PRELIMINARY PAPER #116

The Social Science Study of Disasters and Mass Communications*

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1987

*This is a paper which was prepared to appear as a chapter in Lynne Masel Walters and Lee Wilkins (eds.) Bad Tidings: Communication and Catastrophe, Hillsdale, New Jersey: Lawrence Erlbaum Associates (forthcoming). The work in this paper, while done under National Science Foundation grant ECE-8504423, expresses the views and opinions of the author and not necessarily of anyone else.

Introduction

In this chapter we shall cover five general topics. First, we give a very brief history of the early social and behavioral science disaster studies both in the United States and elsewhere. One of our major points will be that, while the work has come far in the last three and a half decades, the initial research was rather uneven and many areas remained little examined or almost unexplored, including the operation of mass communication systems in disasters. A few reasons for this selective inattention are suggested.

Second, we shall highlight and summarize some of the more important general themes which have emerged from the numerous specific studies on all kinds of disaster phenomena. For the most part it will be stressed that much of the research has uncovered a great number of myths about individual and organizational behavior at the emergency time period of disasters. We shall note that the existence of a disaster mythology has been partly attributed to what is assumed and reported about such situations by mass media organizations.

Third, we will indicate something of the quantity and topical focus of the past and current work on mass communications in disasters, primarily by a substantive listing of the specific studies undertaken. That there has been an acceleration of research on the subject matter will be noted, as well as the start of efforts at theoretical formulations. We shall briefly note what might account for this trend.

Fourth, we will highlight some major themes in the research findings and observations up to this time about mass communication behavior in disasters. In the process, some attention will be given to important unknown matters as well as known themes. A graphic matrix will be used to

try to depict the present overall state of knowledge.

Finally, we shall conclude with a partial agenda for future research on mass communication activities in disasters. Certain innovations in the mass media area, particularly the development of new electronic technologies, as well as qualitative changes in the nature of disasterous events, are creating different sets of research questions and issues. What has been learned from the past may not be as equally applicable to the disaster situations of the future.

We should also note that our prime interest is in the human, social, group and organizational aspects of the mass communication mediated through mass media at times of disasters. More specifically, our major focus is on emergency time period activities (that is, on preparedness and response). However, such an emphasis does reflect the bulk of the existing literature since there are very few mass communication studies related to the mitigation and recovery phases of disasters. Similarly, we will make only passing allusions to the isolated pieces of research on fictional depictions of disasters (but this topic is partly covered in the chapter by Shain in this volume; see also Quarantelli, 1985c).

We shall be mostly discussing mass communication in actual or threatened natural and technological disasters. Thus, collective stress or mass emergency situations such as are associated with wartime activities, civil disturbances and riots, terrorist attacks, and other conflict types of events, while addressed by other authors in this volume such as Elliott and Scanlon, are outside our concern in this chapter. While there are some similarities, there are also some basic differences between mass communication in consensus type (that is, natural and technological disasters) and conflict type (e.g. wars) situations (see Quarantelli, 1970, and Kueneman and Wright, 1976). However, we do note in suggesting a future research

agenda, that high priority should be given to systematic studies of the similarities and differences of mass communication in these two kinds of collective stress situations as Barton (1970) calls them.

Given a choice, we might prefer to distinguish the concept of mass communication from that of mass media, with the former having reference to the social processes and groups involved and the latter to the technologies or mechanical means involved. Such an approach would allow an analysis of two related but, nonetheless, independent phenomena, that is, the techno logical base and the organizational suprastructure. However, rather than attempting to make a case in this chapter for the theoretical and practical usefulness of this distinction, we will use the two terms--mass media and mass communications--interchangeably as, unfortunately, is the tradition in the literature of the area. We also include under either one of the terms the full range of what is usually intended, that is, newspapers and other print outlets, radio and television stations, wire services, cable systems and the more recently developed so-called high tech electronic services (for the last see Rice et al., 1984).

The Development of Research

The first systematic social science disaster study ever undertaken was by Prince (1920) who, as part of his Ph.D. dissertation in sociology, looked at the social change consequences of an ammunition ship explosion in Halifax, Canada, which killed around 2,000 persons in 1917. Although an occasional study was done in the years that followed, it was not until the end of World War II that social and behavioral research of disasterous events started to have any continuity and began to accumulate a body of data, especially on the behavior in the emergency time periods of disasters. Particularly important in the early days of the effort was the research done at the National Opinion Research Center (NORC) at the

University of Chicago (1950-1954), the studies undertaken by the Committee on Disaster Studies and the Disaster Research Group (DRG) at the National Academy of Sciences (1951-1962), and the work initiated by the Disaster Research Center (DRC) established in 1963 at the Ohio State University (and which has continued to this day but relocated to the University of Delaware in 1985). These pioneering efforts, which were linked in that key person nel from NORC played major roles at DRG and at DRC, created, systematized, and institutionalized the field of disaster studies in this country (see Quarantelli, 1986).

The NORC work was primarily social psychological in orientation and was concerned mostly with the reactions of victims to the impact of a disaster. The DRG research started to move towards a focus on group behavior in disasters. The DRC studies explicitly concentrated on the preparations and responses of social organizations and communities to sudden type disasters. All three American research entities studied both natural and technological disasters and assumed the distinction was not an especially useful one for research purposes. The pioneer researchers were predominantly sociologists.

