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SIMILARITIES AND DIFFERENCES IN INSTITUTIONAL RESPONSES TO NATURAL AND TECNOLOGICAL DISASTERS

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The Questions Being Addressed

In this paper three questions are addressed concerning possible differences and their implications for planning between natural and technological disasters.

First, are disasters for planning purposes best approached generically or in agent specific terms? The mostly research based answer is that the generic approach is more valid although this does not mean there are no meaningful differences along other dimensions between disasters.

Thus, second, we ask along what lines disasters might be usefully differentiated or typologized? Eight key dimensions are discussed, mostly as they are significant for the emergency time phases of disaster occasions.

Third, we conclude with asking whether whatever distinctions are made, are they equally applicable across all phases of the disaster planning cycle, namely, mitigation or prevention, emergency preparedness, emergency response, and recovery? Our brief discussion takes the position that it appears the generic approach is clearly best applicable to the emergency time phases, somewhat less so for the mitigation phase with recovery falling in somewhat between the others.

In the process of answering all three questions, implications for institutional and organizational behavior will be noted.

Disasters as Generic Phenomena

In most places although not everywhere in the world, much although not all disaster planning for disasters tends to be agent-specific. There is a tendency to organize separate and distinctive planning around specific disaster agents. Thus, there often are separate plans for disasters resulting from hazardous chemicals, separate plans for hurricane threats, separate plans for emergencies in nuclear plants, separate plans for flood threats, and so on. Planning is often separated with usually different organizations for preparing and responding to the separately viewed threats or impacts.

This kind of separate agent specific orientation 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 the yes is in an important sense to the wrong question; thus, increasingly there has been a shift by disaster researchers in the last decade especially in developed countries to an all hazards or more generic approach.

Before expanding on this, we should note that disaster researchers at one time approached the matter in the same way as many current disaster planners. In the very earliest days of social science disaster studies four decades ago, the great majority of researchers were inclined to accept as relevant for planning purposes the typical everyday distinctions drawn between a variety of different kinds of disaster agents (e.g., floods, explosions, hurricanes, fires, etc.). Soon the more particular distinctions tended to be collapsed into two general categories: natural disasters (so called "Acts of God") and technological ones (those supposedly brought about by human actions). However, more recently and increasingly the value of these kinds of surface or manifest distinctions has been doubted and the matter has became part of the larger question of a generic versus an agent specific approach to disasters (Quarantelli, 1982).

The agent specific approach assumes that each type of disaster agent (e.g. a volcanic eruption, a nuclear radiation fallout) or classes of agents (e.g., the source being in the natural or in the technological sphere) have certain distinctive characteristics that have consequences for what occurs (see Baum, Fleming and Davidson, 1983). The generic approach assumes that there are more individual and organizational behavioral similarities than differences across all disaster occasions (see Quarantelli, 1987). Currently, most social scientists interested in disaster research do not use a typology of different agents or classes of physical agents but take a generic approach to the problem.

There are two general reasons for this shift to a generic approach. One is theoretical, the other--more important--is empirical. From a theoretical point of view there has been a shift away from a focus on the physical aspects involved towards a more social conception of disasters. This has partly resulted from a logical recognition that, for example, the occurrence of an earthquake or a chemical explosion per se does not automatically result in a "disaster." Thus, a natural land movement of a certain kind is an earthquake and the transformation of an inert liquid into an expansive gas is a chemical explosion. But unless there are significant social negative consequences of some kind, such happenings remain only a geophysical event or a chemical process (e.g., an earthquake in uninhabited land or a chemical explosion caught within a safety container). From this perspective, a disaster can be identified <u>only</u> in terms of some features of a social occasion, that is, some characteristics of the individuals and groups reacting in the situation, The socially oriented conception of a disaster forces a focus on the common or similar properties of the social happening and away from the physical features of natural and technological agents and impacts.

