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CRITERIA WHICH COULD BE USED IN  
ASSESSING DISASTER PREPAREDNESS  
PLANNING AND MANAGING

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To assess, in any intelligent way, the preparedness planning for disasters requires asking the question: what is good planning? It would be possible to advance some ideal version of what should be, but we prefer to root our answers to the questions in the empirical research undertaken by social and behavioral scientists in the last three decades.<sup>1</sup> Part of this research is particularly strong on the community and organizational aspects of disaster planning.<sup>2</sup> The research cuts across natural and technological disaster agents, but is somewhat stronger on studies done in developed countries (i.e., industrialized and urbanized societies) than in developing countries. There is, therefore, an issue on the question of how much the research findings can be extrapolated to all kinds of societies, so we will address the matter towards the end of this paper.

### Preparedness Planning

Good community disaster preparedness planning is that which meets the following ten criteria. That is, from an assessment or evaluative point of view, the planning should have these characteristics. Other features probably contribute to good planning also, but the studies undertaken by disaster researchers in the social and behavioral sciences in the last 35 years suggest that these ten are necessary, if not sufficient, for the best planning for disasters.

Good community disaster planning should:

1. Recognize that disasters are qualitatively different from minor emergencies.

On a daily basis, almost all community organizations learn to deal with minor emergencies. For some, as for example the public utilities, fire and police departments, hospitals, railroads and airlines, and parts of the chemical and nuclear industry, such responses to accidents are a normal part of their everyday activities. They have standard operating procedures (SOPs) to manage such situations. Often these organizations have highly skilled personnel who have become quite adept at dealing with minor crises.

Unfortunately, to paraphrase some police officers, this often leads to the belief that a disaster is merely a very large scale traffic accident. In a nationwide study of the chemical industry, we found that many officials felt that preparedness planning for acute toxic releases, chemical explosions, and other such mishaps was no more than an extension of everyday corporate health and safety measures.<sup>3</sup> In another study of the delivery of emergency medical services (EMS) in large mass casualty situations, interviews with EMS personnel showed that it was their belief that special preparedness

planning was unnecessary because the provision of EMS in disasters was but an extension of EMS in daily operations, the only difference being one of degree.<sup>4</sup>

These and similar views, often strongly voiced, are simply wrong. In a disaster there is a difference of kind, not just degree, compared to what goes on in an accident or minor emergency. A disaster involves not just more, but something which is qualitatively different. This has to be considered when planning for disasters, training for disasters, operating under disastrous conditions, and evaluating group or organizational activity during such occasions. An accident cannot be perceived as a little disaster, nor can a disaster be viewed as a big accident!

This is not merely a distinction that has come out of social science research. Some organizations and communities also recognize that such differences exist. For example, public utility companies in the United States carefully distinguish between: (1) accidents or emergencies (e.g., everyday localized breakdowns which can be handled by local resources and personnel); and, (2) disasters and catastrophes (e.g., statistically rarer events which require external aid because local resources cannot cope with the acute demands). Many public utility companies typically recognize a "qualitative difference" between emergencies and disasters. Anyone having the responsibility of planning for or managing the response to such occasions should also recognize and accept the fact that such differences do exist.

We give the following five examples to illustrate major qualitative differences between disasters and everyday emergencies.

(A.) During community disasters, organizations are forced into more and different kinds of interactions with other groups. The greater the number of contacts among organizations the more new relationships with other groups or organizations will be established. For example, businesses may be required to interact with social service agencies for the first time during major crisis periods. In addition, local private groups may be required to coordinate their activities with remote and/or unfamiliar governmental bureaucracies.

Conversely, during periods of normalcy new relationships between organizations often develop very slowly. There is seldom a need to suddenly and concurrently establish linkages with multiple groups having local, state, and regional, and/or national components. During a disaster, however, there is little time available to adjust, for example, to the blurring of interorganizational boundaries, or the informal sharing or pooling of personnel, tasks, and equipment--common features of major disasters, but not minor emergencies. Complicating such situations of greater interdependence is the number of new groups with varying functions,

capabilities and expectations that will be involved. Even a relatively moderate size disaster will force dozens of unfamiliar local and extra-local organizations to work together on unfamiliar or new tasks that are a part of the community response network. In short, disasters call for more and different organizational relationships.

(B.) During disasters, organizations will lose some of their autonomy (e.g., direct control over their own functioning). In most societies, when a community's ability to function normally is seriously threatened, security and protection from life-threatening situations usually becomes the responsibility of civil authorities. The mayor, the police chief, the head of the local disaster agency, or some other official, can declare a "state of disaster" and initiate measures to control disaster-related activities in a given locality. The military sometimes takes over disaster operations. However, although there are many stories to the contrary, it should be noted that martial law or rule has "never" been declared in American disasters and is extremely unlikely to ever be imposed. Civil control over the military is maintained even during disasters, in almost all developed countries. This is not true elsewhere in the world, but in all cases the normal, everyday autonomy of organizations is curtailed everywhere in major disasters.

As a direct result of the loss of organizational autonomy, daily activities which are taken for granted become problematical during a disaster. The freedom of mobility within the community, as for example, entering or leaving one's property, may be restricted by police barricades or an evacuation order. During disasters involving dangerous chemicals, site control in the United States may actually be vested in an outside agency such as a state or regional hazardous materials response team, or a Federal agency such as the Environmental Protection Agency. Additionally, the national or international corporations will often intervene during disasters and assume responsibilities, make decisions, or set policies which normally would be the sole prerogative of the local plant, office, or operation. In short, organizations can have their autonomy pre-empted in disasters in a way which will not occur during minor emergencies.

(C.) Performance standards for organizations may change drastically during disasters. What is appropriate during periods of normalcy or minor emergencies often becomes less relevant during the managing of a major community crisis.

For example, SOPs for fire service professionals require a swift response to emergencies involving structural fires. In the United States these procedures are followed by both public or private fire service organizations on a daily basis. However, firefighters should respond quite differently to fire-related emergencies involving unidentified chemical substances or materials whose

properties are not thoroughly understood. Often, delaying the response until the situation is clarified is what is called for in the disaster planning. By using daily performance criteria as a basis for determining the type of response required to control chemical incidents, some fire departments can unintentionally turn minor chemical incidents into major chemical disasters. Similarly, EMS professionals have adopted SOPs that emphasize quick response time and swift delivery of patients to hospitals. However, when handling large numbers of casualties, such routine operations are, or at least should be, pre-empted by special procedures. For example, there should be the triaging of victims and the judicious transportation of injured persons to area hospitals to avoid overcrowding of emergency rooms and other risks associated with delays in emergency medical care due to overloading of hospital staff and substandard medical care.

