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EMERGENCY PREPAREDNESS AND RESPONSE PLANNING:  
AN OVERVIEW OF SEISMIC POLICY RELATED ISSUES\*

Dennis E. Wenger  
University of Delaware

Thomas E. Drabek  
University of Denver

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## EMERGENCY PREPAREDNESS AND RESPONSE PLANNING:

### AN OVERVIEW OF SEISMIC-POLICY RELATED ISSUES

In this paper we will consider a number of issues relevant to local community adoption and implementation of emergency preparedness and response planning measures. A number of themes have emerged from our analysis of the topic, however, the most critical one appears to be that the issue is highly complex. It is complex due to such factors as the diversity and heterogeneity of local community systems, the variety of local planning structures, the multidimensional elements that influence planning measures, and the paucity of research efforts focused upon the topic. This complexity bodes ill for any who believe that local communities will readily develop plans for earthquake response.

Before addressing specific topics relevant to the adoption of emergency preparedness and response measures for seismic hazards, the concepts of "community" and "community emergency preparedness and response systems" require clarification. By community, we are referring to all of the organizations and institutions that provide requisite services and perform necessary functions for a population on a locality basis. Governmental organizations and public sector institutions are obviously an important component of local communities. When we think of emergency preparedness activities, the public sector tends to come to mind first. Therefore, we often consider the local police, fire, emergency management, public works, and administrative components of government as being "emergency relevant." However, the private sector also is a critical component of community preparation for all hazards including seismic. Such groups as the Red Cross, Salvation Army, hospitals, and the mass media obviously are important. Furthermore, there is an increasing interest and awareness on the part of local business and industry in emergency planning and preparedness activities. Within some industries, such as the nuclear power and chemical industries, the concern is nationwide and has been spurred by well publicized accidents and new federal requirements and planning initiatives. In this discussion we will be concerned with the emergency preparedness and response planning of both of these sectors.

We will discuss the following topics or issues. First, we will consider the state of knowledge concerning local community emergency preparedness and response planning. We will consider the nature of technical knowledge that exists and also examine the nature of social science knowledge about the area. With regard to the former issue, we will examine the variety and magnitude of instructional materials available to local communities for disaster planning guidelines. In the latter case, we will primarily examine studies of the planning process. Second, we will discuss and characterize the policy process at the local level. The discussion will be couched within the framework of four natural-history processes, i.e., formulation, adoption, implementation, and change or evaluation. Third, we will also consider influences upon the policy process of external forces, such as state and federal agencies and legislation.

Before turning to a discussion of the state of knowledge, it is important to note that the discussion is not limited only to issues of seismic planning or earthquake preparation. We have taken a generic approach to the problem, as opposed to a limited, myopic one. Thus, consistent with the Integrated Emergency Management System (IEMS) of the Federal Emergency Management Agency (FEMA), we will discuss emergency preparedness and response planning from an all-hazards perspective. This approach is justified because the core functions and requirements of disaster preparedness and response cut across various types of hazards. For example, the problems associated with search and rescue, casualty care, and restoration of services are similar, regardless of whether the disaster agent is a hurricane, tornado or earthquake. The organizational demands to successfully handle communication, coordination, and convergence are also similar in various types of disasters. Of course, we will consider issues pertaining specifically to earthquakes and seismic disasters when they merit special attention.

## The State of Knowledge Concerning Emergency Preparedness and Response Planning for Seismic Hazards in the United States

### The State of Technical Knowledge

Local community public officials and private agencies have considerable technical knowledge available for formulating, adopting, implementing and evaluating local community preparedness and response plans. This material comes from a variety of sources and tends to present somewhat diverse, though generally compatible, information. There is considerable material that has been produced by the engineering and physical sciences. Among the techniques developed by these sciences are risk-mapping, hazard vulnerability analysis, loss estimation, and flood plain mapping. The focus of our discussion, however, is upon the social science knowledge. We have grouped the available information into the following categories based upon the source of the material: 1) research-based planning guides and primers, 2) practitioner-developed planning guides, 3) workshop and specialized planning guides, and 4) official government guidelines and educational activities.

First, a variety of scholarly or research-based planning guidelines have been published. For example, Dynes, Quarantelli and Kreps (1981) developed a guideline of general principles of disaster planning based upon the findings of social science studies of disaster. This valuable work presents the planner with prescriptive and proscriptive guidelines for developing plans that are based upon actual, as opposed to mythical, individual and group behavior. It stresses that planning is a process, not a product, and that plans must be molded to people, not people to plans. (Recently, Quarantelli (1985) completed a more compact discussion of many of these themes.) Also, Tierney (1980) has produced a similar guide for planning for chemical disasters based upon the studies of the Disaster Research Center. Possibly the most detailed and explicit planning guide of this genre, however, was developed by Foster (1980). This work gives extensive treatment to such topics as risk analysis, warning systems, and the content of disaster plans. Once again, the guidelines are based upon research in the field and are compatible with existent knowledge.

A second type of information is contained in "how to do it" books written by practitioners in the field of emergency management. For example, Herman (1982) prepared a brief summary volume based upon his experience in a local emergency management position. Although useful as a model for planning, this material is often based upon a "command and control" image of disaster management that is not consistent with findings from the research literature (Dynes, 1983).

Workshop and specialized planning guides are a third type of technical information. This material is voluminous and comes from a variety of sources. For example, Gori (1984) has produced a primer on improving the state of earthquake hazards mitigation and preparedness based upon papers presented at 12 workshops across the United States. The material is interdisciplinary and presents important guidelines to local planning officials. Morantz, Russell, and Kelly (1982) have developed an excellent guide that focuses upon the problems of mitigation. Based upon the experience in 81 case studies, the book discusses mitigation strategies for a variety of hazards. A number of specialized planning guides also exist. For example, the San Francisco chapter of the American Red Cross has produced a planning guide for private corporations (American Red Cross, 1986). The Southern California Earthquake Preparedness Project has produced a series of earthquake preparedness planning guidelines for FEMA (e.g., Federal Emergency Management Agency, 1985a, 1985b). A large number of additional examples could be offered.

Finally, a number of different governmental agencies have produced planning handbooks. For example, the Office of the United Nations Disaster Relief Co-ordinator has produced a volume devoted to disaster prevention and mitigation for seismological events (UNDRO, 1978). Within the United States, FEMA has developed a number of different guides. Some of these are specific to various hazards, such as hurricanes and floods, while others are of a general nature. FEMA (1985), as part of the Integrated Emergency Management System, has developed a guide and checklist for local community emergency planning.