Even more critically crucial regarding the issue is that cumulative social science studies have found that most sociobehavioral features of disasters are not agent or class agent specific, but

are generally manifested across many different types of natural and technological agents (see Drabek, 1986). For very many of the human and organizational problems in preparing for and managing the response to disasters, the specific kind of agent which might be involved in the disaster does not matter. Whether the emergency time disaster task be warning, evacuation, sheltering, feeding, search and rescue, disposition of the dead, mobilization of resources, communication flow, interorganizational coordination, public information, etc., and whether the tasks involve individuals or groups, the same general activities have to be undertaken irrespective of the specific agent in the situation.

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 agent involved. It does not matter if the agent is a tornado, an oil spill, a tsunami, or a major fire in an hazardous waste site--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 (e.g., Perry and Mushkatel, 1984; Perry, 1985). These human aspects of a disaster do not depend on the specific type of 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 agent in the situation. For example, research has consistently shown that the less seriously injured are likely to be treated first, that one or a few hospitals will take a disproportionate number of the injured victims, that there will be no overall coordination of the medical-health response (see Quarantelli, 1983; Auf der Heide, 1989). Similarly, studies have concluded that ordinary citizens in impacted localities will quickly undertake most of the initial search and rescue, that the handling of dead bodies is very psychologically disturbing, that formal search and rescue teams tend to operate in an unintegrated way (see Mileti, Drabek and Haas, 1975; Drabek, Tamminga, Kilijanek and Adams, 1981). The specific agent involved does not matter very much in the carrying out of such emergency tasks.

The same is true when general classes or categories of agents are contrasted. For example, in a disaster preparedness primer, certain differences are noted in a discussion of the similarities and of the differences between community planning for natural hazards and chemicals hazards. But it is then observed that:

> these differences do not necessarily rule out the application of principles of natural disaster planning to problems of chemical hazards. In fact...studies on natural disaster planning and response can be of value

for persons connected with chemical disaster preparedness.

It is then stated:

> regardless of the characteristics of a particular disaster agent and the specific demands generated by it, the same kinds of community response-related tasks are necessary in both kinds of disaster and for all disaster phases. In any community, for example, the assessment of hazards and the aggregation of disaster-relevant resources necessary, regardless of the specific hazards and resources in question. Similarly, post-impact communication and decision-making procedures must be planned for and activated in <u>any</u> community crisis.

Then it is noted:

> To draw an analogy, a battle on land is fought with different weapons, material, personnel and support systems than those used in sea battles, but, nevertheless, the general overall battle requirements are the same for both. In both cases, intelligence about enemy strength and movements must be gathered, resources must be collected, trained personnel must be led effectively, and so on. The same is true for disaster planning: although disaster agents and the human and material resources needed to respond to them may vary, the same generic kinds of activities must be performed in the predisaster, preimpact, response, and recovery periods, regardless of the specific threat (Tierney, 1980: 18-19).

A similar questioning of a technological versus natural disaster distinction has particularly accelerated in the last decade (see, e.g., researchers such as Bolton, 1986 who notes many similarities between natural hazards and industrial crises in developed countries, and operational personnel such as Wijkman and Beralke, 1984, who indicate the very title of their volume, <u>Acts of God or Acts of Man</u>?, is not a meaningful distinction in developing societies). Others have looked at particular behaviors such as evacuation and noted similarities in volcanic eruptions, floods and nuclear power plant accidents (see Perry, 1983).

Even when social aspects seem somewhat agent specific, closer examination frequently indicates that the linkage is often of a broader nature. For example, the concept of "disaster subculture"

was linked initially to a specific agent, such as a flood subculture or a hurricane subculture (see Moore, 1964; Osborn, 1970). The reference is to the development of adjustive mechanisms at both the individual and organizational level as a result of repeated exposures to the same kind of disaster. There is now reason to believe the nature of the experience and other situational factors are more important in the development of adjustive subcultures than the characteristics of the specific agent (see Drabek, 1986: 339-340). Some have even argued that such activities as earthquake predictions are not that agent specific. Thus, Turner (1980) implies that much of what researchers know about how people respond to threats and warnings for other dangerous possibilities is equally applicable to prediction scenarios for earthquakes.