Some of the earlier researchers did note, without examining it in any detail, the important role of radio, in particular, in transmitting warnings about potential disasters. For example, Anderson (1970) looked at mass media involvement in the transmission of warnings to the general populace about tsunamis in Crescent City, California, and Hilo, Hawaii, following 1964 and 1965 earthquakes. DRC obtained information from a number of radio stations regarding their role in warning about the 1965 Palm Sunday tornadoes in northern Indiana (Brouillette, 1966). Stallings (1967), in describing the warnings issued in the 1966 Topeka tornado, noted

how stations passed on messages from the US Weather Bureau. This pattern of observing that radio and television stations have some part in warning about impending disasters has continued to the present day (e.g. see Ledingham and Masel-Walters, 1985). Now, as well as in the past, the research focus is on the warning process per se rather than the operation of mass communication per se, with some exceptions in the 1980's as we shall eventually note. From a theoretical point of view, mass communica tion systems, as such, were even more generally ignored, even when the processes of communications in disasters generally was a central focus, as in the doctoral dissertation of Harry Williams (1956).

Noticeable in the early pioneering studies, is that almost no atten tion was paid to mass media organizations, as such, or non-warning mass communication news or stories at times of disasters. The NORC work, despite the fact that it was done in a research organization very attuned to mass media operations, all but totally ignored the area of mass communi cation (although the topic was peripherally treated in Bucher's (1957) independent work on scapegoating). The DRG, either in its own field studies or the research it supported, was almost as uninterested in the area except for noting the use of radio in warning messages. About the only exception in the pioneering work was a DRC in-depth study in 1964 of the changes in structure and functioning of a radio station during a major forest fire near Santa Barbara, California. The report of this study (written by Adams) only made publically available in 1974, is, according to the Inventory of Disaster Field Studies in the Social and Behavioral Sciences 1919-1979 (Quarantelli, 1984), the first clear cut piece of re search on a mass media organization to ever be undertaken. The only earlier clear cut study directly focused on some mass communication aspects of disasters was by Ewell R. Williams who did a content analysis of letters

to the editor of a newspaper following the 1953 Waco, Texas, tornado (the study results were published as a Master's thesis in 1956, and by Harry Moore, who in 1958, incorporating the Williams material, presented a more extensive content analysis of that same newspaper's treatment of disaster related news stories, photographs and advertisements). The three mentioned studies constituted for all practical purposes the corpus of direct studies on mass communication in disasters until the late 1960's.

As noted elsewhere (Quarantelli, 1986), early disaster studies were very uneven in their coverage, even of important topics. But few other major institutional areas were given so little direct attention. Just a few years ago, Verta Taylor, in singling out the mass media of communication institutional area, stated that,

> At present, the very few studies which exist in the literature are confined almost exclusively to descriptions and analyses of the news reporting of local radio and television stations in the United States, Much more needs to be done. (1978:274)

To some extent, this is possibly because social science research of any kind, beyond certain kinds of marketing and survey studies, was not that extensive on mass communications in the 1960's. As McQuail has stated of the early work in the area:

> ...the corpus of findings about mass communications bears the marks of an entirely practical concern with two objectives: the counting and description of audiences and the measurement of direct effects on those exposed to communication. Between them, these two enterprises account for most of the research effort over a period of twenty or thirty years covering the 1930's, 1940's and much of the 1950's. (1969:36)

Thus, the early social science disaster researchers had little to guide them towards studies of the operations of mass communication systems in disasters. Also, the methodology required for similar kinds of quantitative "audiences" research would have been extremely difficult to

implement in the disaster field, although the NORC classic and still unmatched in-depth survey of victims in an Arkansas tornado showed that it was not impossible given the availability of enough resources (see Marks, et al 1954).

However, probably more important is that the early researchers failed to recognize the dual role of mass communicators in disasters, as reporters of the events and as major organizational actors in preparing for and responding to disasters. There was a strong tendency to see the mass media outlets as primarily reporting about events, and to a considerable extent as not being good reporters of disaster happenings. As we shall soon discuss, the pioneers in disaster research found considerable mythology about the supposed behavior of individuals and groups in disaster situations. As one such pioneer in a recent oral history account said, "My early field experiences quickly led me to doubt the validity of most press accounts of disasters. They could not be depended upon." (Lewis Killian, personal communication, 1986). Given a widespread discounting of mass communication accounts of disasters, and a failure to fully appreciate the mass media organizational operations in disasters, there was a tendency for researchers to treat the mass communication system as at best a secondary and not altogether reliable secondary source of information about a disaster event. In our early work on panic behavior, for example, we essentially decided very quickly that press accounts of "panic" in behavior could safely be ignored as providers of valid data on the question. (Quarantelli, 1954).

The general neglect of the mass communication area was also probably reinforced by the fact that the governmental funding agencies evidenced very little interest in pioneering work on the topic. Perhaps there was a

reluctance, as on some other research topics, to fund research which might be politically sensitive. But our impression is that in the absence of pressure from disaster researchers to open up the topic, the funding agencies involved primarily remained passive given their view of mass communicators as reporters rather than as participants in disaster re sponses, a perception which is still very widespread today.

Outside of the United States, the pioneering disaster research has been criticized as being somewhat parochial and reflective only of the American scene (e.g., Dombrowsky, 1981). Although social science disaster studies were also initiated in the middle 1950's in Canada and the early 1960's in Japan and France, the situation was not that different elsewhere for a long time insofar as mass communication was concerned. Although the operations of mass communications in disasters was eventually to become a central focus of attention in Japan, in the early years of study, the topic was generally neglected also by disaster researchers outside of the United States.

