

University of Delaware
Disaster Research Center

PRELIMINARY PAPER
#59

DISASTER PREPARATION PLANNING*

E.L. Quarantelli
Kathleen Tierney

March, 1979

*Position paper prepared for American Association Advancement of Science
Workshop on Fire Safety and Disaster Preparedness, Washington, D.C.,
March 14-16, 1979.

INTRODUCTION

Most descriptions of disaster events place a great deal of emphasis on the damage done to life, physical structures and facilities. Financial estimates of the destruction caused by the disaster agent, together with accounts of the number of dead and injured, comprise the commonly accepted standard for gauging disaster severity. However, disasters also exact social costs over and above the damage to life and property. Indeed, it can be argued that it is precisely this element--the sudden disruption of social life--that distinguishes disasters from other destructive or costly events such as accidents, personal or family tragedies and economic depression. The notion that some degree of stress on community social organization is present in all disasters is expressed explicitly in widely quoted definitions which define a disaster as

an event, concentrated in time and space, in which a society or a relatively self-sufficient subdivision of a society undergoes severe danger and incurs such losses to its members and physical appurtenances that the social structure is disrupted and the fulfillment of all or some of the essential functions of society is prevented (Fritz, 1961: 655); or as

a collective stress situation when many members of a social system fail to receive expected conditions of life from the system (Barton, 1970: 38).

All disasters have in common the fact that they threaten life, property and the functioning of the ongoing social order. They differ, however, along several dimensions which have implications, not only for the kinds of hazards they pose to human communities, but also for the kinds of preparedness activities communities can launch.

A recent overview of the disaster area has pointed out the importance of distinguishing between disaster agent characteristics when seeking to determine community hazard potential and preparedness measures (Dynes, 1974). Agents differ in their: (1) frequency; (2) predictability; (3) controllability (4) cause; (5) speed of onset; (6) length of forewarning; (7) duration; (8) scope of impact; and (9) destructive potential. Agent characteristics clearly affect community preparedness and response. For example, more predictable disaster agents, such as hurricanes, allow for a warning period and for considerable activity aimed toward saving people and property. Less predictable agents, e.g., explosions, and disasters characterized by rapid onset (flash floods) allow less potential warning time and present a relatively greater threat to life, property and community functioning. This variation in agent characteristics is one of the reasons why, while general principles of good disaster preparedness (DP) exist, there can be no single set of preparedness rules applicable to all communities; each must undertake planning by first taking into consideration its own particular set of hazards.

One of the pioneering students of disasters differentiated the disaster event along a time dimension, arguing that there are stages to disaster impact (Powell, 1954). Eight stages were distinguished: predisaster con-

ditions, warning, threat, impact, inventory, rescue, remedy and recovery. Analysis suggested each stage is characterized by different types and rates of community activity and that each presents different organizational problems. For example, activity in the "rescue" phase is more spontaneous, informal and unorganized than activity in the "remedy" phase, which is marked by more highly organized and professionally directed response and also by interorganizational friction. Conceptualizing disaster as a stage-like event has implications for preparedness policy. By pointing out that community needs and modes of functioning do not remain constant as the disaster event recedes into the past, planning should aim at providing appropriate mechanisms for bringing the community through these phases, a perspective which provides a needed corrective for approaches to DP which focuses on the immediate post-impact period only.

Disasters have certain elements in common. However, they also display a great deal of variety--a fact that in the past led many to despair of ever being able to plan adequately for them. However, the position of disaster researchers is that adequate DP is a goal that is indeed achievable. While the status of research and policy in the DP area is not as it might be, both areas have seen improvement in recent times.

STATEMENT OF THE PROBLEM

Why do we need DP? The answer is that disasters in American society are increasing and will continue to mount for several reasons. First, new disaster agents, such as chronic and sudden chemical hazards, are emerging as a result of technological developments. Second, greater numbers of people are at risk both because of migration and settlement trends and because of life-style changes. This can be illustrated by the increase in flood and flash flood hazards. It has been estimated that 22,000 U.S. communities are subject to flood hazards, with an annual average flooding loss of between one and two billion dollars (Mileti and Hutton, forth.). Increased flood plain development is one factor accounting for these large losses. In the 1970's, the average annual death rate from flash floods has tripled, compared to the 1940's average. This rise in fatalities is due in large measure to the expansion of leisure time and the greater popularity of camping in the flood prone areas during the high-risk summer months (Mogul, Munro and Groper, 1977).

The increase in disasters and the fact that more people are at risk are not the only reasons better DP is warranted. The greater social and economic interdependence which characterizes our modern way of life means that the potential now exists for more massive disasters, with regional and even national impact. Region-wide blackouts are a case in point. Moreover, the public attitudes have changed. The population as a whole, as well as particular categories of citizens, have come to expect more efficient and effective planning and are increasingly less tolerant of inequities in disaster response. In short, without greatly improved DP, the material and social consequences of disasters will become more and more negative as time goes on.

Can DP make a difference? If disasters are viewed primarily in terms of the casualties, property losses and social disruptions they occasion, the answer is yes in all three problem areas. This can be illustrated in a

variety of ways. The development of warning systems through the decades has clearly resulted in saving lives in the case of such disaster agents as tornadoes (Brinkmann, 1975). The appropriate employment of land use measures has cut losses from such agents as river floods (White et al, 1975). The institution of preplanned one-stop centers for relief and rehabilitation activities probably have lessened the stress to which individuals, families and households have been subject after major disasters (Parad, Resnick, Parad, 1976). While it would be a mistake to view all preparedness measures as being functional in reducing negative disaster consequences, preparedness clearly can have positive results.

Is current DP at the level it could be? Whether looked at from the standpoint of different governmental levels, or with respect to other kinds of social organizations, the answer is no. Federal involvement in disaster planning and response has been marked by confusing, changing and inconsistent policies; failure to link preparedness and response activities; the absence of a single agency point-of-contact for disaster-relevant activities; duplicative and means-rather-than-ends-oriented bureaucracies; and the absence of a comprehensive overview of resource allocation and use. Federal disaster relief efforts have at times appeared misguided and short-sighted to observers. Relocation programs for disaster victims have been singled out for particularly intense criticism, both in the popular press and in social scientific research (Hall and Landreth, 1975; Erikson, 1977), for exacerbating individual and community problems after disasters rather than ameliorating them. Two instances of poor federal coordination which resulted in reduced community goodwill were observed following the Hurricane Agnes flooding in Wilkes-Barre in 1972 (Vinsco, 1977). In one case, the state of Pennsylvania instituted a grant program for disaster victims, and the Internal Revenue Service taxed the grant benefits. In the other, after many flood victims took the initiative and began to repair and restore their damaged homes, the Urban Renewal Program began to buy up unrepaired homes at preflood values. Many persons felt this was essentially rewarding the less responsible homeowners for their inactivity and penalizing those who had begun repairs at their own expense.