Finally, researchers who argue for a generic approach question in many cases whether any concrete agents can be identified in certain disasters and also if agents can always be easily classified. Thus, what is the agent in a famine or drought? Are the sources of forest and brush fires or of avalanches and landslides to be found in human actions or natural phenomena? What of physical fatigue in bridges or pipelines which result in structural collapse or nondeliberately contaminated food or medical products--what is the source of what might turn into a disaster? Plane crashes, as well as many other transportation accidents, can be generated by both natural and technological agents.

The generic approach is not only held by social science disaster researchers. When the United States Congress was considering the Implementation Plan required by the Earthquake Hazards Reduction Act of 1977, the Office of Technology Assessment was asked to develop "Criteria for Evaluating the Earthquake Mitigation Implementation Plan." A summary of the report which discussed the criteria said a major issue was "earthquake versus an all natural hazards strategy." With respect to this matter, the report concluded that:

> While it may be convenient for researchers and the large Federal agencies to handle hazards categorically, the practicalities of State and local government organization and function increasingly required integrated planning and operations for all hazards. Similarly, federal construction and housing programs also could be responsive to all hazards, not just to one or a few selected hazards (Quoted in The Hazard Monthly, July, 1980, p. 3; see also Coates et al, 1979)

At times when the polarity of approach is raised and discussed, a statement is made to the effect that, yes there is a difference in approach possible, but the division is an operational versus an

academic one. Thus it is argued that field operational personnel faced with dealing with an immediate emergency situation need agent specific knowledge. For example, how far do people have to be evacuated to avoid the toxicity or flying debris if a tanker of chlorine is threatening to explode? On the other hand, it is said that those with more academic concerns can afford to deal with the more generic questions. What, for instance, are the general factors which motivate people to evacuate?

This operational-academic distinction is not a valid one. It seems to confuse tactical matters (e.g., the distance to evacuate), which would vary in <u>any</u> situation involving either similar of dissimilar disaster agents, with strategic matters (e.g., general principles of motivation applicable to all situations). There are strategies for dealing with disasters which cut across disasters; the tactics may be more situationally specific, although even the military from where the strategy-tactics distinction is drawn seems to feel that solders can be taught tactical principles that apply in all or most combat situations.

We can also noted that such a practical and applied field as medicine proceeds as if planning and responses in disasters need not be agent specific. It is extremely rare to find disaster medical personnel training and preparing for only one kind of medical treatment. Disasters are viewed generally (e.g., the World Health Organization defines a disaster as "a situation which implies unforeseen, serious and immediate threats to public health" (LeChat, 1980: 18), and disaster medicine emphasizes general principles and organizationally focus is on personnel alerting systems, triage, allocation of patients to hospitals, and other non-specific disaster aspects (Butman, 1982).

It sometimes may appear that a generic approach to disasters combines rather dissimilar kinds of physical agents or other heterogeneous elements and otherwise violates common sense. In one way, this is correct, but it is not necessarily significant. An analogy may make this point better than a direct discussion. Biologists have long classified whales, bats, and human beings as mammals. There are many manifest differences in sizes, structures and functions of these three creatures; however, for purposes of biological study and application, these obvious commonsense differences are far less significant than less overt structural and functional similarities, such as the fact that all mammals are warm-blooded and bear their young alive. For purposes of biological study and application of biological principles, the physical size of a whale compared with a bat, or the fact that the former needs a water environment where human beings basically need a land environment, are unimportant.

Putting together manifestly different physical agents or overtly different disaster-related elements can be viewed similarly. In fact, it has been suggested that disaster researchers should follow

the lead of biologists who draw a distinction between phenotypes and genotypes (Quarantelli, 1987: 27). Instead of focusing on surface and manifest phenotypical features, instead attention should be on similar underlying or genotypical characteristics.