General Observations and Findings

In the last two and a half decades, research in the disaster area has increased tremendously, with probably more studies being undertaken in a single year of the 1980's then were conducted in all of the first ten years of pioneering work. There is no question that the later research is not only quantatively, but qualitatively far superior to the early studies. The acceleration of the work can be seen by contrasting the first research codification effort which was made by NORC (see Fritz and Marks, 1954), and the massive inventory of just sociological findings recently produced by Drabek (1986). The 15-page NORC article is a marked contrast to the 509-page book by Drabek which draws 1,232 empirically supported conclusions on 146 subtopics derived from nearly 1,000 published reports.

Later we shall document how these and all other past and recent reviews and codifications of the literature say little, in either relative or absolute terms, about the topic of mass communications in disasters. However, before turning to such a discussion in the next two sections of this chapter, we want to note some of the major themes in the research findings and observations as they bear indirectly on a suggested relationship about what mass media outlets and communicators report about the emergency time behavior of individuals and groups, and what social science researchers have found out about such behavior. Even keeping in mind the different objectives of workers in the two areas, as Weller (1979) has pointed out, the differences are marked.

One theme in the research literature is that human beings respond remarkably well to extreme stress. As already said earlier, those threatened by disasters do not break in panic flight. Likewise, they very seldom engage in anti-social or criminal behavior such as looting. Similarly, victims neither go "crazy" or psychologically break down, nor do they manifest severe mental health problems as a result of disasters. Those officials and others with responsibilities in a community do not abandon their work roles to favor their family roles. In the aftermath of a disaster impact, survivors do not passively wait for outside assistance, but actively initiate the first search and rescue efforts, taking the injured to medical care, and doing whatever can be done in the crisis. Mass shelters are avoided as those forced out of their homes go overwhelmingly to places offered them by relatives and friends. Other characteristic behavior in disasters could be cited but a central theme in the research literature (see Fritz, 1961; Barton, 1970; Dynes, Quarantelli and Kreps, 1981; Drabek, 1986) is that victims cope well with the extreme

stress they are exposed to in major community emergencies generated by either natural or technological agents.

This general conclusion on how human beings respond in such situations is seen as at variance with what is generally believed both by the public at large and even community officials. The beliefs of the latter have also been documented in research studies (see Wenger, Dykes, Sebok and Neff (1975). These beliefs, on the basis of the research findings, have been char acterized as the "myths" of disasters (Quarantelli and Dynes, 1972). The discrepancy between what is commonly and widely believed, and the actual behavior at emergency times, is explained by researchers in several ways. However, one major source of the beliefs is attributed to journalistic reporting of disaster phenomena. Put another way, researchers see the disaster mythology as partly rooted in mass communication system expecta tions and accounts of how people supposedly behave in such situations. As Kreps has written:

> There appears to be a long-standing assumption among disaster researchers that the media are deficient in disaster reporting. The media have been accused of inaccurately reporting disaster impacts, of giving undue emphasis to the sudden and dramatic, and of conveying false images about disaster behavior (1980:40-41).

However, it can also be argued, and has been, that mass media accounts are also deficient in reporting organizational behavior in disasters as well as misrepresenting individual behavior. While the research literature emphasizes the coping and adaptive behavior of human beings in disasters, another theme is that in contrast much organizational behavior is inefficient and ineffective, if not actually dysfunctional. In fact, one point often stressed in the literature is that the organizations which converge to help in the emergency situation not only are frequently the locus, but also the source of the problem (see Quarantelli, 1985b). Thus,

it has been observed in the research literature that if there are negative mental health, or at least psychological problems in disasters they are seldom the direct consequence of the disaster agent impact but more the result of inept managing and poor decisions by public and private bureaucracies that are trying to help in the emergency or immediate post-impact period (see Quarantelli, 1985a). Similarly, research studies have consistently documented serious organizational problems in mobilizing relevant resources, in communicating and coordinating intra- and inter-organizationally, and in appropriately managing disaster problems and difficulties (Drabek, 1986).

Although the point is sometimes only implicitly made, researchers also often seem to be saying that mass media accounts of most disasters simply fail to depict the actual behavior of organizations in such situations. Whereas journalistic accounts seem to stress the negative about individual behavior, there is a tendency perhaps to focus on the positive about organizational behavior. While some stories about emergency time and post recovery activities of helping groups may point out problems and difficulties, the great majority of accounts about the emergency and immediate post impact actions of responding organizations stresses what they have done and accomplished. In fact, some researchers have stated that mass media personnel tend to take a "command post" view of disasters, seeing them primarily as events that are defined and explained by the key emergency organizations involved such as police or high local government officials who are unlikely to have other than a formal bureaucratic view of the situation (see Quarantelli, 1981). Put another way, the problematical picture of organizational preparedness and response to disasters uncovered by the systematic social science work is seldom, according to researchers, reported by mass media organizations.

Specific Studies

It is difficult to advance a very concrete figure either on the number of studies and/or the number of publications that have focused on mass communication in disasters. Much depends on what one would consider a study, a publication and/or mass communications in disasters. However, some rough estimates can be made if certain criteria are used.