At the root of instances of mismanagement like these is the fact, obvious to most observers, that federal disaster-related programs are simply too numerous to be coordinated effectively. One survey reported that there are no less than forty-two federal agencies which have planning and operational responsibilities in disaster and community-wide emergencies (Executive Office of the President, 1977). Another research project attempting to gauge the range and extensiveness of federal-level programs was able to identify several hundred programs in more than fifty federal and national public organizations and added that there were probably more (National Governors Association, 1978).¹ The upcoming federal reorganization will offer an opportunity for straightening out this bureaucratic labyrinth, but more efficient and effective organization will not occur by fiat. The slow implementation of the reorganization is not a good augur of what may come. Furthermore, if old problems are not resolved, a potential danger exists for even worse DP at the federal level, with the partial centralization of some aspects of DP in FEMA.

State-level disaster planning, although on paper somewhat improved in the last few years, has not yet shown that in practice it is better than it once was. For example, estimations and reporting of disaster damages in

order to qualify for federal aid have not been impressive. Considerable and increasing animosity toward federal disaster activity has also been evident. In general, state governments appear to define their major areas of responsibility as short-term, pre-disaster planning and immediate or short-term post-disaster response. Mitigation activities, such as formulating land-use policies, as well as long-term recovery efforts, are not defined as state responsibilities by state officials. The National Governors' Association Emergency Preparedness Project described state-level emergency planning in this manner in its final report:

The major finding of this study is that many state emergency operations are fragmented. This is not only because uncoordinated federal programs encourage state fragmentation; but because the strong relationships of long-term recovery and mitigation of future disasters to actual preparedness and response for more immediate disasters, all in the context of state development planning, are not always adequately understood. Also, federal-state-local emergency management roles and strong state emergency management policy have not been delineated and articulated.

(National Governors Association, 1978, ii, 6, Italics in the original.)

While disaster planning at the local community level is considerably better than it was a decade ago, its focus is still overwhelmingly on the response in the immediate emergency period. Moreover, the quality and quantity vary from nonexistent and poor to abundant and excellent. Regarding the characteristics of DP in the local community, one study conducted in the early 1970s concluded that in local disaster preparedness is that there is no dominant pattern (Dynes and Quarantelli, 1977). Local disaster planning activities exhibit variation both in the range of natural and human-generated agents planned for (scope) and in the extent to which local organizations coordinate their efforts (extensiveness). The figure below illustrates this variation and gives examples of the kinds of disaster plans that are in effect at the local level.

Scope and Extensiveness of Disaster Planning Within the Local Community

		Extensiveness	
		Single Organization	Multiple Organization
Scope	Single Agent	(I) Specific plan: e.g., police civil disturbance plan	(III) Inclusive plan for specific agent: nuclear civil defense plan
	Multiple Agent	(II) Extended plans; police plans for natural disaster & civil disturbance	(IV) Comprehensive plan: multiple agent & Organization

The same study noted several positive trends in local DP: (1) a broadening of the scope of disaster planning to include more potential community crises; (2) a decline in the assumption that preparation for a nuclear attack was sufficient planning for all types of disaster contingencies; (3) an increasing emphasis on the survival of the local community, rather than on national security; (4) an increase in the degree of integration among local disaster planning organizations actively engaged in planning; and (5) an increase in the degree of integration among local disaster planning organizations.

These improvements notwithstanding, the study reported that local civil defense organizations are not socially visible in the local community and that the tasks and functions of the local civil defense organizations are not well understood. This is the case not only in the general population, but among community influentials and key officials as well.

Cleavages and lack of cooperation of DP also exist between and among the public and private sector disaster-relevant organizations. For example, much planning in the health and medical area with regard to disaster emergency medical services proceeds almost independently of other kinds of community disaster planning (Tierney and Taylor, 1977). Similarly, although competition among the many religious and private relief groups is not as blatant as in the past, there is still far from an integrated effort (Smith, 1978). DP sponsored by religious groups is frequently separate and distinct from that which is done in the public sector.

How do the different governmental levels perceive one another with regard to DP? As we have noted, approaches to DP problems by different governmental levels are neither internally coherent nor consistent with one another. This lack of correspondence leads to misperceptions during non-emergency times and to friction in times of disaster. From the top, or federal, level, state and local governments are seen as attempting constantly to broaden federal involvement--as in the Love Canal (New York) toxic chemical incident and in the recent cold waves and fuel crises--as expecting the federal government to shoulder huge financial burdens; and in general as demanding more than the law, tradition and bureaucratic realities deem reasonable. States view with suspicion the federal government move to centralize management, e.g., in FEMA, while decentralizing functions such as disaster housing, shifting responsibility to the states. State and local government officials tend to see decisions of federal and regional agencies as arbitrary, unpredictable, slow and generally inadequate for meeting immediate emergencies.

The increasing costs of disaster response and recovery are responsible for much of the friction which exists among governmental levels. In recent years, costs have risen disproportionately and threaten to mount to impossible open-ended financial burdens for government. In the years between 1970 and 1979, for example, the estimated direct federal expenditure for "disaster relief and insurance" amounted to approximately \$610 million per year, on the average (Office of Management and Budget, 1978). The federal government spent \$215 million in relief following the Johnstown flood of 1977 alone (National Oceanic and Atmospheric Administration, 1977). Each disaster-stricken community has financial burdens which it cannot possibly bear on its own; from the standpoint of the local community, financial aid is a right

and requests for federal assistance are entirely legitimate. The federal government, then, is placed in the difficult position of balancing requests against one another and of distributing resources which are finite to remedy problems which sometimes seem to be growing infinite.

If government agencies tend to view one another negatively where DP issues are concerned, this view is shared by members of the general population they serve. Citizens of disaster-stricken communities tend to view government agencies at all levels as doing less than an adequate job in disasters. For example, in a community-wide survey conducted by the Disaster Research Center following the 1974 Xenia, Ohio, tornado, a random and representative sample of citizens gave two federal agencies--HUD and SBA--the lowest evaluations of approximately two dozen health, welfare, relief and government organizations named. City government was also among the groups receiving low performance ratings. A similar survey conducted in Wilkes-Barre following the 1972 flood found that, of eight organizations named, federal, state and local government (in that order) were ranked lowest in terms of overall performance (Wright, 1978).