Thus, performance criteria used during daily routine operations often yield to the adoption of disaster performance criteria during major crisis occasions. As is the case when fire professionals are faced with crisis situations under conditions of uncertainty, EMS systems that use daily performance criteria as a basis for determining the actions that should be taken during major crises have resulted in inadequate and inappropriate responses to mass casualty incidents. Under the pressure of increased disaster-related demands, emphasis on speed of response and "snatch and run" procedures are not appropriate response managing principles. In short, disasters call for different types of organizational performance than do minor emergencies.

(D.) A minor emergency is often managed by an organization (public or private) having responsibility or authority to effectuate an emergency response to deal with the situation, or is managed by local organizations such as the police and/or fire department. Under emergency conditions, the crossing of boundaries among public and private sector organizations is seldom required. However, during disasters in the United States a more coordinated relationship among public and private sector organizations is required. Thus, a disaster requires the mobilization of public community resources and often requires the preempting of some private rights by public rights. For example, unrestricted entry onto private property, which is normally very limited on a daily basis, is permitted under disastrous conditions. Also, in disasters the destruction of selected private property for the good of the larger community (e.g. the construction of levees) is often permissible without negative consequences.

Although legally questionable in the United States, the requisitioning of private goods and/or equipment for the public good is an acceptable practice during major disasters. Such actions are not necessarily restricted to the public requisitioning of private goods. It is to be noted that essential personnel and

resources from the private sector are often freely offered for the public good at the height of a disaster. Under disastrous conditions, there may be, in fact, public expectations and demands for goods and services from the private sector which would not otherwise occur during periods of normalcy. Thus, boundaries between public and private goods and services become blurred during disasters.

It might be argued that some societies do not have much of a private sector where there is individual as opposed to collective ownership. Actually, in all human groupings there is some kind of family, if not personal, ownership of things. More important, even when the state, in principle, owns practically everything, different governmental subunits have claims of "ownership" (i.e., control) of different properties. So at times of disasters, even in these societies, there is likely to be a melding and blurring of who "owns" what.

(E.) In the typical everyday community emergency, the responding agencies are not impacted directly or indirectly. Their personnel, equipment, facilities, and resources are not damaged, reduced, made inoperable, or destroyed. Usually the supportive infrastructure of public utilities and works will remain functioning, and there will be no impairment of physical movement. In a sense, the helping groups moving to deal with the accident or emergency are dealing with an unfortunate event that has happened to someone else.

Whereas in a community disaster the local responding organizations themselves will frequently be part of what is impacted, directly or indirectly. They may lose some of their work force, buildings, supplies and resources. Even if they have no direct losses, they will often have difficulty functioning because of total or partial loss of the electric power or the telephone system, and/or the blocking of roads because of debris and wreckage. As such, the community groups involved are also victimized, more or less, by the disaster impact.

Good community disaster preparedness has to take this into account. In fact, there could be relatively good preparedness for going in as an "outsider" to a localized emergency, and poor or no preparedness for the organization itself being impacted. In American society, research has found this often to be true of hospitals and mass media radio on television stations. They may be relatively prepared as "outsiders" to respond to an emergency, but have few preparations to help in responding to direct or indirect impact. This is often a major difference between community disasters and minor emergencies.

To summarize, during disasters, organizations are often faced with a new set of circumstances with which they must cope. As discussed, organizations may have to: (1) quickly relate to more and different groups and other organizations; (2) adjust to losing

a part of their autonomy; (3) apply different performance standards; (4) operate within a closer public and private sector interface, and (5) respond to being directly impacted themselves.

Therefore, disaster preparedness planning which does not recognize the qualitative as well as quantitative differences between emergencies and disasters cannot be good. It is crucial that disaster planners recognize that they have to think about disasters in a different way from everyday accidents, disruptions and minor emergencies. To paraphrase Hemingway, just as the rich are different from the poor in their behaviors, disasters are different in major ways from everyday emergencies.

## 2. Be generic rather than agent specific.

Most disaster planning is agent specific rather than being primarily generic or general. However, research shows good planning takes the latter rather than the former position. Because something is very widely believed is no indication of the correctness of a particular point of view.

There is a tendency to organize separate planning around specific disaster agents. Thus, one finds in many places around the world that often there is separate planning for chemical disasters, separate planning for nuclear plants, separate planning for flood threats, and so on. The planning is separate, with usually separate organizations for preparing and responding to the separately viewed threats or impacts.

This separate kind of agent-specific planning might seem natural and obvious. Are not chemical threats different from earthquakes? Are not floods different from massive fires in high rise buildings? The answer, of course, is yes, but yes only up to a certain point.

For very many of the human and organizational problems in preparing for and managing the response to disasters, the specific kind of disaster agent does not matter. For example, the same kind of warning messages and the same kind of warning system is needed and effective in getting people to evacuate, irrespective of the specific disaster agent involved. It does not matter if the agent is a cyclone, a chemical spill, a tsunami or "tidal wave," or radioactive fallout--what will motivate people to give credence to warning messages, what kinds of warning messages will be effective, what will limit the acceptance of a warning, and so on will be the same in all cases. These human aspects of a disaster do not depend on the specific type of disaster agent involved.

Similarly, if there is need for organized search and rescue or the large scale delivery of emergency medical services after a disaster impact, the more important organizational aspects that have to be dealt with do not depend on the specific disaster agent involved.

Our research, for example, has consistently shown that there is a strong tendency for the less seriously injured to be treated first, that there is a strong likelihood that not all the available hospital and medical facilities will be used. Likewise, studies have shown that ordinary citizen victims will undertake most of the initial search and rescue, that the handling of dead bodies, especially if they are dismembered or disfigured, is very psychologically disturbing and has mental health consequences for those who engage in such activities. The specific disaster agent involved does not matter very much.

Disasters do differ from one another. But it is not the difference between a chemical disaster and an earthquake disaster, for instance, which is most crucial. In our view the differences that are important have to do with such matters as predictability, controllability, speed of onset, length of possible forewarning, duration, scope of impact, destructive potential, and so on. It is important for planning and response if there is a possible warning time. It matters much less if the agent involved is a natural one or is a technological one. Certain physically "dissimilar" disaster agents can have similar consequences. Conversely, certain physically "similar" disaster agents can have rather dissimilar effects for the purposes of disaster planning.

Given all this, it is not surprising that DRC studies, as well as the research of others, have consistently shown that disaster planning should primarily be, first of all, generic or general and that there should be only one major organization responsible for coordinating the overall planning for all kinds of disasters. There should not be totally separate preparedness planning by different groups for different agent specific disasters. Of course, within the overall planning, there can and might be special provisions for the particular aspects of certain specific kinds of disaster agents, but primary emphasis must be on generic or general disaster planning.

We should also note that general disaster planning in contrast to specific agent planning is:

- (1) cost-efficient in terms of expenditure of time, effort, money, and resources;
- (2) a politically better strategy because it is possible to mobilize a wide range of groups interested in disaster preparation and response--in effect create a more powerful constituency for disaster planning;
- (3) a major way of avoiding duplication, conflict, overlaps and gaps in actual responses; and
- (4) a way of increasing efficiency as well as effectiveness in any organized response to a disaster.