In addition, one would be remiss not to recognize the educational activities undertaken by the National Emergency Training Center at Emmitsburg, Maryland. This FEMA-sponsored training center provides a myriad of material in the form of handbooks, training films, course material, simulations, and on-campus training for local officials. Courses vary from the specific and technical, (e.g. "Microcomputer Applications in Emergency Management," "Earthquake Hazard Mitigation for Utility Lifeline Systems," to the more general, e.g., "Disaster Preparedness Seminar--Emergency Management Team," co-sponsored by the International City Management Association; "Seminar on Contemporary Issues in Emergency Management"). In combination with FEMA's teleconference programs aimed at specific emergency management issues, such as hazardous materials and emergency medical services, these materials provide an extensive body of technical knowledge for local consumption.

This brief overview does not do justice to the quantity of the material available of a technical nature. A complete review of such material would go beyond the parameters of this discussion, however, an extensive bibliography of these materials has been prepared by David Morton

(1981), librarian at the Natural Hazards Research and Applications Information Center.

At this time, two issues need to be mentioned. First, with regard to seismic planning and preparation, there is no governmental concurrence or oversight program similar to that found with regard to emergency planning and response for fixed-site nuclear facilities. The Nuclear Regulatory Commission and the Federal Emergency Management Agency have developed a program of support for local emergency planning for nuclear accidents. Yearly evaluations of local plans and exercises are part of the licensing procedure for nuclear facilities. NUREG 0654 has been developed as the definitive guide for the production of local emergency plans. It is a clear, specific model of a local planning document that facilitates improved local community emergency preparedness. Since the accident at Three Mile Island, local community preparedness for nuclear hazards has been significantly improved. There is no NUREG 0654 or comparable program for seismic hazards. Of course, given the variability of the earthquake hazard and its scope, preparation of such guidelines would be far more difficult.

Second, although there is a rather impressive body of technical knowledge available to local community officials from a variety of sources, there is very little knowledge about how that material is being used. Relatively little is known about the effectiveness of such information for improving local community preparedness and response systems. Research has been notably absent in an attempt to evaluate the impact of this material upon local community systems. We do not know the extent to which local officials are aware of the existence of the information, the degree of exposure or utilization of the material, or its impact upon improving local preparedness measures. Such research should be given high priority.

#### The State of Social Science Knowledge About Local Community Preparedness and Response Planning in the United States

Before discussing social science findings regarding emergency preparedness and response planning, a brief presentation of the history of disaster planning in the United States may be insightful. This issue is very complex and an adequate treatment is beyond the scope of this discussion. Allow us to simply note the following "landmark" events. First, the Federal Civil Defense Act of 1950 created the Federal Civil Defense Administration within the Executive Office of the President. The act further specified that the primary preparedness responsibility for nuclear or other forms of attack rested with states and their political subdivision, i.e., local government. This mandate for primary responsibility continues to reside within state and local communities at this time. Second, throughout the 1950's and 1960's federal planning efforts focused primarily upon nuclear war preparation and were diffused among a variety of agencies that underwent periodic and repeated reorganization. Third, by the early 1970's the emphasis had shifted within the Office of Civil Defense to peacetime, as well as wartime, emergencies. In 1972 this office became the Defense Civil Preparedness Agency (DCPA) and with the Federal Preparedness Agency (FPA) and the Federal Disaster Assistance Administration (FDAA) provided the core of federal planning for both nuclear and peacetime disasters. Fourth, in 1974 the introduction of

crisis relocation planning within DCPA once again placed heightened attention to wartime and nuclear planning. This program received a controversial response at the state and community levels. Fifth, in 1979 the Federal Emergency Management Agency (FEMA) was created in an attempt to increase centralization and coordination of the planning and response efforts of a variety of federal agencies, including those mentioned previously. Sixth, the accident at Three Mile Island had a profound effect upon federal emergency planning activities, especially those concerned with population evacuation. FEMA and the Nuclear Regulatory Commission (NRC) were given responsibility for evaluating and adequacy of emergency response plans around fixed-site facilities. Furthermore, extensive funding was made available to states and local communities to develop these plans. Seventh, in 1983 FEMA introduced the concept of the Integrated Emergency Management System (IEMS). This was an "all-hazards approach" that once again brought heightened attention to peacetime and natural disasters. Finally, currently under the direction of the present FEMA Director, Julius Becton, another shift in emphasis can be noted in that traditional civil defense planning, i.e., wartime preparation, has once again been given increased priority. In sum, planning at the federal level has been highlighted by continual reorganization and shifting priorities (see Drabek, in press).

Social science studies of disaster have traditionally focused upon the emergency period and the associated response patterns of individuals and organizations (Fritz, 1961; Barton, 1970; Dynes, 1974; Drabek, 1986). It has been only recently that research has been directed at the issue of community preparedness and response planning. Since 1970, an increasing body of information has been developed regarding the extent and nature of emergency preparedness at the local level. If one examines this literature, a number of themes emerge.

1. The lack of homogeneity among local units.

Several studies have pointed out that there is great diversity among local emergency preparedness offices and arrangements in the United States (e.g., Drabek, in press; Quarantelli, 1985; Caplow, Bahr and Chadwick, 1984; Anderson, 1969). Thus, in order to understand the problem of earthquake policy initiation with regard to emergency preparedness and response planning from a national perspective, it is essential to recognize this reality. While large cities and counties often support agencies that have full-time professional staff members, many jurisdictions do not.

Furthermore, the structural location of the function of community-wide disaster planning varies considerably. The most extensive survey completed to date documented this variation as follows.

"In cities, the city manager (reported by 22.5%), part-time emergency preparedness coordinator (18.8%), or the fire chief (16.2%) was most likely to have this responsibility. On the other hand, in counties, full-time emergency preparedness coordinators (33.3%) were found to have the responsibility for emergency management. Only 32.7% of the cities responding had either a full-time or a part-time emergency preparedness coordinator" (Hoetmer, 1983: 1-2).