The generic or all hazards approach is not necessarily easily acceptable. There are a number of reasons for this. There is a historical reason. Much early work on disasters initially focused on the physical agent involved, and to some this became an habitual and traditional way of approaching the problem. Thus, for example, there are specialists on flood control or hurricane prediction problems. In more recent times, a similar reluctance to moving away from an agent specific orientation can be observed in the fire research and the nuclear risk areas. Researchers and operational people in those two areas have long struggled with questions as to the physical agents involved and the agent specific characteristics of the agent. Accustomed to thinking in that way, they have difficulty in seeing that sociobehavioral studies of other disaster situations have direct applicability to their own areas. They reflect well a famous statement by Kenneth Burke that, "a way of seeing is also a way of not seeing" (quoted in Lindesmith and Strauss, 1949: 101).

Even recognizing that there may be a more valid approach than an agent specific perspective is handicapped by the fact that many interested in disaster problems have difficulty in communicating because they live in relatively different professional and intellectual research worlds. Some of these persons are specialists and knowledgeable in depth about one kind of agent such as fires, earthquakes, nuclear hazards, or landslides. Others are specialists and knowledgeable in depth about topics and questions that cut across various kinds of disasters, and thus may primarily think in such topical terms as warning, search and rescue, medical treatment and handling of the dead. In a sense, some divide the disaster world horizontally; others divide it vertically. This separation does not facilitate communication from one axis to another. Furthermore, it is probably more difficult for vertical communicators (agent specific specialists) to understand horizontal communicators (general disaster specialists) than vice versa. The former, for example, a seismologist, is likely to have a narrower perspective than the latter, for example, a sociologist.

Different Disaster Dimensions

Now the generic approach currently in favor does <u>not</u> deny that there are important differences between disaster occasions, only that they are not specific agent linked. For example, in some cases warning is possible and in others it is impossible or very difficult, and in other instances impact is very diffuse whereas in others the impact is very focused and localized. As many have said, what is important is not the physical difference between an explosion or an earthquake, but the fact that neither, for example,

usually allow time for warning. Or as others have said: "a flash flood resulting from a broken dam might have more similarity to a sudden tornado than to a slowly rising Mississippi River flood (Stoddard 1968: 12); "a flood in Cincinnati for which there may be two weeks warnings, is simply not a comparable event to a flood in Denver with six hours warning, or to one in Rapid City where warnings were received as flood waters entered dwellings" (Mileti et al, 1975: 5); or "the differences between damaging events due to the same natural or man-made agent may be larger than between events initiated by a different agent" (Hewitt and Burton, 1971: 124). Obviously such approaches or perspectives cut across different agents and suggest looking at different dimensions of the social setting in which the disaster occurs.

If we could develop disaster typologies based on some combinations of meaningful dimensions of social occasions, we could better grasp the commonality of sociobehavioral phenomena across different agents and differences within the same agent. In line with this view it has been suggested that typologies of disasters should combine such generic social dimensions as predictability, relative loss impact, recurrence, unfamiliarity, rapidity of onset, length of threat, inclusiveness of involvement and the social centrality of the affected population (Quarantelli, 1985: 58). As we shall note later, all of them can be conceptualized as characteristics of the social occasion rather than of the physical agent in the disaster.

These dimensions not only cut across different disaster agents (whether natural or technological) but also the same disaster agent (e.g., a flood or a chemical explosion). For instance, the same kind of chemical explosion may be seen as a familiar threat in localities around chemical complexes but unfamiliar in other communities; the degree of familiarity will affect responses to warnings, the probability of evacuation, and expectations about emergency organizational behavior. The lead being suggested here follows the one provided by biologists who distinguish between phenotypes and genotypes. Disaster research it is argued should develop genotypical typologies of disaster occasions.

Unfortunately no such typology exists. Or more accurately there is none that has won any wide acceptance in the disaster research community (for perhaps the earliest one proposed even before social science disaster research had any vitality, see Carr, 1932; for more recent examples of typologies proposed see Barton, 1970 and May, 1989). However, in the last decade particular dimensions have increasingly been singled out as being important for developing a typology within a generic approach. We will therefore discuss as they have been noted in the research literature, eight major dimensions or characteristics of a population's response in a disaster occasion. Given our general conceptualization of disaster, the emphasis is on characteristics of the occasion rather than any

dimension of a physical agent (even if there is one which is not always the case as, for example, in the instance of famine).