In summary, the problem is that, while DP is necessary and does make a difference, it is not as good as it could be. Moreover, the various governmental levels have difficulty agreeing on their respective roles. Such misperceptions are important because they have consequences for disaster operations and, subsequently, for the public's perception of governmental efficiency and legitimacy in crises.

CONDITIONS AFFECTING THE PROBLEM

What accounts for the state of affairs in the DP area? There is no one cause or single factor responsible for the problem. Rather, there are complex conditions of long standing, in part having to do with research knowledge and its application, as well as with fundamental policy positions and consensus. In short, there is a problem because even the partial knowledge which exists regarding disaster preparations and response is not utilized and because there are unresolved differences about basic policies which are reflected in inappropriate social organization.

In the not too distant past, it could be correctly argued that there was no body of knowledge about DP (Quarantelli and Dynes, 1977). As will be discussed in detail in a later section, that situation has changed in the past several decades. We are no longer completely dependent upon common sense notions and speculation based on anecdotal accounts and limited experience. By means of systematic and extensive studies, scientists and scholars have developed considerable understanding about technical and socio-behavioral aspects of DP (White and Haas, 1975).

At the same time, the view has become dominant that it is possible to prepare for disasters, although there is not universal consensus on this point. Particularly at the local operational level, the opinion still exists that every disaster is unique; this attitude is accompanied by the assumption that everyday measures for ordinary emergencies can simply be extrapolated for

use in major disasters. This can be seen in recent thinking about planning for the hazards associated with dangerous chemical substances (Quarantelli, Lawrence, Tierney and Johnson, 1979). Both these views argue against disaster planning and lead to a short-sighted focus on activities in the immediate emergency period rather than on long-range prevention and preparedness. These beliefs notwithstanding, as in other areas of American society, e.g., health, finance, transportation and energy, planning is seen as not only feasible but also desirable and necessary.

Nevertheless, there are problems associated with DP which stem from research and policy matters. For example, while there is considerable knowledge about disasters currently available, this knowledge is uneven, with major topics, e.g., factors affecting state and federal interface on preparedness and response measures, almost totally unexplored by systematic study. Moreover, even in those areas where knowledge exists, it has not been applied because of, among other reasons, inadequate technology transfer mechanisms. Programs are advocated and instituted which studies have shown are insufficient, inappropriate or too complicated to implement, e.g., the flood insurance program.

Accompanying these shortcomings in the scope and strength of knowledge is -a lack of appropriate social structure for carrying out even those disaster-related policies which exist "on paper." For example, DP is frequently left as a responsibility for emergency response groups rather than planning organizations. Oddly enough, the required linkage between preparedness and response seems more recognized in Third World Countries which attempt to link their national development plans with disaster planning to a much greater extent than does the United States (Lewis, O'Keefe, Westgate, 1977). Furthermore, comprehensive DP has been handicapped partly by the fact that prime responsibility for DP has often been placed in the local civil defense organization. In general, such agencies are coordinating entities rather than overall planning units, deal mostly in short-run emergency procedures and are not capable of grappling with longer-run mitigation activities as are involved in zoning, land use and building code regulations. That large segments of the population, including many governmental officials, downgrade the nuclear threat and wartime dangers emphasized by civil defense also has meant that the lead of DP at the local level in particular has been taken by an organization which does not have complete public legitimacy and is a source of controversy. While a strong case can be made for organizing on an all-risk spectrum basis, the realities of American life has meant that local DP leadership has frequently not been in a strong position.

Organizational problems will not automatically disappear as a result of the establishment of FEMA. The history of disaster policy making has left an organizational residue which could leave the new agency multiheaded and diffuse. Additionally, major components of the emergency social system, such as the medical-health sector, are still totally outside the FEMA organizational structure.

Perhaps most important of all, the basic question of what constitutes a disaster has not been resolved, either in American society or by policy makers. Insofar as DP is concerned, the very definition of what constitutes the disaster problem is unclear. In research, planning, administration and

operations, many different conceptions of the term are used (Dynes, 1974). In fact, the concept is becoming even broader, with, for example, "terrorism," "energy depletion," and "economic dislocation" increasingly being defined as disasters (Barton, 1970; Davis, 1978; National Governors' Association, 1978). In short, the distinction between disasters and social problems appears, in recent times, to have become quite murky.

Conditions exist in the research and policy areas which exert a major influence on the manner in which DP is formulated and carried out. Compounding this problem is the fact that the relevant parties do not fully recognize the import of those conditions, although they seem slightly more aware of the impact of policy differences than of the lack of research application.

STATUS OF CURRENT PUBLIC POLICY

At the root of the kinds of organizational problems we have been discussing is a fundamental lack of agreement on the nature and goals of public sector disaster planning. Currently, there is no consensus regarding DP; moreover, there does not appear to be a national resolve to deal with questions of DP policy. The establishment of FEMA was a structural change which left policy issues unresolved and may have actually exacerbated them. In fact, it can be argued that the reorganization process was done backwards; an organizational structure was evolved before answers were agreed upon to fundamental questions such as what phenomena should be included under the disaster label; what the future may hold in terms of changes in the quantity and quality of disaster events; what preparedness is; and, most importantly, what the overall goals of disaster planning should be. Given answers to these kinds of questions, an appropriate institutional structure could then have been developed with the help of policy research.

What is a disaster? The question seems simple; in policy terms, the answer can be very complex. As indicated earlier, there has been a tendency to broaden the term to include all sorts of socially significant misfortunes, almost to the point where the term "disaster" is almost equivalent to the term "social problem." Continued movement to expand the definition of disaster would have major implications for the kinds of DP social structures needed. However, an even more basic question is whether the broader definition of disasters does or does not subsume phenomena which share enough in common with those captured in the older, narrower formulations that both can be treated under one label and by means of a single set of policies.

Systematic and comparative studies would suggest answers to these questions which would improve upon arbitrary semantic and legal definitions. Research might speed recognition of the fact that, while there is a general class of collective stress situations, disasters are only one category within this class (Barton, 1970). Failure to conduct and support research on the similarities and differences among types of collective stress situations--e.g., civil disturbances, economic dislocations and depressions, war, as well as natural and technological disasters--leaves the issue of definition a matter of conjecture and speculation. Such data as does exist suggests that disasters ought to be conceptualized as those suddenly appearing events which necessitate emergency responses to maintain minimum levels of community functioning, and should be distinguished from subtle, gradual forms of social change and from social problems.²

Decision-makers must also come to terms with the fact that disaster agents in the future will not necessarily be the same as those in the past. Hazardous materials, for example, are and will increasingly be serious threats. In 1977 alone, acute community emergencies caused by dangerous chemicals claimed 32 lives and injured 543 persons in the United States (Johnstone, 1978). In 1978, train derailments involving hazardous materials in Waverly, Tennessee, and Youngstown, Florida, produced a total of 24 deaths, 159 injuries, \$3.3 million in property damage and \$550 million in legal claims (National Transportation Safety Board, 1978). Over 1,000 new chemicals enter the commercial market every year (Brown, 1970), which means that the number and variety of hazardous materials can only increase with the passage of time.