If by study is meant a data gathering effort undertaken by some kind of a social scientist in a systematic manner, we are probably not talking of more than several dozen pieces of research at most. A recent compilation by DRC used to develop an annotated bibliography on the mass media and disasters (Friedman, Lockwood, Snowden and Zeidler, 1986) is supportive of this estimate. In the report, 26 different studies of 49 different disasters or situations (but several same events such as Three Mile Island were studied by different researchers) and 29 different publications are mentioned. The DRC compilation, while acknowledged to be incomplete, does include research for which there was produced only limited circulation working papers or reports. To put the results in a larger context, the DRC Inventory of Disaster field studies alone, found studies of 353 different disasters up to 1979 which had resulted in over 1,080 publications (Quarantelli, 1984). It should also be noted that summary reviews of the disaster-relevant mass communication literature put together by Kreps (1980) and by Larson (1980) for the Committee on Disasters and Mass Media of the National Academy of Sciences, lists practically no studies, disasters or publications not also cited in the DRC annotated bibliography on mass media and disasters.

All of the above compilations and bibliographies deal primarily with English language literature sources. One consequence is a slight

underestimation of the total work undertaken. There have been, for example, some mass media studies undertaken by Japanese researchers, a hardly surprising situation given that the core of social and behavioral disaster research in Japan has been conducted by mass communication specialists at the Institute of Journalism and Communication Research at the University of Tokyo (for an English language summary and annotation of Japanese studies done up to 1981, see Yamamoto and Quarantelli, 1984; for later work, see Hirose, 1986). Not always noted have been Swedish, Italian and French researchers who have done occasional studies of mass communication in crisis situations (e.g. Rosengren, Arvidson and Sturesson, 1975; Santoianni, 1983 and Lagadec, 1985). In addition, not all of the work by Scanlon and his colleagues at the School of Journalism at Carlton University in Canada has always been captured in the summaries and reviews of the mass media literature mentioned above, but this may partly be because that research focuses as much on interpersonal communication flow as on mass communication and looks at both consensus and conflict type collective stress situations (see, e.g., Scanlon, 1978; Scanlon and Frizzell, 1979; Scanlon and Alldred, 1982; Scanlon, Dixon and McClennan, 1982).

Nonetheless, even when all these and other more fugitive references are included, the total corpus of work on mass communication in disaster would seem to number less than fifty if the term research is used rather broadly and not more than three dozen if reference is to a systematic empirical study of some kind. Both in relative and absolute numbers, this is a low total. To provide some context, it can be observed that in one recent research effort alone, DRC studied more than 50 different emergent citizen groups all around the United States (Quarantelli, 1983).

Topically, the research tends to be uneven in focus and there are major unexplored questions and areas. For example, while Wilkins (1986)

with regard to the Bhopal chemical disaster and Morentz (1980) with respect to the Sahel drought looked at wire service reports, the international media of the wire services have been mostly ignored. Similarly, the operation of national systems in disasters have been generally unexamined, although Nimmo (1984) did study CBS, NBC and ABC telecasting about the Three Mile Island nuclear plant accident, and Rogers and Sood (1980) did examine NRC reporting about the Andrha Pradesh cyclone. The functioning of cable systems in disasters has been almost totally unexamined, and only a few studies of disaster-relevant aspects of magazine productions have been undertaken such as by Alexander (1980) on two Italian magazine coverage of the Florence flood and the content analysis of the treatment of Hurricane Alicia in Time and Newsweek by Wenger and Friedman (1985).

As might be anticipated, print media studies have been more common than studies on electronic media, at least if the DRC annotated bibliography can be taken seriously. On the other hand, there has been more research on individual radio and television stations than on individual newspapers. The figures from the bibliography which should be treated with considerable caution show that while there were 17 major studies of 42 newspapers and at least four magazines, there had been 4 studies of 67 radio stations and 5 studies of 52 television stations.

Substantively, what has been studied? Among the major works have been the following (besides the earlier mentioned research by Adams (1974), Williams (1956), and Moore (1958). Alexander (1980) did a content analysis of British and Italian print media coverage of the 1966 floods in northern Italy. Brooks (1970) as part of his Ph.D. dissertation looked at the emergency and disaster planning of 20 radio and 13 television stations in the United States. Interviews and content analyses were done by Sharon

Friedman (1981) of eight newspapers in the Three Mile Island area. A content analysis of the reporting by two California papers of the Alaskan, Imperial Valley, Algerian, and 1980 Italian earthquakes was done by Goltz (1984). Green (1983) has looked at how local newspapers helped to generate emergent citizen groups organized around disaster issues. In a DRC study, Hannigan (1976) did a content analysis of a newspaper in flooded Wilkes Barre.

Harless and Rarick (1974) interviewed radio personnel in six cities which had natural disasters. Three newspapers were content analyzed by Jensen (1972) in his study of a Southern California fire. From a DRC study, Kueneman and Wright (1975) reported on the disaster news policies of 72 radio and television stations in a dozen cities in the United States. Mazur (1984) has looked at the reporting about the Love Canal chemical disaster and the Three Mile Island nuclear plant accident. As already noted, Morentz (1980) did a content analysis of 750 wire service reports, special and mass media articles and press releases about the Sahel drought in 1974-1975. The comparative study by Nimmo (1984) of how the three American television networks reported the Three Mile Island nuclear plant accident is being repeated in a DRC study of how those networks initially reported the Chernobyl disaster. Rogers and Sood (1980) have done content analyses of the coverage by The New York Times, Le Monde, Time, NBC, and several other mass media outlets, about the Andrha Pradesh cyclone and the Sahel drought. The same authors (1981) have also looked at local and American media reporting of Hurricane David impacting the island of Dominica. Scanlon (1979) tested hypotheses about the adequacy and completness of media coverage of the 1978 Terrace floods in Canada. He also looked at Darwin Australia after Cyclone Tracy to see a situation where the local mass media outlets in a community were initially all made

non-functional (Scanlon, 1978). Sood (1981) analyzed interview and content data in a study of news gatekeeping in Hurricane David in Dominica, a blizzard in Seattle and a mudslide in Los Angeles.

