agencies. The director is Chitturi

Raghavulu, a political scientist and, while the Laboratory has not been in operation long, its existence is important to note here. A similar research and training center/Disaster Management Institute has been formed as a result of the Bhopal disaster. This center will, among other activities, continue to monitor the consequences of that major disaster. In addition to the academically-based research institutes, there are an increasing number of officials in governmental and nongovernmental sectors who have disaster responsibility and who have interest in research as a possible guide for policy. Such interest and effort is often found in an international journal, published in India, *Disaster Management*.

A much more recent surge of interest in disaster research has occurred in the People's Republic of China, the location of some of the most destructive disasters in history, but also an area where until recently social science knowledge has been considerably devalued. However, even within the past revolutionary context, there was considerable attention given to struggle of the masses against the consequences of disasters and there was an emphasis placed on the role of the people in assisting the government in detecting certain precursors of earthquakes. After the Xingtai earthquake in 1966, Premier Zhou Enlai emphasized the importance of the wisdom and the efforts of the masses in earthquake prediction. Subsequently, there was considerable attention to combine mass observation and involvement with improvements in seismological technology. The merits of that popular movement was enhanced by the successful prediction of the Haichang earthquake but was undercut severely by the unpredicted and devastating effects of the Tangshan earthquake which occurred on July 28, 1976. That earthquake, however, underscored the need to give increased social scientific attention to disasters and the Chinese adopted the term "seismo-sociology" perhaps to differentiate such research from the negative criticisms which the social sciences had received from earlier revolutionary rhetoric. That term was institutionalized by the establishment of a research section within the Institute of Geophysics of the State Seismological Bureau in August 1979. The tasks of the section were defined broadly to include research on organizational systems, issues relating to the issuance of earthquake prediction; to gain knowledge to improve future and counter measures and to implement them in urban planning; and to study and draft regula-

tions and laws pertinent to earthquakes and earthquake prediction. The research section can also use personnel in provincial offices of the State Seismological Bureau to assist them in the conduct of research.

In addition to the institutionalization of research in the SSB, researchers in other settings have already initiated considerable research. Many of these projects have centered on the consequences of Tangshan earthquake. For example, Sheng Xuewen and Liu Ying of the Institute of Sociology, Chinese Academy of Social Sciences have examined the consequences of family reorganization in the Lunan district of Tangshan where some 37 percent of the families had one or more family members killed in the earthquake. (Sheng has continued his interest in disaster research with a study of the Daxinganling Forest Fire in May 1987). In addition to the family research by the Institute, sociologists from the Department of Sociology at Nankai University, including Su Tuo, Wu Zhon-shou, Yang Dongwen, have looked more closely at various aspects of the response to the Tangshan earthquake, including changes in interpersonal relations as well as deviant behavior. These initial research efforts which have been encouraged by greater appreciation of the contributions of social science and a new openness to international cooperation. Another interesting development has been the 1988 organization of the Chinese Disaster Resistance Association. That Association has as its goal to promote scholarship in disaster; to popularize knowledge; to provide advice to the Party and the Government; and to facilitate communication among the members. To achieve these goals, the first issue of the *Journal of Catastrophology* has already been published as has a *Newsletter of Disaster*, and plans are being made to establish a national information network on disaster. Those trends will offer important opportunities for comparative research in the future.

#### CURRENT POLICY DEVELOPMENTS WHICH MAY ENCOURAGE RESEARCH IN THE FUTURE

A final comment is in order to give attention to developments outside the research community which may have important consequences for research in the future. It has been noted several times previously that the funding of disaster research is often closely tied to issues within policy community. There are several developments of interest. First has been

the declaration of the U.N. Assembly that the 1990s will be the International Decade for Natural Disaster Reduction. This declaration will evoke many different types of activity, not all of them apparent at this time. While the predominant thrust will deal with the physical science aspects of disaster "reduction," there is social science participation in an international committee of experts. Perhaps, more importantly, there will be some encouragement on an individual country level for the inclusion of concerns which would necessitate participation by social scientists and, in fact, one result might be an increase in research funding in the future.

In addition to the overall theme of disaster reduction which will permeate U.N. agencies, there are agencies within the U.N. which have a continuing interest in disaster-related activity. First of these has been the Office of the United Nations Disaster Relief Coordinator (UNDRO) which was established in 1972 with a mandate to mobilize, direct and coordinate aid to disaster-stricken developing countries to assist their governments with emergency preparedness programs and to promote disaster prevention and mitigation. UNDRO is not active in undertaking research itself or in the generation of new knowledge but is concerned with the use of available knowledge for practical application. Other U.N. agencies have become interested in the effect of disaster on development. For example, the United Nations Centre for Regional Development recently held an Expert Group Meeting on Regional development Planning for Disaster Prevention in Tokyo in 1987, and papers from the meeting were recently published as an issue of the *Regional Development Dialogue* (Vol. 9, No. 1, Spring 1988).

Another development of importance has been the establishment of the Asian Disaster Preparedness Center at the Asian Institute of Technology in Bangkok, Thailand. The decision to establish the Center came from a feasibility study sponsored by UNDRO and the World Meteorological Organization and the study was funded by UNDP. The Center is to respond to the needs of the Asian/Pacific Region on the basis of training, information, studies, planning services and consultancies. It is intended as a multidisciplinary program and would draw course participants from countries within the region. Since the Center was just established in 1986, the primary effort has gone into the development of seminar and training courses, but it intends to move in the direc-

tion of encouraging research on a variety of disaster-related topics. It could play an important role in the future in encouraging research in a region where interest and skills are currently lacking.