"Acts of God" are slowly coming to be rivaled by highly destructive chemical agents as hazards; policy makers should take note of this trend. In principle, the two threats should be planned for and responded to in similar ways, but on the other hand, the newer kinds of threats do have certain distinctive features which may require different DP planning strategies. Poisonous chemicals, for example can inflict damage by spreading slowly through the ecological chain and producing effects far distant in both space and time from the point at which they were introduced into the biological system. The question of whether these newer disaster agents should be treated in the same manner as the "old" hazards for DP purposes is, again, a matter for systematic research.

Another unsettled policy matter, in addition to the lack of consensus on the question "What is disaster?" involves the question, "What is preparedness?" The widespread and common view defines preparedness narrowly, as the writing of plans by emergency agencies in order to specify what emergency time activities should be performed by various disaster agents. An alternative view sees planning as a process rather than a product (plans) and is more comprehensive in that it takes into consideration a variety of long and short term strategies for preparedness. This view conceptualizes preparedness as a set of interrelated activities by various governmental and private institutions which aims at preventing and/or reducing the probability of disasters, as well as lessening their negative effects on human communities. Seen in this light, preparedness includes:

1. assessing hazards;
2. setting a range of long and short term policies which decrease hazards to life, property and community functioning;
3. developing and coordinating emergency plans and procedures;
4. engaging in a broad spectrum of preparedness activities: training, drills, rehearsals, meetings, critiques;
5. organizing individuals and groups in order to develop institutional linkages which support preparedness activities; and
6. creating a climate of public opinion which is positive with regard to the need for planning and raising the awareness of citizens about hazards and the appropriate response to them.

Just as it is necessary to agree on what it is that is being prepared for, i.e., "disasters," it is also necessary to have some consensus on what is meant by "preparations." These are policy issues involving fundamental choices, but they can all be informed by appropriate kinds of policy research.

Related to the search for consensus on what constitutes "preparedness" is the issue of establishing the overall goals of DP. There is no single self evident goal; rather, there are major goal choices which entail both costs and benefits. Increased efficiency, for example, is clearly a goal sought by the framers of the federal reorganization plan. Presumably, a consolidation of administration will eliminate costly inconsistencies and duplication, vastly improving service. This approach contains implicit trade-offs, however. One writer asks, for example, whether equally important values might be promoted through decentralized administration:

In a federal system, can a unified or a decentralized organization deal more effectively with programs heavily dependent upon state and local government participation? To what extent are any disadvantages of decentralization offset by increased knowledge and experience which subject-oriented agencies gain from dealing continuously with particular constituencies...administrative reorganization measures should take into account not only such factors as efficiency and economy but also the quality and quantity of services ultimately rendered (Norton, 1978: 5-6).

Efficiency and participation are one set of countervailing goals for DP, but there are others. One important set of alternative goals involves the role of DP organizations in the community, specifically the question of whether disaster agencies should promote the status quo or social change. In relation to community disaster recovery, for example, the activities of major disaster-related agencies could be limited to those which would restore the community to the condition which existed before the disaster. On the other hand, disaster could be viewed as an opportunity to hasten existing trends or bring into being desired changes. (In fact, some research does suggest that disaster itself accelerates trends, both at the organizational and at the community level [Anderson, 1969; Kreimer, 1978; Ross, 1978]). Similarly, DP agencies can choose between two alternatives: maintenance of the community system and the promotion of self-sufficiency. The activities of disaster relief agencies could be a vehicle for community self-help following disaster by providing a context which would allow citizen involvement in post-disaster recovery; or, on the other hand, agencies could assist citizens directly. Choices of this kind have direct policy implications. Following a massive disaster, for example, should greater attention be paid by agencies to enable a disrupted economy to renew production so people can return to work? Or should efforts be directed to paying unemployment benefits? Or should some mix of the two strategies be employed? The fact that goal choices invariably mean the sacrifice of other valued goals is an unpleasant one and is one of the factors which makes goal-setting difficult. However, since all policy is based on goals, goal-setting is a task which cannot be postponed or performed on an ad hoc basis.

It is impossible to have meaningful DP policies and procedures unless there is understanding and consensus on what a disaster is, what hazards the future holds, what disaster preparedness is, and what goals DP should promote.

These are fundamental policy issues, but they can be informed by relevant research. Policy research is appropriate and needed in the disaster area, as will be discussed later.

STATUS OF CURRENT BASIC AND APPLIED RESEARCH

The basic and applied research of a social and behavioral nature in the disaster area is better than it should be, given the erratic, selective and weak funding support which has been available (White and Haas, 1975). In fact, a case could probably be made that an astounding amount has been learned about disaster behavior at surprisingly little cost. The results also suggest what could be accomplished if even a moderate level of sustained research and development effort could be mounted.

A few agencies such as the old Office of Civil Defense (now DCPA), the National Institute of Mental Health, and more recently, the ASRA (formerly RANN) section of the National Science Foundation have provided the bulk of the financial support for such studies as have been undertaken. Conspicuous by their absence from the research and development area have been most other federal agencies with disaster or mass emergency responsibilities, as well as almost all state and municipal groups, professional associations of planners, governmental officials, etc. Only this year, for example, has an organization such as the United States Conference of Mayors initiated any study of municipal level DP. Last year, the state governors did something for the first time. It is not surprising, therefore, that while disaster researchers have explored many matters far afield from their specific research mandates, they have not addressed all questions of relevance and interest to policy makers and operational people in DP, not only at the federal level, but particularly at the state and local community levels.

Nevertheless, enough study has been undertaken so that recently it has not only been possible but necessary to assess the research literature. Some of the assessments have been of the total social and behavioral disaster research enterprise (White and Haas, 1975). Other reviews and evaluations have been of the work on disasters within a particular social science discipline (Quarantelli and Dynes, 1977; Torrey, 1979), or on a specific topic such as warning (Mileti, 1975). These examinations of the research effort and findings have been useful in pointing out certain features about the focus of the work undertaken until now and certain trends in the totality of the research and development conducted.

