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THE STRUCTURE OF DISASTER RESEARCH: ITS
POLICY AND DISCIPLINARY IMPLICATIONS*

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**The Structure of Disaster Research:
Its Policy and Disciplinary Implications***

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The context of sociological research on disaster is discussed by the various settings in which the research tradition has developed. In addition, both funders and users of that research are identified. It is suggested that the most important policy use of disaster research has been to change the conceptualization of disaster. While no specific study can be directly tied to particular policy changes, the overall research tradition has had a transforming effect. That transformation is, of course, more obvious in some societies than in others.

In the future, it is suggested that increased attention will be given to disaster preparedness and planning because of more and worse disasters. This means that social science research will continue to thrive because of its potential utility in problem solving. However, future research will be increasingly cast in interdisciplinary terms. Given the reluctance to support basic research, the relationship between applied research and the core disciplines will become more problematic.

Introduction

The value placed on sociological research depends on the cultural conceptualization of an issue and its public policy implications. For most of human history, disasters have been considered collective misfortunes but not objects of study, or even issues of public policy. Much of recorded history, however, is structured around disasters of one form or another. In literature, disasters have been used as metaphors to explain universal human

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actions. Usually, disasters have been considered "acts of God," conveniently outside social systems, although certain consequences of disaster had important social implications. Those in power often perceived disasters as weakening social systems which made rulers vulnerable to conquest from outsiders. Disaster, then, had implications for maintaining social order. There was also concern for disaster "victims." Even if God were responsible, His randomness did not necessarily coincide with worldly notions of justice. Those unjustly affected were deserving of compassion. Even in the colonial period, disaster victims deserved relief. Elements of fatalism defined, and in many parts of the world today continue to define, the cultural conceptualization of disaster.

The emergence of industrial societies generated a more active view of disasters. The notion developed that technology could become the solution to disaster related problems. Floods could be eliminated by better constructed dams. Destruction from earthquakes could be reduced substantially if better materials and construction techniques were used. These assumptions about the hopes for industrial societies were generalized with the implicit assumption that disaster prone countries would be healed by increased development. At the same time, there was increasing recognition that not all disasters were "natural" and that a number of emergent situations could be properly seen as technological. Since God was technologically illiterate, political systems, in some recent theories, should bear the blame. Since the interest in and the puzzlement with disasters have been so closely tied to world history, it is not surprising that, in time, they have also interested social scientists.

Sociological Studies of Disasters

Social science attention to disaster is relatively new. The first empirical study was of an explosion caused when two ships collided near Halifax's harbor at the end of World War I (Prince 1925). The first theoretical work was *Man and Society in Calamity* by Pitirim A. Sorokin (1942). The primary initiation of such studies came after 1950, however. While the greatest concentration of research has been done in the United States, the research community in recent years has become increasingly international. In addition, the research area has become increasingly multidisciplinary. Although we have focused on contributions by sociologists, we have mentioned some research, and researchers, from other disciplines. Certain of the patterns we have summarized, particularly those pertaining to the relationships between research and public policy, have parallels within

social geography, especially with regard to flood disasters (see Burton, Kates and White 1978).

While the sub-field is quite young in the history of sociology, the empirical research base is large enough to have deserved several codifications (Barton 1969, Dynes 1970, Drabek 1986), efforts to recap international and cross cultural studies (Dynes 1988) and even discussions of the intellectual history of the field (Quarantelli 1987, 1990). Drabek has suggested that, while some sociologists consider disaster research trivial, one can argue that disaster research is at a strategic intersection among several dimensions—public policy, user applications and middle range theories. While here our focus is on the “uses” of sociological research, it is also appropriate to underscore the fact that disasters can provide significant payoff for sociological theory since they represent types of uncertainties in which elementary forms of social processes and structures are revealed. They provide the opportunity to observe the emergence of social structure and the functioning of such structure under stressful conditions (Kreps 1989). In certain ways, disasters represent unique laboratories, ethically acceptable natural experiments. If viewed in this way, disasters are unique social experiments for nearly all subspecialties within sociology, rather than trivial aberrations in social life.

A preliminary disclaimer is in order. We will make no attempt to define the limits of what might be called “disaster” research. We have no particular objections if others wish to include conflict situations, such as war, or chronic conditions, such as desertification, global warming and famine under that rubric. We have not wished to exclude here but only to focus on those occasions where social structure is rather suddenly stressed by what sometimes are called “natural and technological” disaster agents.