Just as regional centers are important, "national" centers can provide encouragement in the long run for research. In the last several years, a national disaster center was set up in Indonesia. While many such centers have as the primary function training and information, those functions depend on knowledge, and therefore, the encouragement of research, either in-house or by others, is a usual step in institutional evolution.

In addition to more formally organized policy-related efforts, there are informal networks which facilitate international communication. For example, there are periodic meetings among top policy officials with emergency management responsibility in the U.S.A., Canada, U.K., Australia, New Zealand and the Asian Disaster Preparedness Center, and there are regular bilateral meetings which maintain the information flow about both policy and research.

In addition to activities just mentioned, the World Bank has developed greater interest in utilizing disaster research and encouraging subsequent research as a part of their staff analysis in their evaluation of development loans. In addition to the Bank's concern for "natural" disaster, they have taken an initiative to develop a multidisciplinary research program which is based on a systems approach to safety and management of risk in large-scale technological operations. The World Bank with the governments of Denmark, Sweden and Holland are beginning to develop a series of workshops in the U.S.A., Europe and Japan which have, as one element, broadening the traditional engineering approach to risk-management to encompass the findings of the social sciences. All of those efforts point to the importance in conceptualizing the modern world in sociotechnical terms. In that conceptualization, the social scientific knowledge of disaster will be needed and to be effective that knowledge must be built on a comparative base.

### SUMMARY

Although it is a relatively young field, disaster research was international from its very beginnings. The focus of the field has been the social response to various disaster agents, both "natural" and technological,

and to the social consequences of those agents. In recent years, the field has become more international and, to a certain extent, more collaborative and even comparative. There is nothing unique about the theoretical paradigms or the methodological approaches used in these studies, but there is a degree of uniqueness in the fact that, compared with many other subspecialties, disaster research is multidisciplinary and usually relevant to policy. The International Sociological Association, through its Research Committees, has provided a useful focus to encourage and sustain the diverse research interest because, fundamentally, the goal of the field is to understand behavior in various situations of social stress. The evidence underscores the similarities which derive from our common social institutions rather than the differences which are produced by transient ideologies.

### NOTES

<sup>1</sup>There are many different ways in which disasters can be conceptualized, and one popular way is to use it in an evaluative sense to denote something we don't like. A more clearly sociological definition should define it in terms of social consequences rather than in terms of the "causal" agent. By and large, the major focus of the literature included in this review centers on what might be called community "consensus" disasters with relatively rapid onset, best exemplified by so-called natural and technological disasters. This focus tends to exclude "conflict" disasters, such as riots and civil wars as well as negative but chronic societal conditions, such as famine or desertification. There is, however, a considerable literature on famine/drought which has been produced by international relief organizations and foundations. Such a "narrow" focus here is to keep some degree of homogeneity in terms of the sociological consequences.

<sup>2</sup>The discussion here focuses primarily on contributions to disaster research made by persons who are identified as "sociologists." Since the research area is multidisciplinary, this means that contributions from other fields are somewhat slighted here, but the diversity can be indicated by pointing to the work of Joseph Scanlon, Carleton University, communications; Ian Davis, Oxford Polytechnic, housing and architecture; Uriel Rosenthal, University of Leiden, Roger Wettenhall, Canber-

ra College of Advanced Education, William Petak, University of Southern California, public administration; Gilbert White, University of Colorado, Robert Kates, Brown University, Roger Kasperson, Clark University, David Alexander, University of Massachusetts-Amherst, John Sorenson, Oak Ridge National Laboratories, Risa Palm, University of Colorado, Robert Geipel, Technical University of Munich, geography; Alcira Kreimer, World Bank, urban planning; and Alvin Mushkatel, Arizona State University, Patrick Legadic, Polytechnic Institute-Paris, political science; Michael LeChat, University of Louvain, epidemiology; and Howard Kunreuther, Wharton School, University of Pennsylvania, economics.

<sup>3</sup>Of course, it is extremely difficult to have a comprehensive knowledge of the disaster literature in any specific country, even your own. For example, I am aware of the fact that the U.S.-Yugoslav Joint Board of Scientific and Technological Cooperation developed three international conferences dealing with various aspects of earthquake research. The first held in Ohrid in 1979 dealt with the geological and seismological aspects of earthquakes. The second held in Skopje in 1980 focused on earthquake-resistant structures and the third on the social and economic aspects was held in 1981 at Lake Bled. All three were sponsored by the National Science Foundation and the Council of Yugoslav Association of Self Managed Communities of Interest for Scientific/Research. The major social science participation from Yugoslavia in the last conference came from the Institute of Geography in Slovenia although Dr. Stane Saksida, Director of the Institute of Sociology, University "Edward Kardelj" Ljubljana, chaired one of the sessions. The proceedings of that conference have been published (Jones and Tomazevic 1982). I am aware there is a publication on Naravne Nasreze V Sloveniji published by the Slovene Academy of Sciences and Arts and Naravne Nescece V Jugoscafij, published by the Union of the Geographical Association of Yugoslavia. Josip Obradovic, Zagreb University, has participated in the six-country collaborative effort organized by Frederick Bates and is briefly discussed in the text. I am also aware of some interest in disaster research at the Institute for Social Research, University of Zagreb on the part of Dr. Meadcy Zvonarevic and Zeljko Buzov, but I have not seen any publications from these interested groups. That simply points to rather persistent problems in com-

munication in an international research network which is compounded when that network cuts across disciplinary lines.

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