The staff of this International City Managers Association project were able to identify 20 "desirable characteristics" that contributed to an effective emergency management organization. These ranged from clearly defined roles of elected officials, to an all-hazard approach, to active intergovernmental coordination. In addition, they were able to relate these 20 characteristics to 12 alternative organizational structures. Those structural arrangements in which the Emergency Preparedness Director served as the Chief Administrative Officer while, public safety divisions specialized in planning and incident command, were viewed as being the most effective. (ICMA, 1981).

In addition to the locus of authority for emergency planning, variation can also be found in the degree of integration of the emergency planning function within the broader community. For example, Wenger, Quarantelli and Dynes (1987) have observed that there are eight patterns of local emergency management arrangements. This typology is based upon three dimensions: (1) the degree to which the emergency management office or organization is autonomous within the community as opposed to being integrated into other units, (2) the extensiveness of planning activities, and (3) the extensiveness of response activities (1987: 63-74). The range of types is from the small, autonomous office that engages in limited planning and response, to the large, highly integrated, community-wide arrangement that undertakes extensive planning and response. (See Figure 1)

Figure 1: An Empirically-based Categorization of  
Local Emergency Management Systems

		<u>STRUCTURE</u>			
		<u>Autonomous</u>		<u>Integrated</u>	
EXTENSIVENESS OF PLANNING ACTIVITIES		Narrow	Broad	Narrow	Broad
EXTENSIVENESS OF RESPONSE	Narrow	Type 1	Type 2	Type 5	Type 6
ACTIVITIES	Broad	Type 3	Type 4	Type 7	Type 8

Type 1 = Traditional LEMO, Local Emergency Management Office  
 Type 2 = Bypassed LEMA, Local Emergency Management Agency  
 Type 3 = Emergent LEMA, Local Emergency Management Agency  
 Type 4 = Established LEMA, Local Emergency Management Agency  
 Type 5 = Embedded CEMO, Community Emergency Management Office  
 Type 6 = Bypassed CEMA, Community Emergency Management Arrangement  
 Type 7 = Emergent CEMA, Community Emergency Management Arrangement  
 Type 8 = Established CEMA, Community Emergency Management Arrangement

In sum, the literature has consistently observed what Drabek (1985: 85) labels as "a lack of standardization" among local community emergency management systems. There are variations among a number of dimensions, such as domains and responsibilities. There are wide differences in the ways in which they relate to other organizations within the community. There are differences in how they carry out tasks during emergencies, and

there are differences in their control of various resources (Wenger, Quarantelli, and Dynes, 1987: 5).

Depending upon the size of the community, some evidence indicates that the types of strategies and forms of interorganizational structures differ significantly among emergency management systems. For example, inter-organizational relationships are much less formalized in smaller communities than in larger ones (Drabek, in press).

There are two important implications from this observed lack of homogeneity. First, it means that local emergency planning for seismic disasters must be placed within the context of the local community social system. It is inaccurate to conceptualize one ideal model of local community planning arrangements that, on the one hand, may be representative of only a small minority of all local communities, and, on the other hand, be inconsistent with local traditions, culture, and institutionalized social arrangements. In other words, local community emergency planning and management arrangements have developed in the context of local disaster experience, hazard vulnerability, governmental structure, resource availability, power structures, and normative expectations. The imposition of an arbitrary model of emergency planning upon a community whose social and governmental structure are inconsistent with that model can produce ineffective measures (Wenger, Quarantelli and Dynes, 1987).

Second, the diversity indicates that it is very difficult for federal and state agencies to develop programs for seismic preparedness and response that can be applied uniformly to all communities. If local emergency management and planning arrangements were homogenous, then the problem would be extraordinarily simplified. A single model, such as the Integrated Emergency Management System, could be applied with relative ease. The decentralized structure of American society is a political reality with profound implications. Planning approaches rooted in bureaucratic theories reflecting centralized authority models have limited applicability.

## 2. The Extensiveness of Local Community Emergency Planning

An analysis of the level of local planning activity in the mid-1970's observed that there was a general lack of planning and preparedness measures within local communities (Dynes and Quarantelli, 1977). However, more recent studies indicate that the situation has significantly changed during the past decade. Quarantelli (1985) has noted that planning has improved at the local level. "The typical LEMA undertakes more planning than the local civil defense office of the past, and, at least in relative terms, the planning can probably be said to be better in the sense of being more systematic and realistic" (Quarantelli, 1985: 18). In particular, local communities appear to be doing a better job at not only producing plans, but in engaging in broader planning activities. Many communities now have some sort of Emergency Operations Center, though the quality and adequacy of the facilities varies dramatically. Resource inventories and procurement seem to be improved. Some communities are doing a better job of integrating their disaster planning with that of other organizations in the community. Also, stimulated somewhat by efforts at the federal level, communities are increasingly taking an "all hazards approach" or a generic



approach to planning which is consistent with the Integrated Emergency Management System Model (Quarantelli, 1985: 18-22, see also Drabek, in press).

Furthermore, it should be noted that, consistent with the plea for increased professionalism with regard to local emergency management policy initiatives (cf. Petak, 1984), it has been found that the level of professionalism among emergency management officials has increased significantly. Quarantelli has observed that staff members of local emergency management agencies seem better educated, more motivated and interested, and generally more professional than their predecessors. The use of work-related research results, training opportunities, and educational material is far more prevalent among emergency management personnel than in the past (1985: 15).

A number of qualifications, however, are necessary to fully evaluate this optimistic pronouncement. First, while planning has generally improved, it has not improved in all communities nor for all types of hazards. Even with federal programs of matching funds being available, there are still communities with little or no emergency planning (Wenger, Quarantelli and Dynes, 1985). While planning for nuclear emergencies has significantly improved under federal influence, preparation for earthquakes, though fostered by such state legislation as the California Emergency Services Act and the Californai Earthquake Hazards Reduction Act of 1986, still lags in many communities (Seismic Safety Commission, 1986; Wyner and Mann, 1983: 283-291). Second, the improvement in planning appears to be concentrated in the "hardware" sector. In other words, communities are doing a better job at constructing Emergency Operations Centers, procuring resources, and constructing communication systems.

These improvements in physical facilities, equipment and resources obviously are beneficial. However, many of the major problems that occur during disaster response do not involve these elements. Instead, they concern such serious difficulties as interorganizational communication, authority relationships, coordination among disparate and autonomous units, and issues of organizational domain. Planning and preparation to effectively solve these critical social and organizational problems is less extensive and effective (Wenger, Quarantelli and Dynes 1987).

