At the height of a disastrous impact, and in the immediate post-impact recovery period, many activities are different from what they had been in the preimpact period.

There is much emergent behavior and groups, the more in catastrophes than in disasters. For example, there will be emergent groups that engage in search and rescue, distribute relief supplies and present grievances of victims about housing and rebuilding (Drabek, 1986: 132-249). Thus, Aguirre and his colleagues (1993) found that the search and rescue in the Guadalajara, Mexico gasoline explosion in 1992, while influenced by informal preimpact social links and ties, was essentially undertaken by emergent groups. However, very few such groups survive in any form. Most simply come into being and then disappear. They are merely temporary social entities with very few of them becoming institutionalized and part of the ongoing social structure. There may be occasional exceptions to this tendency to dissolve, as was true of some citizens groups that crystallized after the Three Mile Island nuclear accident (Walsh, 1984), after the Mexican earthquake of 1985 (Robinson, Franco, Castrejon and Bernard, 1986), and after the Exxon Valdez oil spill (Button, 1992), but these are the rare exceptions.

Apart from emergent groups appearing there are also the temporary modifications of preimpact patterns that occur in formal organizations as a result of disastrous occasions. But such alterations in structure and behavior seldom last beyond the immediate crisis period. Also, while it is typical among officials in the weeks after impact to talk about instituting organizational changes, especially in planning for future occasions, this seldom occurs. For example, a Disaster Research Center (DRC) study of American organizations that looked at them up to five years after impact, found that very few of them established any new structures and/or functions as a result of the crises they underwent (Adams, Stallings and Vargo, 1970; also Ross, 1978).

Likewise, at the community level, temporary modifications are vastly more likely than permanent changes. Rebuilding of destroyed or damaged parts of communities frequently follows the preimpact pattern, that is, what is reput in place is generally the same as before, be this street location, building forms, shopping areas, etc. (this same pattern was observed a half century ago in the rebuilding of bombed cities in Europe after World War II, see Ikle, 1958). It is therefore not surprising that Bates and his colleagues found that in seven Guatemalan communities hit by a rather catastrophic earthquake, 19.5% lived in exactly the same house that they lived in before and 60.8% lived in a different house but located on the same site as their pre-earthquake dwelling, and 14.9% lived in a different house on a different site but in the same village or town where they had resided before the earthquake (Bates, Farrell and Glittenberg, 1979: 128)

A major study in the United States found very little effects of disasters when it looked at a number of community aspects.

> We find no discernible effects of either floods, tornadoes, or hurricanes on the changes in population or housing stocks experienced by counties in the period between 1960 and 1970. Additional analyses were also made of the effects...on other characteristics of counties, including housing values, rents, age composition, educational level of population, and family income...In short, there appears to be no firm findings to indicate that natural disasters have any long-lasting effects on counties (Wright, Rossi, Wright and Weber-Burdin, 1979).

In many ways, disasters at least (we discuss catastrophes later) seem to bring about remarkably few permanent changes especially at the organizational level and above. This is in contrast with other kinds of social crises and their consequences. For example, major macro social changes can result from successful revolutions (see Eisenstadt, 1978; Zimmermann, 1983; Skocpol, 1984). Social developments affecting organizations, communities and national level programs and policies also have been observed following recent riots in the United States (Quarantelli, 1993a: 73).

But overall the research picture for disastrous occasions is as Drabek has written:

> for most disasters studied--apart from a few cases that appear to have important differentiating qualities--the overall picture is one of...relatively minor, ripples in the long-term development cycle...They are minor, in that continuity, rather than total redirection, emerges (Drabek, 1986: 251).

Put another way, disastrous occasions per se are not major spawning grounds for major new social initiatives or changes. It is not that no change at all ever occurs. Rather it is that apart from temporary modifications, permanent changes are very few and mostly along limited dimensions, as we will now discuss.

(2) Differential effects rather than broad sweeping consequences.