In addition, while we have tried to maintain a focus on sociological research, we have used illustrations from a broader category of social scientists. In the United States a core of social scientists interested in disaster research are sociologists, but that is not true in most other countries.

Finally, the dominance of illustrations from the U.S. reflect both a cultural bias and a reflection of reality. Most disaster research has been initiated in the U.S. so illustrations of that research based reflect that fact. On the other hand, both of the authors have had considerable experience in and knowledge of disaster research around the world.

Research Settings

There have been a variety of settings which have generated this research tradition. The various settings for disaster research follow the pattern of the way other research has been institutionalized within each society.

The most common pattern is research done by the individual scholar/researcher in a University setting. A second pattern has been the development of combined teaching/research programs where an interdisciplinary curriculum on disaster or emergency management create research expectations for that faculty. There are now two examples; the Institute of Emergency Administration and Planning, University of North Texas, U.S.A., and the Center for Disaster Management, University of New England, Australia.

A third pattern is the establishment of a University based center with primary focus on some aspect of disaster. Perhaps best known is the Disaster Research Center, formed by sociologists at The Ohio State University and now located at the University of Delaware, U.S.A. DRC, founded in 1963, is administratively located in the Department of Sociology, although heavily involved in multidisciplinary networks, nationally and internationally. Other centers, such as the Hazards Assessment Laboratory, Colorado State University, U.S.A. and the Hazard Reduction and Recovery Center, Texas A and M University, U.S.A. are headed by sociologists, although administratively located in other parts of the University. A similar University based Center is the Katastrophen-forschungstelle, located at Christian-Albrechts-University in Kiel, Germany where Wolf Dombrosky is co-Director. Although multidisciplinary in focus, the Natural Hazards Research and Applications Information Center at the University of Colorado serves as a national clearinghouse and links social scientists with diverse groups of practitioners through conferences and publications.

In some countries, research is focused in the Academy of Sciences, such as that of Boris Porfiriev and Constintine Popov at the Russian Academy of Sciences and George Pogolian at the Institute of Philosophy and Law, Armenian Academy. In France, a research group on *Crises* is located in the Centre National de la Recherche Scientifique, under the leadership of Patrick Lagadec and Claude Gilbert, both political scientists. In the United States, some national laboratories, such as the Oak Ridge National Laboratories and the Batelle Human Affairs Center, Seattle, have long established research programs.

On occasion, there may be research generated within particular governmental units. Within the Chinese State Seismological Bureau, the Institute of Geophysics has a section responsible for "seismo-sociology" which has

focused on understanding human reactions to earthquake prediction. A final pattern is private research centers, such as the Emergencies Research Unit, established by Nicolas Petropolous in Greece.

Funders and Users

Sociological research does not have high funding priorities any place. This is especially true for basic research. While University settings may emphasize "basic" research, agencies which provide grants for such work often take practical applications into account in the grant evaluation process. In terms of disaster research, one could argue that, historically, Universities around the world have provided the most resources in the support of individual researchers. There is grant and contract funding available in the disaster field but the overwhelming portion of that funding goes to the physical sciences and engineering. For example, in the U.S., there is a National Center for Earthquake Engineering Research with an annual budget of between five to ten million dollars. Of that amount, about \$300,000 is devoted to "social science activities" which includes educational efforts and conference subsidies, and a small portion to actual research.

There are, in every nation, governmental agencies with responsibilities for some aspect of disaster management which may provide funding for sociological research. These are such agencies as civil defense, interior or home office, social welfare, international development as well as agencies that have responsibility for the consequences of certain physical disaster agents—geological survey, meteorological agency, water resources and energy. On occasion, regional, state and local governments provide limited types of research support. Almost always, the funds are directed toward very specific topics of immediate local interest. In addition, supra-national governments may provide some research funding—such as the United Nations agencies, especially UNDP, UNDRO, WHO and UNESCO, as well as the European Community, the World Bank, the Organization of American States, the League of Red Cross and Red Crescent Societies. The latter agencies are more often willing to support the preparation of documents and materials than to sponsor research.

It is very difficult to estimate the level of funding, even in any one country since support is neither constant nor continuous. Consequently, for research operations, this means limited and episodic funding. The Disaster Research Center, however, has had continuous funding since 1963. The funding level has averaged about \$250,000 a year, ranging from \$50,000 to \$500,000. Those figures would exclude faculty salaries and some Univer-

sity support. The bulk of the grant funds have been used to support of graduate students.