### 3. Social Science Based Principles of Emergency Planning

Social science analysis of emergency plans and planning activities over the past two decades has generated a considerable number of research-based planning principles. It is beyond the scope of this effort to detail these principles and elaborate upon them. These principles are derived from the following publications: Dynes, Quarantelli, and Kreps, 1974; Quarantelli, 1981; Quarantelli, 1985; Perry, 1979; Tierney, 1980; Wenger, James and Faupel, 1980; and Dynes, 1983.

a. Effective disaster planning requires that plans be adjusted to the normal patterns of behavior of people, rather than have people adjust their behavior during an emergency to the expectations of plans.

b. Planning should be considered as a process, not as a product. In other words, too often planning is equated with the simple production of a

planning document, rather than seeing it as a process of continuous updating, hazard assessment, public education, resource inventory, training, and evaluation.

c. Planning should be based upon scenarios that are likely to occur within communities, not upon unrealistic, catastrophic, millennial scenarios that would totally overwhelm a community and have little relevance to actual emergencies and disasters.

d. Everyday measures and plans for handling normal emergencies are not adequate for use in major disasters because the social environment, resource-base of the community, interorganizational linkages, and communication load are drastically altered.

e. Disaster plans should be based upon accurate expectations for individual and group behavior during disasters, not upon various myths, such as panic, looting, helplessness, and shelter utilization.

f. Disaster planning should be integrated into the normal community planning activities, i.e., it should be integrated into the traditional, professional planning process and not isolated from other planning issues.

g. Disaster planning is not disaster management. Quarantelli (1981) has noted that the principles of disaster planning refer to the general strategy, whereas the principles of emergency management have reference to the tactics which need to be considered in a situation. Planning involves such tasks as reducing the unknowns in a problematical situation, evoking appropriate actions, focusing upon general principles, and educational activities. Management includes handling such specific problems as warning, search and rescue, casualty care, and restoration of essential services.

h. Disaster planning should not be based upon a "command and control" response model, but upon an "emergent human resources model," which assumes that the local community is the logical and viable base for emergency action, rather than that the local system must be held together by an artificial system of centralized control.

A number of additional specific guidelines could be listed, but these illustrate the solid base of social science knowledge that has accumulated and has been translated into policy recommendations for local emergency planning.

#### 4. Major Weaknesses in Community Disaster Plans

Social science research has also identified a number of weaknesses in local emergency plans. Many of these involve the violation of the above-noted planning principles. For example, Wenger, James, and Faupel (1980) found that disaster planning was often isolated from the day-to-day planning process, and was assigned to organizations that were divorced from traditional institutionalized sources of social power within communities. In fact, all of the previously noted principles continue to be violated in some local planning efforts. Outdated, nonexercised, command-and-control model plans that make few or erroneous expectations about individual and

group behavior continue to be documented in post-event response studies (Drabek, et al., 1981).

In addition to these weaknesses, researchers have noted a number of other problems. Let us briefly note a few of these issues:

a. The fragmentation of planning at the local level

Dynes (1983) and Quarantelli (1985) have observed that planning at the local level is often fragmented between at least two independent spheres. First, there is planning by the "social control sector." This planning is often undertaken by representatives of local government and usually involves emergency management, police, fire, and perhaps public works involvement. Second, independent planning is often done by the "medical and social service sector." Hospitals, emergency medical organizations, and various social service agencies often become engaged in planning for victim services. The difficulty, however, is that these two components of emergency response--which are intrinsically interrelated--are often not integrated within local planning activities. In some settings, the fragmentation can become even more extreme. Mader (1985: 13) studied eight jurisdictions in California with regard to a variety of seismic issues, including emergency response planning. He observed that in only half of the jurisdictions was there any contact with the emergency preparedness arm of local government in the preparation of the seismic safety elements or their implementation. Even in those instances where contact occurred, the amount of coordination was usually minimal. Further documentation of such lapses in the structural anonymity required for multi-agency coordination has been provided by Leik, et al. (1981) and Caplow, Bahr, and Chadwick (1984).

In addition to this bifurcation between "social control" and "medical and social service" sectors, increasingly, emergency planning is also being undertaken by institutions and organizations from the private sector. Increased attention to emergency planning within a variety of corporate areas, especially those which deal with the manufacture and transportation of hazardous substances, can be observed in the past decade. Business organizations, schools, and voluntary associations have increasingly attended to the problems of emergency and disaster preparedness. These efforts, however, are also often undertaken in isolation from other planning activities in the community.

If community response to seismic disasters and other hazards is to be effective, it must involve the integration of the various sectors of the local community into a system-wide approach. A fragmented approach results not only in an inefficient planning operation, but sows the seeds for authority, domain and task conflict during the period of response.

b. Agent- or Event-Specific Planning as opposed to an All-Hazards Approach

Quarantelli (1981) and others have argued for an all-hazards approach to planning. As noted, the problems of emergency response cut across a wide diversity of different disaster agents. Unfortunately, some plans continue to be developed as if earthquakes, floods, hurricanes, tornadoes, and toxic spills had no common managerial requirements.

At least one study has documented the efficacy of an all-hazards approach. Drabek (in press) has observed that there is strong endorsement from a variety of local officials and representatives of different local agencies for an all-hazards planning model. Not only is the approach sound on the basis of research principles, but it appears to engender important political support within the local community.

#### c. A Myopic Focus Upon the Emergency Period of Disasters

Dynes, Quarantelli and Kreps (1981) were among the first to note that few disaster plans consider the transition from the emergency period to the recovery period and that almost none plan for the inevitable return of normalcy. By focusing solely upon the immediate pre- and post-impact periods, planning for rehabilitation and long-range mitigation is not well integrated into that planning designed to guide emergency activities.

In sum, there is considerable social science knowledge concerning the structure, process, and product of disaster planning. Major research collections exist at the Disaster Research Center at the University of Delaware, the Natural Hazards Research and Applications Center at the University of Colorado, the Center for Technology Environment and Development at Clark University, and the University of Pittsburg. These centers currently are attempting to coordinate and integrate their research holdings and, thereby, increase their availability to emergency management officials. As with the case of technical knowledge, however, there is very little information regarding the extent to which this knowledge has impacted upon local planning efforts. What is known, however, is that the structure of planning is diverse and heterogenous within the United States. Although planning has generally improved in the past decade, post-event studies continue to indicate that much of the planning taking place violates proven principles.

