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Analysis of the Readiness of Local Communities  
for Integrated Emergency Management Planning

by

Theodore Caplow, Howard M. Bahr, and Bruce A. Chadwick

Final Report

for

FEDERAL EMERGENCY MANAGEMENT AGENCY

Washington, D.C. 20472

[Contract EMW-83-C-1129, Work Unit 4841A]

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public. The concept of integrated emergency management systems (IEMS) has so far been well-received on the local level, partly because it conforms to pre-existing practice, and partly because it deflects attention from possibly controversial civil defense measures to types of emergency management that enjoy unequivocal public support. Few distinctive civil defense activities are currently ongoing in the sampled communities, and there is considerable confusion about how the public would be warned and instructed in case of a nuclear alert. Aside from these considerations, most of the networks studied should be able to handle any emergency that bears a reasonable relationship to their available resources.



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TABLE OF CONTENTS

	<u>Page</u>
0. <u>Detachable Summary</u>	8
1. <u>Introduction</u>	14
A. Background of the Research	14
B. The IEMS Concept	16
C. The 3-Dimensional IEMS Model	18
D. Related Issues	22
2. <u>Previous Research</u>	24
A. Community Emergencies	25
1. Inventories of Disaster Research	25
2. Descriptive and Statistical Studies	36
B. Research on Emergency Planning	53
1. Studies of Civil Defense Personnel	53
2. Other Research on Emergency Planning	59
C. Research on Risk Perception	74
1. The Risk of War	74
2. The Risk of Disaster	78
3. Natural and Technological Disasters	89
D. Public Opinion and National Policies	91
1. Public Attitudes about Civil Defense	92
2. The Integrated Emergency Mangement Era	99
3. Salient Points of Previous Research	101
3. <u>Horizontal Integration: The Community Action Network</u>	105
A. The Fifteen Sampled Communities	105
B. The Role of the Emergency Management Director	111
C. The Four Community Sectors	118
1. The Control Sector	118
2. The Public Service Sector	120
3. The Voluntary Sector	122
4. The Industrial/Commercial Sector	124

D.	Formal and Informal Processes in Emergency Management	127
E.	Formal Planning and Informal Implementation	130
4.	<u>Functional Integration: The Gamut of Disaster</u>	137
A.	Variations in Community Experience	137
B.	Perceptions of Risk	139
1.	Common Hazards	139
2.	The Perceived Risk of Nuclear War	141
3.	Ordinary and Exceptional Risk	146
C.	Perceptions of Emergency Response Capacity	148
5.	<u>Vertical Integration: The Communication Chain</u>	163
A.	Involvement with State Agencies	163
B.	Involvement with Federal Agencies	166
C.	Awareness of National Policy	169
6.	<u>The Responsible Population</u>	172
A.	Criteria for Selection	172
B.	Profile of Responsibles	174
C.	Sociometric Weight in the Emergency Management Network	178
D.	Threat and Responsibility	180
7.	<u>Effectiveness of Community EM Networks</u>	184
A.	Effectiveness Scores	184
B.	The Best and Worst Networks in the Sample	186
C.	Variations in the Pattern of EM Networks	190
8.	<u>Salient Issues in Local Emergency Planning as of 1984</u>	209

9. <u>Technical Summary</u>	214
A. Task 1 and Provisional Workplan	214
B. Access Procedures	218
C. Field Procedures	220
D. Coding and Quality Control	222
E. Data Analysis	224
APPENDIX A: Discussion Guide - Form 7	227
APPENDIX B: Observation Report Transmittal Form	240
APPENDIX C: Code Sheet	241
APPENDIX D: Codebook	246
APPENDIX E: Bibliography	271

LIST OF TABLES

<u>Table Number</u>	<u>Label</u>	<u>Page</u>
3-1	Population and Geographical Location of Sampled Communities	106
3-2	Some Aspects of Emergency Management in Fifteen Sampled Communities	108
3-3	Proportion of Informants who Identify the Emergency Management Director as Key Person in Emergency Management Planning	113
3-4	Key Positions in Emergency Planning, According to EM Directors in 15 Sampled Communities	116
3-5	Mentions of Persons in Four Community Sectors in Connection with Emergency Planning	121
3-6	Friendship Links in the Emergency Management Network	128
3-7	Awareness of Community Emergency Management Plan in Fifteen Sampled Communities	132
3-8	Awareness of Organizational Plan in Fifteen Sampled Communities	135
4-1	Most Likely Emergencies and Estimated Probabilities in Fifteen Communities	140
4-2	Mean Estimated Probability of Various "Most Likely" Emergencies	141
4-3	Perceived Likelihood of Nuclear War. General Population, 1978; EM Responsibles, 1984	145
4-4	Likelihood of Nuclear War Perceived by EM Responsibles in Fifteen Communities	146
4-5	Perceived Target Danger. General Population, 1978; EM Responsibles, 1984	148

4-6	Target Danger Perceived by EM Responsibles in Fifteen Communities	149
4-7	Perceived Fallout Danger, General Population, 1978; and EM Responsibles, 1984	150
4-8	Fallout Danger Perceived by EM Responsibles in Fifteen Communities	152
4-9	Community EM Effectiveness Scores by Scale and Probability of Most Likely Disaster	155
4-10	Rating of EM Network's Capacity to Manage a Major Emergency in Fifteen Sampled Communities	158
4-11	Ratings of Community Reaction to a Hypothetical Emergency in 15 Sampled Communities	159
4-12	Ratings of Evacuee-Reception Capability in Fifteen Sampled Communities	161
7-1	Network Effectiveness Scores for Fifteen Sampled Communities	185

LIST OF FIGURES

<u>Figure Number</u>	<u>Label</u>	<u>Page</u>
7-1	Network Diagram, City 8	194
7-2	Network Diagram, City 3	195
7-3	Network Diagram, City 6	196
7-4	Network Diagram, City 14	197
7-5	Network Diagram, City 11	198
7-6	Network Diagram, City 7	199
7-7	Network Diagram, City 15	200
7-8	Network Diagram, City 1	201
7-9	Network Diagram, City 9	202
7-10	Network Diagram, City 2	203
7-11	Network Diagram, City 13	204
7-12	Network Diagram, City 5	205
7-13	Network Diagram, City 12	206
7-14	Network Diagram, City 4	207
7-15	Network Diagram, City 10	208

DETACHABLE SUMMARY

September 1984

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FEMA Contract No. EMW-83-C-1129

with

United Research Services, Inc.  
Box 20, Charlottesville, Virginia 22902

READINESS OF LOCAL COMMUNITIES FOR  
INTEGRATED EMERGENCY MANAGEMENT PLANNING

Detachable Summary

This research examined the emergency management networks of fifteen communities throughout the United States, with particular attention to factors influencing effectiveness.

The method used in the study is network observation. Observers moved from one key person to another in an organization network along paths indicated by the informants themselves.

Analytical procedures are derived from a 3-dimensional IEMS model, in which horizontal integration refers to the involvement of emergency management personnel with the four relevant sectors of the community: the control sector, public service sector; voluntary sector, and commercial/industrial sector; vertical integration refers to the involvement of the local network with higher echelons of government; functional integration refers to the balancing of resources across the spectrum of potential hazards.

The report begins with a comprehensive review of the literature on community emergencies, local emergency

planning, risk perceptions and public opinion about preparedness. Among other findings, we note the tendency of the public to respond uniformly and predictably to disasters, the primary dependence upon local resources, the frequency of successful improvisation, the convergence of outsiders and outside resources toward the scene, the occurrence of typical sequences of community response. The literature shows that emergency planning, including civil preparedness, has had wide public support in this country, while having only a low priority among public concerns. The shift from civil defense to comprehensive and integrated emergency management has bolstered public confidence without raising the low priority. All of these findings are congruent with the information obtained in the present investigation.

The EM networks in all of the sampled communities are centered in the control sector, with secondary involvement of the public service sector. The voluntary and industrial/commercial sectors are underutilized.

Emergency management planning is a formal procedure relying on written plans; it is not much influenced by friendship, or other informal ties.

The effectiveness of emergency planning is greatly affected by a community's recent experience. Communities which have experienced a recent major disaster show superior

network effectiveness. Among those without recent experience, communities which agree on the most likely potential disaster - usually flood or windstorm - show better network effectiveness.

The people in local EM networks are much less apprehensive than the general public about the possibility of nuclear attack; they exclude it from their list of realistic threats. But they are more apprehensive than the general public about the dangers of fallout.

The 15 states represented in the sample are organized in different ways for emergency management, but there is considerable uniformity in the coordination of state and local efforts. State agencies enter an emergency situation at local initiative, ordinarily in response to a request for uniformed manpower or the loan of costly equipment. Most localities are reluctant to call upon state assistance but do so when compelled by circumstances.

