University of Delaware
Disaster Research Center

PRELIMINARY PAPER
#178

CAN AND SHOULD SOCIAL SCIENCE DISASTER
RESEARCH KNOWLEDGE AND FINDINGS FROM
DEVELOPED SOCIETIES BE APPLIED IN
DEVELOPING SOCIETIES

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1992

Abstract

We consider the extent to which social science research findings about disasters primarily derived from developed countries can and should be applied in developing societies. It is first noted that the conceptual distinction made between developed and developing social systems may lead to an underestimation of the existing capabilities for preparing for and responding to disasters in developing nations. We then note general differences between organizational structures in developed and developing societies, because organizations everywhere are the prime actors in disaster preparedness and response. However, most of the paper discusses six major observations with respect to the extent to which empirically based research findings about the behavior of organizations in highly urbanized and industrialized societies can be extrapolated to or applied in developing social systems. We conclude that it is not a matter of either/or, and that there are certain social features in developing societies which might lessen the necessity of importing disaster social technology from developed countries.

Introduction

Disasters, whether resulting from natural and technological agents, are currently more frequent in the developing countries of the world. The number which can be cited will vary depending on the criteria used, but probably 70-85% of all such occasions happen outside of developed societies. There is also reason to think that in the future proportionately more disasters will occur in developing nations than in the more developed countries. Inevitable changes in the nature of disaster agents as well as trends in social systems almost insure this will be the case as we move into the 21st Century (for a discussion of the underlying conditions responsible, see Quarantelli, 1991c; see also Bowonder and Kasperson, 1988).

In addition, the more catastrophic instances of such occasions, measured in terms of casualties and homeless victims although not necessarily of property losses, have been and will be more likely in the developing nations of the world. Some of these more recent disasters in the last several decades are very well known: the toxic poisoning incident in Bhopal, India, is the worst chemical type disaster to ever have occurred and the 1984 gas explosion in Mexico City resulted in one of the very highest total of dead in a technological disaster; the 1970 cyclone and accompanying tidal surge which hit Bangladesh and the famine in Ethiopia in the 1980s, rank among the highest in all of human history in the number of fatalities that occurred.

However, in contrast to where disasters happen, is the fact that by far the greatest amount of social science disaster research has taken place so far in developed countries (for inventory of research findings see, Drabek, 1986 and Kreps, 1991). There are pockets of researchers in nations such as India and Mexico, but in many of the most disaster prone countries in the developing areas of the world, there are almost no domestic scholars looking at the social aspects of disasters in their own countries (e.g., this was a conclusion reached in a conference focusing on southwest Asia, see Research on Socioeconomic Aspects of Disasters in the Asia-Pacific Region, 1989). Overstated, disasters mostly happen in developing countries, social science studies about such happenings have mostly taken place in developed societies. In partial support of this statement, we can note that a survey of all the field research done by social scientists on disasters up to 1979, listed English language publications from less than a dozen researchers from developing countries and only about two dozen studies in such societies (although the survey confined itself to sudden type disasters and therefore did not cover more slowly developing collective stress situations such as famines, droughts and epidemics, see Quarantelli, 1984). Undoubtedly in the last decade there has been an increase of systematic work by researchers in developing countries in their own societies, but it is actually

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probable that such work is even proportionately less of the total worldwide given the accelerated increase of studies in developed nations (for the latter see Dynes, 1991).

Given this imbalance, is there anything about what we have learned about the social aspects of disasters in the developed nations which can be applied to disaster preparation and disaster management in developing countries? In some respects, this is simply a more focused or delimited question within the broader issue of how much technology transfer can and should occur from developed to developing countries. As is well known, such general technology transfer, whether it be of social knowledge or physical things, has not always been appropriate or easy. However, our focus in this paper is only on the transfer of social technology from developed to developing countries with respect to systematically researched derived knowledge about disasters. Can it be done? Should it be done?