What factors are associated with the development of local emergency response plans? At this time let us examine some of the issues relevant to the planning process at the local level.

#### THE POLICY PROCESS OF EMERGENCY PLANNING AT THE LOCAL LEVEL

We have previously emphasized the heterogeneous nature of local emergency planning arrangements in the United States. Given the decentralized quality of American society regarding emergency planning, it is important to recognize that the intergovernmental processes do not produce standardized procedures or policies at the local level. If a policy preference is formulated by a federal level agency such as FEMA, it is directed toward ten regional offices, each of which will reflect varied emphases and priorities. These offices, in turn, will contact the respective state offices which, in turn, may seek to accept or delay the implementation of the policy. Depending upon the state receptivity, the mix of local offices may be contacted and advised of the newest version of federal "red tape." If the local office is not receiving federal funding--and many do not--the policy statement may simply be placed into a file without impacting local preparedness and response planning in any way.

Precise documentation of these processes, however, has never been completed.

#### a. The Planning Process

Either because of federal and state stimulation, local interest group concerns, or intra-agency motivations, a particular policy regarding emergency preparedness and response planning might be formulated. As we will note in more detail later, to date, analyses of the social origins of such policy tools have not been conducted. Thus, we really don't know what has served as the impetus for various elements of local policy. Once formulated, adoption typically rests with both the administrative component of local government, e.g., the Chief Executive Officer, and the elected officials. Field experience suggests that most local policy regarding emergency preparedness flows from the local emergency management office or one of the operational agencies, e.g., law enforcement or fire department, toward the administrative and elected bodies, rather than the reverse. This adoption process, however, has also not been assessed through careful study.

Once adopted formally, all such policies must be implemented by whatever governmental and private agencies are appropriate. If these agencies have not participated in the prior two phases of policy development, the degree of implementation may become problematic. Multi-agency participation may occur, but only if the local emergency management office has developed reasonable legitimacy and has nurtured a somewhat integrated network of interorganizational relationships (Drabek, 1983).

Finally, if implemented by the numerous collection of agencies that comprise the actual emergency response system, the policy may register change in organizational behavior. Thus, case studies of many post-disaster responses, (e.g., Gray, 1981; Drabek, et al., 1981) indicate that the implementation of an emergency operations center may speed the emergence of inter-agency coordination activities. Similarly, a study of a local warning and evacuation plan for families who resided near Mount St. Helens (Perry and Greene, 1983), documented change in both organizational and citizen behavior. Unfortunately, in this case, the adoption and implementation phases of this process were not assessed.

Although our knowledge concerning factors associated with the processes of formulation, adoption, implementation, and change is limited, let us briefly review some of the findings from the literature that relate to each of the phases. The focus of this discussion will be upon factors located within local communities. Later we will consider external forces upon the planning process; in particular, we will consider those of a state, federal and private sector nature.

##### 1. Formulation

If local community emergency planning is to be formulated, it must evolve from a supportive social climate. One element of such an environment is public support for planning efforts. Research by Turner, et al., (1979) and Perry and Greene (1983) indicates that there is at least a general acceptance and level of support for emergency planning on the part of citizens. Furthermore, as Turner, et al., note, there is also general

agreement that at least earthquake planning is a public, not a private issue. It is seen as an activity that requires collective rather than merely individual action, and is perceived as being primarily the responsibility of local government (1979:80).

There is some debate, however, concerning the priority that is given to disaster planning. Some researchers, such as Rossi, Wright and Weber-Burdin (1982), report that low priority is given to such activities. Although important, it is argued that there is not significant support for programs to mitigate and respond to events of low frequency, low predictability, though high impact.

Degree of salience and its impact on actual preparedness activities are complex matters, however, and subsequent studies have indicated that these conclusions did not take into account changes over time that may be stimulated by specific and focused initiatives. (Drabek, Mushkatel, Kilijaneck, 1983).

Understanding when emergency planning policy is formulated is enhanced by considering two important issues. First, what are the major loci or points of pressure for formulation within the local community? Second, what types of communities are more likely to be involved in the formulation process?

Generally, there are three major sources of policy formulation at the local level: (1) emergent citizen groups, (2) public and private planning entrepreneurs, and (3) local officials who seek compliance with state and federal mandates. Emergent citizen groups at times act as catalysts to stimulate the formulation or modification of emergency planning policy. Studies by Turner, et al., (1979), Quarantelli and Stallings (1985) and Quarantelli (1985) have focused upon the impact of these collective action groups upon earthquake and general disaster preparedness. The findings from the research indicate that these groups are small, short-lived, and lack extensive power relevant resources. They tend to rely upon a small cadre of committed members who often experience burnout. Emergent citizen group involvement does appear to vary, however, by the type of hazard. For example, citizen activism with regard to emergency planning for fixed-site nuclear facilities has been more extensive, longer-lived, and effective than that for natural hazards (see Walsh, 1981, 1984). Part of the reason for this success may be ideological fervor within the set of goals of these emergent groups that seems to be lacking in those emergent collectivities oriented toward natural hazards (Quarantelli, 1985). As a primary source for formulating planning policy, however, emergent citizen groups are of apparent limited effectiveness in natural disaster situations. Furthermore, it must be emphasized that there are no continuing advocacy groups for emergency planning within the United States.

Public and private entrepreneurs are a second source of policy formulation. Drabek (1985) has isolated the importance of the personality and individual actions of local emergency management directors in formulating local disaster planning. A strong role commitment to the development of planning, in combination with a perception of legitimacy and active networking of interorganizational resources, can be of vital importance in the process. Similarly, formal organizations, such as the

Southern California Earthquake Preparedness Project, can be instrumental in stimulating new policy.

Finally, there is the issue of compliance within the intergovernmental system. Local communities that receive FEMA funding are under considerable pressure to comply with federal regulations. Similarly, local communities within California are also under pressure to develop emergency planning, both from the California Emergency Services Act, the general plan for land use within the state, and the California Earthquake Hazards Reduction Act of 1986. Unfortunately, we have almost no knowledge about the level of compliance and the effectiveness of these programs at the local level for the FEMA initiatives. Research into this issue is sorely needed. Furthermore, the level of compliance in California, as noted by Mader (1985) and Wyner and Mann (1983) is limited.