Overall, in the United States the total amount of social science research funding would be about three million dollars, with the bulk of the monies coming from the National Science Foundation, the Federal Emergency Management Agency, the National Institute of Mental Health. There are periodic research funds from the National Oceanic and Atmospheric Administration, the United States Geological Survey and the Department of Energy. In other countries, where sociological research is less well institutionalized, funding is much smaller and, in some cases, almost nonexistent.

The extent of the users of disaster research is, of course, much wider than those who fund research. While many of the funders are national in their responsibility, persons in agencies at lower levels of government-regional, provincial, and local are more likely to need and apply research. In addition, many nongovernmental agencies, such as the League of Red Cross and Red Crescent Societies, Salvation Army, as well as many religious and secular relief agencies are research users. An increasingly important users group is city management professionals. Recently, the International City Management Association published a book on *Emergency Management: Principles and Practice for Local Government* (1991) as a part of its Municipal Management Series. Edited by Drabek and Gerard J. Hoetmer from ICMA, the contributors include eight social scientists who base their contributions on current research. In addition, there are a growing number of people who identify themselves as "Emergency Managers." In the U.S., this had led to the development of professional associations, mechanisms of communication, such as *Hazards Monthly*, which publishes popularized version of research, and there is the beginning of a "professional" literature. For example, Drabek (1990) has examined successful emergency management offices and their strategies for maintaining organizational integrity. This book has been a focal point in numerous workshops and seminars sponsored by state or local emergency management associations, e.g., Tennessee, Wisconsin, Colorado and Arizona and in several other locations, e.g., Australia, New Zealand, England and Spain.

There is also a demand for specific materials that can assist in teaching of emergency management skills. Many items have been prepared recently by political scientists and public administration faculty that have built upon the foundation created by sociologists (e.g., Sylves and Waugh 1990 and Charles and Kim 1988). Recently, a formal section on emergency management was established within the American Society of Public Administration. Through the official journal of the ISA Research Committee on

Disasters, the *International Journal of Mass Emergencies and Disasters*, a great deal of exchange has been stimulated. Some of the efforts are in new university curricula while many more efforts are found in extension and short courses, such as those found at the Asian Disaster Preparedness Center, Asian Institute of Technology (AIT), Bangkok, Thailand, the Emergency Management Institute (EMI), Emmitsburg, Maryland, U.S.A. and the Australian Counter Disaster College (ACDC), Mt. Macedon, Victoria, Australia. Within the past year, formal university degree programs in emergency management have been established in Australia and New Zealand. Like their counterparts in the U.S., these incorporate sociological research completed by a growing number of scholars throughout the world. A number of U.N. agencies use disaster research materials in their in-service training. While it is possible to detail a longer list of users of disaster research, we would argue that the major impact of disaster research has been to completely reconceptualize disaster policy in social science terms. This reconceptualization has had profound implications, not just in the U.S., but in other countries and in international agencies.

On the Conceptual Use of Disaster Research

Quarantelli (1991a) has suggested that there are three different uses made of the findings of research:

1. the instrumental, or action, uses
2. the conceptual, or understanding, uses
3. the symbolic, or political, uses

The first usage, the instrumental alternative, relates to specific studies which can be used as a basis for future decision making on specific issues. The second alternative suggests that research can provide background information and perspectives which influence future action in the much broader sense. The emphasis here is on understanding and not on specific items of knowledge. The third alternative points to the ways in which research results can provide a legitimating function for certain policies. For example, most research on nuclear power accidents, from Three Mile Island to Chernobyl, is now used to legitimate various policy decisions. Interestingly, the same evidence is often used in completely contradictory ways.

We would argue that, of these three alternatives, the primary use of disaster research has been in providing conceptual understanding. This research has changed the notion of the nature of disaster, its "causes," its consequences, and the potential for action. To articulate the significance of this point, it is necessary to posit a rather universal view of disaster from

the past, and then to suggest ways in which that conceptualization has been changed. To sharpen such a contrast, the baseline conceptualization might be stated in the following way:

Disasters were events which had social consequences but were generally outside human control. When such events occurred in communities, they created great fear and personal trauma. This created social chaos, making local communities incapable of effective action. Outside authorities, especially the military, were needed to re-establish command and control. Outside agencies were needed to aid these helpless people. Disaster planning was to enhance the national government's ability to reestablish social order and to facilitate recovery. Since some national governments were inept and weak, it was the responsibility of donor governments to provide assistance.