To the extent that social changes occur as a result of disastrous occasions, they tend to be differentiated in their occurrence. That is, a specific organization, some sectors of a community, certain parts of a society may see particular developments that would not otherwise have occurred. But often the imagery, mass media coverage and public discussions about many disasters and

catastrophes implies that all the population and area in the impacted community was a victim. Thus, for example, reference is made to "Mexico City being hit by an earthquake," the "midwest United States was impacted by floods," the "Chernobyl nuclear accident struck the Soviet Union or Russia", etc. This is a very misleading picture, because in these and other disasters, only certain parts of the communities involved were directly impacted.

Also, many immediate effects while seemingly large in absolute terms, often are relatively insignificant when placed in a larger context. For example, as recent studies of the Loma Prieta earthquake and other disasters indicate, overall negative economic consequences were relatively minimal at worst, even though the losses may have been in the billion of dollars.

> The data suggest that, at the county level, the quake has had little economic effect. To find drastic, localized effects which are marred by aggregates, one has to look at data for cities or even blocks within cities (Economic, 1992: 147).

Also, as one examination of the effects of disasters on financial markets reported:

> The total loss from Hurricane Hugo and the Loma Prieta earthquake combined amounted to under $10 billion, nine-tenths of which was sustained by homeowners. The value of the equity market in this country is over $2 trillion. This means that these disasters may have produced a .005 percent change in the capitalized value of corporate America, an insignificant amount to register on the stock market. This is not to say that some corporations, such as insurance carriers and resort companies in South Carolina, were not impacted. But overall, the effects were negligible, particularly in contrast to the wild swings in the New York and Tokyo stock exchanges, which caused nearly $2 trillion in paper losses combined (Economic, 1992: 104).

It might be objected that this kind of analysis is burying fairly narrowly focused impacts of disastrous occasions in a much wider economic context. But that is the point--while such occasions may directly and heavily impact localized areas, the surrounding context absorbs much of the impact and what may seem absolutely large becomes relatively quite small in the larger world.

In this kind of framework, massive and very broad aftermath changes are not to be expected in typical disasters since not that much of

the preimpact setting is altered. Particular organizations and parts of communities or societal activities may be badly impact and disrupted or destroyed, but overall there may be few overall consequences. At the very least this kind of analysis suggests very strong caution in leaping to conclusions that because large numbers may be involved, they are necessarily significant. It does not follow that there will be much direct effect and that there will be major social change or marked changes in development.

This granted, there can be and are differential effects from disastrous occasions. Thus, some organizational changes occurred after the 1985 Mexican earthquake. The Red Cross and the local metro system changed the disaster preparedness stances of their agencies, as well as establishing new interorganizational ties for planning purposes. In particular a basically new national system of civil protection and a new national level emergency planning, coordinating and managing organization came into being. In addition, mechanisms were institutionalized for strengthening and creating counterpart disaster planning entities at state and local government levels in the country (Quarantelli, 1993c: 34).

A differentiated pattern is also noticeable at the community level. For example, after the Alaskan earthquake, the rebuilding in a number of impacted coastal villages, left them with considerably better ports and facilities than they had before impact. But along most other lines, these communities changed little if any at all.

The Loma Prieta earthquake also, while its consequences were minimal in the larger social context, did have localized community effects. For instance:

> The earthquake resulted in a significant decline in the supply of low-cost housing for the poor and for members of various ethnic groups because of the damaging structural impacts in the Oakland area, the area south of Mission Street in San Francisco, and the Tenderloin District (a region with large Indochinese refugee population). The issue of housing for these impacted populations has become an important social and political concern in the Bay area (Economic, 1992: 137).

Occasionally, there are developments at the societal level. There may be changes in laws and legislation which can be attributed to the effect of some particular disastrous occasion. In the United States, national level programs and organizations such as the Federal Emergency Management Agency (**FEMA**) have been changed in the wake of recent major disasters such as Hurricane Hugo and the Loma Prieta earthquake, and the more catastrophic Hurricane Andrew.

Of course, the more the change is in line with what may already

have been latently present, the more it is likely to occur. For example, in Montserrat in the West Indies, after Hurricane Hugo, three local improvement projects planned before impact were implemented. These included introducing new agricultural production practices, building a community center and improving the potable water distribution system. Originally projected to be carried out on an incremental basis over a ten year period, after the hurricane, the projects were completed over a two year period (Berke, Kartez and Wenger, 1993: 104). Similarly, following an earthquake in Santa Rosa, California in 1986, a preimpact downtown revitalization plan was implemented (Mader, 1980).