What types of communities are most likely to formulate emergency planning programs? In general, the literature points to the importance of disaster experience as a catalyst; i.e., the greater the frequency and the greater the magnitude of disaster experience within a community, the more likely are emergency planning programs to be formulated (see Drabek, 1986: 55-56 for a discussion of this literature). However, formulation is not adoption. As we shall note below, disaster experience does not have a simple, causal linkage to the adoption of emergency planning programs. A number of other facilitating and debilitating contextual factors must also be considered.

## 2. Adoption

Social and political factors associated with the adoption decision will be discussed in the next section. At this time let us focus our attention upon two issues. First, what types of communities are most likely to adopt emergency planning programs? Second, what factors at the community level appear to be related to this adoption?

While disaster experience may be an important factor in formulating emergency planning policy, the adoption of that policy and the extent of planning activity appear to be influenced by a variety of community level factors. Disaster experience does appear to be a factor in the development of extremely elaborate local planning systems, particularly those found in disaster subcultures, only if (1) repetitive disaster impacts have been experienced by the community, (2) the focal agent allows for some period of forewarning, and (3) the agent causes consequential damage that is salient to various segments of the community (Wenger, 1978). Furthermore, Mader (1980) has argued that experience alone is not enough to generate adoption. Proposals that are accepted must be consistent with other community objectives.

Therefore, what are these other community objectives and characteristics? Studies have indicated that adoption may be higher in those communities that are larger in size, possess more resources, and face objective threats. For example, it has been observed that planning for chemical emergencies is most extensive in communities that are larger, located in the midwest, more frequently victimized by disaster, have both objective and perceived vulnerability to chemical hazards, have greater

financial capability, and larger emergency resource availability (Gabor, 1981: 349).

Rubin (1981) has observed that neither disaster experience nor size alone account for variation in levels of preparedness. The two variables, however, may have interaction effects when included in a model with such factors as regional area, dependency, and cost-benefit analysis.

Wyner and Mann (1983) have isolated five factors as being critically important in facilitating the adoption and implementation of risk mitigation policies by local governments: state mandates, previous earthquake experience, staff ability, attitudes of local governmental leadership and staff, resources, and competition from other issues. Based on their case histories in 13 local governmental jurisdictions within California, they concluded that: "Risk level decision-making in local governments, then, is characterized by low visibility, incrementalism, and low priority." (Wyner and Man, 1983:324).

These findings raise as many questions as they answer. Why are these factors related to preparedness policy adoption? More importantly, what are the issues relevant to the process of policy adoption? The answers to these questions are multi-dimensional and indicate that the adoption process is very complex and exacerbated by the previously mentioned diversity in local community arrangements for emergency planning. To date the most rigorous theoretical modeling of the factors that promote or discourage the adaption of risk-mitigating adjustments has been completed by Mileti (1980). His major postulates were summarized by Drabek (1986: 384-385) as follows:

VH4.4 Higher levels of perceived risk are positively associated with: (1) ability to estimate risk, (2) causes of environmental extremes perceived as naturalistic, (3) experience with risk, (4) size of the unit of analysis, and (5) access to information; and negatively associated with: propensity to deny risk. (Based on Mileti, 1980.)

VH4.5 Degree of risk-mitigating adjustment is positively associated with: (1) perceived benefits--costs of implementation of risk-mitigating policy and (2) image of damage (both of which are positively associated with perceived risk). (Based on Mileti, 1980.)

VH4.6 Degree of risk-mitigating adjustment is positively associated with: capacity to implement policy; and negatively associated with: perceived costs of implemented policy. (Based on Mileti, 1980.)

VH4.6a Capacity to implement policy is positively associated with: (1) social differentiation, (2) power differentiation, (3) political differentiation, and (4) resources. (Based on Mileti, 1980.)

VH4.6b Perceived costs of implemented policy are positively associated with: (1) opposing values and (2) opposing interest group goals. (Based on Mileti, 1980.)



Although some of the factors that can influence adoption will be discussed in the last section, let us simply note that the work of Olson and Nilson (1982), and Drabek, Mushkatel, and Kilijaneck (1983) point to the inherent complexity of the issue. Based upon the work of Lowi, Olson and Nilson argued that different types of policy (distributive, constituent, regulative, redistributive) have different types of politics (participatory, specialist, pluralist, elitist). Therefore, different political strategies are appropriate to each type of policy proposal (1982: 89). Drabek, et al. (1983) in their studies of seismic policy adoption in the states of Missouri and Washington, found general support for this proposition.

Finally, an important contribution to the understanding of factors related to adoption of emergency preparedness and response planning has been produced by Yin and Moore (1985). The authors examined conditions associated with the adoption of research and development proposals in nine case studies. With regard to the adoption of natural hazards research, the authors found that three models of the relationship between research and policy were particularly relevant. These were (1) the research, development, and diffusion model, (2) the problem-solver model, and (3) the social interaction model. Similar patterns of utilization were found for the nine case studies. Both the social interaction and problem-solver model were relevant to the analysis. Successful adoption was facilitated by heightened levels of interaction between research producers and users. Interactive, two-way communication involving presentations at formal meetings, participation in professional organizations and workshops, the development of user-dominated advisory panels, and other devices were important for success. Furthermore, the problem-solver model also has relevance, because this type of interaction should be an ongoing activity throughout the research process.

### 3. Implementation

There has been scant research on the implementation of adopted policy. Burby and French (1980) examined factors related to the implementation of the National Flood Insurance Program. They found that local community officials varied in their perceived degree of effectiveness attained in implementing the program. Perceived effectiveness tended to be associated with prior community experience with land use management, political support among local officials, direct state regulation of flood plains, and a restriction upon previous flood plain development.

Some research on opposition to the implementation of emergency planning has been undertaken. Among the factors found to be associated with opposition are economic loss and a lack of knowledge of the potential hazard (see Drabek, 1986: 371-373 for a discussion of this literature). In the case of certain seismic mitigation measures, such as strict enactment and enforcement of building codes and zoning regulations, it is known that opposition from developers and builders may arise due to the perceived economic threat to their livelihood. However, with regard to planning for emergency response, there is a dearth of literature.