While some elements of this baseline conceptualization persist in some agencies, in general, the research tradition has dramatically altered it. Drabek (1986), in his inventory of research, has conceptualized those research findings in terms of both a temporal and a structural dimension. The temporal dimension placed disaster response in an inclusive social process, tying response to preparedness, recovery and mitigation. For the structural dimension, he used different system levels, not different disaster agents, starting from the individual, group, organizational, community, society and international. Such a classification already suggests the appropriateness of viewing disasters generically, not differentiating them by agent and of viewing them as social occasions, not geophysical events nor so-called "natural" happenings. In addition, there is the suggestion that responses from various social levels are required to understand the consequences. Using Drabek's classification of increasing social complexity, certain "findings" can be identified which modified the more traditional view.

Individuals

Disaster victims do not exhibit irrational and self destructive behavior nor do they become helpless and dependent. While some are killed and injured, most "victims" are not. They become resources. Most early emergency tasks, such as search and rescue, are done by disaster victims themselves. Disaster "victims" also constitute organizational resources and can work effectively in the emergency period. Such victims seldom exhibit traumatic indication of stress but do exhibit types of altruistic behavior uncommon prior to the disaster. While there are a series of problems created

by the disaster, victims know how to solve such problems better than persons from outside the community. Problems of social order are rather minimal except as they are reflected in coordinating an effective emergency response.

Group

The family tends to expand its protective role, reassuming "traditional" functions—providing food and shelter to members of extended family. Families and neighborhood groups turn attention away from conventional self interested economic activities toward more altruistic and helping concerns. Families can become role budget centers reallocating usual family tasks so that persons can function in more community oriented roles. Various family and neighborhood groups expand their social support activities.

Organizational

Community organizations provide the backbone for a community's response to disasters. By and large, such social systems prove to be effective. They possess human and material resources which can be mobilized effectively and which can sustain emergency activity. Such organized activity can, of course, be enhanced by disaster planning and in developing social mechanisms to coordinate their activities with other actors. Such organizations can make the adaptations necessary for an emergency. Even nondisaster relevant organizations play an important roles in an emergency. The success of that response is heavily dependent on predisaster experience and planning. Disasters may hurt but do not completely destroy existing social systems. Much of what is interpreted as "disorganization" is the process by which communities adapt their resources to new problems. In addition, new social organization emerges to cope with unanticipated problems. Organizations need to develop flexibility to adapt to new problems. Military and other highly bureaucratic models of planning restrict that ability.

Community

Disaster impacted communities remain viable social units. The most important initial information in most sudden disasters is not the number dead but the number who survived; not the extent of destruction but the extent of existing resources. Communities also have the ability to take a proactive, rather than a reactive, stance toward disaster. Responses can be

anticipated and preparations can be made. Disaster planning should be oriented toward enhancing the human and material resources of the various social units, rather than on the assumption of maintaining order and controlling people. Planers are bound to fail if they assume that the major problem is maintaining order and the major solution is in developing centralized decision making. Disaster planning which enhances the capabilities of various social units to make decentralized decisions is likely to succeed. Preparedness and mitigation activities can reduce both costs and consequences at the community level.

Society

Even if disasters are infrequent in the life of most social systems, preparedness and mitigation can reduce both costs and consequences. Emergency planning can be built into existing social organization. Such efforts need to become a customary function of local government. Emergency management, however, constitutes a unique set of skills, not necessarily to be borrowed from other occupations, especially the military. Part of emergency management is to understand the effects of hazards and to understand how people act toward risks. Risk is an evaluative social concept, not a statement of objective probabilities. Part of emergency management is understanding how people receive and act on warnings. Warning is a social process. Neither official nor scientific information provide sufficient motivation to evoke preventative action in and of itself. Part of emergency management is to develop social incentives to initiate preparedness and mitigation. As a result of the importance of these skills in urban industrial societies, a new role of emergency manager is beginning to emerge. The major payoff for emergency management is at the community level, not the national level. The major national thrust should be to enhance that activity and to develop those skills at the local level.

Since disaster response is only one phase of a continuous social process, actions taken in the response and recovery period can enhance mitigation and preparedness actions in the future. However, although disasters are occasions for limited social change, the post disaster period is not the time for extensive social experiments in housing, population location or changes in income distribution.