(3) Changes are more likely from catastrophes than from disasters.

Although the research evidence is yet not conclusive, it does appear that catastrophes more than disasters are likely to generate social changes at the organizational level and above. This is not to say even catastrophes will always and automatically bring about major changes in the development of a community or society. Although we gave some examples earlier of macro level consequences in certain cases, as a whole historical accounts of past catastrophes do not support such a sweeping statement. In some instances there has been the destruction of total communities such as in several volcanic eruptions like occurred in Pompeii after the eruption of Vesuvius (Etienne, 1992) and in St. Vincent when Pelee erupted (Kennan, 1969). But in all these cases, very few if any permanent effects seemed to have followed elsewhere as a result of what happened to the impacted communities.

There is a literature, especially on developing countries where catastrophic disasters are more likely, which argues that postimpact recovery efforts ought to be directed towards building sustainable development initiatives rather than just restoring the status quo (e.g., Pantelic, 1991). But this literature also recognizes that on the whole, aid and recovery program tend to be oriented to short term relief with little linkage to long term development (Anderson and Woodrow, 1989). Nevertheless, if there are permanent social changes or developments after disastrous occasions, they are far more likely to occur after catastrophes than after disasters. For instance, while there does not appear to be much if any at all outmigration from an area hit by a typical disaster, a portion of the population permanently left St. Croix after catastrophic Hurricane Hugo hit the island (Christian, 1992).

In a major statement, Bates and Peacock have advanced seven likely reasons why developmental changes might be expected. They note that the most important is that catastrophic disasters:

> place the structure of the social system under stress and test its capacity to perform vital functions. In the process, weaknesses in the structure of the system are exacerbated and

> made visible for all to see. Furthermore, the system is forced to adapt, at least temporarily to this stress and the conditions that cause it. These, at first, temporary adaptations may become permanent features of the social structure or bring about other changes that will be incorporated (1987: 311).

They also note that catastrophic disasters:

> differentially affect soci-economic and ethnic groups as well as different sectors of the community's division of labor. As a consequence the stratification system may be affected, and differential decline and growth may occur in various sectors of the social structure...(1987: 312)

In addition, catastrophes may lead to the emergence of new groups as noted earlier in this paper, and provide a setting which fosters new forms of interaction between existing organizations. This too may lead to permanent changes. Also, catastrophic disasters:

> frequently destroy or severely damage outmoded infrastructure and force its replacement by more modern technology. Such...innovation may result in the alteration of the stratification system or the division of labor and may result in both differential growth and elaboration of sectors of the system's structure (1987: 312).

At times too, catastrophic disasters often:

> result in the influx of a large number of outsiders who supply additional labor and expertise as well as large amounts of outside physical and financial resources. This may produce an economic boom, and provide the impetus for change in both and the division of labor and in stratification as well as differential growth and elaboration (1987: 312).

Related to this is that the outside convergers bring with them forms of behavior and relationships that differ from those in the impacted community. These new patterns may be adopted by the local population and become a permanent part of the social structure. On the other hand, the contact may not be positively viewed from the perspective of populations in communities in developing societies, especially if the implication is that the locals are going to have depend or outsiders to survive and recover.

Finally, Bates and Peacock note that:

> conflicts often emerge in the aftermath of a [catastrophic disaster] over the distribution of scarce resources and over the equity principle which should guide the reconstruction effort. These conflicts may have serious political implications and result in permanent changes in the relationship between the government and other units comprising the system (1987: 312).

This is illustrated well in the aftermath of the massive avalanche in Yungay, Peru (Oliver-Smith, 1979a).

Now, it has been observed that the permanent changes that can occur will range from the relatively superficial or surface to the most fundamental. For example, the Friuli catastrophe in Italy:

> modified the outer-trappings of religious life without altering more deep-seated feeling about religion... [e.g.] fires were lit on hilltops on the twelfth night before Christmas to bring good omens for the next year's crop. Before the quake, virtually all villages between Gemona and Cividale practiced this rite, but now it has nearly disappeared. The feasts of the patron saints that were held annually in every village have also been abandoned (Barbina, 1979: 148).