It should be noted that we leave open the question of transfer in the other direction. While we believe that this is a possibility in the social arena, it is simply a fact that in the disaster area that it would be very difficult to cite at the present time more than very isolated instances of actual transfer of knowledge or understanding about disaster phenomena from developing to developed social systems. However, it is a potential transfer source that would be worthwhile exploring and might be considered by developing countries and their social scientists.

In the rest of this paper, we will do two things. First, after noting some conceptual problems with the term "developing" societies, we will briefly discuss some general differences between organizational structures in developed and developing countries. The reason for this focus is that the great bulk of disaster planning and managing is primarily a function of organized groups or organizations. Second, we than make several observations about the extent to which empirically based findings about the disaster behavior of organizations in highly urbanized and industrialized societies can and should be extrapolated to or applied in developing social systems.

Differences Between Developed
and Developing Societies

The question of the applicability of the findings from disaster research primarily done in developed countries to developing ones is a very complicated matter. Whatever we say should be taken as an initial exploration rather than a final conclusive statement about the issue. In our view, even the way the question is generally posed, at best, is a debatable one.

It should be recognized that the social sciences originated and grew to maturity in a few countries of the Western world.

Consequently, they cannot help but reflect some aspects of that world. The very concepts of "developed" and "developing" countries comes from a Western perspective (these terms are not always recognized as having been formulated and refined by social scientists from an initial post World War II conceptualization of "modernization", see, Binder, 1986). As such let us consider two serious conceptual problems in the use of the terms "developed" and "developing".

First, there is a latent Western ethnocentrism in the way the terms tend to be used. Criteria of economic and political complexity of certain kinds are used as the differentiating factor to dichotomize the notion of development. But if complexity in the religious or the family/kinship spheres was used instead, we would almost certainly have to recategorize some of the social systems we presently put without much thought in one or the other category. This is not purely an abstract anthropological issue since it could be easily argued, for example, that the family/kinship complexity of a society is directly related to the kind and degree of disaster planning it can and could undertake. In fact, we feel comfortable in stating that it is at least a very viable hypothesis that the complex family/kinship structures found in many developing countries may be better suited to coping with disasters than the current social arrangements of households in most highly urbanized and industrialized systems (for a discussion of this with respect to individual and household recovery from disasters, see Quarantelli, 1991a).

In addition, in some so-called developing social systems, the family/kinship structures and functions are roughly the functional equivalent of certain Western type governmental and economic bureaucracies; religious institutions in other places are sometime the same for political activities. A consequence of a failing to note this is that in disaster planning therefore, Western oriented officials (and this can apply also to officials in developing countries who have been trained in the West) tend to look for the structural or organizational equivalence of what they are familiar with, rather than looking for how the equivalent tasks, activities, or functions are being carried out in the developing country. There is a general issue here that needs considerable examination although we can not do more than introduce it in this paper.

Even less easily set aside in addressing the question of developed and developing, is the tremendous variations in the societies which are generally called "developing". To put China and Indonesia into the same category as island nations such as Tonga and Vanuatu with populations of less than 100,000 seems a somewhat dubious exercise. The difference in size actually merely reflects a great number of other more important differences. This kind of categorization is dubious in the same way as if we were to treat the disaster preparedness and response of most Asian and Latin American metropolitan areas equivalent to that of an isolated mountain top

hamlet in Nepal or a farming village in the Philippines. All other differences aside, the huge areal and population size differences between developing societies ought to suggest considerable caution and restraint in making any generalization, comparative or otherwise, about them.

Also, we have a problem with the fact that those social systems characterized as developing exhibit considerable social and cultural heterogeneity. The cultural values, beliefs and norms, not to mention their social organizational structures, class and intergroup relationships, and the bases of social integration involved, comprise and span most of the variation known to exist in the world. Equally as important as the heterogeneity itself is that along certain dimensions some of the developing countries are closer to some developed societies than they are to other developing nations. For example, there is considerable variation in the attitudes toward and the legitimacy accorded by elites and citizens at large to their political institutions. This is not an unimportant factor in disaster preparedness and response. But this sociocultural dimension cuts across and does not differentiate developed and developing social systems.