1. The relative proportion of the population involved.

The proportion of the population involved relative to some base is far more important for planning purposes than absolute numbers (see Britton, 1987: 35-36). This is true whether the focus is on concrete losses or on psychological involvement. For example, 500 dead in a metropolitan area of five million involves relatively far less of the community than does 100 in a small town of 1,000 inhabitants. There can be a similar situation in terms of the amount of property damage or destruction. The same absolute numbers might mean a catastrophe in some communities but only a bigger than usual emergency in others. In more general terms, this disaster occasion characteristic has less to do with geographic scope or the physical scope of impact than with the social scope of the disaster occasion. The degree of community involvement has to be identified in social terms relative to the total population or resource base.

From an organizational point of view there are several important implications, the greater the relative proportion of the population involved. For one, the greater the relative involvement, the more the occasion will be a disaster rather than just an emergency. Put another way, as increasingly has been argued a disaster is both quantatively and qualitatively different from an everyday emergency and necessitates different kinds of planning. A Bhopal gas poisoning incident is not merely one end of a scale with a gas leak in a house at the other end (see Shrivastava, 1987a).

Along another line, the huge, urban complexes that are coming into being in many developing societies--contrary to widespread belief--are far more likely to generate a tremendous acceleration of everyday emergencies rather than disasters. But in such situations when a disaster occurs it is likely to be of a catastrophic nature. The tip point for a disaster is much higher when viewed relatively than it is in absolute numbers (e.g., handling 250 dead a day may be the normal statistic in a metropolitan area). Institutional disaster planning has to take this into account.

2. The social centrality of the affected population.

Also, important for planning purposes, is whether the affected population is central or peripheral to the larger social community. That is, the victims may be from the area or they may not identify very much with the impacted locality (see Quarantelli, 1985: 60). Thus, the occasion of one disaster may involve a rather different population mix than another, even with an identical disaster agent in the same community (e.g., if a tornado were to hit a crowded airport terminal at one time and a large but local social event at

another; making victims respectively of many transients and many of long time closely linked neighborhood residents).

Organizationally, the more mixed the population affected the more likely there will be problems; everything else being equal homogeneous populations present less planning problems. In developing societies, for example, there will be major situational differences between areas populated at certain times of the year with many temporary migrant workers and other localities that are generally populated only by a stable native population. Disaster planning to be effective would have to be rather different for these two kinds of situations where the affected populations differ in their social centrality. This would be true even if both disaster occasions happened within the same society.

3. The <u>length</u> of involvement of the affected population.

Length of involvement refers to the crisis response of the population in the disaster occasion; it should not be confused with duration of the threat which is usually and more meaningfully considered a dimension of the physical agent. Thinking of length in the sense indicated permits us to take into account occasions where the duration of the primary disaster agent is short but the length of crisis involvement is longer because of perceived secondary threats (e.g. an accident involving a train carrying chemicals may be over in a few minutes, but the threat or actual slow release of toxic chemicals from the wrecked train may generate a crisis that lasts days as was the case at Mississauga, Canada, see Scanlon and Padgham, 1980). Or, as a number of disaster researchers have noted, there could be an occasion like the 1979 nuclear hazard accident at Three Mile Island where the duration of the accident was relatively short but psychologically the length of the crisis for certain population segments continues to this day (the volcanic eruption at Mt. St. Helens had this same characteristic for some of the nearby residents).