International

In most urban, industrial societies, there are few long term social consequences from disaster, but, in others, disaster becomes a serious

obstacle to sustainable development. Much international disaster relief has been counterproductive. Too often it is neither needed, timely nor culturally appropriate. The usual function is to enhance the charitable image of donor countries, but that generally postpones the recovery process. A better form of international assistance is to provide those countries with local resources and skills to support their indigenous preparedness and mitigation efforts.

Policy Impact

The consequences of the research tradition has been to transform policy approaches to disaster. That transformation has been most complete in the United States, but, in general, those policy changes have also had other national and international implications. In the United States, responsibility for disaster was "demilitarized." At the national level, this has meant pulling together diffuse functions to create a Federal Emergency Management Agency with responsibility for "comprehensive" emergency management. An all hazards approach is emphasized conceptually which can be implemented through the development of integrated emergency management systems within local communities. Greater emphasis is on the development of emergency planning and in the development of various community based mitigation programs. The whole focus has been to strengthen local community resources to deal with their own problems and to de-emphasize national and other outside "assistance." A similar shift in direction has occurred in the handling of international disaster assistance through the development of an Office of Foreign Assistance within the State Department. That program has begun to emphasize support for preparedness and mitigation activities as being at the center of assistance and to downplay conventional relief activities. An increasing emphasis is being made to incorporate mitigation and preparedness activities within development programs. Similar directions in policy can be seen in other nations and in the networks of international nongovernmental disaster and development agencies.

To understand the extensive impact that sociological research has had on disaster policy requires explanation of various mechanisms within the policy process. We would argue that a major reason that sociological research has had significant impact has been the involvement of researchers in science policy and disaster policy roles. For example, in the United States, a major source of the establishment of research policy is the National Academy of Sciences and, its research arm, the National Research Council. A number of sociologists have chaired disaster related committees in the NRC: Socioeconomic Effects of Earthquake Prediction (Ralph H. Turner), International Disaster Assistance (Russell R. Dynes), Natural Disasters

(Dennis S. Mileti), Disasters and the Mass Media (Everett M. Rogers), Emergency Preparedness (Thomas E. Drabek). Other sociologists have also been members of other NAS/NRC Committees. Much of that participation was facilitated by the mediating roles of two sociologists Charles Fritz, on the staff of the National Academy of Science and William A. Anderson, at the National Science Foundation.

In addition, sociologists have participated in multidisciplinary advisory capacities. Joanne Nigg has served as Vice-Chair of the Earthquake Engineering Research Institute and the Scientific Advisory Committee of the National Center for Engineering Research. Kathleen Tierney serves on the Advisory Committee of the National Earthquake Reduction Program. At particular times, the direction of national policy is modified through activities generated by politically appointed Commissions. While Cora Marrett was appointed for her knowledge of complex organization to President Carter's Commission on the Accident at Three Mile Island, Russell Dynes headed the staff task force on Emergency Preparedness and Response. That task force included two other sociologists, Dennis Wenger and Robert Stallings (Dynes et al. 1979). Dynes, Dennis Mileti, Michael Lindell and Ronald Perry have provided "expert" testimony in several administrative law hearings concerning certain dimensions of research on emergency planning.

At times, the assistance of researchers is sought by other countries and international agencies. For example, Drabek (1989) conducted an evaluation study for the League of Red Cross and Red Crescent Societies on the operational aspects of the rehabilitation program which was implemented following the Mexico City earthquake. Its intended audience was the donor societies and it was oriented to improving the process. Subsequent to the same earthquake, Dynes acted as an informal consultant to the Secretario de Gobernacion, Federal Government, Mexico in the development of legislation creating a national system of "civil protection." Similar involvement in the policy process by sociologists has been evident in other countries: Barry Turner (U.K.), Carlo Pelanda (Italy), Orjan Hultaker (Sweden), Wolf Dombrowsky (Germany).

Yin and Moore (1985) empirically examined the utilization of disaster and hazards research findings. Most important among the many factors they identified that has accelerated dissemination and implementation of research were social networks that existed among researchers and key practitioners. Drabek (1991) for example, has made extensive use of project advisory committees to serve as critics, provide liaison assistance with field work, and to carry project findings directly into practitioner networks

through both formal and informal mechanisms. Dynes, Quarantelli, Drabek, Kreps, Mileti, and many other disaster researchers have been available regularly during the past three decades to assist practitioner groups with their professional programs and concerns.