On the other hand, it was found that an earthquake basically changed the economic division of labor in twelve Guatemalan communities. That is, in the aftermath of the catastrophe, there were compared to the preimpact situation major postimpact changes in patterns of businesses involved in producing agricultural products, clothing, household goods, health, personal services, legal/financial, leisure, farm stock and equipment, information/communication, etc. While there had been a prior tendency toward complexity in the division of labor prior to the earthquake, it was sharply accelerated and most marked in the six communities most heavily impacted. The authors concluded:

> The question posited early in this paper was: Does a natural disaster have long-term effects upon community level division of labor? The answer is clearly "Yes". ...The fact that complexity was altered...adds further confirmation to Prince's hypothesis that disasters do produce social change (Hoover and Bates, 1985: 23).

Also, some researchers in the former Yugoslavia have stated that a rebuilt city of Skopje was partly relocated and was twice as large in population and much more prosperous and modern economically than it would have been without its devastating earthquake catastrophe (Musci, 1982). In a more negative way, Oliver-Smith has documented the catastrophic destruction of Yungay, Peru and what happened in the aftermath to the community involved (1979b; 1992).

A case might be made it is in developing countries that social change is more likely. Part of this could stem simply from the fact that catastrophes are more likely to occur in developing than developed societies. But it is also because some of the reasons that Bates and Peacock suggested are more likely to exist in developing systems such as that local victims will be exposed to converging strangers with rather different values and beliefs. This is compounded by the fact that many although not all developing countries tend to be relatively more socially heterogeneous than many developed societies, a point we alluded to earlier as a development feature likely to result in more and worse disastrous occasions in the future.

(4) There are positive as well as negative outcomes.

Disastrous occasions tend to be equated with death, destruction, suffering, losses and all sorts of negative images. Thus, to many the effects of such occasions are automatically seen as being in a totally negative light. However, the consequences of disasters and catastrophes are a matter of empirical determination and should not be an a prior speculative judgement. In that framework, there is clear evidence that there can be positive as well as negative consequences. This is true even in the mental health area. Some victims and families are better off in the long run than they were before impact as a result of undergoing the extreme stress of a major disaster. For example, some have more positive self images and confidence in being able to handle future crises as well as stronger family ties (Drabek and Key, 1984; Quarantelli, 1985)

A Canadian disaster researcher, Scanlon, indicated this point also more generally when he wrote an article that discussed "the winners and the losers" in disastrous occasions. He observes that:

> Some persons, families, organizations, communities get specific economic benefits as a result of disaster (1988: 50).

As one example he cites Seward which was in economic decline before the 1964 Alaskan earthquake. It was devastated by the earthquake, but rebuilt and the preimpact trend was drastically reversed. This is consistent with the observation of Dacy and Kunreuther that:

> Communities hit by a natural disaster are often rebuilt so they emerge bigger and better

than they were before the event (1969: xi).

Finally, we will conclude this section of the paper with the observation that whether any change is positively or negatively viewed depends considerably on the perspective taken. This is particularly true in the political arena. Oliver-Smith discussing disaster occasions in developing societies notes that they:

> can reveal most clearly the existing power relations in a society and the reconstruction process may become an arena of contestation that can put in motion processes affecting predisaster structures of power relations and benefits...Disasters and reconstruction often create openings for the entrance of new groups into the political or economic process, questioning existing power relations, promoting change and simultaneously evoking or mobilizing resistance in sectors supporting status quo arrangements...Such tensions have implications for shifts in political economic power relations in the long term as well as reinterpretations both the structure and process of development (1993: 105).

THE FUTURE OF PLANNING FOR DISASTROUS OCCASIONS

So far we have projected a picture of the future that by most criteria would be viewed as negative. But that is neither our intent nor is it a fully accurate projection if left at that. The future with respect to planning for disastrous occasions is not completely bleak. Some of the social changes that are occurring will also positively affect planning in the decades to come. In particular, we want to note some of the implications in the ever increasing importance of the mass media in social life and in the trend towards democratization of political activities. They both encourage and facilitate improvements in disaster planning.