With respect to foci, both general theoretical works and propositional inventories have been produced. While there have been early pioneering efforts (Fritz, 1961), most have appeared only in the last decade. The more general works usually attempt to present some kind of model of disaster behavior, discuss the major factors which appear to influence that behavior, and indicate the kinds of problems likely to be encountered in mass emergencies (e.g., Dynes, 1974). For example, a work which is considered a classic in the field, after describing three different historical disasters, discusses the following in successive chapters: the dimensions of disasters, including definitions, classifications and the methodology of studying them; individual behavior in disasters, as well as the problems of organizational role competence and role conflicts in extreme stress situations; the coordination of organizational and mass behavior, including organizational

mobilization, patterns of organizational communication, the public as consumers of organizational services, and methods such as prior training and accurate mass communication for increasing effectiveness of response; the solidarity of communities in the immediate post-impact situation and how this affects the responses of victims; and formal organizations and their role in recovery and restoration, including the capacity of local governments to deal with sudden crises, as well as the nature of competition between community organizations over relief aid and assistance (Barton, 1970).

The general propositional inventories assembled so far usually attempt to assess the quality and quantity of empirical support for different generalizations and propositions about disaster behavior. One such recent effort (Mileti, Drabek and Haas, 1975), for instance, attempted on the basis of an examination of specific studies, to pull together what was known about individual, group, organizational, community and societal behavior with respect to preparing for disasters, initially responding to them, emergency time responses, and activities in the post-disaster recovery and reconstruction period. The specific propositional inventories roughly attempt the same, collating and codifying what is known on the basis of data usually obtained in field studies about the nature of the phenomena, the conditions influencing it, and the problems likely to emerge in disaster situations. Specific disaster inventories exist about such processes and organizations as military-civilian relationships during disaster operations (Anderson, 1968), local community functions under disaster conditions (Wenger and Parr, 1969; Wenger, 1978), police departments in disasters (Kennedy, et al, 1969), local civil defense offices in natural disasters (Anderson, 1969), and warning systems in disasters (McLuckie, 1970).

However, despite the range of topics studied, the time focus of most research has tended to be relatively narrow, concentrating on the immediate emergency time period. Relatively little work has been done on the pre-impact time period or on preparations for or efforts to mitigate the possibility of disasters. There have, of course, been some exceptions (e.g., Burton, Kates and White, 1975) and ongoing studies on organizational transmission of warning messages, local vulnerability to chemical-type hazards, and perceptions of earthquake predictions - to cite some examples - are paying a great deal of attention to planning for general or specific threats, particularly at the local community level. Research on recovery from disasters or long-term effects has even been rarer, although not unknown (e.g., Anderson, 1969), but again current work is marked by some attention to the longer run post-impact period. A recent study, for example, very systematically assessed the economic impact of certain natural disaster agents such as tornadoes, floods and hurricanes on local communities (Rossi, Wright, Wright and Weber-Burdin, 1978). Nevertheless, there is still a clear imbalance in the total research, with the majority of the work thus far having concentrated on the immediate emergency period of disasters. Neither the sponsors of the research nor the officials or planners using the studies have shown much inclination up to now to indicate they recognize the need to broaden the time focus of the research effort.

There has also been considerable unevenness in the research questions asked. Certain topics have been almost completely ignored, such as the role of corporations and labor unions in disaster responses, the part financial

institutions play in long-run recovery or the importance of political factors in state and community decision making with regard to DP. On some matters, there exists only an isolated study here or there, such as on the handling of dead (Blanshan, 1977), municipal officials' perceptions of their roles in mass emergencies (e.g., Wolensky, 1975), or on blame assignment after disasters (e.g., Bucher, 1957). With regard to other matters, the evidence is strong but not conclusive such as the apparent absence of severe psychopathy or mental disorders as a result of disaster impact (e.g., Perry and Lindell, 1978), the rarity of panic in almost any kind of mass emergency (Quarantelli, 1979), or the importance of emergent groups in handling disaster problems not adequately treated by existing organizations (Stalling, 1978). On still other topics, as we shall soon note, studies have left us with a very good understanding of the phenomena examined. Thus, the general picture ranges from one where not even an educated guess can be advanced to where there is substantial, often quantitative, evidence regarding the disaster phenomena being considered.

At least for some disaster researchers, there are particular questions and topics which research has very well addressed. Much is known about certain matters. For example, on the basis of both early and more recent studies, we have a good picture of the nature of the warning process in disasters, in what ways and with whom it may be effective or ineffective, and what difficulties there are likely to be in the issuing and receiving of warning messages (Williams, 1964; Drabek, 1969; McLuckie, 1970; Mileti, 1975).

Similarly, there is good understanding, for instance, about narrower issues such as the purchase of flood insurance (Kunreuther, 1978) or the absence of looting and similar antisocial behavior in American disasters (Quarantelli and Dynes, 1970). Some broader matters are also well understood. For example, there is now a good grasp of why disaster planning must be seen as a continuing process and not merely as something which results in a product such as a written disaster plan (Dynes, Quarantelli and Kreps, 1972). Similarly, on the basis of solid studies, we now can see the fallacy and inadequacy in trying to use regular everyday existing health and mental health delivery systems to provide disaster-related services (Tierney and Taylor, 1977; Taylor, Ross and Quarantelli, 1976). In these and similar matters, as we shall emphasize later, while there exists substantial knowledge based upon research, it has proved difficult to translate such knowledge into practical and operations terms. The problem is not what we know, which is substantial along some lines, but how to apply that knowledge.

This is a serious matter, because we can anticipate that both the quality and quantity of the basic and applied research will generally improve in the future. Current disaster studies simply use better samples and research designs than in the past, and are obtaining better and more valid data than ever obtained before. As such, research findings will be more solidly grounded in data than ever before (Drabek, 1970).

However, while the quality of the work has and is improving and while recent research has been characterized by more diversity in what has been studied and greater variation in researchers and approaches (Quarantelli, 1978), there are several negative factors around. For one, certain research topics tend to become the focus of a major attention because of federal legislation and political interest, almost of a faddish nature, in them, e.g., earthquake prediction. It is not that such topics are necessarily unimportant,

but whether research priority ought to be determined by scientific criteria and operational needs or by other factors. A case could be made, for example, that it would be of great practical and theoretical value to learn about the interface (or lack of it) between federal and state disaster agencies or between state and local community disaster agencies. But "interface" as a research topic does not have much political "glamour" and is not likely to become the object of a future fad as, say, weather modification once was. There is some danger, therefore, that some research is and will be supported and conducted not because of its intrinsic merit or its extrinsic value to a national constituency, but because of its political popularity. This is likely to continue unless disaster planners and operational personnel, especially at the local and state level, become more vocal and explicit about their DP needs and requirements.