The relationships of localities with federal agencies are much less uniform. Federal agencies are not expected to respond to local initiative, their intervention is associated with large-scale disasters, and their activities are seldom clearly understood by local people.

Familiarity with FEMA varies greatly among communities, but local EM people who have worked with FEMA do not have

a full picture of its functions and policies.

One way to improve communication between FEMA and local communities would be to undertake a study, like this one, of state EM networks in order to obtain a better picture of how the three levels are linked together.

We describe members of local EM networks as the responsible population. They are overwhelmingly male, white, middle-aged, family-oriented. They do not participate very much in civic and recreational associations. They have long tenure in their communities and in their jobs. Their attitudes are not easily changed.

Summarizing the salient issues that emerge from this study:

- Most of the EM networks sampled are reasonably effective, and can be expected to perform well in a major emergency. A few of them are ineffective and, given the principle of local autonomy, these are difficult to repair.
- Even the most effective EM networks in this sample do not avail themselves of the resources offered by the voluntary and commercial/industrial sectors, to the detriment of their programs.
- Little information about emergency planning is available to the general public in these communities. This scarcity

of information entails a number of hidden costs for the system.

- The emergency drills staged in these communities are small-scale and infrequent, so that plans are not adequately exercised and some problems that would appear in an actual emergency are not simulated.

- The concept of an integrated emergency management system has so far been well-received by the responsible population, partly because it conforms to existing procedures of emergency response in better-managed local networks, partly because it simplifies the preparation of written plans, and partly because it deflects emphasis from possibly controversial civil defense measures to other types of emergency management that enjoy unequivocal public support.

- Very few distinctive civil defense activities are currently ongoing in the sampled communities. There is considerable confusion on the local level about whether shelters would be used, how evacuation would be managed, and how the public would be warned and instructed in case of a nuclear alert.

- Aside from the foregoing reservations, it appears that in at least nine of the sampled communities, the existing EM network is sufficiently practised and flexible to handle any emergency that bears a reasonable relationship

to their available resources and to readjust rapidly to new configurations of natural or technological threat.

1

INTRODUCTION

## I. INTRODUCTION

### A. BACKGROUND OF THE RESEARCH

The guiding purposes of this project were: (1) to analyze emergency planning and management programs in local communities from the perspective of integrated emergency management; and (2) to improve methods of community research in relation to emergency planning and management.

The specific objectives of the research, as set forth in the project proposal, were: (1) to provide analyzed and interpreted data on acceptance of national planning for integrated emergency management in a sample of local communities; (2) to compare the attitudes and practices of people in emergency management networks concerning civil preparedness with those of the general public as revealed by survey research; and (3) to develop a reusable method of studying community action networks to assess local reaction to national emergency planning.

The method used in this study was network observation, a type of nonsurvey research in which observers move from one key person to another in an organizational network, along paths signaled by the informants themselves, until most of the key persons in the network have been identified and reached for face-to-face discussion.

The 15 communities to be studied were selected by FEMA to represent a wide variety of geographic, demographic and administrative conditions. Table 3-1 shows the distribution of the sample by region and population. In order to preserve the confidentiality promised to individual respondents as a condition of their participation, the 15 sampled communities are identified only by code number in this report.

For convenient performance, the research was planned as a sequence of seven tasks:

Task 1 - Identify areas of community action, values and beliefs relevant to civil preparedness and emergency management.

Task 2 - Develop the data collection plan and instruments to be used to capture information identified in the previous task.

Task 3 - Identify the network of key positions in each of the communities selected for study.

Task 4 - Collect needed information by face-to-face discussion with those persons occupying positions identified in Task 3.

Task 5 - Code the collected data for computer entry, and analyze by means of SPSS.

Task 6 - Present all findings and conclusions, together with supporting data and technical background, in a final report nine months from the starting date of the research effort.

Task 7 - Provide briefing on the research results to selected FEMA personnel as directed.

The present report represents Task 6 above. It is submitted in draft, for review by the Federal Emergency Management Agency.

## B. THE IEMS CONCEPT

Integrated Emergency Management System (IEMS) is defined as "A strategy for implementing emergency management activities which builds upon functions common to preparedness for any type of occurrence and which, at the same time, includes provisions for dealing with the special requirements of individual types of emergency situations (FEMA Instruction No. 5000.2, August 1983).

As the Director of FEMA explained in his May 1983 memorandum introducing the concept, "IEMS stresses an integrated approach to management of emergencies across the full spectrum, including natural disaster, such as tornadoes, hurricanes, floods, and earthquakes; technological disaster, such as explosions, release of hazardous materials, accidents involving radiological materials, and possible nuclear power plant accidents; resource shortages; and possible attack. There are varying levels of common requirements across this emergency spectrum for operations, such as population movement, shelter, medical care, food, and provision of other critical resources.

"IEMS will stress the preparedness elements common to emergencies across the full spectrum, while at the same time recognizing elements unique to specific types of emergencies. The larger emergencies associated with a catastrophic earthquake or war will be accorded special

attention and greater Federal involvement. Initial emphasis will be placed on basic emergency preparedness capabilities - planning, warning, communications and control, and identification of resources required for emergency response - in particular, at local levels, where the people live who must be protected from emergencies across the entire spectrum.

"IEMS will, therefore, provide for an integrated approach to preparedness for all emergencies, in line with FEMA's purpose and charter. General principles applying to the development of IEMS include providing maximum flexibility to State and local governments in achieving commonly accepted Federal, State, and local goals, as well as integrating emergency management planning into mainstream State and local government planning and decision-making processes."

The four elements of emergency management are defined as follows: Mitigation is an activity that actually eliminates or reduces the probability of a disaster occurrence or reduces the effects of a disaster; Preparedness involves activities that seek to facilitate the disaster response to save lives and minimize damage to property in the event of an emergency; Recovery activity involves assistance to return the community to normal or near-normal conditions; Response activities occur immediately before, during, and directly after an emergency or disaster. (Emergency Management Review Vol. 1 #1, Fall 1983, p. 13).

### C. A THREE-DIMENSIONAL IEMS MODEL

The term "integration" in IEMS has multiple significance, referring at the same time to (1) the inclusion of all major hazards; (2) the coordination of activities among levels of government - Federal, state, and local - and among levels of administration - national, regional, state, community and district - and between overlapping jurisdictions (e.g. cities and counties); (3) the integration of functional sectors within a given community, and of services and service providers within a common framework of emergency planning and management.

From the standpoint of the local community, which is the focus of the present study, we distinguish three dimensions of integration that have approximately equal importance. These are designated as horizontal integration, functional integration, and vertical integration.

Horizontal integration refers to the balanced involvement of sectors of the local community in an effective community action network. The four community sectors that emerged from the early phases of this project as particularly relevant to IEMS were (1) a control sector, consisting of the elected and appointed public officials with primary responsibility for the maintenance of order; (2) a public service sector, consisting of both public and private officials responsible for operating such public services as schools, hospitals, utilities, transportation and social welfare;

(3) a voluntary sector, consisting of paid and volunteer personnel of such eleemosynary organizations as Red Cross, Salvation Army, United Way, rescue squads, churches; and

(4) an industrial/commercial sector consisting of the responsible managers of enterprises engaged in the production of goods and services for profit. Although there is some overlap among these sectors e.g., newspapers and television stations stand at the margin between the service sector and the industrial/commercial sector - the functional distinctions between sectors are fairly clear. Participation in emergency planning and management shows a distinctive pattern in each sector.

In Chapter 3 of this report, we examine the horizontal integration of the community action network in each of our 15 specimen communities with special reference to the role of the EMD\* and his working relationships with each of the four sectors described above.

Functional integration refers to the balancing of emergency management resources across the all-hazards spectrum so as to cope flexibly with all types of emergency. By types of emergency we mean not only the familiar list of natural and technological hazards but also a more abstract classification of emergencies into ordinary and exceptional emergencies, a classification jointly determined by the scale and by the probability of particular occurrences.

\*Emergency Management Director. Actual titles vary, including Emergency Management Officer or Coordinator, Director of Civil Defense, etc.

In Chapter 4 of the report, we examine the functional integration of our specimen communities across the gamut of hazards, with special attention to risk perceptions and self-estimates of emergency management capability, as these have developed with reference to each hazard.

Vertical integration refers to the integration of local emergency planning and management with emergency management agencies in higher echelons of government. This has been a unique feature of American civil preparedness programs since their inception during World War II. In most other countries, civil preparedness programs are centrally administered. In the United States, civil preparedness goals are set at the federal level, but the responsibility for implementation devolves upon state and local governments. Not only do the 50 states retain wide autonomy with regard to these matters but thousands of local governments retain autonomy in the implementation of policies and directives emanating from the states. Although these are government programs, they rely upon persuasion rather than coercion to enlist cooperation at all levels down to the individual citizen. This voluntary element generates so much local and regional diversity that it is exceedingly difficult to obtain a panoramic view of the emergency management system as it operates at the grassroots.