A consequence of using a blanket category of "developing" often obscures to officials and disaster planners that there can be very important intercountry differences and intrasociety variation in the degree of development involved. A simple dualistic label of developed and developing does not encourage thinking and looking for such variation. This is less a plea to treat each society as different from every other, but more of an argument that stereotypic labeling needs to be avoided. There is a need to think beyond two labels primarily derived from a particular historical context.

What obviously is needed is a typology of societies that goes far beyond a simply dichotomy of certain aspects of development. There is a parallel here to some problems in conceptualizing the very phenomena of "disasters". Almost all serious students of the problem, for example, do not consider a dichotomization of natural versus technological disaster agents, or of Acts of God versus Acts of Men and Women, as either a very useful or valid approach to the definitional issue (see, e.g., Wijkman and Timberlake, 1984 and Quarantelli, 1990a). Instead, efforts have been initiated to typologize disasters in terms of such multiple dimensions as duration, possibility of forewarning, speed of onset, magnitude of impact, and so on (e.g., Quarantelli, 1991b). Eventually a meaningful multi-typology of disasters will be worked out (for a recent effort see Dynes, forthcoming). However, there is also a need to develop a multi-typology of social systems that are impacted by disasters. Such a system typology must and will go far beyond a simple minded dichotomization of developed or developing societies.

However, given the present absence of such conceptual tools, we are forced to work with the developed-developing distinction. Nonetheless, we shall try to provide a little sharper focus. Thus, the remarks that follow should be seen as most applicable to moderate size developing countries with a degree of political complexity and an industrial economic base and at least the nominal existence of certain modern social institutions such as a mass communication system and a modern health-medical system.

In this kind of heuristic framework, developing versus developed social systems differ from an organizational point of view along the following six lines (the remarks are based on previous papers, see Quarantelli, 1987, 1990a and b):

1. Developing societies as a whole do not have as complex organizational structures as do developed systems. There is simply less of an infrastructure in such countries. This is true both in terms of the number of different agencies and organizations as well as the relative totality of the work force in such groups. It is easy to overlook the fact that in contrast, developed countries tend to be "organizationally rich." Just as developing social systems are economically poorer they are also usually organizationally poorer. There is therefore much less of an initial social structure on which to build disaster planning.

2. Many if not a majority of the very top organizational personnel have often obtained their advanced training and education outside of their own systems. Many of these officials have been socialized to Western type professional ideals and contexts rather than the local situations. They often look at their own worlds with eyes different from other average officials and citizens. As an Indian editor recently noted:

The educated ruling elites, "looking westward", are getting increasingly alienated, cut off from the roots of native culture, pushed away from their own nationals. They become strangers at home.(Desai, 1982: 5).

One consequence can be a failure to see the positive aspects of their own systems for disaster planning.

3. The organizational structures as do exist tend to function from the top down. While almost all organizations anywhere are reactive rather than proactive, this is especially true in developing countries with a strong tendency for initiatives only at the very top. This frequently means that initiative for new policies and programs is left in the hands of only a relative few and

if this is the case, they frequently have much to do and
can give little time to any one particular problem such
as disaster planning. Furthermore, top organizational
decision makers are seldom those that have to do the
actual work involved, so high level formal policies or
agreements may remain only that in top oriented
organizations.

4. In many organizations, emphasis is on structures or
forms rather than functions or tasks. For some
officials, the means often become ends, as seen in the
proliferation of paperwork and plans, as well as
incessant paper flow. This of course is not peculiar to
bureaucracies in developing countries, but it seems
particularly prevalent in such societies. A frequent
consequence in such social systems is that in planning,
an end product, the plan, gets emphasized rather than the
planning process itself. Disaster plans rather than
disaster planning gets the priority. But it is far more
useful everywhere to envision planning as a process
rather than to perceive it as merely the production of a
tangible product. Such an approach avoids confusing
means with ends, and keeps a valuable emphasis on the
dynamic nature of whatever is being planned.