Another possible weakness in current basic and applied research in the disaster area is a tendency to search for technological solutions to what often are essentially socio-political problems. For example, some research and development activities on warning tend to focus on communication technology, what kinds of space satellites might be put to use in disaster situations, or how many radio frequencies are needed so all hospitals in a community can communicate with one another. But the real problem in disaster situations is seldom one of the communications means used. Rather, it usually is a question of who will be communicating what, i.e., it is a matter of planning which organizations should be in contact with one another and for what purpose. Observations and experiences have shown that disaster problems in American society are seldom matters of hardware; it is usually the "software" which is either absent, inappropriate or inadequate for DP, and basic and applied research should recognize this fact.

TECHNOLOGY TRANSFER MECHANISMS AND EVALUATION RESEARCH

Groups who undertake disaster research, serious writers on mass emergencies of whatever kind, speakers at meetings on various types of large-scale crises, and practically anyone engaged in the study of disaster phenomena can all document that there is a large and receptive audience in the country at large who is interested in finding out what has been systematically learned about DP. The potential users of DP research and development exist; there is no lack of interest. The problem, instead, is a lack of recognized technology transfer mechanisms and an absence of known information sources to which potential users can turn. The point is well made in a letter received by a midwestern disaster research center from a local public official in a community in a Pacific coastal state. The writer said that he knew relevant information existed, that he needed help as did others, but what he did not know was where to turn.

The rudimentary elements of technology transfer mechanisms do exist. For example, there are two recently established professional disaster journals which public the most up-to-date studies in DP. Furthermore, as their titles indicate, they are formally committed to publishing material that is of interest to disaster policy makers, planners and operational personnel. One journal is called Mass Emergencies: An International Journal of Theory, Planning and Practice. The other is named Disasters: The International Journal of Disaster Studies and Practice. Besides the journals, there are a

number of newsletters which are generally available at no cost to their subscribers, that aim at diffusing information about DP. Some such newsletters are issued by federal agencies such as FDAA (e.g., Disaster Information). The Natural Hazards Observer, a quarterly newsletter put out by the University of Colorado, explicitly "is intended to strengthen communication between research workers and the individual, organizations and agencies concerned with public action relating to natural hazards." Unscheduled Events, another quarterly newsletter issued by the Disaster Research Center at the Ohio State University, has roughly the same goal. Also, there has been a marked increase in the number of conferences, meetings and workshops devoted to some aspects of DP and concerned with involving DP practitioners as well as researchers. There is practically no month that there are not at least two or three such meetings being held somewhere in the United States. The Natural Hazards Research and Applications Information Center in Colorado, with support of the National Science Foundation, holds a well-known annual workshop whose participants are deliberately drawn from the private as well as the public sectors and include officials at all levels involved in DP, in addition to disaster researchers. Of interest, perhaps, is the feedback received by the conference organizers from the representatives of state and local governments, public interest groups, and planners who attend the workshop. With respect to utilization of research in the 1978 workshop, it was reported that:

- Local officials would like to have more information about and easier access to case studies from other communities. They are likely to try actions for implementation, legislation, public awareness programs, etc., if they know of a program that has worked elsewhere and how the task was initiated and carried out.

- User input should be obtained before the research nears completion so that the effort is responsive to user needs.

- The all-hazards approach to any desired action is useful to local officials who must respond to a wide cross-section of problems in the community.

- Users are interested in implementing ideas that come out of research, but often don't know how to do so successfully. It would be helpful if researchers were to devote more energy to steps that might be taken to transfer the results of their research into action. They could then make suggestions for application available to users, along with the research findings.

- As always, the final report must be readable by the user; "hire a translator" if necessary. Also, a report is not always the best way to disseminate research results. Alternatives should be considered, tailored to the user's needs.

(Natural Hazards Observer 3, December
1978: 2)

However, while these technology transfer mechanisms do exist and others could be mentioned, they suffer from a number of limitations. Most are very new, having only a few years of existence. They are also relatively few in

number, certainly reaching only a small fraction of the potential users of DP research. The very existence of most of the mechanisms is simply unknown to many DP practitioners, particularly at the local community level. There is no one point where an interested party could learn about the range and kinds of transfer mechanisms available. Even key federal disaster officials and agencies do not always know of their existence and generally do not call them to the attention of state and local officials. This, however, is not surprising since the federal government as yet has been unable to compile in one place information on all disaster assistance-relevant programs which it undertakes. Given this, it would be unlikely to take a leadership role in diffusing the results of DP research.

There are also some other major problems with DP-related technology transfer mechanisms. For one, as noted earlier, there is a strong bias in the area, in looking for narrowly technological solutions to what are essentially socio-political problems requiring social technology. The temptation is to seek solutions in the wrong place and to attempt to transfer that technical knowledge, physical mechanism or material thing. A somewhat similar point was recently made in the Working Paper produced by the Congressional Office of Technology Assessment. Looking at the matter primarily from the federal perspective, it notes:

In the past four decades, the federal government has undertaken to control the impact of hazards in a largely technical fashion. The emphasis has been on construction projects, warning systems, quick-response capabilities, cloud seeding, medical alert teams, and other instruments designed to change either the hazard itself or its impact. These solutions are seen as readily available, easy to quantify and cost, and highly visible. They are solutions to which nearly all parties can agree and which have a definite start and finish--an attractive quality for government decision makers. Largely ignored during this time were the often less expensive but usually more difficult to enact social and public administrative solutions to hazard problems. Strong constituent communities (construction real estate, etc.) oppose measures to legislate people away from the hazard-prone areas. Furthermore, insufficient integration of technological advancements with social and political alternatives has resulted in an either/or utilization. Seldom is a comprehensive hazard analysis and risk assessment the motivation of legislative activity; rather, building codes are enacted on an ad hoc basis and zoning is frequently a political decision.

(Office of Technology Assessment, 1978:
36-37)

This is not to say that, for example, building dams for flood control should be totally abandoned and replaced by land use measures. Rather, the point is that unless the social technology in the DP area is at least as well developed and implemented as the more technical technology has been, it will be impossible to do full justice to what social and behavioral disaster research has already uncovered. We badly need to develop, improve and expand social technology transfer mechanisms.