The foregoing comments are not intended to be critical of the emphasis on local autonomy in these programs. That

emphasis has been deliberate and derives from widely-shared beliefs about the appropriate division of authority among levels of government and the importance of local knowledge and volunteer enthusiasm in coping with local emergencies.

Chapter 5 of this report examines the involvement of the emergency management networks in each of the 15 sampled communities with numerous state agencies (the list varies from state to state) and numerous federal agencies, including FEMA.

#### D. RELATED ISSUES

In Chapter 6 of the report, we turn our attention to the responsibles, a convenient label for the key persons in local communities who are responsible for emergency planning and management, considering them as a category of citizens with distinctive attributes. We compare them with the general public in regard to such attributes as age, sex, marital status, household composition, ethnicity, religion, political affiliation, membership in associations, and length of tenure.

We will also measure and try to explain the "sociometric weight" of individuals in emergency management networks, which helps to account for variations in individual and network effectiveness.

In Chapter 7, we consider the variations uncovered by this research in the structure and effectiveness of emergency management networks, and try to identify the factors that make for effective performance by some of these networks, and inadequate performance by others. We also discuss the responsiveness of local networks to policy initiatives developed by higher echelons - a question related to network effectiveness but deserving separate consideration.

Chapter 8 presents some of the major policy issues developed by the research. These are presented as policy alternatives, with specified advantages and drawbacks, rather than as outright recommendations, since it seems to

us that the development of explicit recommendations calls for a merging of research results with the informed judgments of people engaged in the administration of emergency management programs.

A technical account of the study is presented in Chapter 9 of the report, including the original project design, the modifications imposed on it by field experience, the pilot study, the development and continuous revision of instruments for data collection in community action networks, and the procedures followed in quantitative, thematic, and graphic analyses of the collected data.

Chapter 2, which follows, is a comprehensive summary of previous research on community emergencies, emergency planning, risk perception, and reactions to national emergency policies. It sets the background for our own research and also allows us to check our own results against those of previous investigators, finding them generally congruent. But the reader who is not immediately interested in this background material may want to skip Chapter 2 and turn to page 105, where the findings of the present study begin to be discussed.

PREVIOUS RESEARCH

## 2. PREVIOUS RESEARCH

The present study of emergency management and planning networks in 15 communities builds upon an extensive research literature on human behavior in large-scale emergencies. In the context of that literature, our explorations of integration, coordination, and access to resources in response to emergencies represents a fairly narrow range of interest. However, the specific issues addressed in this report are related to the entire body of historical and scientific work on disasters and their impact on human behavior.

This chapter summarizes previous research relevant to the issues and concerns we discussed with the 619 community responsables who provided most of the data for this report. The review which follows is organized around four topics: community emergencies, emergency planning, risk perception, and reactions to national emergency management policies.

## A. COMMUNITY EMERGENCIES

### 1. Inventories of Disaster Research

One of the earliest compilations of scientific research on disasters was a special issue of the Journal of Social Issues (Chapman 1954). Entitled "Human Behavior in Disaster: A New Field of Social Research," the issue contained seven papers including a description of the growth of disaster research organizations and the establishment of the influential Committee on Disaster Studies of the National Academy of Sciences-National Research Council in 1952 (Williams, 1954:6); a summary of early work on psychological and emotional reactions to disaster (Janis, 1954); an account of the NORC disaster studies to that point, which included the interviewing of almost 1,000 people recently involved in 70 different disasters (Fritz and Marks, 1954); and two papers about identifying research needs and objectives (Powell, 1954; Killian, 1954).

In 1956 the Committee on Disaster Studies of the National Academy of Sciences-National Research Council, published Disaster Study Number 1, the first monograph in an influential series which set the standard for disaster research for over two decades. Anthony Wallace's Human Behavior in Extreme Situations was a review of the existing literature on mankind's experience with mass emergencies, cataclysms, and disasters. He drew from a bibliography of about 13,000 items, one-fourth of them

annotated, prepared by the Committee's Clearinghouse of Disaster Studies. It was the most extensive survey of the disaster literature published until that time.

Wallace (1956:7-13) explained that most of the publications he had reviewed were journalistic accounts that were useful as raw data but were unscientific. Another large category was what he termed "technical journalism," such as articles in trade journals, public relations reports, technical papers from the insurance industry, the medical professions, public relief organizations, and so on. A third major category included historical studies of disaster. Finally, there were the studies by social scientists, some containing empirical data and some wholly theoretical. Wallace concluded with a review of the weaknesses in the disaster literature and sketched out "an organized approach to disaster studies" which had considerable influence on subsequent research.

Other early inventories include a special issue of the Annals of the American Academy of Political and Social Science (Smith, 1957) containing four articles on characteristics of disasters, six on governmental work and plans, five on voluntary agencies and activities, and a lengthy case history of the 1955 Yuba City, California flood. The editor describes the special issue as:

. . . bringing together for the first time a broad review of the physical characteristics and the human and physical consequences of natural disaster; the nature and scope of the truly far-reaching, complex, but well-coordinated efforts of government in preparation and avoidance, recovery and restoration; and the widespread but specific and detailed voluntary preparedness, with one or two examples out of recent experience in applying the plans and measures to acute major disaster situations. (Smith, 1957: viii).

An annotated bibliography on human behavior in disasters was produced in 1957 by the journal Human Organization (Rayner, 1957) and an inventory of field studies appeared two years later (Fritz et. al., 1959). The 1959 inventory was revised and expanded in 1961 to include laboratory studies, research on civil defense exercises, and accounts of 103 disaster-related events ranging from airplane accidents and blizzards to false alerts, tornadoes, and World War II bombings (Disaster Research Group, 1961).

Two decades later Quarantelli (1978:2) noted that the growth of social research on disasters had been almost exponential during the previous 10-15 years, and cited Allen Barton's (1963, 1969) work as contributing to that growth.

In Communities in Disaster Barton noted that narrative accounts of disaster went back to humanity's earliest records, but that systematic social research on disasters began around 1940. Except Prince's (1920) study of the Halifax Explosion and a 1927 Red Cross report on U.S.

floods, the disaster accounts Barton used to develop his typology of collective stress situations were all published after 1940 (Barton, 1969:58).

A summary of disaster studies prior to 1960 (Disaster Research Group, 1961) had claimed to have a massive data base of 21,600 interviews in 103 disasters or threat situations, but when Barton (1969) broke down the 21,600 interviews by type of interview and type of emergency the data base was much thinner than it appeared. His tabulation showed that only a few studies had produced large numbers of interviews on disaster experience, and that some of these were only marginally relevant. Here is the breakdown:

<u>Type of Research</u>	<u>Number of Interviews</u>
Studies of false alerts (response to warnings)	3,000
World War II Strategic Bombing Surveys (largely concerned with morale rather than disaster behavior)	7,100
Studies of epidemics or threats of epidemics (largely concerned with information received and self-protective actions)	2,500
Studies of very small samples (fewer than 100 respondents)	3,000
Large sample studies	
Holland flood study	1,500
Arkansas tornado study	410
Other large sample studies (20 situations, "the bulk from studies focused on limited problems and phases . . . or from unsystematic samples that do not represent any defined population, or from surveys that have never been adequately analyzed")	<u>4,090</u>

As a consequence of limited data, said Barton, the student of disaster behavior in communities was forced to rely excessively on the Arkansas and Holland studies. He concluded that there still did not exist, "the basic material for a quantitative analysis of response of large numbers of organizations or communities to disaster (Barton, 1969:59-60). The bulk of the disaster research available at that time consisted of qualitative studies. Between 1945 and the late 1960s there had been a proliferation of disaster studies, but the body of verifiable knowledge remained disappointingly small. Barton called for the study of a wider range of disasters using random sampling and focused interviewing; for more studies of organizations in disaster; for standardized descriptive inventories of disasters and cross-cultural disaster files; for long-term panel surveys of the restoration process following disaster; for historical studies of large-scale disasters and for the development of computer-simulation models of mass behavior in community disasters. He developed models of disaster behavior and set forth 35 testable hypotheses about community responses to disaster.

Baker (1964: 318-319) identified numerous defects in disaster research. He noted the paucity of research on particular organizations or types of disaster effects (particularly the effects of disaster on families and communities); the lack of pre- and post-disaster data; excessive reliance on after-the-

fact interviews; the absence of cross-cultural comparisons and syntheses and a failure to explore the relationship between man-made and natural disasters.

Baker stressed the need for research on disaster planning, especially about (1) predictable hazards; (2) the coordination of federal, state and local disaster services; (3) disaster training for emergency response personnel and the general population; (4) the effects of training upon role performance; (5) community planning for disaster response; and (6) coordinated emergency communications (Ibid., 321-323).