5. Few distinctively separate disaster preparedness or
responding organizations exist. This is true whether the
planning be for mitigation, preparedness, response and/or
recovery. While the situation has somewhat started to change
in recent years with the creation of at least emergency
oriented groups, overall there are relatively few specifically
disaster groups and agencies of any kind in most developing
countries. This means that if the need for any kind of
disaster planning arises, it often has to be grafted on to
whatever non-disaster social groups exist, or even more
difficult, that new organizations for that purposes have to be
created. Apart form the lack of groups with relevant
responsibilities for disaster planning, there is also the
accompanying lack of a constituency that might otherwise
provide some kind of political pressure and support. The
seeming lack of a "political will" to do anything about
disasters in some developing countries is often rooted in this
social void, although it is not the only factor involved.

6. Furthermore, the further away from the national level,
the rarer the existence of disaster specific groups in
most developing countries. To be sure there will almost
always be local agencies with police, fire, and medical
functions, for instance. But these are mostly oriented
at best to dealing with very localized and low scale
emergencies and not with responses to community wide
disasters, and certain not with disaster mitigation,

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preparation and recovery planning and managing. The importance of this lies in the fact that in all societies, almost any kind of implementation of any planning of any kind, has to occur at the local community level. This is as true of disaster as it is of development planning generally.

Apart from the need for a new typology of social systems around the world, what are other implications of our remarks on the applicability of disaster research findings on organizations derived from developed countries to developing ones? Let us mention five points. They are derived not only from the research from Western societies, but also from some of the limited social science disaster research on organizations that have been done in such places as India and Mexico, and a few studies in other Asian, African and Latin American countries (see, e.g., Alam, no date; Raghavulu, 1982). However, at best, the statements should be taken as educated impressions not 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 societally specific behavior patterns became more likely as one moved up to the family, the organization, the community and the societal level.

Such cross societal disaster 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 undertaken by survivors, neighbors and private citizens. Evacuation is carried out by family or household units rather than solo individuals. In contrast, organized disaster mitigation measures and reconstruction activities which are primarily at the community level tend to vary much more 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 specialized technological resources, such as military groups, will tend to behave generally 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 function that such groups may have. For example, many developing social systems do not have the elaborate or specialized weather service organizations that can be

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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 Western Europe or the United States and Australia. 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 citizen s and groups to sudden risks and hazards. In some developing societies, there are rather complex informal social networks at the village level which allow many warnings to reach populations relatively well apart from any mass communication system. For instance, there are studies which have shown the existence of a wide variety of early indicators of possible flooding as well as long established warning message networks functioning in flood prone village communities in India that are apart from the official and mass media warning systems (see Howes, 1979; Schware, 1984).

Similarly, most developing countries do not have the interrelated complexes of groups and agencies which in Western type societies are characterized as medical health systems. The elaborate and linked groups that have been created in many developed countries for the delivery of emergency medical services are even less likely to exist in developing societies. As such, it might be thought that certain highly disaster relevant functions might be almost completely unmet in such systems. This is not the case. As an Indian observer once wrote, while cases involving major surgical operations can only be done within a hospital context:

> even in a country like India where proper medical hospital care may not be available in peace 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 [the Joint Assistance Center] itself have been integrating such techniques (e.g., solar therapy) into its training programmes for disaster preparedness for the last several years (Jain, 1983: 2).

Overall, our general point is that we should not assume that the organized ways that exist in the West for providing certain services or carrying out particular tasks, are the only relevant social arrangements possible. More 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 some 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 experiences a society and its organizations have
with disasters, the more likely they are to be prepared for and to
respond well to a later 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 recurrence of disasters raises the probability of
the emergence 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 later disaster (Wenger,
1978).

As noted earlier, as a whole, developing nations are more at risk
to disasters than developed ones. 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 such
have improved 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 a widespread implicit
assumption that in almost all respects developing countries as a
whole are worse off in disaster preparedness than developed
nations, especially given few or no local organizations
specifically oriented to disaster problems.   If disaster
subcultures exist, this would not be the case.