How six major newspapers and selected radio and television broadcasts in Southern California reported earthquake news has been set forth by Turner (1980) and his colleagues (Nigg, 1982). In a partial parallel study, Hirose (1986) has examined mass media coverage in Japan of earthquake prediction. In another study, McKay (1984) has provided information about the reporting of three newspapers of a bushfire in Australia. Waxman (1973) examined the gatekeeping process by local radio stations in four flood stricken communities; in another DRC study, Weller (1979) did a content analysis of a local paper in the Alaskan earthquake, in a major snowstorm in Chicago, and in a tornado in Topeka. A test of the perpetuation of "disaster myths" was done by Wenger and Friedman (1985) in their content analysis of coverage of Hurricane Alicia by The Houston Post, the Washington Post, The New York Times, US Today, Newsweek and Time. Wilkins did a content analysis of the coverage of Bhopal by commercial news network broadcasts, the wire services, the East Coast "prestige press", and national news magazines (1985). In a very recent study, Beady and Bolin (1986) have reported on pioneering research on the role of the black media in disasters by looking at the contents and uses of newspapers, radio and television stations in Mobile, Alabama during Hurricane Frederic. Finally, DRC and collaborating Japanese colleagues are getting ready to publish the results of a study of the processing of news by the local mass media in two major disasters in both societies (the Japanese results have been partly set forth in Hiroi, Mikami and Miyata (1985).

Even from the above listing, it is clear that there has been an

acceleration of the empirical research on mass communications in disasters. In the DRC bibliography, there is one such reference to a pre-1960 study, 12 are to 1970-1979 publications and all others are from 1980 on. There was an upsurge of writings in the area as a result of the Three Mile Island nuclear plant accident (see, e.g., Krieghbaum, 1979; Stephens and Edison, 1980, 1982 as well as other sources cited earlier), and multiple studies are ongoing in Sweden, Italy, India and the United States as a result of the Bhopal and the Chernobyl disasters.

In addition to the empirical work, theoretical formulations about mass media operations are increasingly appearing, although there is nothing that could remotely be called a middle range theory of mass communications in disasters. Earlier codifiers of the disaster literature said almost nothing about the area. Dynes (1974), for example, in his comprehensive codification of research results does provide an introductory descriptive vignette of radio station operations especially during the Warner Robbins tornado, but otherwise does not even allude to mass communication organizations during disasters. Fritz (1961) in the earliest codification effort in the area pays even less attention to media operations, and Barton, in the most systematic theoretical overview of collective stress situations almost exclusively refers to how a few characteristics of disasters (e.g. the number of victims) will affect news media coverage (see 1970: especially pages 221-222 where there is the only discussion of mass communication in disasters as such). In contrast, Drabek (1986), in the latest major codification attempt, has discussions about mass communications and mass media operations in each of the eight substantive chapters of his book. A few years earlier, the National Academy of Sciences Committee on Disasters and the Mass Media (1980) produced a volume dealing solely with the general role of the mass media in disaster reporting. More

limited efforts at theoretical generalizations, for example, can be found in the treatment of the command post perspective of mass communicators set forth by Quarantelli (1981), in the examination of news media responsibility for disaster myths perpetuation as described by Goltz (1984), and in the assessment of factual accuracy of the media's coverage of community crises as analyzed by Scanlon, Tuukko and Morton (1978).

The increase in empirical research and theoretical formulations can be attributed to several factors. DRC, for example, as a matter of organizational research policy has deliberately chosen to continually open up new questions and issues in the disaster area. The bulk of the Japanese disaster researchers given their institutional base in journalism and mass media studies, and working closely and collaboratively with DRC personnel, were strongly inclined to look at mass communications in disasters. Also, disaster researchers including those from DRC who had undertaken studies of urban and ghetto civil disturbances in American society in the late 1960s and early 1970s had been impressed by the role of the mass media in the generation, development and continuation of such collective behavior (see, e.g. Dynes and Quarantelli, 1973; as well as specific studies of mass media organizations and activities as reported by Quarantelli, 1971 and Kueneman and Wright, 1975). This latter work directly led to the DRC collaborative research with the Japanese on local mass media operations in disasters, and to the current DRC study on the processing of news on community disasters by media organizations.

However, probably the most important factor in the acceleration of social science work on mass communications in disasters was the appointment of a committee in 1978 by the National Academy of Sciences to look at the role of the mass media in disasters. No particular event sparked the

establishment of the committee. But Charles Fritz, a pioneer disaster researcher who, in the 1970s was an Executive Secretary of different disaster related committees at the Academy, had long been interested in systematically examining mass communications in disasters, and saw the time as opportune to approach the National Science Foundation for a grant to make a state-of-the art assessment of the topic. Interestingly, the final report of the committee, despite two major rewritings, was never publically issued because it failed to meet the quality standards of the Academy's own reviewers. Intellectual differences between the researchers and the journalists on the committee may have contributed to the problem. What many outsiders have taken as the committee's report, that is, Disasters and the Mass Media (1980) is actually only the set of the proceedings of an earlier workshop that the committee had held, and is not a committee report as such and does not reflect later deliberations that took place over more than a year. Nonetheless, that volume has become known as a milestone in the history of the development of studies of mass communication in disasters, and is almost certainly the most cited reference in the litera ture on the topic.