Dynes (1970:5-10) divides the literature on disasters into three categories: popular, official, and professional. The popular literature, consisting mainly of eyewitness accounts and imaginative reconstructions, highlights unique rather than typical experiences. The official literature--the reports of governmental and quasi-governmental agencies and relief organizations--yields information on types of organizational response; on inputs, services provided, and units of organizational "product" expended; and self-assessments of organizational performance. However, official reports often have management or public relations purposes that impair their objectivity.

The professional literature on disaster may be subdivided into studies of (1) mass behavior, (2) individual behavior, (3) organizational behavior. Dynes is

interested in the latter, and his (1970) monograph was the most extensive analysis of organizational responses to disasters up to that date. It built upon prior work by Form and Nosow (1958), Barton (1963) and Rosow (1954). Dynes' work differed from these earlier studies in its explicit concentration upon the organization as a unit of analysis in disasters. His analytical protocol included information on type of organization, identifying characteristics and organizational history, degree of bureaucratic complexity, types of control, modes of membership recruitment and orientation, disaster activities, and relationships to other local, regional, and national organizations. Two hundred and fifty published studies were systematically analyzed in this fashion, together with unpublished material collected by Disaster Research Center staff in tape-recorded interviews at 73 research sites (Dynes, 1970:5-12, 219-221).

Among the community organizations whose disaster-response activities are described and evaluated are service agencies of local government (police, fire, and public works departments), public utilities, medical services (hospitals, public health departments), relief agencies (Red Cross, Salvation Army), the mass media, and coordinating groups (civil government, local civil defense). Dynes' treatment of organizational responses during disasters includes their roles in several stages of community reaction to emergencies: the development of an emergency

consensus, the development of norms encouraging altruistic behavior, the expansion of the citizenship role, and such pre-disaster attributes of the community, as degree of familism, cohesion, and adequacy of key organizations (Ibid., 16-48, 84-108).

The most ambitious review of the research literature on crises and emergency management is an ongoing project by a team at the University of Pittsburgh who helped to create a computerized data base, the FEMA Crisis Response Conclusion Retrieval System (Rogers and Nehnevajsa, 1984). The data base includes key works, research findings, conclusions, and other information from the scientific literature on public crises and emergencies. Working from a universe of about 5400 documents, the investigators selected approximately 1400 as most relevant; among the criteria for relevance were the publication date (recent documents were preferred), the geographic focus (materials on the U.S. and Canada were preferred), and whether a document dealt with individual behaviors and attitudes or organizational procedures and policies (the data on individuals was preferred.) Application of the above criteria to the 1,417 documents initially classed as relevant reduced the total to 641. Of these, 227 could not be located and 161 were, upon inspection, found not to be appropriate for abstracting and retrieval. The remaining 253 documents were incorporated in the FEMA Crisis Response Conclusion Retrieval System.

(Ibid., 247-249 and 251-273) and are listed in a summary bibliography.

The researchers abstracted and classified the documents and the research conclusions they contained; their 1984 report is a synthesis of conclusions from related studies. It includes a taxonomy of crisis types, separate chapters on the stages of crisis, psychological and social perspectives on crises, preparations for crises, communications behavior in pre-crisis and crisis conditions, activities during periods of threat and official warning, and a summary section on the implications of all these findings for emergency management.

The conclusions most relevant to emergency planning are probably these:

- (1) The public responds to crises in remarkably uniform ways;
- (2) Public attitudes generally parallel the attitudes of emergency preparedness officials: the recognized goals are to reduce harm, lessen property damage, and minimize loss of life.
- (3) Responses to crises by the public tend to follow a known routine, with deviation from that routine in cases of unusual hazards that justifies formal emergency planning: "if public memory was perfect and all hazards equally familiar, plans might not be needed".
- (4) People respond to crises by seeking information about both the hazard's etiology and appropriate responses;

"off-the-shelf" emergency materials are frequently sufficient to provide such information.

(5) Evacuation is a spontaneous reaction to many types of crises.

(6) People respond to crises in groups; the most viable and resilient of these groups is the family.

The authors' general conclusions are that (1) an "all-hazards approach to emergency management seems to be quite realistic," for people behave in similar ways in most emergencies, and the all-hazards approach is an efficient use of human and material resources; and (2) emergency management personnel should be careful not to over-plan: "People do not always require, nor do they want such detailed response plans . . . The key is flexible guidance that facilitates the public's response to hazard." (Ibid., 185-187).

The specialized literature on search-and-rescue has been summarized by Drabek et al. (1981), which covers the existing literature on search and rescue efforts in large-scale disasters and in remote locations, and reports the results of interviews with managers in 137 disaster-relevant organizations and with many survivors. There is a fine bibliography (112 items) on multiorganizational response in search-and-rescue missions. An innovative "social mapping" technique is used to diagram relationships in the emergency organizations during the year preceding

the disaster or search-and-rescue event, the communications and leadership patterns that operated during the crisis, and attitudes about the effectiveness of the participating organizations.

The major findings relevant to emergency management are these (Ibid., 1981:xviii-xix):

- Persons who manage emergency response in disasters are surprised by the number and diversity of the groups who arrive to help.
- Emergency managers must recognize that emergency response systems are very complex and include organizations with many different forms of authority and sponsorship.
- Effective responding groups become an "emergent multiorganizational network" (EMON).
- Much rescue work may be completed before formal emergency organizations arrive, but their specialized services will still be needed.

The seven EMONS studied (Ibid., 1981:xix-xx) varied in size, location, formalization and sponsorship. Improvised and unanticipated linkages emerged in every case, although the participating organizations had been only loosely connected prior to the emergency. The seven EMONS differed significantly in their degree of development of formal emergency planning. Communications flows varied but were surprisingly dense. Decision and control structures varied but were more flat than pyramidal. The EMONS varied

in stability, and there were wide variations in their overall performance.

These investigators identify the operational problems that generally appear in search-and-rescue situations:

- 1) Communication between agencies . . .
- 2) Ambiguity of authority . . .
- 3) Special resources should be used more effectively. Emergency managers . . . must be able to locate resources such as search dog teams, satellite-based communications, tracking expertise, and diving units . . . . A recurring problem was the inability of the local police and sheriff's offices to direct the integration of military units into the response effort.
- 4) Someone should be designated to work with the media. Emergency managers need special training in providing information to the media.

The investigators further note that emergency managers must expect disaster responses to be "multi-organizational and emergent," that EMONS are loosely connected by their nature and will generally remain so; and that the entire EMON must be considered in evaluating the effectiveness of emergency response. (Ibid., :xx-xxi)

The theoretical basis for the analysis of emergent properties among organizations facing large-scale problems were set down a decade before the Drabek study by Webster (1973), Weller and Quarantelli (1973), Dynes (1970), and Parr (1970). Also relevant are Forrest (1978) and Ross (1980).

## 2. Descriptive and Statistical Studies

The first systematic study of disaster behavior was published in 1920 (Prince 1920) and the first serious

attempt to put disaster study in theoretical context did not appear until 1942 (Sorokin, 1942). There was considerable research in the 1950s and 1960s, but specialists in the field see the decade of the 1970s as the time when disaster research came of age (Quarantelli and Dynes, 1977).

Most recent studies have been conducted under the auspices of a small number of research institutions, including the Disaster Research Center at Ohio State University; the Natural Hazards Research and Applications Information Center at the University of Colorado; the Centre for Research on the Epidemiology of Disasters at the Catholic University of Louvain in Brussels; and by teams at Iowa State University and the University of Pittsburgh. A British organization, the International Disaster Institute, publishes the major journal dealing with disasters, Disasters: The International Journal of Disaster Studies (Cuny, 1983).

By 1961 a reviewer of research of disasters could point to more than 140 different disasters and serious accidents studied in some way by social scientists (Fritz, 1961: 652-653), and many of the generalizations from the early disaster literature have been reaffirmed by disaster research in the 1970s and 1980s.

In that early review, common myths about disaster behavior were listed and labelled as gross distortions, and the problems of preparing for disasters were summarized.

Fritz (1961: 659) noted, as we did in our discussions in late 1983 and early 1984, that "the most highly organized preparations exist in communities and societies that have repeatedly and recently experienced the same kind of disaster." He also mentioned some problems of disaster management that continue to confront emergency planners, such as uncoordinated activity, role conflict, and several types of convergence behavior, (personal convergence, information convergence, and material convergence).

The aftermath of a disaster usually exhibits a pattern of activity that seems disorganized to outside observers, as individuals and small groups act with purpose, but duplicate or compete with each other because they are not coordinated. Such activities may appear to manifest panic; in fact, they are uncoordinated activity on a community or societal level (Ibid., 674-675).