In addition, some social scientists have suggested that below the
formal organizational level, there may be relative adaptability to
environmental problems in developing countries. They note that
residents of rural villages in such systems, because they do not
have the extreme specialization, formal agencies, and bureaucratic
structures that are found in cities in developed societies, may be
better able to cope not only with everyday emergencies but also
disasters. One study of two rural villages which underwent flood
disasters in Indonesia and in Peru concluded that:

> Although marginalization may render many Third
> World populations more vulnerable to potential
> disasters, case study materials based on these
> two responses suggest that some victims in
> these types of villages may better be able to
> recover from such disasters than many within
> more developed countries (Holland and
> VanArsdale, 1986: 51).

4.   One of the better documented general conclusions of disaster research on organizations is that there is much emergent behavior in the emergency time periods and that such behavior usually makes for more efficient and effective responses. This is certainly true in developed societies (Drabek, 1987). To what extent would this hold for organizations in developing social systems?

In the absence of much 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 crisis occasion. 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 immediate action and established organizations can 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 societies do not have the career 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 impression is that many organizations in developing social systems would show relatively little adaptive capabilities, less because of their historical roots, but more as said earlier because many organizations are top heavy and tend to emphasize structure more than tasks. If our hypothesis is correct, a 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 collective mass emergencies, suggest what factors might be important. They have to do with such structural dimensions such as centralization of decision making, patterns of communication flow, height or layers of hierarchies, complexities of the division of labor (see, e.g., Quarantelli, 1985: also Scott, 1987). However, the matter is far from simple and the applicability of research findings to developing social systems is even less certain.

For example, in developed societies there are differences between highly centralized and decentralized types of organizations which also vary depending on the time phase of disaster planning being considered (McLuckie, 1975). The former types do not seem to be able to react as quickly to a crisis as the latter types. On the other hand, decentralized ones do not cope as well as centralized ones in handling reconstruction issues such as improving seismic safety (Dynes and Quarantelli, 1989). Some organizations have very

long and complex channels for information flow with much going down from the top layers of the hierarchy. Some studies of disasters seem to indicate that such groups, as exemplified in many hospitals, are inefficient in responding to emergency time needs unless they informally go to decentralized decision making and informal information exchange with, for example, lower level nurses communicating horizontally and making key decisions instead of the top hospital administrators vertically passing down formal orders. But in contrast, much disaster mitigation planning seems to be better when guided from a centralized office.

Now the degree to which the patterns in these examples would hold equally true for developing societies is an open question. But given what is known to exist within developed countries, it seems probable that a similar pattern might also be true within developing social systems. There is some supportive research evidence for this. For example, a study of the emergency time organizational response to the Mexico City earthquake found that while Mexico and its capital city are formally very highly centralized, informally there is considerable everyday decentralization and this allowed a fairly effective organized governmental reaction in the immediate aftermath of the disaster (Dynes, Quarantelli and Wenger, 1990).

Conclusion

In conclusion, what can we say? We know that the dimensions discussed are important in certain societies, those in which the social science research has been undertaken and that is primarily developed social systems. But we do not have solid evidence which dimensions are important in developing societies. Therefore, we have given our impressions of the possibilities of transfer. Such a view might 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 done, that the lessons from Western type societies have no applicability in non-Western systems. In our view, it not either/or, but what can and cannot be extrapolated from one kind of society to another. Obviously this will require intensive comparative analyses (for on particular effort to do so see Dynes, Quarantelli and Wenger, 1990 which in part attempts to compare disaster related organizations in Mexico and the United States).

In addition, we have tried to suggest that there is reason to think that developing countries might consider that some of their existing social arrangements might actually be functional for disaster preparedness and response purposes. If so, this suggest that instead of importing all social technology from the outside, efforts ought to be made to identify those elements within the developing countries which are of such a nature and which could be improved to help cope with disasters. So even if transfer is

possible, there is a question of whether it should be done. Actually this is consistent with a general implication of the current body of disaster research, namely, that the best disaster planning is that which adheres most closely to what already exists at the local community level. Applying this principle to developing countries suggest that the best planning that they can undertake is that which is most consistent with existing organizational arrangements at the local community level, rather than importing social technologies exclusively from developed societies.

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