Finally, the greater sophistication in disaster research and in mass communication research in recent years also probably has influenced the increased efforts at theoretical formulations about the mass media in disasters. This can be seen in a recent paper by Wenger (1985). Drawing both from the mass communication and the disaster research area, he sets forth a number of problematical aspects about mass media operations in disasters, noting both functional and dysfunctional features as well as within and outside the mass media perceptual evaluations of performance in disasters.

Some Significant Research Themes

Drabek in his recent massive effort to codify the results of sociological disaster research, sets forth a number of specific propositions and hypotheses about mass communication in disasters (1986: see, e.g., pp. 41-42, 122-123, 165-169, 222-223, 336-338). Rather than repeating those specifics we will try to indicate some major themes in the research literature. We have selected out those themes which we think are most significant either from a theoretical or practical point of view. No effort is made to depict systematically all the discernable themes, a task we have projected for a future publication.

However, as we have written earlier and elsewhere (Quarantelli, 1980), it is necessary to have some kind of framework in order to see what has been and has not been found. Different frameworks could be used for this purpose. For our exposition we set forth the matrix depicted below. Along one dimension, media systems and outlets can be distinguished. Along the other dimension or axis, distinctions can be made between communicators, contents, audiences, and consequences of mass communication. Thus, in graphic terms we have the following:

	Communicators	Contents	Audiences	Consequences
A. International systems (e.g. wire service)	1	2	3	4
B. National systems (e.g. BBC, NHK)	5	6	7	8
C. Local Community systems				
1. Print outlets	9	10	11	12
2. Radio outlets	13	14	15	16
3. Television outlets	17	18	19	20
4. Cable outlets	21	22	23	24
5. Film outlets	25	26	27	28
6. Other electronic media	29	30	31	32

If we look at the research findings and observations about mass communication in disasters, in this matrix, the overall general conclusion would have to be that our knowledge base is rather limited. Many of the cells are all but empty or would have in them only one or very few empirically based statements (e.g., cells 1-4, 21-32). If we seek to rise from the level of empirical generalizations to basic themes, we will find only a cell here and there about which general statements could reasonably be made (among the strongest candidates would be cells 9-11, 13-15, 17-19).

As to level A, there are practically no studies about the inter national media systems such as the major wire services or videotape distributors. This is not surprising because even outside of the disaster area, they have been little described or analyzed. To the extent there are any discernable themes in the disaster literature it is that general know ledge and perception of most disasters anywhere, especially in developing countries, is almost exclusively dependent on reporting by the Western World mass media. Slow moving disasters such as the recent Sahel drought and the Ethiopian famine were well developed before they were suddenly and dramatically announced to the rest of the world. Not only are there selective delays in reporting, but there are many natural disasters in Latin America, Asia and Africa which involve many casualties and fatalities and much property damage, but never get reported in press accounts that circulate around the world. On the other hand, the Bhopal, India, chemical poisoning, the Amareo, Columbia, volcanic eruption and the Mexican City earthquake did get considerable exposure in the international mass media. Also, disasters which cut across national boundaries such as the radiation fallout from the Chernobyl nuclear plant accident in the Soviet Union and the partial toxic chemical polluting of the Rhine River as the result of a fire incident in Switzerland, in one sense of the term, appear to have been

overreported. Actually, there and other thematic notions which might be advanced are almost all speculations; we have practically no empirically based studies at the international level (cells 1-4).

The situation is only slightly better at level B, that of national mass media systems. There are a handful of studies, especially of the contents (cell 6) of national mass communication systems. Looming over any other observation is that domestic disasters are major news stories in almost all mass communication systems, a not totally self explanatory point as illustrated by the fact that only in the last few years have such events become so in the Soviet Union, and still continue to be ignored or very underplayed in a few developing countries. Another major theme from both Japanese and American studies, is that different national television net works have different styles of reporting news about disaster emergencies. Also clear is that the content of national and local media coverage of disaster news is rather different. Another weaker theme is that audiences do not necessarily receive what they want. However, there are huge gaps in our knowledge. There are, for example, no parallel studies in the disaster area to the organizational research that was done on the factors and decisions which were made in the United States national television network news coverage of President Kennedy's assassination (Love, 1969).

Such knowledge as exists about mass communications in disasters is mostly about certain aspects of level c, that is, local community systems (but primarily about American, Canadian, and Japanese situations with a few insights about Australian, Swedish, Italian and French situations). Among some of the more significant themes in the research literature are that the different media differentially deviate from the normal processing of news stories at times of disasters (with radio stations changing the most,

newspapers the least, and television stations falling in the middle). Another theme is that there is not an across-the-board response in the different media outlets of a local mass communication system; a few go to an all disaster news focus and some devote much attention to the community emergency, but many either cease operation for the duration of the emergency or continue more-or-less normal time programming. In other words, the local system, especially the larger it is, responds selectively and not as a holistic entity. Another theme in the research literature is that the very largest and the very smallest local media outlets change the least at times of disasters.

There also seems to be very high consensus that the everyday gatekeeping process of the mass communication system is considerably altered, if not truncated, during the emergency time periods of disasters. The generally negative view of mass communication personnel held by emergency organization officials also comes through as a very strong theme. Most, but not all, of the research indicates that the criteria used to identify a "news" story at times of disasters do not differ that much from what is used on an everyday basis.