Also, because the issue here is primarily a matter of perception by involved parties there can be rather sharp differences between the risks as perceived by so-called experts and as seen by the populace at large. Thus, in developed societies some potential threats in the nuclear and chemical spheres are often differently viewed by interested parties with citizens in general using different criteria for risk assessment than do workers or specialists from these areas (see Slovic, Fischhoff and Lichtenstein, 1980; Covello, 1983; Slovic, 1987). The differences result less because a technology is involved but more because of the bases of the perceptions involved: those most intimately involved with a threat downplaying it in a fashion similar to the so-called "fatalism" exhibited to some natural threats (e.g. a volcanic eruption or flood) by native populations in developing countries. Such major perceptual differences can pose major planning difficulties for disaster planners on obtaining organizational definitions of what

is or is not safe and getting population to evacuate, etc. More generally, from a planning point of view, the greater the length of the perceived involvement, the more criticism responding organizations can anticipate.

4. The rapidity of involvement by the population.

In some disaster occasions the population becomes slowly involved in the crisis. On the other hand there may be very rapid involvement in a disaster occasion. Some flash floods such as the one in Rapid City, many dangerous chemical emergencies resulting from transportation accidents, the false story of a dam collapse at Port Jervis, New York and a hotel walkway collapse in Kansas City are studied examples of the kinds of occasions in which the population was very quickly involved (see e.g., Mileti, 1974; Danzig, Thayer and Gallanter, 1958; Quarantelli, 1984b). While rapidity of involvement is sometimes related to the next characteristic to be discussed--predictability--it is nonetheless independent of it. Predictability has to do with expectedness, rapidity with speed; the two can vary independently. Also we treat rapidity of involvement as a characteristic of the disaster occasion; it is not equated with speed of onset, which a feature of some physical disaster agents.

Rapidity refers to what happens in the response pattern and is viewed from the perspective of those involved; thus it may or may not correspond with the actual time available for action. This obviously can create planning difficulties. Generally populations and organizations adjust best to slow involvement situations; in some cases there may not even be much of a crisis. Adjustment is much more difficult in rapid involvement occasions. The matter is often compounded in some developing countries where, as we and others have discussed elsewhere, conceptions of social time may differ between more Western oriented emergency groups and the indigenous population in an area.

5. The predictability of involvement.

As just indicated, there are times when populations can predict their possible involvement in disasters; in other cases, the crises are unexpected. Such evidence as exists indicates the unexpected is much more psychologically disturbing than the expected. If one can predict involvement in a dangerous situation, culpability for the involvement is more likely to be attributed to self. If predictability is low--as seemed to be the case in the Mt. St. Helens volcanic eruption and the Three Mile Island nuclear accident--others are more likely to be held culpable. Also if predictability is high--as in the instances of populations living near chemical complexes or on flood plains--there is greater sensitivity to danger cues, willingness to act upon them, and less trauma in evacuations (Quarantelli, 1984a). Finally, if

predictability is low, we speculate there would be a tendency for a greater affective reaction.

The common thread in all of this is the element of the unexpected; as a consequence, people in the community are unable to bring their normal routines and coping mechanisms to deal with the crisis. While most people behave relatively well in such immediate crises, there is undoubtedly considerable stress and strain that may have negative psychological consequences. There are also organizational problems in predicting the unexpected; by definition it is very difficult. Furthermore, obviously the less a situation is expected, the less likely relevant organizations will have prepared and trained for such occasions.

6. The unfamiliarity of the crisis.

Along with low predictability, high unfamiliarity with a disaster occasion appears to be both psychologically and organizationally disturbing. This issue has several different aspects. For example, people have different images of different kinds of threats. They are clearly most concerned with and afraid of those that are most unfamiliar, such as in developed societies of some of the threats associated with nuclear power plants and chemicals (see Waller and Covello, 1984). The knowledge that populations in these societies have of many natural disaster threats may be little better than their knowledge of other threats, but there is little doubt some threats are perceived as more unfamiliar and therefore more worrisome to most people.

Also, as noted in studies on handling of the dead (Hershiser and Quarantelli, 1976; Blanshan, 1977; Blanshan and Quarantelli, 1981) the great majority of people--at least in American society--are unfamiliar with dead bodies, especially in large numbers. They become very psychologically disturbed if they have to deal directly with the dead, a reaction not as strong in some developing societies. Also few people---and this seems to cut across societal lines---are accustomed to seeing very badly injured or disfigured live or dead bodies; such an unfamiliar sight in a disaster occasion is usually very psychologically upsetting. Many transportation disasters, as well as flash floods, tend to generate such sights (for plane crashes, see Quarantelli, 1980); in addition to being psychologically disturbing, they are often disruptive of search and rescue efforts.