### 3. Be integrated rather than fragmented.

Another weakness in disaster preparedness planning is that too often it fails to take an overall community perspective on the process. It is of no use for an organization to plan well for itself or a handful of other organizations when potential or actual disasters precipitate a community mass assault on the problem. Studies by ourselves and other researchers have, in fact, consistently reported that local emergency personnel are often surprised at the number and diversity of responders both from within and outside the community which converge on the disaster site--the larger the disaster, the more the converging groups and their variety.

This organizational mass assault would create problems even if planned for, but, unfortunately, there tends to be fragmentation of local disaster preparedness planning. In the United States, at least there frequently are three different clusters of planners who sometimes have little contact with one another (In other societies, the clusterings may differ in number and composition but there are usually unintegrated clusters of groups involved in disaster planning).

One of the clusters is around what has been called the social control sector. This planning is undertaken by representatives of local government and usually involves emergency management agencies (LEMAs), police, fire, public safety and sometimes public works organizations. Another planning cluster tends to be around what might be called the medical and social service sectors. Hospitals, emergency medical groups, and a variety of social service agencies often engage in planning for services for victims. (In recent years the planning for emergency medical services, if it is linked to fire departments, sometimes pulls the two clusters together, but more often than not, there is a planning gap between the two.) Our own field research keeps finding localities where there is separate planning for evacuation and for on-site command posts, for instance. To a considerable extent, the separate planning reflects everyday conflicts and disputes over organizational territory and domain between police-fire departments, fire departments-hospitals, local emergency management agencies-police departments, etc. We have no doubt such competition and conflict among local emergency groups exists in communities everywhere; if so it will often be reflected in separate preparedness planning.

In recent years in the United States, increasingly, disaster planning is also being undertaken by institutions and organizations from the private sector--the nuclear power and the chemical industries being obvious cases. Too often their planning remains separate from that of other community groups.

Good preparedness planning requires an integrated community effort.

All relevant sectors of the community not only need to be involved but their various actions need to be tied to one another. Disasters, after all, do not impact only one sector or segment of a community; in fact a disaster by most definitions is something which disrupts community life across-the-board. Therefore, planning also has to be across-the-board from an organizational point of view.

#### 4. Be based upon an emergent resource coordination and not a command and control model.

There is a strong tendency to assume that disaster planning can borrow much from military situations and settings. Thus, it is often visualized that the best model for disaster organizational preparedness and managing is what has been called a command-and-control model. This is the notion taken from the military area that a top down, rigidly controlled, and highly structured social organization model ought to be developed for disaster purposes.<sup>6</sup>

Let us leave aside the fact that the command and control model is more fiction than fact even in the military area. It is not the way armies, navies or air forces actually operate, especially in conflict situations; stereotypes and group mythologies to the contrary. Direct studies in the disaster area not only have shown that command and control models seldom are organizationally viable, but more important, would be poor models for disaster planning even if they could be implemented in the real world. (The major exception would be if the military was the only viable and nationwide social institution in the society).

In general, the command and control model assumes that disasters create a tremendous discontinuity with everyday life which lowers the effectiveness of individual behavior and reduces the capacities of the social organizations involved. Given this, planning is centered on the development of mechanisms to control supposedly widespread maladaptive individual behavior and on the creation of ad hoc structures to replace the supposedly disrupted and non-functioning social organizations in the disaster area. Planning efforts are thus directed at the creation of strong authority to overcome the supposedly social disintegrating effects created by the disaster agent.

In general, planning in this mistaken model is oriented towards creating new norms for individuals undertaking emergency behaviors. For example, spontaneous behavior is frequently seen as inappropriate or as manifesting irrational actions on the part of panicking individuals; but real evacuation is something to be ordered by authorities who are the only ones capable of making

rational decisions for others. In this model, plans often make extensive provisions for mass shelters for evacuees on the assumption that individuals and other units, such as families, will be incapable of coping or remedying such crises. Thus, it is assumed new structures are needed to replace the old ones which will have become demoralized or ineffective. This kind of communication and information system is visualized as best able to evaluate information and create official and thus correct messages which than can be communicated through formal and official channels. For the collective good, it is thought decision making has to be centralized with the decisions communicated to induce the compliance of the affected populations.

This kind of planning effort, partly consciously and partly unconsciously, is oriented around creating an artificial and authoritarian structure to replace natural and spontaneous behavior and structure. The natural and spontaneous response is viewed as incapable of being effective in the stress conditions created by a disaster event. In effect, formal plans are created which are thought to be more rational than any informal response, and to which disaster victims and impacted groups are to adjust.

However, the research evidence points in a different direction. We will later indicate that in disasters there is less discontinuity with everyday life than is frequently supposed. Also, rather than exhibiting irrational and abnormal behavior, disaster victims maintain, as much as possible, their traditional activities and their usual occupational and family responsibilities. Most organizations in disasters tend to operate as well as they do on an everyday basis--it is extremely rare for them to become non-functional even in the worst of disasters.

Thus, in good disaster planning, rather than attempting to centralize authority, it is more appropriate to develop an emergent resource coordination model. Disasters have implications for many different segments of social life and the community, each with their own pre-existing patterns of authority and each with the necessity for simultaneous action and autonomous decision-making. This makes it impossible to create a centralized authority system. The centralization of authority is usually predicated on the image of disintegration of social life. The evidence of viability of behavior and the adaptability of traditional structures suggest that the exercise of authority is more of a problem in the minds of preparedness planners than a problem of life under disaster conditions.

##### 5. Focus on general principles and not specific details.

There is a tendency, whether in developing written plans, conducting exercises, thinking about possible hazards, etc., to elaborate considerably. In fact, there is a strong temptation to

go into very specific details. This is the wrong way to proceed and there are several reasons why this is a poor path to follow. It is impossible to plan for everything. Situations are constantly changing and specifics quickly get outdated. Too many details leave the impression that everything is of equal importance when that is clearly not the case.

Complex and detailed planning is generally forbidding to most potential users and will end up being ignored. While disaster planning cannot totally ignore specifics, particularly at the organizational level, good preparedness planning should be based upon the use of general principles from which simple rather than complex points can be developed. But even apart from written plans, all disaster planning should aim at general rather than specific details. For example, within the context of previous discussions concerning problems surrounding organizational coordination, good preparedness planning will consider the fact that during crisis occasions organizations with response responsibilities will be working with new and more groups (both existing and emergent) and that the new and different kinds of relationships imposed by the crisis situation are unlike those that are required during periods of normalcy. However, during the planning process, no attempt should be made to specify all of the possibilities and intricacies associated with the scope or degree of interorganizational contacts which might conceivably develop.