A strong theme as to disaster story content is that it does not reflect or mirror reality, but is a matter of social construction in the sense that Tuchman (1978) and Altheide (1976) argue is true of most news. In fact, many of the researchers working in the area appear to believe that the definitional process of the mass media considerably determines what comes to be or not to be defined as a potential or actual disaster. It is also strongly suggested that what is reported about disasters by the mass media perpetuates, as said earlier, the "myths" of disaster behavior. Another developing theme, perhaps not totally consistent with the one just mentioned, is that stories about disasters are not as factually inaccurate

as once believed. Another concurrent and widespread theme is that news coverage of disaster events and/or victims tend to focus on the more extreme or worse cases. There is also a general view among some researchers that reporting about technological disasters is less well handled than that about natural disaster agents, although other students of disasters would disagree.

On the other hand, there are no clear themes as to the visual imagery used by television disaster reporting, as has been developed, for example, about the depiction of violence, war scenes, and pornography and sexual behavior, as well as general news reporting. In fact, not only do we not know if disasters, for instance, are depicted from a bird's eye or worm's eye point of view (Tuchman, 1978), but there does not appear to be even one empirical study of the full content of a local radio station reporting of a major disaster. The use of mass media to deliver personal messages at emergency times, while observed both in Japan and the United States, has not at all been looked at either in terms of functions or content.

Most of the themes about audiences at times of disasters rest on relatively weak empirical studies. A prevalent idea is that no matter how extensive the mass media system, it's disaster relevant information will not reach some segments of the population. Parallel to what has been found about normal day operations, distrust of disaster reports by the media seems to exist among minority groups in the society. Similarly, mass communication content at times of disasters gets processed into existing interpersonal communication links and chains. However, it is not surprising that the cells in our matrix covering "consequences" are devoid of much empirical data and do not allow for many generalizations given that we have very little knowledge of who listens or watches what, with whom,

where and for what purposes during the emergency time periods of disasters. In fact, although the impression is widespread, we really have little hard data that audiences have greater exposure to and use mass communication more during disasters than normal times. It would be very helpful if profiles were developed of mass media audiences during major community crises.

There are studies here and there about the consequences of mass media reporting or information (e.g. in this volume the article by Nigg), but the work is less than might be expected and it is difficult to discern well empirically grounded general themes (apart from some having to do with the warning process). Thus, Hartsough and Mileti recently commented that:

> There is a great deal of opinion, usually in the form of "conventional wisdom" about the topic of psychological disaster impacts and the mass media, but very little systematic data are actually available...In fact, there seems to be a paucity of scientific studies on the effects of mass media...on behavior in general...To our knowledge, the only study on the topic of postdisaster mass media psychological effects is reported by Murphy (1985:282-283).

In line with this, frequent assertions are made that the well known convergence phenomena in disasters can partly be attributed to mass communication reports. This may be true, but apart from the fact that convergence itself has not been very well documented in systematic empirical studies, there does not appear to be any piece of research directly demonstrating a link between mass communication and convergence behavior. There are also a few theoretical formulations which, for example, hypothesize that the bigger and more sudden a disaster, the greater the media coverage, and that this will lead to more attention and conversations about the disaster among the victims (Barton, 1970:222). This may be, but it would be difficult to find any systematic research that has actually gathered data on such linkages. Apart from a general

statement that some media communicators provide some media content to some media audiences with some media effects, we are lacking specific themes about the consequences of mass communications in disasters (but see the educated speculations in Kreps, 1980; Larson, 1980).

Future Research Agenda

There are three clearly indicated research paths for the future. The first, and really more minor one, is to build on what we now think we know, or at least strongly suspect, about mass communications in disasters. Thus,

there ought to be studies attempting to confirm, for example, the truncated gatekeeping which seems to occur at emergency times, the differential media deviation from normal everyday operations, the influence of organizational size in mass media changes at times of disasters, the differences in local community and national level reporting, and all the other findings and themes we discussed earlier. Also, sometimes observations have been inconsistent with one another; for example, Gans (1980) advances a number of plausiable, but not altogether consistent impressions about the number of people who might be affected by a disaster, and the probability of that event being reported by the mass media he studied. The proposed effort would be to establish the universalities and limitations about what has already been found. Also, while deemphasized in our discussion, we need to know much more about the complex intermixture of mass media communications and interpersonal communications in the receiving and using of warning messages (as partly discussed in the Walters and Ledingham chapter in this volume, also Scanlon (1976).

More important would be the initiation of research on the many questions and issues which have been barely addressed, if at all. In terms

of our matrix, this would include almost everything except cells 6, 9-10, 13-14 and 17-18. In many instances we do not even have descriptive accounts or case studies of those aspects of mass communication in disasters. In particular, we should have comparative research at the national system level (cells 5-8), studies which lend themselves well to a cross-societal approach. Put another way, unless we have a number of studies using a sophisticated approach (e.g. Hannigan and Wigert, 1973) from which themes can be derived for every cell in the matrix, we cannot even pretend to claim to have an understanding of mass media operations in disasters.

Unfortunately, even if we had such knowledge now, we would still be faced with a rather large future research agenda. This is because both the nature of disasters and the nature of mass communication are rapidly changing and whatever our studies would tell us now will not give a good picture of both the near and distant future. Space limitations preclude any extended discussion, but there needs to be recognition by researchers in the area that: (1) not only will there be quantitatively more disasters, but also the quality of disasters are changing in some respect, and (2) the rapid changes and development of new electronic technologies in mass media are basically altering the whole phenomena of mass communications in disasters.