The mass communication systems around the world, particularly as the result of accelerating developments in electronic and computer technologies, have greatly increased their capabilities to quickly produce and distribute information. As a result of technological developments we are moving everywhere into what has been called the "information" type of society (Dordick and Wang, 1993). There are numerous and fundamental consequences from this for every aspect of human life. For our purposes, we want to solely note some of the implications for the disaster and catastrophe area.

For example, the mass media outlets increasingly put disastrous occasions on the agenda of everyone they reach. Information put forth about such occasions is simultaneously exposed to mass audiences in far distant places. Thus, a hurricane in Florida in

the United States will be noted as happening and significant not only by Americans, but also by some in Dacca in Bangladesh, an area also subject to major cyclonic disasters. An earthquake in Armenia will not only be visually exposed to those in that region in the former Soviet Union, but will equally be brought to the attention of audiences in Mexico City, another earthquake prone area.

But it need not even be a disaster experienced in a given area. A Bhopal in India or a Chernobyl in Russia becomes, as a result of media outlet exposure, instantly memorialized all around the world as an important historical happening as well as a symbolic representation of catastrophes that threaten the human race (see Wilkins, 1987) as do in slightly different ways famines as the current one in Somalia or earlier in Ethiopia. This kind of exposure to the content of mass communication systems, given its very dramatic visual presentation, can contribute to the notion that there should be planning for disastrous occasions. Image creating disastrous occasions in particular tend to generate efforts at planning for such crises. Even though distant, officials and communities elsewhere are given striking examples they can use to argue for more local preparedness.

There is every reason to think that mass communication systems will increasingly report on major crises that are distant from their own areas. Modern technologies have enhanced the abilities of local electronic mass media stations to send their own personnel to report directly on disastrous occasions. For example, many television stations from many areas in the United States sent their own reporting teams to transmit live reports back to their local communities after the 1985 Mexico City earthquake.

This kind of mass media information dispersal supports already existing tendencies to improve planning for disastrous occasions. We should note that we are not talking of a static social setting insofar as such planning is concerned. In fact, looking at the historical evolution from the past to the present, one might be encouraged in terms of dealing with future disastrous occasions. The present situation is certainly better than what existed in the past, and as such augurs well for the future.

Our center, the Disaster Research Center, has done considerable research for nearly 30 years on preparations for and responses to natural and technological disastrous occasions. Along some line our recent field studies report rather good news. For example, local emergency management agencies in the United States, have much better planning and managing and have better personnel than they once had (see Wenger, Quarantelli, and Dynes, 1986).

A similar picture can be found if one looks at most countries, developed or developing, around the world. In the last few decades planning for and responding to disastrous occasions has improved. There has been a particular acceleration of the process in European

countries such as Italy, Great Britain, Greece and Spain. Where nothing once existed, much has been created; where there was something in place it has been made better. Almost anywhere that one looks the present as compared with the past is an improvement. Even in developing countries, except perhaps in Sub-Saharan Africa, there has been notable increases in crisis type planning in such societies as India, Mexico, China, Venezuela and Bangladesh.

There is no reason to think that the indicated improvements will not continue to occur. Disastrous occasions will increasingly be on the agenda for attention as the mass communication systems everywhere will find it progressively easier to report on such news stories. While we would not want to suggest that such information dispersal is completely socially functional (a topic which can not be discussed here), without doubt the news stories will contribute positively to existing efforts to improve planning for crises.

In turn, the mass media content about disastrous occasions will continue to converge with another major social trend. As a whole, a social change going on has been a move towards democratization of political activities. This involves changes of many different values, beliefs, activities and practices. For this paper, the two most important have to do with what citizens increasingly expect of their governments and the rise of citizen activism. Both of these will continue to move in the direction that citizens will more and more expect their own governments to protect them against disastrous occasions and/or join with their fellow citizens in efforts towards better planning for environmental threats.