Finally, good planning requires accepting the belief that there are principles of good planning. Few would explicitly deny this. However, implicitly, even some emergency management organization officials think that every situation is unique and that, in a real sense, general preparedness planning is impossible. That is not a valid view. Every human being is somewhat biologically different from other humans. Nonetheless, the medical world, for example, has little difficulty in identifying general symptoms of illness and specifying uniform treatment procedures. Similarly, each disaster is different, but a general preparedness approach is possible.

#### 6. Recognize that far more is involved than producing a document.

A further impediment to developing good disaster planning involves the adoption of too narrow a view of what preparedness planning involves. To many, the writing of a disaster plan is the essence of planning. This is not only incorrect, but actually can be a very dysfunctional position to take. Officials sometimes think they are prepared merely because they have a formal written plan. Even worse, focus on a plan often leads organizations to ignore other critical activities that are absolutely necessary for developing good community disaster planning.

Disaster preparedness is not synonymous with the formulation of written disaster plans. A more useful perspective is to envision

planning as "a process" rather than to perceive of it as merely the production of a tangible product. Viewed this way, preparedness planning involves all of those activities, practices, interactions, relationships, and so forth, which over the short term or long run are intended to improve the response pattern at times of disaster impact.

As viewed within the aforementioned perspective, disaster preparedness planning includes:

- a. Convening meetings for the purpose of sharing information;
- b. Holding disaster drills, rehearsals and simulations;
- c. Developing techniques for training, knowledge transfer and assessments;
- d. Formulating memoranda of understanding and mutual aid agreements;
- e. Educating the public and others involved in the planning process;
- f. Obtaining, positioning and maintaining relevant material resources;
- g. Undertaking public educational activities;
- h. Establishing informal linkages between involved groups;
- i. Thinking and communicating information about future dangers and hazards;
- j. Drawing up organizational disaster plans and integrating them with overall community mass emergency plans; and,
- k. Continually updating obsolete materials/strategies.

Thus, while formal disaster plans are an element in disaster preparedness, they are best viewed as only one of numerous activities which should be undertaken to improve the efficiency and effectiveness of a community disaster response.

The creation of human resources or the reduction of organizational problems cannot be achieved just by writing a plan. For example, converting disaster victims into potential helping resources must involve public education, training techniques, and so forth. Similarly, reducing the response-generated problems of organizations requires having meetings, holding drills, securing agreements on memoranda of understanding and taking other necessary actions as required. A range of activities have to be undertaken if the desirable preparedness objectives are to be achieved.

7. Strive to evoke appropriate actions by anticipating problems and possible solutions.

While in some instances planning can be oriented to prevention, most planning has to be directed toward altering or modifying what will happen. Planning should indicate the range of problems which will occur and a range of possible solutions to them. Thus, good planning attempts to reduce uncertainties, but it is unwise to assume that everything can be anticipated or that all of the

unknowns can be accurately predicted ahead of time.

The contingencies are too many to anticipate all possibilities; however, good planning can indicate some of the major parameters of the situation. For example, we can incorporate into the planning process the perspective that disaster victims will take the initiative and will not be passive, or that helping organizations will have difficulty coordinating new tasks. Such an approach reduces the unknowns which have to be considered. It not only narrows the range of problems which need to be anticipated, but also lessens the number of alternative or optional solutions which have to be examined. If disaster victims do not markedly engage in antisocial behavior, for instance, there is little need to plan for a variety of security measures or the mobilization of many law enforcing agencies. On the other hand, if there is always a degree of tension between local and extra-local organizations, whether in the public or private sector, this should be recognized and addressed in preparedness planning.

Community disaster preparedness planning should strive to evoke appropriate actions. At times, planning appears primarily as a mechanism for speeding up responses to crisis situations. It is true that good planning may allow a quicker response to certain disaster problems; however, quickness of response should be a by-product rather than a major objective. Appropriateness of response rather than speed of response is far more crucial. Accordingly, it is much more important to obtain valid information about what is happening than it is to take immediate actions. Reacting to the immediate situation may seem the most natural and humane thing to do, but it is rarely the most efficient and effective response strategy. The immediate situation is rarely that important in terms of both short-run and long-run consequences. Planning, in fact, should help to discourage impulsive reactions and to encourage the adoption of appropriate actions necessary to meet the challenges of the immediate situation. For example, planning should be directed at slowing down the convergence of helping organizations at a disaster site, thus reducing coordination problems.

#### 8. Be based on what is likely to happen.

Some planners seem more oriented toward conceptualizing the most ideal response-type situation imaginable rather than focusing on the realistic possibilities which will be present. This is unfortunate. It is far better to plan on the basis of how people and groups usually react during normal and emergency situations than to expect them to change their behavior drastically during disasters. In short, planners must adjust their planning to include an understanding of people and their behavior under stress, rather than expect people to change their behavior in order to conform with the planning.

The principle is equally applicable to organizations. The great majority should not be expected to act and/or react much differently during a disaster than they would during periods of normalcy. For example, it is useless to assume that concerns over organizational domains or territories which prevail during normal periods will suddenly disappear during disaster periods. Disaster planning must be adaptable enough to include expected organizational behaviors, rather than try to force organizations to drastically alter their activities in order to meet the requirements of planning.

As such, good disaster preparedness planning must include education and training as a key component. There is not only the need to teach one's own group on what to expect, but the necessity of learning how others are likely to respond. A frequent error in organizational disaster planning is that planners forget that they will have to orient, train or educate other groups relative to their respective roles under disastrous circumstances. Knowing the role/responsibilities of a few key officials and planners, or the organization, is not enough. The counterpart roles of others must be clear to facilitate coordination and an integrated community disaster response.

9. Rest on valid knowledge and not myths and misconceptions.

Preparedness planning can be no better than the assumptions made about individual and organizational behavior during disasters. Unfortunately, most such planning usually takes place on an ad hoc basis and/or is based on the most recent limited disaster or minor emergency experience of the organization or community. The planning, therefore, is not based on any systematic knowledge about behavior in disasters.

This would pose no problem if, for example, the common sense notions and assumptions made about disaster time were valid. However, social science studies in the last decade have seriously questioned common expectations about disasters. In fact, such research has consistently shown that many popular views about disaster behavior are inaccurate.<sup>7</sup> Obviously, any preparedness activity which is based on incorrect assumptions about anticipated behavior during disasters is not good planning.

There often are expectations of panic, but what occurs is rather reasonable behavior. For some reason, perhaps because of the mass communications system emphasis on the theme, many officials and others think that when people are faced with great threat or danger they will panic. This panic supposedly manifests itself in hysterical breakdowns or wild flights. Presumably, people cannot be depended upon to react intelligently and non-selfishly in situations of great personal danger.