There will be more disasters in the future because of continuing population growth, greater density of populations in high risk areas, more property and material things to be impacted and affected, and greater interdependence of societal operations. For example, the very same size earthquakes as those of 1811-1812 around New Madrid, Missouri which had few social consequences at those times, occurring today could occasion thousands of casualties and immense economic damages in Memphis and St.

Louis, as well as at least temporary disruption of the functioning of American society. Even with the best of mitigation measures, there will be more and worse disasters in the future, assessed even only in quantitative terms.

But it is the qualitative changes and consequences that are coming to the fore that are even more important. We now have all kinds of possible technological accidents of a chemical, biological, or nuclear nature which were all but nonexistent a few decades ago. They are creating the possibilities of disasters that can have major consequences in place and time distant from the original sources. The potential in the Three Mile Island nuclear plant accident and the reality in the Chernobyl nuclear plant accident in the Soviet Union was that populations far away in time and place could be endangered. The Rhine River toxic spill affected several nations, and it is possible to visualize a biogenetic engineering mistake threatening the ecological life cycle of whole regions of the world. In many of these newer kinds of technologically rooted disasters, the threat is often not easily seen, the danger can become very diffuse, and there could be severe consequences for literally unborn generations. Therefore, to the quantitative we have to add qualitative changes in the disasters of the future compared with those of the past. (We leave aside in our discussion also that there are both new threats as well as new vulnerabilities as might be illustrated by reference to the spread of AIDs and the extreme dependence of highly developed societies such as the United States on the continual functioning of interrelated computers linking vital sectors of the social system). Research on mass communication, to be realistic, will have to assume that the disasters which will occur will generally be both quantitatively and qualitatively different from those of

the present (see e.g. the analysis of newspaper stories on major oil spills in the oceans and hazardous materials as examined by Molotch and Lester, 1974, 1975 and Lagadec, 1985).

These are the disasters of the future which will have to be dealt with by mass media systems. But mass communication itself is in a state of extreme flux and change. What are the implications for disaster preparations and responses, for example of the bringing in of distant stations via cable to a local community? We now have cases of audiences in one section of the United States receiving tornado or flood warnings meant for the area around the original transmitting station in another section of the country, and conversely not receiving their own local community warnings because they are tuned to a far distant station. Some anecdotal examples raise even more interesting questions. In one case recently studied in the field by DRC, the on-the-scene reporting of a hazardous toxic spill incident by the local television station was utilized by the incident fire commander to make field decisions; also at the very same time that official was bieing interviewed by a reporter on what was happening. In still another disaster, guests trapped in their rooms in a high-rise hotel fire, were informed of the progress of the fire and instructed on what they should do by the on-the-scene telecasting of the incident by mobile vans of local television stations. Many of the newer technologies from cellular telephones to direct broadcast satellites to video cassette recorders intervene in new ways in transmissions from the initial communicator to recipients of the information. Clearly we have phenomena here rather different from what is usually assumed in the traditional view of mass media use in disasters.

Furthermore, as written in a recent volume on the "new media":

> New ways of encoding, transmitting, distributing, and displaying information most overtly in the form of new communication technologies. For example, digital, as compared to analog, encoding dramatically increases the speed, accuracy, and volume of information that can be exchanged. It efficiently integrates voice, data, and video. It facilitates signal processing and coding techniques. It offers greater privacy and security. But more important, humans are beginning to communicate in new ways as well. New media--from videotex to personal computer networks, from communication satel lites to fiber optics--are blurring distinctions that seemed so clear and useful a generation ago (Rice et al, 1984:34).

The importance of much of this is that, of course, it adds an interactive element absent from the one way mass media of the past and much of the present. For example, what will the increasing addition of computers and interactive media technologies do to the operation of local emergency management agencies as they attempt to mobilize resources, exchange information, and coordinate activities in disasters? The new technologies will make a difference, but we have even few suspicions at the moment how they will do so and in what ways. Future research needs to be done on such matters and to get away from the past simple minded notions of treating mass communication in disasters as primarily a matter of studying what warning messages get to potential audiences. There is a tendency for both disaster planners and disaster researchers to look at past disasters, but if they are to improve their performances, they would be better off in projecting to likely scenarios of the future, where both the nature of disasters and of the mass communications involved will be generally different from the past and the present.

Also, in this chapter we have explicitly focused on communications in disasters, what we earlier called consensus type community emergencies. However, it would be definitely worthwhile to examine the similarities and differences between mass media reportage of the full range of crises

affecting public life, including conflict ones which involve everything from wars to civil disturbances to terrorist attacks. A slight start has also been made in this direction of comparative description and analysis by those, for example, who argue a command post perspective is likely to dominate all local reporting of any emergency (e.g. Quarantelli, 1981), to those who note a differential and selective reporting of riots in American society over news coverage of disasters (Kueneman and Wright, 1975).

Finally, we will conclude by noting that we think the fields of disaster research and study, and of mass communication can be mutually beneficial. Instead of approaching the problems as if there were not a very extensive body of general mass communication literature providing theoretical notions, conceptual distinctions and empirical generalizations (an odd position taken in e.g. Lindy and Lindy, 1985), those in the disaster area can use what already exists to guide their work. In turn, students of mass communication can learn from disaster research some of the limits and qualifications of their views (e.g. Wenger 1985).

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