On one level, we would argue that sociologists in the disaster area have had a much greater influence in the development of science and public policy than in any other area of comparable research, especially in their participation in the National Academy of Sciences, where social scientists generally play a quite marginal role. This significant impact tends to be impressive if compared with the small number of sociologists doing research in the area. It would be too much to claim that the quality of the research is so convincing by its theoretical significance and its methodological sophistication that its application is assured. On the other hand, that "success" might provide certain clues as to the elements necessary to insure the use of sociological research. Certainly important are the critical structural conditions of a nation state which is somewhat open to the utilization of social science research in the "solution" of social problems and of a University system which provides considerable flexibility in the choice of research topics and in the allocation of research time.

In addition, as we have already indicated, some research funding is possible in the U.S. although generally not in the form of support for "basic" research. The disaster area in the U.S. has had several individuals who have continued research for a number of years. While these persons maintain a reputation as a sociologist within the discipline, they also have participated in a variety of science and public policy forums. This has often meant endless hours enduring multidisciplinary and multi-interest settings where issues are discussed and where social science conceptualizations may be introduced. These are usually settings where social science knowledge is devalued by physical scientists and by engineers. Such settings require persistence, often over years. They require the ability to communicate "findings" to many different audiences in quite different formats. To be effective, such persons need a basic knowledge of the legislative history and the current agency controversies. These are tasks and require skills which are not often considered in research methods courses. While these comments are certainly not intended to initiate a full discussion of the policy process, it would be our judgement that researchers in the disaster area have been more heavily involved in the policy process than many of their colleagues in other research areas. In any case, to have important policy implications requires much more than publishing in sociological journals.

On the Future

In looking to the future, what can be said about the sociology of disaster? First, there is increased attention given to disaster preparedness and planning by various nation states. An international network of people involved in disaster policy has emerged which shares information and that facilitates the diffusion of innovation of policy ideas around the world. Current and past disaster research constitutes a major element in that communication process. In addition, United Nations agencies as well as agencies such as The World Bank are increasingly concerned with building in disaster preparedness into the development planning process. These activities are both cause and consequence of the adoption by the UN General Assembly of a resolution to make the 1990s the International Decade of Natural Disaster Reduction. Such a declaration also involves the encouragement to member nations to develop national committees to develop and encourage attention to these issues. While it is expected that much of the concern of the decade will center around the improvement of technologies, at least two sociologists were members of the overall scientific advisory body. In addition, within specific national committees, there may be participation by social scientists. In the U.S., E. L. Quarantelli is a member of the National Committee on IDNDR, formed by the National Academy of Sciences. The Decade both internationally and nationally is to set goals to introduce programs with the intent to reduce the cost of disasters. With those aims, past research is extremely important and future research may be generated.

In addition to the awareness which the International Decade will create, it is also obvious that disasters as an object of study will not quickly nor easily disappear as a topic of concern. In fact, Quarantelli (1991b) recently has proposed that there are a number of social trends which will produce more and worse disasters. This increase will come about from the following trends.

1. There are new and increasing kinds of technological accidents that have been almost nonexistent in the past.
2. There are technological advances that reduce some hazards but add complexity to old threats, e.g., high rise fires and plane accidents.
3. New versions have developed of old or past dangers, e.g., urban droughts, rather than rural droughts.
4. There is the emergence of new kinds of technological accidents that can lead to disasters, e.g., computer accidents, biotechnology.

5. There will be an increase in multiple or synergistic type disasters resulting in a more severe impact, e.g., the convergence of a tornado and a radioactive cloud.
6. Disaster agents will have more to hit and have greater impact, e.g., hurricanes in an increasingly developed coastal areas.
7. More vulnerable kinds of populations will be impacted, e.g., in many areas such as Florida in the U.S., new retirement communities and large concentrations of tourists are particularly vulnerable to hurricanes.
8. Increasingly, metropolitan areas will be impacted. Both the complexity and diversity of these areas create new problems of coping.
9. Increasingly, localities will have disastrous conditions created by sources quite distant, e.g., the scope of radiation from Chernobyl.