Studies have consistently shown that this is simply not the case. People as a whole do not panic. Actual instances of hysterical breakdowns and wild flights are extremely rare, and are usually of no practical or operational importance if they occur. In fact, instead of flight away from the danger site, there is much more likely to be convergence on an impacted area. Instead of collapse into hysterical breakdowns, people actively move to do what they think has to be done in the crisis. Disaster victims are usually quite frightened, but that does not mean they will act selfishly or impulsively. They do not become unreasoning animals, but instead (one could argue) they tend to show more rationality under stress than they do normally, if by rationality is meant conscious weighing of alternative courses of action in a situation. We do not do much conscious weighing of alternatives in performing most of our daily routine behaviors.

There frequently are expectations of disorder, but what appears is a great deal of prosocial instead of antisocial behavior. To inexperienced officials and journalists, disasters are apparently seen as offering opportunities for the surfacing of antisocial behavior. It is speculated that deviant behavior will emerge and that dazed victims in the disaster area become easy targets for looting and other forms of criminal activity. Next to the supposed "panic" problem is the supposed "looting" problem. The imagery is that as Mr. Hyde will take over from Dr. Jekyll crime rates will rise and exploitative behavior will spread.

This is also an incorrect view according to the research undertaken by ourselves and others. Many stories of looting will circulate, but actual instances will be rare and if they occur will be done by outsiders rather than the impacted population itself. Far more material will be freely donated and given away than could conceivably be looted. In actuality, prosocial rather than antisocial behavior is a dominant characteristic of the emergency time period of a disaster. Crime rates will usually drop. Exploitative behavior is only likely to be seen in relatively rare instances of profiteering after the immediate emergency period is over. If disasters unleash anything, it is not the criminal in us, but the altruistic.

There also may be expectations of dependency among planners, but what develops instead is considerable self and small-group initiative. There is a tendency in disaster planning to assume that disasters leave large numbers of people dazed, shocked, and unable to cope with the new realities of the community crisis. The assumption is that victims are so disoriented and demoralized that they will need outsiders to do the most elementary tasks for them, such as being fed, housed, and clothed. If the previously discussed expectation of disorder is based on a Dr. Jekyll and Mr. Hyde view of human beings, the expectation of dependency is based on a Big Brother image. If Big Brother does not step in, nothing, it is assumed, will happen.



We, and other researchers, have also found that this expectation too is quite false. Those who experience disasters are not immobilized by even the most catastrophic of events. They are neither devoid of initiative nor passively expectant that others will take care of them and their needs. Usually, before the full impact is over, search and rescue efforts are initiated by neighbors, and the injured are brought to hospitals. Shelter is actively sought and offered by kin and friends. In fact, the evidence is substantial and consistent that far from even seeking, and much less depending upon, formal relief and welfare organizations, these are among the last sources that the vast majority of victims will turn to for help. In a disaster, self- and kin-help and mutual informal initiative and assistance will dominate.

Thus, if planning assumes panic, disorder and passivity as the dominant behavioral features which will appear at the height of a disaster impact, an incorrect starting point will have been taken. Good preparedness planning instead works with the idea that those impacted by community disasters will generally be calm, orderly, and able to take initiatives.

Unfortunately, just as there are mythologies about human behavior in disasters, there are also misconceptions about organizational behavior. For example, there are widespread beliefs that communication problems stem mostly from technological failures, that there is considerable breakdown of authority, or that coordination can be brought about by centralizing control. These too are mistaken notions. We do not have the time and space in this paper to elaborate on these and other misconceptions about organizational behaviors in disasters; they are discussed elsewhere.<sup>8</sup> But the important point is that beliefs in mythologies about organizations in disasters are as undermining of good planning as incorrect assumptions about human behavior under great stress.

As someone else wrote long ago, more damage is done by what people incorrectly believe to be true, than by lack of knowledge per se. Unfortunately, in the disaster area false beliefs about human and social aspects abound among emergency planners and emergency officials. To the extent that is the situation, their disaster planning will tend to be poor.

#### 10. Use the best scientific knowledge possible.

Planning for disasters can be no better than the knowledge base from which it is derived. Too many officials in emergency management organizations accept planning in principle but do not, or cannot, recognize the fact that they do not approach it using the best possible knowledge base. Planning cannot be based solely

or primarily on common sense notions. As discussed earlier, many popular views incorporate myths about human behavior under extreme stress. For example, social science research has found that because the image of victim-dependency is so widespread, considerable organizational effort is expended on planning mass shelters which will not be used (except under exceptional circumstances) since victims seek and are given sheltering assistance by friends and relatives.

It is also not possible to adequately prepare for disasters solely on the basis of one or two personal experiences! There are dangerous limitations to such an approach. Organizational officials are unlikely to have direct personal experience with very many disasters. Thus, any idiosyncratic features of a particular disaster may be mistaken as universally characteristic of all disasters. There is also a tendency to make broad generalizations based upon personal experiences with one or a few disaster agents and to apply these generalizations to the full spectrum of possible catastrophes.

In addition, planners show a strong tendency to rely too heavily on past experiences rather than to make projections about what might happen in the future. It is often said that generals learn how to fight very well under the conditions presented by the last war, but not an upcoming one. The same can be said of some disaster planners. They learn well how to cope with the last disaster they encountered, but are vulnerable to different kinds of disasters or new threats.

Additionally, due to the lack of a broad perspective, it is not always possible to derive meaningful lessons from personal experiences. For example, rather than recognizing a perceived absence of panic as a general human tendency, often it is attributed to one's own unique stable qualities or the sterling (but exceptional) characteristics of the impacted population. Finally, it is never easy for organizational officials to make an impartial evaluation of the actions of their own group. Too often, after-action reports are post hoc defenses or justifications of what the agency did rather than a candid assessment of either the problems encountered or the mistakes made.

A direct personal or organizational disaster experience is less useful for disaster planning purposes than is often recognized. Before such experiences can be utilized, they must be seriously analyzed and their limitations explicitly stated. It is, therefore, possible for some officials within emergency management organizations to be involved in several disasters yet demonstrate by their actions that they learned very little. In essence, the events to which they refer are not conducive for deriving general principles. Just as military "war stories" contribute nothing to military planning strategy, disaster "war stories" are seldom useful in developing preparedness planning strategies.

The most adequate knowledge base for planning purposes is grounded in as wide a range of as many disasters as possible, involves a systematic and objective examination of what occurs, and attempts to draw general principles and theoretical models from the information available. This is what scientific research in the disaster area attempts. Until the last few decades, disaster planners could justifiably say there were very few social scientific studies which could be used. This excuse is no longer legitimate. There now exists a body of social scientific knowledge very applicable to disaster planning.

### Disaster Preparedness Managing

We would be amiss if we stopped our discussion at this point because it might imply that if the criteria were all met, we would then have good preparedness planning and good managing of community disasters. Unfortunately this is not and can not be the case. There are some major differences between the preparing for and the managing of a disaster. The principles of disaster preparedness planning are not the same as the principles of emergency time crises management.<sup>9</sup>

The distinction perhaps can be understood by drawing a parallel to the distinction made in the military area between strategy and tactics. In general, strategy has reference to the overall approach to a major problem or basic objective. But there are always specific situational contingencies or factors which have to be taken into account in particular circumstances. This the military considers the province of tactics. Thus, if we think in parallel terms, we can equate good disaster preparedness planning with the best strategy that could be followed in readying a community for a sudden disaster, while good managing involves the best tactics which could be used to handle particular contingencies in the emergency time period of a specific disaster.