Unfamiliarity can be associated with the very "statistically unusual." For example, very few people have had experience in search and rescue activities. Too in many disasters there is a need to undertake many varied tasks in very short periods of time; what during normal times is familiar and spread out over time often occurs almost simultaneously in a disaster occasion. Although not always present, a strong element in most such situations is a perception of being unable to control what one is subject to.

These situations are seen as simply impinging upon disaster victims.

While the examples given here are at the individual level, groups also are little better at coping with the unfamiliar. However, organizations do have a prior planning advantage over individuals in that good disaster planning can often well forecast what problems in this dimension could be if the occasion arose. Disaster agencies are not totally vulnerable to the unfamiliar, whether they be in developed or developing societies.

7. The depth of involvement of the population.

It is possible to take certain kinds of losses (e g. deaths of family members, loss of homes, forced moves) as an indication of disaster impact. However, as noted earlier, the relative nature of what is involved may be more important than absolute features. It is not so much what one has lost in absolute terms, but what one has lost relative to others. In one of the first disaster studies, Prince (1920) noted that victims of the Halifax ship harbor explosion felt less personal loss because their own losses were in the context of around 2,000 dead and enormous property damage. The perception of relative deprivation, of course, can be in relation to other people as well as one's own standard of living. In absolute terms, some poor populations may lose more than some wealthier ones; yet the psychological stress may be higher for the more affluent. The general point is that seemingly same kinds of disasters may be rather different because of the differential depth of involvement of victims.

This is a particularly problematical problem for organizational disaster planning. It generally is not a matter for which too many realistic prior scenarios can be projected. However, sensitivity at least to the possibility that the issue could arise, can somewhat lessen its impact when it occurs.

8. The recurrence of involvement.

For some populations, involvement in disaster occasions is a recurrent happening, not a new experience. In fact, there may be even subpopulation differences; in a number of communities around the world certain groups living in flood plains can almost anticipate some flooding every year just as residents around major chemical complexes can expect emergencies. However, the fact of prior experience, of even many experiences, appears to be far less important than whether the prior experiences have been incorporated into ongoing attitudes and behaviors. There are cases, for example, where the development of a disaster subculture are unrelated to frequency of event occurrence. In terms of mental health problems, disaster subcultures essentially quasi-routinize disaster occasions and makes them much less disruptive and disturbing. However, if recurrent experiences are not so quasi-

routinized, they can become a source of psychological stress and strain. Depending on the prior development of a disaster subculture, recurrence as a disaster characteristic may influence mental health either positively or negatively.

There are also pluses and minuses for organizational involvement in recurrent disasters. Everything else being equal, most organizations generally plan and respond better the more they have recurrences of similar disaster experiences. However, it should not be automatically assumed that experience of disasters per se is good; some groups learn little and worst, occasionally a few learn the "wrong" lessons. Apart from that, there is a strong tendency to take the last disaster and whatever needs and problems it creates as the prototype of future disasters. This can be very important. The next disaster may be a drastically different occasion and create very different demands for the involved organizations (see, Forrest, 1979 for a study of a community which usually expected a hurricane but instead got a flood).

Does this discussion of these eight dimensions exhaust those which should be considered in any meaningful disaster typology? This is almost certainly not the case. For example, two other possible dimensions might be mentioned. One would be resource availability, that is what would be useable for disaster planning. Some societies and communities simply are more resource rich than others. While this is not a usual distinction between industrial/urbanized societies and agricultural/rural ones, it is one roughly between developed and developing countries (although those labels and the distinctions implied, as we have discussed elsewhere, leave much to be desired). Everything else being equal, organizations, communities and societies which have more resources can better prepare for and respond to disasters.