The uncoordinated activity is often complicated by role conflict, generally requiring a decision between what one ought to do in a community or disaster-management role and one's responsibility to family and friends. The role conflict experienced by the rescue workers with predesignated roles in disaster management is often severe; they are torn between personal and impersonal loyalties and the conflicting demands sometimes cause extreme psychological stress.

The convergence behavior of persons outside the disaster area creates serious problems. Thousands of people,

some of them from areas near the disaster, others representing agencies or constituencies far removed, begin to converge on a disaster area. There is information overload as messages of inquiry and offers of help tax existing communication facilities; material overload, as tons of unsolicited material, much of it useless or superfluous, begin to arrive. And there is personal convergence as outsiders move in and survivors return to salvage their possessions, search for missing friends, or satisfy curiosity.

Although the initial convergence derives from areas near the disaster site, the process continues for days and weeks following the disaster, as wave upon wave of people from successively distant points travel to the disaster area or send messages and supplies (Ibid., 679).

The convergence includes not only people and material, but many organizations with overlapping or conflicting functions. For example, in the Poma Lake tornado in Osage County, Kansas in 1978, 78 different agencies were involved in attempts to rescue and serve the victims of the capsized pleasure boat, and disaster management was divided among 20 different agencies (Drabek, et al., 1981: 38).

The informational convergence overloads existing communication facilities; the convergence of people and material complicates response; it creates traffic jams, draws off emergency personnel, and blocks emergency transport. The material convergence creates great problems of storage, sorting, and handling. People needed for other types of

assistance may have to be used to handle unnecessary supplies. A Red Cross representative who worked in an Arkansas tornado disaster estimated that only 40 percent of the clothing donated was useful, and described the problems of handling other donated supplies.

...sixty per cent of it was not good; it shouldn't have come into the area at all. It should have been held and sorted and the worthless stuff discarded and not transported. It's too much wasted motion. It took up the time of, I'd say, 500 volunteer workers for two weeks...They could have been rendering assistance in another form (Fritz, 1961: 681).

Controlling the convergence process requires regional or national coordination, and sophistication about the motives of the convergers. Many people define the convergers as looters or sightseers, people intending to exploit the situation. There are some of these, but they are typically fewer than those whose convergence is motivated by altruism. Most of the overload in communication, material and population, results from well-meant actions:

The incidence of looting and other forms of exploitation actually found in disasters...is slight when compared with actions motivated by anxiety over missing kin and friends, sympathy for the stricken population and the desire to help it, and interest in an unusual or unfamiliar event. For these needs to be satisfied, the disaster management must provide adequate information, positive direction, and guidance, rather than indiscriminate restraint ( Ibid., 682).

As early as 1969, Barton concluded that "certain things that both the public and the experienced professionals

in the field believed--such as the generality of panic, shock, and anti-social behavior--are not true" (Barton, 1969:61). Some of these widely accepted myths continue to inspire community decisions and planning; it may, therefore, be useful to list some of the conclusions of researchers about normal disaster behavior that go against the "common sense" expectations of the public at large. An excellent summary of normal disaster behavior based on intensive studies of almost 100 disasters, was prepared by Quarantelli and Dynes (1972), who state that:

1) Most people do not panic in the face of danger. Even when an area is supposedly evacuated, most people do not leave; the major problem in mass evacuation is to convince people that they should go.

2) Only a small proportion of disaster victims respond with shock and disorientation; rational, help-seeking behavior is much more frequent.

3) Relief organizations like the Red Cross and the Salvation Army are only approached as a last resort. Most people seek help from family and friends, then from churches and local police, and only as a last resort from special relief agencies.

4) Most disaster victims meet most of their own needs and help their neighbors: "Even in the most massive disaster, outside agencies apparently contact only a small minority of the victims."

5) American disasters do more damage to property than to people; the ratio of casualties to the population threatened is seldom high.

6) Reports of property destruction are often exaggerated or misleading. The ratio of property damage to the total property at risk is seldom high.

7) In most disasters, outside relief agencies underestimate the resources still available in the community and it is flooded with unneeded supplies.

8) Typically there are more volunteers than needed. Persons with emergency management responsibilities almost never leave their posts in a disaster out of concern for their families.

9) Disaster victims are frequently concerned about their possessions, but instances of looting and antisocial behavior are rare.

10) In the aftermath of disaster, morale is high rather than low, and in the critical first few hours after the disaster, local amateurs and informal leaders function quite effectively.

11) The efforts and activities of external agencies, whether governmental or private, are as often resented as applauded: Visits by important public figures and publicized promises of aid cause resentment because they attribute weakness to the victims and fragility to community organizations.

Several other investigators of collective behavior in disaster have prepared lists of erroneous stereotypes but the myths die hard. A recent list contrasts common, false beliefs with what is known about the actual behavior of disaster victims:

. . . victims are totally helpless in disasters.

. . . disasters are situations that require outside assistance in order for the victims to cope.

. . . disasters wipe out indigenous coping mechanisms

. . . contrary to popular belief, a crisis reinforces local coping mechanisms and . . . local organizations often work better in times of crisis than in normal periods.

. . . victims respond to disaster with abnormal behavior. It is a commonly held view that disasters incite panic, hysteria, rioting, and shock and leave victims too dazed to deal with the situation . . . Abnormal behavior is the extreme exception, not the rule.

. . . grief traumatizes disaster victims to the point where they must be led into activities in order to save themselves. While it is true that grief and shock often follow the loss of close relatives . . . grief is something that must be worked out individually and something that relief agencies are rarely prepared to deal with.

The generalization that most of the cost of disaster recovery is locally borne in the U.S. (Quarantelli and Dynes, 1972: 68) holds also in other countries. Cuny (1983:3), writes that "even in the most intensive international response, outside aid will probably not amount to more than 30-40 percent of the total expenditures for disaster recovery."

He goes on to make a further critical point about international disaster relief:

. . . it is surprising how many agencies respond to disasters as if they were all alike. Over the years, it has become standard practice to supply certain goods to every disaster area. . . An agency's standardized responses often reflect a lack of understanding of the differences between disasters and of the disruptive effects and consequences of each. The responses are also reinforced by myths that have evolved over the years regarding what is appropriate for disaster aid. (Ibid., 44).

Aside from the occasional resentment of disaster survivors toward external relief agencies, there is the possibility that the activities of external agencies may actually do harm rather than good:

For the survivors of a natural disaster, a second disaster may also be looming, for the very aid that is intended to help them recover may be provided in such a way that it actually impedes recovery, causes further economic hardship, and renders the society less able to cope with the next disaster. (Ibid., 3).

Among the difficulties afflicting disaster relief organizations, and by extension, the communities they try to serve, is their "lack of collective memory." Collective memory lapses derive from (1) high turnover among agency staff, (2) the need to expand quickly from a small skeletal staff to a large but temporary field staff, (3) the necessity for professional staff to have other employment during nondisaster periods, (4) the fact that teams do not stay to see the long-term results of their actions, and (5) the lack of systematic evaluation of disaster

interventions by outside agencies. (Ibid., 132-133).

The available information on the reconstruction of disaster sites after disasters is limited. A review of the topic by Haas et al. (1977) turned up only five descriptive or comparative studies of reconstruction, and only a few more studies of limited aspects of reconstruction in individual sites. A careful review of the research literature on disasters and natural hazards in 1975 revealed almost no published work on the problems, issues, and alternative solutions to the problems of reconstruction, and nothing that involved cross-cultural comparisons. His systematic description of disasters and reconstruction in four cities - San Francisco, Rapid City, Managua, and Anchorage, Alaska - leads Haas to emphasize that reconstruction includes opportunities to reduce future vulnerability (Ibid., xvii, 261).

There is good evidence that places which have recently experienced disasters are better prepared than other communities for subsequent disasters. The postdisaster reconstruction frequently includes plans to deal more effectively with the same hazard when it presents itself again. But most American cities have not experienced large-scale disasters in the memories of most of their citizens. In the absence of disaster experience, organizations and individuals are severely limited in their ability to imagine the devastation a disaster can cause. This was the case in Rapid City, which had known of the potential

for floods for several decades and had planned for them, but was still remarkably unprepared for a flood of the size that destroyed portions of the city in 1972. Because most communities will not have any recent experience of large-scale disasters, and because such experience is so useful for emergency management planning, Haas and his colleagues urged the use of large-scale disaster exercises called "scenerios."

. . . the value of scenario analysis in flood plain management in particular and environmental planning in general requires reiteration. In Rapid City, the potential for catastrophe greatly expanded in recent (pre-1972) years but flood events and ensuing damages had been small enough not to arouse fears of an impending disaster. It seems almost axiomatic that decisions are based upon past experience and one's view of the future. Thus, infrequent and minimal experience with environmental phenomena, such as flooding, will probably result in a weak future image of what should be planned for. In the absence of sufficient experience, the environmental planning problem is to create strong enough images on which adequate action can be based. One of the principal features of the scenario method is to create images for planning purposes: images that help portray the consequences of specific action or the resultant conditions of inaction (Ibid., 226-227).