Generally it is impossible to indicate ahead of time the specific tactics which will have to be used in an actual crises, since almost by definition, they will be relatively specific to the actual emergency that develops. However, just as the military finds it possible to discuss tactical principles, disaster researchers can point to some of the tactical considerations which are involved in efficient and effective disaster management. Since we have written on this matter in detail elsewhere, here we will only mention some fundamental points.

Good managing of disaster preparedness planning also can be evaluated in terms of certain criteria. We can judge that the management is good if it results in the:

- (1) efficient mobilization of personnel and resources;

- (2) the adequate processing of information between and within organizations, from and to the public, and within systems of organizations;
- (3) the effective exercise of authority and decision making;
- (4) the development of coordination rather than control.

In many respects these involve the same kinds of problems any organization would have in managing any program. Researchers, for example, usually recognize that planning a study is different from managing a project carrying out the research. It is not clear if managing issues have less disaster-specific problems associated with them than those involved in preparedness planning. In addition, future studies will have to establish if the low probability-high impact nature of disaster occasions introduce elements into the managing process which might make it different from everyday managing.

If the above are well handled, we are likely to have good managing of disaster preparedness planning activities. However, disaster studies in the last 30 years indicate that there are limits to both planning and managing. The limits, which would have to be the subject of another paper if they were discussed in detail, are created by such factors as economic and social costs, human and societal value priorities, poor design implementations, and political considerations. Put another way, because there might be knowledge and understanding of what constitutes good planning and managing does not mean that is what will be in place at any given place in any given time. To draw a parallel, we know in one sense of the term how the further spread of AIDS could be completely prevented; we equally know that will not happen. We may know what is the very best planning and managing for disaster preparedness, but we equally know that is not what will exist in reality.

We mention this to stress that any evaluation of disaster preparedness planning and managing must operate in a real, not an ideal, world. Idealistic conceptions should provide us goals. But if we are to improve planning for disasters we have to be realistic, both in terms of recognizing what really exists and what can be realistically achieved.

This brings us to a last consideration: how applicable are the criteria stated above to all social systems? In the main, the organizational research from which they are derived was conducted in highly urbanized and industrialized societies. Can the criteria therefore be equally applied to the preparedness planning of developing countries?

We leave aside here our serious reservations about the theoretical and conceptual validity of contrasting the terms "developed" and "developing," which we have elaborated upon elsewhere.<sup>10</sup> For purposes of discussions, therefore, we would make the following

points relevant to a possible disaster preparedness technology transfer from developed to developing. Developed versus developing countries from an organizational point of view could be seen to differ along the following lines

(a) Developing societies do not have as complex organizational structures as do developed systems; there is simply less of an infrastructure in many such countries. (b) Many of the top organizational officials have obtained their education and training in developed societies; thus, they have been socialized to Western professional ideals rather than local contexts and norms. (c) Such complex organizational structures as do exist tend to function from the top down; while almost all organizations are reactive rather than proactive, this is especially true in developing countries with a strong tendency for initiatives only coming from the very top. (d) In many organizations in developing countries there is a strong emphasis on structures or forms rather than functions or tasks; thus, the means often become ends as seen in the proliferation of paperwork and plans. (e) Rel-atively few distinctively separate disaster preparedness or management organizations exist; so the further away from the national level of developing societies, the rarer the existence of disaster specific agencies.

If this is the organizational framework in developing countries, what are some of the implications for disaster preparedness? We would like to mention five points with the understanding they should be taken as educated guesses rather than well established empirical conclusions.

1. More than a decade ago, we hypothesized that cross-societal differences in disaster responses in the emergency time period varied directly with the level of the behavior being examined. That is, universal patterns of behavior were most likely at the individual or human behavior level. But societal specific behavior patterns became more likely as one moved up to the family, the organization, the community, and the societal levels.

Such cross societal research as has been undertaken seems supportive of the hypothesis. For example, panic flight behavior is rare among community disaster victims in any society. Search and rescue activity is primarily carried out by survivors, neighbors and private citizens. (Thus, contrary to the image left by many press reports, the vast bulk of search and rescue in the recent Mexican City earthquake was carried out by individuals on the scene right after impact--the publicized activities of foreign teams that went to Mexico City in the days after the earthquake rescued only a miniscule proportion of those found). In contrast, organized mitigation measures and reconstruction activities tend to vary very much from one society to another.

If our general hypothesis is correct, it follows that

organizational disaster behavior will not be universal, but also that it will not be completely societal specific. Clearly what is needed are systematic studies which will identify the universal features and the societal specific characteristics of organizational behavior in disasters. We might hypothesize, for instance, that centralized organizations that have or use the same kind of technological resources, such as military groups, will tend to behave generally in the same way in disasters.

2. The absence in developing societies of the kinds of organizations that exist in Western type countries does not mean a total absence of the disaster functions that such groups may have. For example, many developing countries do not have the elaborate or specialized weather service organizations that can be found in the West or Japan. Likewise, many such countries do not have anywhere near the complex and multi-faceted mass media outlets that exist in Europe or the United States and Canada. But the absence of a modern mass communication system linked to a modern monitoring and warning weather service system does not preclude institutionalized ways of alerting people and groups to sudden risks and hazards. In some developing societies, there are rather complex informal social networks which allow many warnings to reach populations relatively well apart from any mass communication system.

Similarly, most developing countries do not have the systems of organizations which in Western type societies we characterize as medical-health systems. The elaborate and linked groups we have created in many developed countries for the delivery of emergency medical services are even less likely to exist in developing societies. As such Indian disaster specialist once wrote, while cases involving major surgical operations can only be done with a hospital context, "even in a country like India where proper medical hospital care may not be available in peach times for distances up to 10 to 15 kilometers, people over time have developed and devised their own techniques of dealing with medical emergencies, using herbal or other natural resources. JAC itself have been integrating such techniques (e.g. solar therapy) into its training programmes for disaster preparedness for the last several years."<sup>11</sup>

Overall, our general point is that we should not assume that the organized ways we have in the West for providing certain services or carrying out particular tasks, are the only relevant social arrangements possible. Less important than the social structures for doing something, are the social functions carried out. Without in any way implying an equivalence, at the very least we should recognize that different kinds of social organizations might be able to carry out the same tasks, and that similar appearing social organizations do not necessarily have the same functions (as can be easily seen in developing countries which have, in form, Western style democratic political organizations and institutions, but

which really do not function in any democratic way).