One of the few findings directly related to emergency planning involves problems in implementing the Integrated Emergency Management

System within local communities. For example, Wenger, Quarantelli, and Dynes (1987) observed that the successful implementation of an integrated emergency system is contingent upon the normal, traditional structure of the local community governmental system. The integrated emergency system requires the integration, cooperation and relinquishing of autonomy by various governmental units as they become part of the new "emergency period" artificial management system. An imposition of this artificial system upon a community in which governmental units have enjoyed autonomy of action and have competed for budgetary and resource benefits can be problematic. It is difficult for managers who believe that they can exert much control over the destiny of their agency and are in competitive relationships with other agencies to suddenly alter their normal behavior. Indeed, such alteration probably occurs minimally except when the implementation strategy explicitly allows for the continuation of these two critical behavior patterns. Documentation of this matter has not been completed however.

Finally, few researchers have empirically examined the relationship between the extent and effectiveness of pre-emergency planning and the subsequent behavioral response that occurs during the emergency period of disasters. The most recent examination has been undertaken by the Disaster Research Center. Their analysis indicates that while planning is a contextual factor that generally improves the nature of emergency response, it is not a sufficient condition for insuring excellent response patterns. Planning is one, and only one, factor that influences response. Furthermore, as was previously noted, many of the serious problems that occur in organizational and community response to disaster are those elements that are often neglected in pre-impact planning, i.e., interorganizational coordination, authority relationships, task allocation, and interorganizational communication (Wenger, Quarantelli, and Dynes, 1987).

#### 4. Change

Social science research on change processes related to disaster has generally focused upon the impact of disaster events, not upon the impact of policy. Considerable research has examined the effect of disaster experience upon producing change within organizations and local communities (see Dynes and Quarantelli, 1977). It has generally been observed that change is limited following disasters. Furthermore, what change is observed to occur is usually only an acceleration of previously existing patterns of change.

Research upon the effect of disaster preparedness policy upon organizations and communities is practically nonexistent. One notable exception is the work of Palm (1981). In examining the impact of the earthquake disclosure legislation passed in California, Palm observed that the program had little or no impact on individual home buyers (1981: 106). After documenting a variety of factors related to the lack of effect of the legislation, Palm noted that fewer than half of the home buyers could remember a disclosure less than six months after the time it should have been made (1981: 106). Although the legislation was formulated, adopted, and implemented, its effectiveness was limited due to structural and informational problems associated with the nature and form of disclosure.

To this point we have examined factors associated with the policy process within the local community. The issue is complex and is exacerbated by a lack of extensive research. At this time let us further explore state, federal, and private sector influences upon the policy process. As has been emphasized throughout our discussion, local governments act on, and are constrained by, a complex organizational environment.

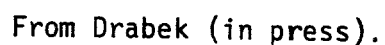
### Environmental Factors

As was previously discussed, primary responsibility for planning and emergency response resides at the local level in the United States. Certain critical environmental factors can influence the viability of local planning efforts. Drabek (in press) has isolated a number of critical variables that influence the response capability in a local community (see Figure 2). While federal policies have a direct influence upon state policies, these have only secondary effects upon the local community. It is at the local community level where important environmental factors exert their influence.

Community size and the existence of local disaster events are two critical factors that shape local response capability. In general, the greater the size of the community and the more extensive its disaster experience, the more viable is the local response system. In addition, the critical role of the local emergency management director must be considered. The strategies that are utilized by the director in support of emergency management are of paramount importance in creating an interorganizational emergency network and developing a local emergency management agency. Among other dimensions, these strategies involve strong program advocacy, interpersonal and interorganizational networking, consensus building, increasing public awareness, and heightened professionalism. These strategies, while having secondary effects upon local government and community acceptance of emergency management, have major influences upon the community response capability.

Therefore, our examination has indicated that the adoption and implementation of local emergency preparedness and response planning is a complex process. It is a process that exists in the context of local diversity and variable structural arrangements. For those hoping for a simple solution or a uniform policy that can be utilized "across the board" in a variety of settings, this review is not sanguine.

## PRELIMINARY THEORETICAL MODEL OF COMMUNITY RESPONSE CAPABILITY



## REFERENCES

- Barton, Alan H.  
1970      Communities in Disaster. Garden City, N.Y.: Anchor Books.
- Burby, R.J., and S.P. French  
1980      "The U.S. Experience in Managing Flood Plain Land Use."  
            Disasters 4, 451-457.
- Caplow, T., H. Bahr, and B. Chadwick  
1984      Analysis of the Readiness of Local Communities for  
            Integrated Emergency Planning. Charlottesville, VA: United  
            Research Services, Inc.
- Drabek, Thomas  
1983      "Alternative Patterns of Decision Making in Emergent Disaster  
            Response Networks." International Journal of Mass Emergencies  
            and Disasters 1: 277-305.
- Drabek, Thomas  
1985      "Managing the Emergency Response." in Public Administration  
            Review 45: 85-92.
- Drabek, Thomas  
1986      Human System Responses to Disaster: An Inventory of  
            Sociological Findings. New York: Springer-Verlag.
- Drabek, Thomas  
(in press) The Professional Emergency Manager: Structures and  
            Strategies for Success. Boulder, CO: Institute for  
            Behavioral Science, University of Colorado.
- Drabek, T.E., A.H. Mushkatel, and T.S. Kilijanek  
1983      Earthquake Mitigation Policy: The Experience of Two States.  
            Boulder, CO: The Institute of Behavioral Sciences,  
            University of Colorado.
- Drabek, T.E., C.R. Adams, T.S. Kilijanek, and H.L. Tamminga  
1981      "After the Wind: The Emergent Multiorganizational Search and  
            Rescue Network Following the Cheyenne, Wyoming Tornado of  
            July, 1979." in Humbolt Journal of Social Relations 9: 90-120.
- Dynes, Russell R.  
1974      Organized Behavior in Disasters. Newark, DE.: Disaster  
            Research Center, University of Delaware.
- 1983      Problems in Emergency Planning. Energy 8: 653-665.
- Dynes, Russell R. and E.L. Quarantelli  
1977      "Organizational Communications and Decision Making in  
            Crises." Report Series #17. Newark, DE.: Disaster Research  
            Center, University of Delaware.