In one of the few published accounts of the activities of a city's emergency management team following a disaster, Taylor et al. (1970:130-139) describe the "ephemeral government" that functioned in the aftermath of the Topeka tornado of 1966. The ephemeral government was a "coalition of individuals variously linked by formal and informal ties," and its "crucial actors" included the Mayor, the Shawnee County Commissioners, the local Chief of Police,

the Coordinator for Civil Defense in Topeka, the Adjutant General of the state of Kansas, the Executive Director of the Office of Economic Opportunity in Topeka, and the Governor of Kansas. The Civil Defense Headquarters was the focal point for the ephemeral government. There was fairly effective coordination, but the local civil defense organization, operating for the first time in a real emergency, encountered many unanticipated problems such as the incompatibility of radio frequencies among local emergency agencies and the lack of a step-by-step emergency plan. Personnel from local federal offices, notable the Office of Emergency Planning, the Urban Renewal Agency, and the Army Corps of Engineers played an important part. The ephemeral government coordinated outside help through a County Commissioner.

The writers describe the ephemeral government as incorporating within itself the Red Cross and a newly created, indigeneous volunteer organization. It was the volunteer organization, reporting directly to the mayor, and not local civil defense, which coordinated city, county, Red Cross, Salvation Army and individual contributions of goods and time (Ibid., 136).

The ad hoc ephemeral government sometimes moved personnel and equipment inefficiently. Vehicles and their crews occasionally reported for work at different locations; equipment was not always appropriate; some volunteer crews

disappeared; and there were numerous problems of inter-agency radio communication. The Red Cross was not subordinate to the mayor, but acted independently; the civil defense group similarly was not responsible to the mayor, and coordination depended on the willingness of the various components to cooperate rather than on established procedures. The more critical components of Topeka's successful response, in the absence of adequate planning, were civic strength, adaptability of local people and organizations, and "the existence of informal social networks which allowed quick coordination."

The inadequacies of the ephemeral government stand out most clearly when its activities are compared to those of the utility companies, whose crews were well-trained, experienced, had worked together, had familiar and appropriate equipment, and had routine operating procedures to follow. For the utility crews, "no shift in their roles was needed, for to them the tornado represented an event differing in quantity, but not quality, from normal experience" (Ibid., 138).

Whatever the merits of the descriptive, qualitative study of communities in disaster in advancing the science of emergency management, such studies continue to be done. Kai Erikson's (1976) award-winning account of the 1972 Buffalo Creek flood in West Virginia is a model of the genre. Erikson's data comes from more than 500 legal depositions by Buffalo Creek residents, tape-recorded

interviews conducted by himself or his associates, mail questionnaires he distributed to all adult plaintiffs in the legal action against the mining company accused of negligence in the collapse of the dam, and extracts from written correspondence between the survivors and the law firm handling their lawsuit.

Erikson argues that a disaster induces psychic trauma among some of the survivors. He makes a conceptual contribution to disaster study by suggesting that perhaps we should define disasters as events that produce psychic trauma, in which case some of the normal processes of technological modernization qualify as disasters for some communities and subcultures. . Erikson also concludes that man-made disasters are becoming increasingly probable and severe:

Interest in natural disasters has continued . . . even though the atomic bomb itself no longer seems to loom as so great a threat in the public imagination, and this may be the result of a growing conviction that the future - no matter how one envisions it - holds such a rich promise of creating disasters of the man-made variety. It is not just a question of specific horrors lying in wait (although it is no feat to compile a list of those) but a question of increased vulnerability to accident, malfunction, and sheer ill will.

The real danger is that, like some grotesque variation on the Peter Principle, technological progress seeks its own level of incompetence. People are encouraged to think that they can control the best in nature and the worst in themselves, and they continue to think so until the momentum of some adventure carries them beyond the limits of their own intelligence or stamina. People do not usually

know their limitations until they reach them, and when they are in charge of weapons and other contrivances with an almost infinite capacity to do harm, the probabilities that the future will be marked by periodic disasters are certainly increased (Ibid., 252-253).

The combination of disaster experience, surviving local resources and external assistance makes most disasters manageable, although they may be very costly. The typical stages of response seem to follow this sequence: (1) unorganized defensive actions, (2) the emergence of local leadership, (3) small-scale rescue operations, (4) development of an ephemeral government, (5) intervention of outside agencies, (6) routinization of reconstruction activity, and (7) formal planning to reduce future vulnerability. However, in a truly massive disaster, such as a nuclear explosion, some stages in this sequence may be unattainable. There may be few local resources left, external organizations may be unable to provide relief, and rescuers may be far outnumbered by victims. Apart from the circumstances attending the atomic bombing of Hiroshima and Nagasaki, there is little recorded experience with large-scale nuclear disaster, and none with nuclear exchanges. As a result, researchers caution that behavior in nuclear disasters may not conform to the usual sequence of disaster, response, and recovery:

The magnitude of a disaster has an important influence on its effects . . . Unless this distinction is made, the attributes that make small-scale disasters frightening but tractable could be assumed to exist in large-scale catastrophes. This would lead to a substantial overestimate of our ability to cope competently with the problems raised by nuclear war . . .

In nuclear war . . . the impulse is to flee, not to enter, the area, because of the terrible destruction and the fear of contamination by radioactivity. The mass convergence of external resources would be far less likely to occur in this type of disaster. It is questionable, given the scope of nuclear war, whether significant outside resources would be available under any circumstances . . .

Given these . . . circumstances, the distribution and movement of leadership and technical experts, equipment and essential supplies into damaged areas will pose difficult logistical and motivational problems even if the conflict terminates immediately. However, should nuclear or conventional warfare continue, these remaining resources will be claimed in large measure for the prosecution of the war effort . . . and will be available for civilian relief only in limited and probably inadequate quantities (Katz, 1982:193, 195-196).

Given the lack of experience with wide-area disasters, we do not know if there is a threshold beyond which the typical sequence of disaster response and recovery would not occur at all. Katz's assertions are plausible, but can neither be verified nor disproved.

The foregoing summary of research on community emergencies is not exhaustive; we have concentrated on those studies directly relevant to our own study of emergency management networks, but we note in passing, an extensive

body of work that we have not discussed, on such related topics as medical care in disasters (Blanshan, 1978; Tierney and Taylor, 1977; Quarantelli, 1970; Stallings, 1970; Raker and Friedsam, 1960; Raker, et al., 1956), mental health aspects of disaster (Hartsough, 1982; Baisden and Quarantelli, 1981; Lindy, et al., 1981; Kinston and Rosser, 1974; Wolfenstein, 1957), family relationships in emergency situations (Drabek, 1983; Bolin and Trainer, 1978; Drabek and Boggs, 1968; Perry, et al., 1956), the workings of voluntary relief agencies (Hostetter, 1983; Adams, 1970; Ross, 1970; Stoddard, 1969), the role of the mass media in emergencies; (Gist and Stolz, 1982; Kitao, 1978; Waxman, 1973), of schools (Klingman and Ben Eli, 1981; Perry and Perry, 1959), of public works departments (Brouillette and Quarantelli, 1971; Brouillette, 1970), and even the reactions of Native American communities to disaster (Ridington, 1982; Davis, 1970).

## B. RESEARCH ON EMERGENCY PLANNING

### 1. Studies of Civil Defense Personnel

Since the middle 1960s there has accumulated a body of research on the characteristics of civil defense personnel. Their job performance, attitudes, and problems have been analyzed, and differences between their outlook and that of community leaders and the general public have been described. There have also been some studies on public perceptions of the civil defense establishment.

Klonglan et al. (1966) assessed factors associated with the role performance of civil defense directors in Minnesota, Georgia and Massachusetts. Role performance was measured by scoring directors' task performance in each of seven task areas: licensing, marking and stocking supplies; direction and control; establishing a plan; training and public education; public information services; and development of two sets of specific emergency services. Fifty independent variables judged to have some influence on role performance were measured, including aspects of personal characteristics, resources, and facilities available to the director, and 37 indicators of other attributes such as goals, perception of sanctions, local status, job satisfaction, extent of communications network, and linkages to other organizations at the local, state, and federal levels.

The factor most strongly related to role performance

was the director's recognition of the usefulness of a state approved, operational, local civil defense plan. Local directors who recognized the advantages of having a formal plan had consistently higher performance scores. Other strong correlates of role performance were "system building" (measured by federal funds obtained, budget expansion, and staff growth) and "systemic linkage" (director's involvement with other local agencies) (Ibid., p. 92).