However, it is not enough to have a mechanism. It is necessary to know if the intended objectives are being achieved. The whole DP area is weak on this score. Programs are implemented and knowledge is diffused without any effort being made to measure what is or is not being accomplished by such activities. There is a great need for evaluation research to assess what is being done. As an example, it was mentioned earlier that there has been a marked increase in DP related meetings where researchers attempt to pass on the results of their studies to disaster practitioners and planners. But no one has any evidence, much less solid data, on what is learned and implemented, if the correct information is acquired, and if the basic and applied research findings are actually and accurately being diffused to potential users. There is a major need for evaluation research, the kind of study which looks at stated objectives and examines to what degree they are actually being reached by the activities which are being carried on (Weiss, 1972). It is of no use to advocate social technology transfer mechanisms generally or specific knowledge diffusion procedures, unless we undertake some research evaluation of what is being done, so we will know what is and is not effective. Evaluation research is different from but no less important in the DP area than basic or applied research.

POSSIBLE IMPACT OF RESEARCH

There is a difference of opinion expressed in the DP literature about the impact of past research on current disaster planning and operations. One point of view is that research "only occasionally results in application of findings by public and voluntary agencies involved in disaster prevention or recovery" (White and Haas, 1975: 5). The other perspective is that one of the major structural trends in the disaster area has been the "perceived relevance of disaster research to public policy and agency responsibility" (Quarantelli and Dynes, 1977: 25). The first perspective seems to be based on the difficulty of showing how any specific research studies led to any specific policy, planning or operational changes. It is true that it is probably impossible to point to any such direct relationship between a study and some DP changes, although the absence of such a linkage would seem to characterize the overwhelming bulk of scientific activity in any area.

Those who are more sanguine about research results believe they can discern a connection between the general thrust of cumulative research on certain topics in the disaster area and behavioral and attitudinal changes among disaster policy makers, planners and operational personnel. For example, long before they were instituted as matters of national policy, researchers had recommended on the basis of their studies the need for emergency operating centers (EOCs) and an all-hazards approach in local community disaster planning. Similarly, the earliest disaster researchers showed by their work the existence of certain myths about disaster behavior, i.e., pervasive but mistaken notions that there was widespread panic, looting and mental breakdowns as an aftermath of the stresses of major disasters. Such misconceptions were widely believed and talked about by the disaster planners and operational personnel of several decades ago. Today, at least among many key public officials involved in DP, such views are seldom expressed. While it would be naive to attribute the establishment of EOCs in about every community in the United States or the absence of talk about "panic" by disaster planners and agency research funders as a sole consequence of the research undertaken, it would be equally foolish not to recognize the cumulative effects of many studies as a factor influencing the changes which have occurred. Research

does and has had an effect on DP, and its impact should not be underestimated. Even those who have taken a rather negative view about the consequences of disaster research have acknowledged that the tradition of sociological studies--which can be traced starting at the National Opinion Research Center at the University of Chicago in the 1950's, going to the Disaster Research Group at the National Academy of Sciences in the early 1960s and continuing at the Disaster Research Center at The Ohio State University at this very time--has produced "results" which "were incorporated in specialized training programs for state and local officials sponsored by the Office of Civil Defense" (White and Haas, 1975: 146). Changes in certain policies and procedures of the National Weather Service in the last decade, in particular, also seem to reflect a complex of social and behavioral studies on warning and evacuation. As another example, many of the key notions and ideas advanced in the soon-to-be released National Governors Association report on State Comprehensive Emergency Management clearly and explicitly mirrors the thrust of much of the body of research on organizations in disasters undertaken, especially in the last decade (these studies are summarized in Barton, 1970; Quarantelli and Dynes, 1970; Haas and Drabek, 1973; Kreps, 1978).

Awareness of possible relevance of DP research is enhanced if it is recognized that, in most cases, study is not concerned with coming up solely with one finding or conclusion regarding a single DP problem or question. The value of much good research, rather, lies in its ability to indicate possible options or alternative courses of action which might be followed and the pluses and minuses of the possible different paths. For example, studies on the legal implications of natural hazards have not received widespread attention. A consequence is that there are many uncertainties regarding the liabilities and immunities of local governments in hazard situations, even though such governmental entities have prime hazard-mitigation responsibilities in this country. In an ongoing study for the Association of Bay Area Governments in California, there is a research effort to: (1) reduce the current uncertainty by clearly identifying what is known about the nature and extent of local government liability for earthquake-related hazards; (2) assess the impact of current tort liability law on the willingness of local governments to mitigate earthquake hazards; and (3) define alternative legislative and administrative approaches which could help local governments to better understand and handle their potential liabilities in a manner supportive of their responsibilities to protect their citizens (Margerum, forthcoming). Data is being obtained through an examination of existing statutory law and relevant case precedents, as well as through a survey of the current activities and strategies of the local governments involved in the study. This study aims not at reaching one conclusion, but intends to spell out a variety of different possibilities which might be open to local governments concerned with some legal aspects of DP.

Similar kinds of studies, seeking to make explicit alternative solutions to problems and taking into consideration the idea that the everyday delivery systems cannot function well at times of major disasters, have been done on the delivery of emergency medical services (Quarantelli, Taylor and Tierney, 1977) and on the providing of mental health services in disasters (Taylor, Ross and Quarantelli, 1976). Many more such studies attempting to outline possible DP options for policy makers, planners and operational personnel are needed.

Also, in assessing the impact of research, it is necessary to recognize that policy makers, planners and operational personnel in the DP area have varying utilization needs and accordingly require different kinds of studies. One hypothetical example of research of possible relevance to policymakers--the use of data banks in disasters--deserves note. Often the question is treated purely in technical terms, but in actual fact, what is involved is a policy matter about which some study can be undertaken prior to any decision making.

Thus, the policy of developing disaster data computer banks has frequently been advocated, although seldom by disasters researchers and others with much experience in real mass emergencies. Such data banks would presumably contain information about available equipment, resources which could be mobilized, etc. A recent study by the National Academy of Sciences on the value of a data bank for the U.S. government in connection with international disaster relief was somewhat negative about the idea, pointing out a number of serious flaws in the assumptions made about the existence and use of such a data bank and recommending that the time, effort and resources which would be needed for a data bank might better be used to strengthen other aspects of international disaster relief planning (Committee on International Disaster Assistance, 1978). While this policy-relevant recommendation does not automatically negate the possible use of data banks for selected domestic DP purposes, it does suggest caution and the need for considerable research and study into the question before any concrete steps towards implementation are undertaken. The point is that many issues which seem to be merely technical are really policy matters, and that such matters can be the subject of systematic examination through policy research.