3. The more experience a society and organizations have with disasters, the more likely they are to be prepared for and to respond well to a new disaster. Now we know from studies in developed countries that there is no direct connection between disaster experiences and good disaster preparedness and response. Nonetheless, research does suggest that there is likely to be a correlation, for recurrency of disasters raises the probability of the development of what has been called a disaster subculture. Such a subculture involves an interrelated set of attitudes and practices among the populations and organizations of an area that makes them better prepared to respond to a new disaster.

As a whole, developing nations are more at risk to disasters than developed countries. Although no solid data exists on this point, we would, therefore, expect developing nations to have many disaster subcultures. That being the case, such cultures ought to improve their capabilities, including those at the organizational level, to cope with familiar types of disasters.

We can only state this in hypothetical form, given the absence of much social science research on disasters in developing countries. But we mention the point in part to question an implicit assumption that in almost all respects developing countries, as a whole, are worse off in disaster preparedness than developed countries, especially given few or no organizations specifically oriented to disaster problems. If disaster subcultures exist, this would not be the case.

4. One of the general conclusions of disaster research on organizations is that there is much emergent behavior in mass emergencies and that such behavior usually makes for more efficient and effective responses. This is certainly true in developed societies. To what extent would this hold for organizations in developing social systems?

In the absence of systematic research data, the point could be argued both ways. It could be said that emergence occurs in organizations in developed countries because that is the only way such groups can cope with the new demands of a emergency situation. Their old structures and infrastructures are too rigid and cannot be easily modified or changed in a very short time period. But a crisis demands action and established organizations cope by generating new structures and functions. This could also be true of organizations in developing countries.

On the other hand, it might be argued that most bureaucratic organizations in developing countries do not have the history of those in developed societies. They therefore would lack the structural rigidity frequently reinforced by a long history, the cumulative accretions of traditional ways of doing things which

will not be easily altered even in the face of a catastrophe. Our guess is that many organizations in developing countries would show relatively little adaptive capabilities, less because of their historical roots, but more because, as said earlier, many organizations are top heavy and tend to emphasize structure more than tasks. If our hypothesis is correct, one consequence would be less adaptive organizations in disasters in developing social systems.

5. Not every structural feature is of equal importance in organizational preparations for and responses to disasters in developed nations. Organizational research in general, as well as studies on the functioning of organizations in mass emergencies, suggest what factors might be important. For example, there are differences between centralized and decentralized types of organizations. The former types do not seem to be able to react as quickly to a crisis as the latter types. Some organizations have very long and complex channels for information flow with much coming from the top layers of the hierarchy. Some studies of disaster seem to hint that organizations with opposite characteristics of those just indicated respond better in an emergency. Other factors of importance were noted earlier when we summarized the major findings on organizational behavior in disasters.

However, our problem here is, in one sense, the one we alluded to earlier. We know the dimensions discussed are important in the context of American society, but we really do not know which specific ones are equally important elsewhere. Such a view may not seem very helpful. Nonetheless, it is a step forward from assuming, as is sometimes done, that what applies in developed societies is fully applicable to developing countries, or asserting, as is also sometime said, that the lessons from Western type societies have no major applicability in non-Western systems. In our view, it is not either/or, but what can and cannot be extrapolated from one kind of society to another.

In conclusion, we can say there are criteria for evaluating disaster planning. Without question, to a degree they are applicable in developing societies. As such we think our discussion can be of some practical value.



## NOTES

1. For summaries of the literature through the years, see Allen Barton, Communities in Disaster, Garden City, New York: Anchor, 1970; Russell Dynes, Organized Behavior in Disaster, Newark, Delaware: Disaster Research Center, University of Delaware, 1974; Thomas Drabek, Human System Responses to Disasters: An Inventory of Sociological Findings, New York: Springer Verlag, 1986.

The most recent summary discussion is in Russell Dynes, Bruna De Marchi and Carlo Pelanda (eds.), Sociology of Disasters: Contributions of Sociology to Disaster Research, Milan, Italy: Franco Angeli, 1987. See also, E. L. Quarantelli, Inventory of Disaster Field Studies in the Social and Behavioral Sciences 1919-1979, Newark, Delaware: Disaster Research Center, University of Delaware, 1984.

2. Our comments in the rest of the paper are based primarily on the following sources, all published by the Disaster Research Center at the University of Delaware, Newark, Delaware. See Russell Dynes, E. L. Quarantelli and Gary Kreps, A Perspective on Disaster Planning, 1981; Russell Dynes and E. L. Quarantelli, Organizational Communications and Decision Making in Crises, 1977; E. L. Quarantelli, Evacuation Behavior and Problems: Findings and Implications from the Research Literature; E. L. Quarantelli, Sheltering and Housing After Major Community Disasters: Case Studies and General Observations, 1984; and E. L. Quarantelli, "Disaster Planning: Small and Large--Past, Present, and Future," Proceeding: American Red Cross EFO Division Conference, Alexandria, Virginia: Eastern Field Office, American Red Cross, 1981: 1-26.

3. See E. L. Quarantelli, Sociobehavioral Responses to Chemical Hazards: Preparations for and Responses to Acute Chemical Emergencies at the Local Community Level, Newark, Delaware: Disaster Research Center, University of Delaware, 1984.

4. See E. L. Quarantelli, Delivery of Emergency Medical Services in Disasters: Assumptions and Realities, Newark, Delaware: Disaster Research Center, University of Delaware, 1983.

5. For a discussion, see E. L. Quarantelli, "What is Disaster? The Need for Clarification in Definition and Conceptualization in Research," Disasters and Mental Health Selected Contemporary Perspectives, Washington, DC: U.S. Government Printing Office, 1985: 41-73.

6. Some of the following paragraphs are derived from Russell Dynes, "Problems in Emergency Planning," Energy 8 1983: 633-660.

7. Among discussions on this topic are those in E. L. Quarantelli and Russell Dynes, "Images of Disaster Behavior: Myths and Consequences," Preliminary Paper #5, Newark, Delaware: Disaster Research Center, University of Delaware, 1973, and Dennis Wenger, Thomas James and Charles Faupel, Disaster Beliefs and Emergency Planning, New York: Irvington, 1985.

8. E. L. Quarantelli, Organizational Behavior in Disasters and Implications for Disaster Planning, Report Series #18, Newark, Delaware: Disaster Research Center, University of Delaware, 1985. See also, E. L. Quarantelli and Russell Dynes, "Operational Problems of Organizations in Disasters," 1976 Emergency Operations Symposium, ed. by Robert Bricton, Santa Monica: Systems Development Corporation, 1976: 151-175; E. L. Quarantelli, "Human Resources and Organizational Behaviors in Community Disasters and Their Relationship to Planning," Complete Record of the Proceedings: Emergency 82 International Congress on Disaster Preparedness and Relief, Geneva, Switzerland: International Civil Defense Organization, 1983: 7/1-17; and E. L. Quarantelli, "The Need for Planning, Training, and Policy on Emergency Preparedness," Symposium 1985 Training and Education for Emergency Preparedness in Canada Today & Tomorrow, Ottawa, Canada: Emergency Planning Canada, 1986: 80-86.