A study of the characteristics of successful civil defense directors (Locke, Locke and Dean, 1966:425-427) measured "success" by the number of features of an ideal civil defense program (30 possible features) that directors marked from a check-list to describe their programs. Among 316 civil defense directors in three Midwestern states, the most successful directors were the most "professionalized," as measured by previous experience in the civil defense organization, full-time paid status, and responsibility for larger populations. The findings suggested that the civil defense program would be far better served by paid professionals than by unpaid volunteers.

A mail survey of a national sample of municipal and county civil defense directors (Mulford et al., 1972) yielded data on the problems perceived by 478 directors regarding available resources, local relationships, and

communication with higher echelons.

Most of the respondents said their budgets were too small (77 percent), their own salaries were inadequate (64 percent), some of their personnel were inadequately trained (76 percent), and that they lacked sufficient personnel (70 percent) (Ibid., 2-6).

Most of them agreed with statements that their official colleagues considered civil defense less important than other departments (77 percent) and that the local public did not understand civil defense (75 percent). About half of the directors agreed that their colleagues did not understand civil defense (49 percent), that there was poor coordination between civil defense and other departments of local government (49 percent), and that their communities were not interested in civil defense (47 percent) (Ibid., 7-12).

A majority of civil defense directors reported disagreement with other local officials about their methods (58 percent) and their goals (55 percent). Agreement with state civil defense officials was not much better. A majority of the directors disagreed with those about goals (52 percent) and methods (53 percent), and almost half (49 percent) about what was expected of them as civil defense directors (Ibid., 24-35).

These problems and conflicts had affected respondents' morale. A third of the civil defense directors said that

the costs of being a civil defense director were greater than the benefits, and another third said the costs and benefits were equal. Only 52 percent said that if they had to choose between being a civil defense director and doing some other job in the community, they would choose the civil defense position (Ibid., 13, 21-22).

Most of those surveyed said they met twice a year or less with neighboring civil defense directors to discuss goal achievement (70 percent), or with state civil defense personnel to discuss civil defense readiness (69 percent), or with regional (90 percent) or federal (97 percent) civil defense personnel for any reason. There was not much evidence of sociable interaction with other civil defense personnel or much interest either (Ibid., 43-48).

A 1975 study of civil defense and disaster planning (Dynes and Quarantelli, 1975:7-10) focused on factors affecting the activities, salience and legitimacy of local civil defense offices. Interviews were conducted with more than 300 respondents in 12 cities. The researchers tried to interview all full-time personnel in each city's civil defense office, and officials in other city and county emergency organizations. Information was collected in each place on the history of disaster planning, on how local civil defense offices were vertically and horizontally related to other groups in the community, and on the resource base for civil defense. ("Vertical" relationships

are with higher-echelon agencies outside the community; "horizontal" relationships are with agencies within the local community; a usage we have adopted in this report.

The relationship of civil defense personnel to community influentials was studied by Bohlen and others in "Prairie City," in the early 1960's (1965, 1965). "External community influentials" (persons living outside the community but having influence within it) were asked to name knowledgeable people within the community. These "internal community knowledgeable" were then asked to identify "internal community influentials". This roundabout procedure netted the names of 26 community influentials, of whom 25 were interviewed in depth about community issues, personal affiliations and interaction patterns, and other matters. Among the issues explored with them were civil defense attitudes, knowledge, sources of information about civil defense, and activities relevant to civil defense.

A random sample of 163 ordinary residents was also interviewed so that their attitudes might be compared to those of the community influentials. Most of the influentials said that civil defense activities were not a waste of money and energy, that civil defense in the U.S. had not been neglected, that civil defense should not be handled by the military, and that they themselves did have some responsibility for civil defense. Both influentials and

ordinary residents were uninformed about the history of civil defense in their location and about current developments as well.

The investigator concluded that "the community influentials who were perceived to have the most power were not currently holding a formal position . . . the civil defense change agent is likely to find that the top community influentials are . . . operating behind the scenes of formal offices" (1964:245). But the evidence for this conclusion was not shown.

A later study by the same research team examined definitions and performances of civil defense roles by county board members, mayors, and civil defense directors in nine Iowa counties having joint county-municipal civil defense administrations (Klonglan, Beal, Bohlen and Nye, 1967). The same Iowa State University researchers completed numerous other studies of the attributes of civil defense directors, civil defense and community, fallout shelters, and related topics (15 of their reports are cited in Klonglan et al., 1967:iii-iv).

## 2. Other Research on Emergency Planning

The assessment of the nature and scope of disaster planning during the 1960s by Dynes and Quarentelli (1975) concluded that in most communities there was considerable consensus about which organizations were responsible to respond in some way during a disaster, but less consensus

about who had responsibility for predisaster planning and coordination. There was less consensus about responsibilities for very complex tasks, (such as warning and evacuation), and less consensus about disaster-related tasks having no clear counterpart in pre-disaster activity (such as compilation of lists of missing persons) than for other tasks. Within communities there was substantial consensus about the general responsibilities of key emergency response organizations, but less consensus about those of other organizations, especially the mass media, public health and welfare offices, and the Salvation Army. There were also ambiguities about the spheres of responsibility of medical organizations, and confusion about the proper roles of civil defense personnel.

As for emergency planning, expectations about organizational involvement and responsibility were not always congruent with existing disaster plans. For example, some disaster plans made assignments to organizations which were not aware of these assignments, and some did not provide a role for organizations that claimed emergency responsibilities as part of their prescribed roles. The responsibilities assigned to a given agency varied greatly by the specific nature of an emergency and some disaster plans involved assignments to individuals or groups that no longer existed in the community, or projected use of facilities no longer operational or available. Finally, there was evidence that the written disaster plans were seldom

referred to in day-to-day emergency planning (Ibid., 32-34).

Although this list of difficulties in coordination of disaster tasks, organizational responsibility, and formal disaster planning is a decade old, our own field observations in the present study suggest that many of these problems have not been resolved. Indeed, some of these issues are inherent in the American style of emergency planning. They cannot be dealt with once and for all and then put aside.

Lang and Lang (1964:67) point to the need for effective communication, leadership, and direction during periods of prolonged threat, to prevent exaggeration of the threat, and to sustain faith in the capacity of the community to defend itself. Thus one function of emergency planning is to maintain public morale in the face of threat. Of course this function is achieved only if reassuring information about planning and community preparedness is communicated to the general public. The best plan imaginable will not sustain community morale if the public are not informed of it.

Disaster planning is useful in maintaining community solidarity for another reason. Disasters that are unanticipated, unprecedented, or indiscriminating are most threatening to morale. Planning for likely emergencies, and exercising those plans, prepares the community for less likely emergencies. Even if a community has little advance warning, action during the pre-disaster period is essential. For one thing, there will be some demoralization

and regrouping during the period of threat, and therefore some coping mechanisms are likely to be activated. In that pre-disaster period, "manifestations of demoralization and of collective defenses will already have occurred in the period of threat and not only in response to the impact" (Ibid., 69). They remark that "the perception of probable effects as manageable and predictable tends to act as a brake on demoralization." In contrast, threats defined as unmanageable induce terror and may lead to disorganization: "the worst kind of threat is the generalized dread of the unknown" (Lang and Lang, 1964:71). Clearly, one important function of disaster planning oriented to the "unthinkable,"--to nuclear attack--is to raise morale and maintain morale during the long periods of tension when doing nothing--admitting organizationally that there was nothing to be done--would lead to greater public demoralization than doing something to indicate that the impending crisis was manageable.

Lang and Lang make several specific predictions about the threat of nuclear war. They postulate that: 1) nuclear war will be perceived by the public as an unmanageable disaster; 2) the greater the perception that it is unmanageable, the greater the unwillingness to plan and prepare for it; 3) Perceptions of nuclear war as imminent and inevitable are not directly related to perceptions of nuclear attack as manageable; 4) the likelihood of useful preparation

and response to nuclear threat depends upon the perception of a nuclear attack as manageable or unmanageable, and of a nuclear war as preventable or inevitable.

People who define nuclear disaster as unmanageable may work very hard to prevent war, because they are convinced that only by avoiding war can community survival be assured. The worst combination of attitudes from the standpoint of national morale is the perception of nuclear war as inevitable and unmanageable (Ibid., 72-73).

They argue that willingness to participate in civil defense planning--"to join in prevention and defense efforts"--is an indicator of national morale. Long-standing threats tend to be demoralizing, and instances of widespread apathy to civil defense efforts are cited as evidence of demoralization. Such apathy is likely to undermine the nation's ability to cope effectively with a nuclear crisis (Ibid., 72-74).