On the other hand, planners are frequently interested in questions of strategy, while operational personnel focus on questions of tactics, e.g., how does a first responder on the accident scene determine whether the substance involved in a transportation wreck is a hazardous chemical? There is no all-purpose research serving the needs of all possible users in the DP area or anywhere else for that matter. Consequently, the value, relevance and utility of any given research depend, to a considerable extent, on the needs and goals of potential users. Efforts to direct or limit DP research only along certain lines fail to recognize that such attempts might make study findings of little utility or use to different categories of potential users. Basic, applied evaluation and policy research in the DP area not only are done differently; they also have essentially different sets of users.

RECOMMENDATIONS

As indicated earlier, there are major problems with regard to both policies and use of research knowledge in the DP area. There is lack of clarity and consensus about policies which is partly reflected in the structures which exist for handling DP. While there is a degree of knowledge derived from research about DP, the knowledge is incomplete and much of what is known has not been adequately implemented because of lack of appropriate technology transfer mechanisms which would enable knowledge to reach interested parties. Furthermore, there is a reciprocal relationship between research knowledge and policies with weaknesses in the former reflected in the latter, and uncertainties in the latter leading to a failure to take full advantage of the former.

All of this suggests a dual general attack upon the problem. Policies need to be clarified and better agreement about them has to be achieved. Research has to be improved and findings have to reach those who need them. However, at least two kinds of conditions need to be met if the attack is to be successful. (1) A larger number of researchers has to be developed. There are simply not enough social and behavioral scientists studying DP. A critical mass is required if high quality work is to be done. Team research needs to be encouraged. Centers focusing on DP research should be supported. (2) A broad front research effort has to be mounted. All the various types of research--i.e., policy, basic, applied and evaluation research--need to be undertaken. More studies have to be done. In particular, greater attention should be paid to studies of the pre-impact time period and of the later stages of the recovery phase. There would be considerable value if there could be a substantial increase in replication and in longitudinal studies of DP phenomena.

Policy research, so far mostly neglected by disaster researchers, needs to be given greater priority. It is crucial that studies be done suggesting alternative possibilities with respect to DP goals and that various possible options be made more explicit. Research into how other societies handle DP might be particularly useful for obtaining the broadest view of alternative and potential policy positions.

Basic research is also crucial because we do not yet have solid understanding of the generic nature of the responses of individuals, households, organizations, communities and societies to extreme stress. Comparative studies of collective stress situations, of which disasters are only one category, would be particularly relevant. The similarities and differences which would be uncovered by such research might suggest different organizational arrangements for coping with disasters than those currently used in American society and might also provide some clues on how newly developing threats might be handled.

Applied research should somewhat change its emphasis insofar as perspective is concerned. More attention has to be paid to what citizens in general and disaster victims in particular visualize as what is needed; the perspective of the consumers of services, as well as those of the providers of services, are important. Similarly, DP should be examined from the viewpoint of local communities, as well as from the more typical and traditional point of view which sees the phenomena from the top down, as defined, say, by federal agencies.

Evaluation research should be substantially increased so that it can be established that DP goals are being reached. New policies, programs and procedures cannot be continually instituted and left unexamined or only unsystematically judged. In particular, demonstration projects should be carried out on such matters as short run and long run disaster housing since these kinds of disaster-related activities lend themselves well to controlled assessment and evaluation.

In addition, the disaster research area should see what it can learn from other relevant research areas. Fire research is an obvious candidate with respect to this point. There has been an all but total lack of connection and contact between research on fire hazards and the disaster research

area; they are two separate worlds. Accordingly, there is an almost complete but mutual lack of knowledge about one another's research and findings. Only in the last few years, as a result of a parallel interest in panic behavior under extreme stress, have a very few researchers from the two research areas interacted. So far, there has been minimal exchange of information except with respect to the topic of human panic under stress (e.g., Bryan, 1978; Quarantelli, 1979). DP would clearly benefit from a closer relationship between the researchers from the fire and the disaster areas.

However, research results of any kind are of little value if they do not reach potential users. Knowledge must be utilized--a thing which has not always occurred in the disaster area. Better links, prior to the initiation of studies, are needed between practitioners in DP and researchers, so that the former can provide input to the latter before research questions are formulated and a research design is worked out. This would not only make for better research, but facilitate the diffusion of research findings. Existing technology transfer mechanisms must be better utilized, and new mechanisms especially for social technology have to be developed and institutionalized. Analyses should be undertaken so that advantage can be taken to diffuse knowledge along the existing social networks among those involved in DP. It should be recognized that, initially at least, creating awareness that knowledge exists and what sources of information are available can be as important an objective as actually passing on specific information.

The goal is better DP. However, "better" does not have to be defined solely in terms of efficiency or through cost-benefit analyses. Particularly in a democratic society, there are other values such as participation which ought to be considered. No matter what the criteria, there are bound to be pluses and minuses. Participation, for example, can lead to the development of interest groups with parochial vision, might encourage litigation and will almost certainly slow down achieving long-run objectives. But this has to be balanced against the enthusiasm, the special knowledge, and the different perspectives that participation can bring. At any rate, whatever the criteria used, they need not be decided solely on the basis of isolated individual judgment; it is possible to do studies ascertaining what different segments of the American population would prefer, what trade-offs they might be willing to accept in DP.

As a result of the cataloguing of the complexities and difficulties enumerated in the previous pages, a false impression might have been engendered. DP is not in good shape, and research on DP leaves much to be desired, if the matter is measured against some ideal absolute standard. However, a more valid way of thinking about our subject of concern is the following. Compared with what the situation was even just a decade ago, DP has in general considerably improved around the country, although it is far from perfect, and research into DP has substantially, although selectively, enlarged our knowledge of the phenomena. The future can build on these achievements of the past, and while the ideal will never be reached, we can advance considerably over where we are at present if the research and development questions and issues raised in this paper are seriously addressed so as to improve DP policy, planning and operations.

FOOTNOTES

¹This report also discusses difficulties officials in disaster-stricken states have reported in using the OMB Domestic Assistance Catalogue as a source of information on disaster relief and assistance programs. Among the problems cited are that the catalogue is incomplete, that primarily response-related assistance programs are listed, and that funding and user information is not included. Moreover, important questions about the programs are not addressed, e.g., even if programs are listed, have funds been appropriated for them? Has OMB allocated the funds? What amounts are still available? Are there special eligibility criteria for recipients? The National Governors Association is compiling a handbook entitled, The Governor's Guide to National Emergency Assistance Programs which contains information on national emergency oriented programs, technical assistance programs, programs for research, and redevelopment programs.

²Many of the previous references have discussions of the definitional and conceptual problems associated with the term "disaster." See in particular, Fritz, 1961, 1968; Barton, 1970; Dynes, 1974; Barkun, 1974; and Westgate and O'Keefe, 1976.

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