For centuries in many places, populations had little expectation that their governments could or would do much to protect them again the impact of disasters. Partly as a result of religious beliefs as well as a general fatalistic attitude about the vicissitudes of life, "Acts of God" were accepted as inevitable.

But this has changed. Partly as a result of the secularization that has progressively become the dominant mode of thinking in Western thought and also because of certain changes in political beliefs about the role of governments, "fatalism about disasters" has become less and less an acceptable popular view. Especially in the developed world, but spreading rapidly elsewhere:

> most citizens accept disaster planning as an appropriate and acceptable function of government...[and] is viewed as a public responsibility (Drabek, 1986: 23).

In fact this author notes that there has been:

> some fundamental changes in hazard perceptions. God is losing ground, when it comes to flooding, for example. And if not

God, than man.

> While events per se may still be viewed as "Acts of God," it is my belief that greater segments of the public view certain types of damages as avoidable, if government will act (1986: 342, 352).

As other writers have noted:

> As humans have come to understand and control natural processes, disasters which were previously viewed as "natural" in that they were beyond human control, are now seen by many as environmental events which can and should be managed.
>
> Currently, many "natural" disasters are not perceived as clearly natural or technological in origin...We suspect that humans will increasingly come to view natural disasters as "unnatural" in origin: people will increasingly assume that humans, and human created systems, are at fault (Blocker, Rochford and Sherkat, 1991: 378, 379-380).

Of course the advent of technological disasters is accelerating the acceptance of this view because to many such dangers are seen as inherently more capable of being controlled by human beings.

That the latter is the case is additionally supported by the emergence in many places of citizen groups interested in environmental threats mostly of a technological nature (such as hazardous wastes, radioactive materials, chemical substances, etc.) From a reactive stance towards the happening of natural disasters, many in this movement have moved to a proactive stance with respect to technological disasters. Thus, both in Europe and the United States, numerous small groups of citizens, usually in an informal way, have formed to better prepare for and respond to chemical and nuclear related hazards which might turn into disastrous occasions There is every reason to think that such large scale citizen activism will increase in the sense of an increase in both the number of such groups and the range of risks about which they think something should be done. It has been observed by many that there was much social activism generated by the Mexico City earthquake of 1985 (see, e.g., Dynes, Quarantelli and Wenger, 1990).

Overall then, social trends such as greater expectation by citizens that they should be protected against environmental threats as well as particular happenings such as the UN Decade for Natural Disaster Reduction, assure that in almost all societies we can anticipate continuing if not increased attention to planning for disasters and

catastrophes. Overall social changes or developments are contributing to preparing better for disastrous occasions.

Nevertheless, it is rather clear that on balance matters are probably going to get further unbalanced. We are going to be faced with more and worse disastrous occasions in the future no matter how much disaster and emergency preparedness and personnel have or could improve in any realistic sense. If we look not from the past to the present, but from the present to the future, that appears as the inevitable outcome. Such changes as will occur in planning while in the right direction will not be able to match the quantitative and qualitative increases in disastrous occasions, at least if the present level of effort is not increased.

In many ways this is no different from what has been observed of the more general environmental problems that face the world.

> The various environmental crises that the world is facing--exhaustion of resources, spoilage, toxicity, and pollution--will grow worse before they grow better. The logic behind this assertion is that the impulse among nations to develop economically and compete with others is so strong that they will give greater priority than impulses to protect the environment. In the short run, environmental considerations constitute a cost and a liability in the drive toward competitive productivity. This effect will no doubt be stronger in those nations struggling to catch up--the former Eastern bloc and the Third World countries--than in the developed nations with developed environmental movements (Smelser, 1991).

Nevertheless, this does not mean nothing can be done. A major first step is to understand the source of the problem for that will also tell us something on what needs to be done. Let us note one general implication of research based observations. It is that solutions are not to be found primarily in new technologies or better use of existing ones. The character and outcomes of future disastrous occasions will primarily stem from social factors. Social issues can only be dealt with socially; improvements in technology can only address technological problems. This is not an argument against the use of technology or its improvement, only that if something is socially problematical, social solutions must primarily be sought.

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