- Dynes, Russell R., E. L. Quarantelli, and Gary Kreps  
1981 A Perspective on Disaster Planning. Newark, DE: Disaster Research Center.
- Federal Emergency Management Agency  
1985 A Comprehensive Earthquake Preparedness Planning Guidelines: City Earthquake Hazards Reduction Series 2. Van Nvys, CA.  
1985 B Comprehensive Earthquake Preparedness Planning Guidelines: County, Earthquake Hazards Reduction Series 3. Washington, D.C.: FEMA
- Foster, H.D.  
1980 Disaster Planning: The Preservation of Life and Property. New York: Springer-Verlag.
- Fritz, Charles E.  
1961 "Disasters." in Contemporary Social Problems by R.K. Merton and R.A. Nisbet (eds.). New York: Harcourt. 651-694.
- Gabor, Thomas  
1981 "Mutual Aid Systems in the United States for Chemical Emergencies." in Journal of Hazardous Materials 4: 343-356.
- Gori, Paula L.  
1984 Primer on Improving the State of Earthquake Hazards Mitigation and Preparedness. Reston, VA: Geological Survey, U. S. Dept. of Interior.
- Gray, Jane  
1981 "Characteristic Patterns of and Variations in Community Response to Acute Chemical Emergencies." Journal of Hazardous Materials 4: 356-365.
- Herman, Roger E.  
1982 Disaster Planning for Local Government. New York: Universe Books.
- Hoetmer, G.  
1983 Emergency Management, Washington, DC: International City Management Association.
- International City Management Association  
1981 Local Government Disaster Protection: Final Technical Report. Washington, DC: International City Management Association.
- Leik, R. K., T. M. Carter, J. P. Clark  
1981 "Community Response to Natural Hazard Warnings: Final Report." Minneapolis, MN: University of Minnesota.
- Mader, George G.  
1985 "A Review of the Seismic Safety Element Requirements in California." Report #SSC 85-05. Sacramento, CA: State of California Seismic Safety Commission.

- Mileti, Dennis  
1980 "Human Adjustment to the Risk of Environmental Extremes." Sociology and Social Research 64: 327-347.
- Morentz, J.W., H.C. Russell, and J.A. Kelly  
1982 Practical Mitigation: Strategies for Managing Disaster Prevention and Reduction. Rockville, MD: Research Alternatives, Inc.
- Morton, David R.  
1981 A Selected Bibliography on Disaster Planning and Simulation. Boulder, CO: Institute of Behavioral Science, University of Colorado.
- Olson, R.S. and D.C. Nilson  
1982 "Public Policy Analysis and Hazards Research: Natural Compliments." The Social Science Journal 19: 69-81.
- Palm, Risa  
1981 Real Estate Agents and Special Studies Zones Disclosure: The Responses of Home Buyers to Earthquake Hazards Information. Boulder, CO: Institute of Behavioral Science, University of Colorado.
- Perry, R.W. and M.R. Greene  
1983 Citizen Response to Volcanic Eruptions: The Case of Mount St. Helens. New York: Irvington.
- Perry, Ronald W.  
1979 "Incentives for Evacuation in Natural Disasters-Research Based Community Emergency Planning." Journal of the American Planning Association 45: 440-447.
- Petak, W.J.  
1984 "Natural Hazard Mitigation: Professionalization of the Policy Making Process." International Journal of Mass Emergencies and Disasters 2: 285-302.
- Quarantelli, E.L.  
1981 "Disaster Planning Small and Large-Past, Present, and Future." in Proceedings: American Red Cross EFO Division Disaster Conference. Alexandria, VA: Eastern Field Office, American Red Cross. 1-26.  
  
1985 Organizational Behavior in Disasters and Implications for Disaster Planning. Newark, DE: Disaster Research Center, University of Delaware.
- Quarantelli, E.L. and R. Stallings  
1985 "Emergent Citizen Groups and Emergency Management." Public Administration Review 45: 93-100.
- Red Cross Disaster Resource Center  
1986 Corporate Disaster Planning Guide. San Francisco: Red Cross Disaster Resource Center.

- Rossi, P.H., J.D. Wright and E. Weber-Burdin  
 1982 Natural Hazards and Public Choice: The State and Local Politics of Hazard Mitigation. New York: Academic Press.
- Rubin, Claire B.  
 1981 Long-term Recovery from Natural Disasters: A Comparative Analysis of Six Local Experiences. Washington, D.C.: The Academy for Contemporary Problems.
- Seismic Safety Commission  
 1986 California at Risk: Reducing Earthquake Hazards 1987 to 1992, Sacramento, CA: Seismic Safety Commission.
- Tierney, Kathleen J.  
 1980 A Primer for Preparedness for Acute Chemical Emergencies. Newark, DE: Disaster Research Center, University of Delaware.
- Turner, Ralph A., Joanne H. Nigg, D.H. Paz, and B.S. Young.  
 1979 "Earthquake Threat: The Human Response in Southern California." Los Angeles: Institute for Social Science Research, University of California.
- UNDRO  
 1978 Disaster Prevention and Mitigation: A Compendium of Current Knowledge, Vol. 3, Seismological Aspects. New York: United Nations.
- Walsh, Edward J.  
 1981 "Resource Mobilization and Citizen Protest in Communities Around Three Mile Island." Social Problems 29 (October): 1-21.  
 1984 "Local Community vs. National Industry: The Three Mile Island and Santa Barbara Protests Compared." in International Journal of Mass Emergencies and Disasters 2 (March): 147-163.
- Wenger, Dennis E., T.F. James, and C.F. Faupel  
 1978 "Community Response to Disaster: Functional and Structural Alternatives." in Disasters: Theory and Research by E.L. Quarantelli (ed.). Beverly Hills, CA: Sage: 17-47.  
 1980 Disaster Beliefs and Emergency Planning. Newark, DE: Disaster Research Project, University of Delaware.
- Wenger, Dennis E., E.L. Quarantelli, and R.R. Dynes  
 1987 Disaster Analysis: Local Emergency Management Offices and Arrangements. Newark, DE: Disaster Research Center.
- Wyner, Alan J. and Dean E. Mann  
 1983 "Seismic Safety Policy in California: Local Governments and Earthquakes." Santa Barbara, CA: Dept. of Political Sciences, University of California.
- Yin, Robert K. and Gwendolyn B. Moore  
 1985 "The Utilization of Research: Lessons From the Natural Hazards Field." Washington, D. C.: Cosmos Corporation.