9. See E. L. Quarantelli, Organizational Behavior in Disasters and Implications for Disaster Planning, Report Series #18, Newark, Delaware: Disaster Research Center, University of Delaware, 1984.

10. This is discussed in E. L. Quarantelli, "Research Findings on Organizational Behavior in Disasters and Their Applicability in Developing Countries," Preliminary Paper #107, Newark, Delaware: Disaster Research Center, University of Delaware, 1986, and E. L. Quarantelli, "Planning and Management for the Prevention and Mitigation of Natural Disasters, Especially in a Metropolitan Context: Initial Questions and Issues Which Need to be Addressed," Preliminary Paper #114, Newark, Delaware: Disaster Research Center, University of Delaware, 1986.

11. N. Jain, "Letter," Disaster Preparedness in the Americas, January, 1983: 2.

## BIBLIOGRAPHY

Copies of the following publications, as well as a free copy of the 250 plus item publication list of DRC (which gives costs and information on how to order), can be obtained from:

The Disaster Research Center  
University of Delaware  
Newark, Delaware 19716 USA

### Books & Monographs

- 3 Dynes. Organized Behavior in Disaster. 1974.
- 11 Taylor, Ross, Quarantelli. Delivery of Mental Health Services in Disasters: The Xenia Tornado and Some Implications. 1976.
- 14 Tierney. A Primer for Preparedness for Acute Chemical Emergencies. 1980.
- 15 Quarantelli. Delivery of Emergency Medical Services in Disasters: Assumptions and Realities. 1983.
- 16 Quarantelli. Evacuation Behavior and Problems: Findings and Implications from the Research Literature. 1984.
- 17 Quarantelli. Sociobehavioral Responses to Chemical Hazards: Preparations For and Responses to Acute Chemical Emergencies at the Local Community Level. 1984.
- 18 Quarantelli. Sheltering and Housing After Major Community Disasters: Case Studies and General Observations. 1984.
- 21 Dynes, DeMarchi, Pelanda (eds.). Sociology of Disasters: Contributions of Sociology to Disaster Research. 1987.

### Report Series

- 11 Dynes, Quarantelli, Kreps. A Perspective on Disaster Planning. 1981.
- 16 Dynes, Quarantelli. The Role of Local Civil Defense in Disaster Planning. 1977.
- 17 Dynes, Quarantelli. Organizational Communications and Decision Making in Crises. 1977.
- 18 Quarantelli. Organizational Behavior in Disasters and Implications for Disaster Planning. 1985.

## Articles

- 12 Quarantelli and Dynes. "Operational Problems of Organizations in Disasters," 1967 Emergency Operations Symposium, ed. by Robert Britson (Santa Monica: Systems Development Corporation, 1967): 151-175.
- 116 Bardo. "Organizational Response to Disaster: A Typology of Adaptation and Change," Mass Emergencies 3 (September 1978): 87-104.
- 118 Quarantelli and Tierney. "Disaster Preparation Planning," Fire Safety and Disaster Preparedness (Washington, D.C.: Office of Public Sector Programs, American Association for the Advancement of Science, 1979): 263-313.
- 140 Wilson. "A Selected Annotated Bibliography and Guide to Sources of Information on Planning for and Responses to Chemical Emergencies," Journal of Hazardous Materials (March 1981): 373-394.
- 141 Quarantelli. "Disaster Planning: Small and Large--Past, Present, and Future," Proceeding: American Red Cross EFO Division Conference (Alexandria, Virginia: Eastern Field Office, American Red Cross, 1981): 1-26.
- 147 Quarantelli. "Sociology and Social Psychology of Disasters," Complete Record of the Proceedings 9th World Civil Defense Conference (Geneva, Switzerland: International Civil Defense Organization, 1981): Part 1, 1-8.
- 152 Quarantelli. "Social and Organizational Problems in a Major Community Emergency," Emergency Planning Digest 9 (January-March 1982): 7-10, 21.
- 160 Quarantelli. "Human Resources and Organizational Behaviors in Community Disasters and Their Relationship to Planning," Complete Record of the Proceedings: Emergency 82 International Congress on Disaster Preparedness and Relief (Geneva, Switzerland: International Civil Defense Organization, 1983): 7/1-17.
- 174 Stallings, Quarantelli. "Emergent Citizen Groups and Emergency Management," Public Administration Review 45 (1985): 93-100.
- 175 Quarantelli. "An Assessment of Conflicting Views on Mental Health: The Consequences of Traumatic Events," Trauma and Its Wake: The Treatment of Post-Traumatic Stress Disorder (New York: Brunner/Mazel, 1985): 173-215.)
- 177 Quarantelli. "What is Disaster? The Need for Clarification in Definition and Conceptualization in Research," Disasters and

Mental Health Selected Contemporary Perspectives (Washington, D.C.: U.S. Government Printing Office, 1985): 41-73.

184 Quarantelli. "The Need for Planning, Training, and Policy on Emergency Preparedness," Symposium 1985 Training and Education for Emergency Preparedness in Canada Today & Tomorrow (Ottawa, Canada: Emergency Planning Canada, 1986): 80-86.

#### Preliminary Papers

5 Quarantelli and Dynes. "Images of Disaster Behavior: Myths and Consequences," 1973.

13 Kreps and Dynes. "Organizational Intelligence: Its Conceptual and Empirical Utility," 1974.

41 Quarantelli and Dynes. "Different Types of Organizations in Disaster Response and Their Operational Problems," 1977.

53 Quarantelli. "Uses and problems of Local EOC's in Disasters," 1978.

81 Quarantelli. "Principles of Planning for Industrial and Business Disaster," 1982.

98 Wenger. "Mass Media and Disasters," 1985.

105 Dynes. "The Concept of Role in Disaster Research," 1986.

107 Quarantelli. "Research Findings on Organizational Behavior in Disasters and Their Applicability in Developing Countries," 1986.

114 Quarantelli. "Planning and Management for the Prevention and Mitigation of Natural Disasters, Especially in a Metropolitan Context: Initial Questions and Issues Which Need to be Addressed," 1986.

#### Final Project Reports

15 Dynes and Quarantelli. Organizational Responses to Major Community Crises, 1975.

24 Quarantelli. Studies in Disaster Response and Planning, 1979.

31 Quarantelli. Emergent Behavior at the Emergency Time Periods of Disasters, 1984.

32 Quarantelli. The Functioning of the Local Emergency Services Offices in Disasters, 1985.

33 Quarantelli. Emergent Citizen Groups in Disaster Preparedness and Recovery Activities, 1985.

34 Wenger, Quarantelli, Dynes. Disaster Analysis: Emergency Management Offices and Arrangements, 1986.