Likewise, there are differences in both degree and kinds of disaster preparedness around the world. While there is some correlation between preparedness and development it is far from being a high one, and thus should be treated separately. Using resource availability and degree of preparedness as additional dimensions for the creation of disaster typologies would seem both logically and empirically justified (and these have been used in an attempt to develop a societal typology for the disaster emergency medical service area, see Quarantelli, 1989). But for the moment, until typologies based on a generic approach to disasters are systematically generated, used, and evaluated as to their usefulness, this can be but a suggestion and not a recommendation.

Different Phases of Disaster Planning

The examples given in the prior discussion re almost exclusively with respect to preparing for and responding in the two middle phases or stages of the disaster planning cycle, namely emergency preparedness and emergency response. There is little doubt a

generic or all hazard approach is most useful for those two parts of the planning cycle. The eight different dimensions discussed which cut across agents is equally applicable to the two middle phases of the disaster planning cycle.

A partial case can be made that a generic approach is also valid for approaching certain disaster related mitigation and disaster recovery issues. Thus, such phenomena as preimpact individual disaster insurance coverage (Kunreuther, 1978) or the longer run demographic consequences of disasters (Rossi et al., 1983) seem relatively independent of the specific disaster agent involved. Research has shown that there is widespread reluctance to purchase disaster insurance; there are relatively few long run and important consequences on the demographic structures of disaster stricken communities and societies. Further studies may find some significant cross societal differences in these matters but that still would be a social situational rather than agent specific differentiating factor.

Nevertheless, a qualification on the agent specific independence of disaster mitigation behavior might be added especially for mitigation planning activities. There are two reasons for this. Some particular measures which might be taken to prevent or at least weaken disaster impact do tend to be somewhat agent or agent class specific. For instance, cloud seeding to prevent the formation of hurricanes or encasement of nuclear plants in building structures that would mitigate nuclear radiation leaks are measures that would have little inherent applicability to other kinds of disaster agents. In addition, the knowledge bases and specialists that would be needed for such planning are rather different than those received for other kinds of preventive or mitigation planning.

This is not to say that in all respects the planning process involved in disaster mitigation would be totally agent specific. For example, the general kinds of bureaucratic arguments advanced for a physical solution to potential disaster problems, the social sources of support and resistances in the governmental and private sector to such measures, population views of the legitimacy and acceptability of the planning suggested, and willingness to put preventive measures on a political agenda, do seem to show considerable similarities irrespective of the particular disaster agent involved. Thus, what researchers have found about the non-technical difficulties in implementing earthquake mitigation measures (see Drabek, Mushkatel and Kilijanek, 1983) do not seem to be that different from the problems involved in instituting hazardous chemical disaster preventive measures (see Tierney, 1980). Put another way, many of the human, group, organizational, community and societal aspects of disaster mitigation planning, tend to be generic rather than agent specific.

This is even truer of disaster recovery planning. To be sure, a few technical aspects will be agent specific. How to clean up pollution of agricultural land from salt water flooding and from nuclear radiation are rather different technical recovery activities. But the more social aspects of the recovery phase of disaster planning are more generic than they are agent specific.

The implications of this for the planning process seems fairly clear. Priority should be given by any organization involved with any aspects of the process to taking a generic approach to disasters. This would be especially true for institutional planning for emergency and emergency response. For more technical aspects, especially for mitigation and to a lesser extent for recovery activities, some attention needs to be paid to more agent specific aspects of the problem.

Apart from theoretical, logical or empirical research reasons for taking a generic or all hazard approach to disaster planning, there ar also some practical ones. These include being: (a) cost-efficient in terms of expenditure of time, effort, money and resources; (b) a politically better strategy because it mobilizes a wider range of groups interested in disaster planning thus creating a more powerful constituency for the process; (c) a major way of avoiding duplication, conflict, overlaps, and gaps in preparedness activities and actual responses to disasters; and (d) a way of increasing efficiency as well as effectiveness in any organized effort to cope with disaster occasions (Quarantelli, 1982).

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