Quarantelli concludes "It is that solutions are not to be found primarily in new technologies or better use of existing ones. The difficulties note stem from social factors. Social problems can only be dealt with socially; technological improvements can only address technological problems." (p. 27)

Thus, for the immediate future, the potentialities for disaster research seems encouraging. In the next decade there will be a considerable increase in the attention which policy makers will give to the research issues which have characterized the field in the past. In addition, as Quarantelli has suggested, the increased technological dependance, urbanization and social complexity will produce more and worse disasters. So, researchers in the field will not experience a paucity of research opportunities. Of course, these future trends will also affect the role and status of the social sciences. It is to that future that we will turn now.

The uses of sociological research in the future will depend upon changes in world society. And those changes in turn will affect the nature and uses of the social sciences. Neil Smelser (1991) has suggested some of the outlines of these changes. He points to three master trends which will continue: the drive toward economic productivity, a pressure to improve technology and the movement toward the internationalization of the economy. Given these master trends, there will be additional tendencies, some directly derivative from the master trends. These include: (1) that environmental crises will get worse before they get better; (2) continued structural differentiation and complexity; (3) increased application of knowledge to decision making; (4) inter-nationalization in the cultural area, including science; (5) continued pressure toward democratization; (6) social problems

will become increasingly internationalized; (7) a continuation of widespread problems of chronic instability; and (8) the continuing erosion of traditional forms of social stability.

Smelser argues that, in the future, the social sciences should be expected to thrive in such an increasingly complex world. He suggests that it will be in the interest of governments everywhere to support the social sciences for its potential utility for problem solving. He also suggests there will be an improvement in the ideological infrastructure essential for the social sciences. These can be seen as positive portents for the future. On the other hand, the demand for applied social science and the continuation of structural differentiation suggest other trends which have much more negative consequences. There will be an increased separation between basic and applied research and between theory and empirical research. At the same time, there will be increasing fuzziness of the lines between disciplines since applied work is interdisciplinary in nature.

The fuzziness may not be problematic if researchers are both rooted in their disciplines and can relate their interdisciplinary research to disciplinary concerns. For example, the members of the Research Committee collectively produced a book which attempted to show the relevance of certain sociological concepts to disaster research (see Dynes, DeMarchi and Pelanda, 1987). On the other hand, the research problems and emphases in the sociology of disaster are increasingly becoming alienated from "mainstream" sociology. For many in the area, research reported in more traditional sociological journals is irrelevant and esoteric. Too, within traditional departmental structures, those interested in applied fields are increasingly alienated from their local colleagues and more comfortable with their extended research networks which are international in scope. This trend suggests the future importance of the Research Committees and the increased viability of some but not all of them in the future. The future is likely to reveal what sociologists have known all along: health of some of the parts does not necessarily insure the health of the whole discipline. This reality will come home to many departments whose very existence will be challenged because of localized budget crises. While opportunities for various differentiated segments, including disaster research, look promising, the general discipline may appear to be of low priority, if not completely expendable, to cost cutting administrators looking for quick fixes to deep rooted institutional deficiencies (see Kantrowitz 1992).

Conclusion

While disasters have been a recurrent theme in literature and throughout history, only recently has disaster become a topic of interest to sociologists. Although disasters could have been considered a strategic research site by early sociologists, the research field has primarily evolved since 1950. While the research interest is international and by its nature, multidisciplinary, sociologists, primarily in the U.S., have been at the center of the development of a critical mass of research. That research base is not necessarily extensive but it has had a rather profound effect on public policy. With that change, communities can be encouraged to adapt a proactive response and to mobilize human and material resources to prepare and respond. That view has modified the direction of social policy in both national and international agencies.

Given certain world trends, disasters will continue to be a focus of applied social research. In fact, the future may bring more and worse disasters. That encouraging outlook for the future of the sociology of disaster does not necessarily mean that research will contribute automatically to the basic theoretical issues within the discipline nor will the sub-field necessarily find the discipline to be a fertile source of ideas for understanding the human side of disasters. As the profession of emergency management matures and disaster researchers are pressed to specify the limits of generalizability of increased numbers of localized data bases, higher priority will be given to more fundamental questions. How and why do societies differ in their coping responses to risk? What social constraints pattern the differential distributions of risk, both temporally and globally, as new policy initiatives are implemented that are intended to mitigate disaster impacts and improve disaster preparedness, response and recovery? As these types of issues are approached, disaster researchers and emergency managers will look toward the discipline of sociology for relevant theoretical paradigms. A new partnership may emerge that could prove to be mutually beneficial. To the extent that the discipline fragments substantively, stagnates intellectually and withers politically, it will fail to provide the insights needed.

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