Another set of emergency planning issues is raised by Haas' examination of Rapid City's reaction to the flash flood of 1972 (Haas, 1977). The city had an emergency plan, but it was geared to nuclear attack rather than to a natural disaster. As in the Topeka tornado (Taylor, et al., 1970), it was the emerging, voluntary action network that responded immediately to the emergency. The

emergency preparedness office was unable to swing into action for several days:

The majority of the victims were rescued as a result of immediate ad hoc response by groups not coordinated into a single unit. Military and civilian coordination was not achieved for several days (Ibid., 216-217).

A community's experience in disaster may be a primary factor in its preparedness for future disasters, but other variables, such as the amount of resources, the size and preparedness of public agencies, and the availability of support from "emergency-relevant" organizations like construction companies, are important predictors of crisis management capability (Wenger, 1978:24). Indeed, it has been argued that for resource-poor Third World countries, prior experience of disaster may be irrelevant, because they cannot afford to prepare for emergencies (Green, 1977:23, 25). The same condition may hold for impoverished communities in more affluent countries.

Dynes and Quarantelli (1975:15-21) used information collected in 12 U.S. cities, selected because they were vulnerable to disasters, to sketch the history of urban disaster planning in the 1960s. They characterized the decade as a period of transition in disaster planning, and analyzed the factors that inhibited or facilitated comprehensive planning.

During the 1960s disaster planning was located in

three different parts of these communities - civil defense offices, private health and welfare agencies, police and fire departments - with minimal contact among them. Most community organizations seemed to write their emergency plans in isolation. As a result, each tended to maximize its own projected role in a potential emergency. Even within organizations, planning was often "cyclical and spasmodic rather than continuous and cumulative."

The investigators identified five major trends in disaster planning over the decade:

1. The scope of disaster planning was broadened to include a wider range of disaster agents . . .
2. There was a decline in the assumption that preparation for a nuclear attack was sufficient planning for all types of disaster contingencies. . . .
3. There was a shift in the focus of disaster planning from the emphasis on security of the nation to the concern with the viability of the local community . . .
4. The number of community organizations involved in disaster planning increased . . .
5. The organizations involved in disaster planning became better integrated (Ibid., 17-18).

Factors said to inhibit disaster planning were the identification of civil defense primarily with planning for nuclear attack; "residues of distrust" from conflict between civil defense and other emergency organizations over authority in emergency situations; the attitude that

a nuclear attack plan was sufficient for all smaller disasters; the insistence by some directors that civil defense was primarily preparedness for nuclear attack and of others that federal policy precluded civil defense involvement in local comprehensive planning; the tendency for initial planning within organizations to have been overly detailed, so that attempts to move to comprehensive planning entailed even greater detail and complexity; a tendency for organizations to resist involvement in overall community planning; and a tendency for planning to center on individuals rather than on their official positions, with a loss of continuity when personnel changed (Ibid., 18-19).

Factors facilitating planning included experience with actual disasters; vicarious participation in major disasters that received national publicity; new threats to the community, especially civil disturbances and student protests and "new" types of violence, such as terrorist attacks, which prompted new planning for "internal" problems; appointment or election of new officials who accepted comprehensive emergency planning as part of their jobs; and the local impact of "on-site assistance," a national program in which teams of planning experts sponsored by the Office of Civil Defense came to the community and encouraged local leaders to rethink their plans, with special attention to the coordination between emergency

agencies (Ibid., 20-21).

Rossi et al. (1982) interviewed "political elites," including state and local government officials, civil defense directors, state and local planners, mayors and city managers, flood control and public works officials, relief-agency executives, and representatives of such groups as the League of Women Voters, the Chamber of Commerce and local taxpayers' associations. Their sample of "political elites," with the exception of official specialists in state-level positions, was very similar to the networks of local people linked in some way to emergency management which we observed in the present project.

The Rossi sample included over 2000 respondents in a sample of 20 states and 100 local communities. It is thus considerably larger and much more diverse than our population of 619 informants in 15 cities. However, our coverage of the local networks is better. They appear to have had about 15 representatives, on the average, from each network studied, compared to our minimum of 40.

Rossi and his colleagues were interested in assessing support for "certain nonstructural disaster-mitigation policies and programs." The major examples were land-use management and building codes. Their respondents were chosen to represent the state and local power structures responsible for disaster preparedness and response, as

well as nonofficial persons who had some stake in the issues posed by management of environmental risk (Rossi et al., 1982:3-4). Their sample is deliberately biased in the direction of "high risk" since the states and cities chosen were judged to have high risks from floods, tornadoes, hurricanes and earthquakes. The local governments studied included 39 county governments and 61 city governments. The two counties of highest risk were chosen within each of the 20 states selected, except Delaware, where the single highest-risk county was taken. On the other hand, the 20 states in the sample include all 12 of the 48 contiguous states judged to have the highest risk of hazard damage, 5 of the 15 "medium risk" states, and 3 of the 21 "low risk" states. It is impossible to say what such a mixed bag represents, except for the skew towards high risk (Ibid., 4, 28).

The persons and groups most active in issues related to disaster regulation are "the elected officials and the public agencies concerned with the community infrastructure, such as the planning and public works department--in short, those whose position requires them to pay attention to local legislation on such issues." Local decision-making related to natural disasters was found to be located in the City Council, the Mayor, the media, the Civil Defense Director, and the Chamber of Commerce, in that order. (Ibid., 201-202; 230).

City Councils and Mayors were perceived as important allies in getting action on matters related to natural disasters by 81 and 77 percent of the respondents respectively, followed by the media (newspapers, 71 percent; TV and radio stations, 61 percent), the Civil Defense Director (53 percent), and the Chamber of Commerce (50 percent). Perhaps the most striking implication of these findings is that Civil Defense Directors are no more influential than Chamber of Commerce officials when legislation related to emergency planning is in question.

The same report includes data from a survey of the general public in nine California cities--El Dorado, Los Angeles, Mendocino, Oakland, Sacramento, San Diego, San Mateo, Shasta, and Stockton--in 1977-78 (Ibid. 107-124). Responding to an item about family and community concerns attending a serious natural disaster, those surveyed marked "very concerned," "somewhat concerned," or "not at all concerned" with reference to six potential calamities. The six are listed below, along with the range and median percentage who marked "very concerned" among the nine cities.

	Nine California cities	
	Range	Median
. . . the building in which you live would suffer serious damage?	24-44%	38%
. . . the contents of your home. . . would be seriously damaged?	21-52	36

. . . that you or someone in your family would be seriously injured?	40-64	56
. . . the police and fire departments would be unprepared?	22-51	32
. . . there would be long delays in getting people to hospitals?	34-64	45
. . . hospitals would not be able to take care of all the people needing medical attention?	32-72	53
. . . phone services, electricity, or natural gas would be out of service for more than a day?	30-63	49

Observe that the highest levels of concern expressed have to do with personal injury and the availability of emergency medical care.

Respondents expressed somewhat more confidence in local police and fire departments: only in one city (Oakland) were more than half of those surveyed "very concerned" about the level of preparedness in these departments, and the median was lower for this item than any other. (114-115).

A 1982 national survey questioned city and county chief administrative officers (CAOs) about the status of local emergency management. (Hoetmer and Herrera, undated). The 1,297 respondents, including 856 city and 441 county administrators, were asked about their community's disaster experience, local support for emergency management, attempts at disaster mitigation, emergency planning, capability of emergency response machinery, and their recommendations for improvement.

There had been over \$10 billion in property damage, 2,131 deaths, and 7,555 injuries since 1970 in the 401 cities and 273 counties whose CAOs reported at least one

disaster. A total of 1,168 disasters were tabulated; 407 of these had involved a presidential disaster declaration. The massive economic and casualty losses were in marked contrast to the minimal funds spent for emergency management: the cities had an average annual budget for emergency management of about \$26,000; the comparable figure for counties was \$40,000. Moreover, these averages were distorted upward by the high expenditures of a few large cities and counties. The median emergency management budgets were \$8,000 for cities and \$24,000 for counties. The investigators comment that "the fractional amounts expended for emergency management are totally out of proportion to the enormous numbers experienced in death, injury, and property damage." The low expenditures are one manifestation of the low priority local governments attach to emergency preparedness. That finding echoes another recent study which describes the low priority given to emergency preparedness both by elected officials and by the general public:

The absence and/or relative infrequency of an impending danger to life and property fails to keep interest levels high for any length of time beyond the moment of the immediate threat (International City Management Association, 1981: 35).

Fewer than half (44 percent in counties, 32 percent in cities) of the CAOs said their community had a public education program on emergency management, and the programs reported consisted mostly of newsletters and/or press releases. A communication gap between administrators and the public was also apparent in respondents' estimations of

of the public's capabilities in an emergency. Although the CAOs described their fellow citizens as supportive of emergency preparedness and civil defense, most of them rated their fellow citizens below average in specific skills such as ability to recognize warning signals, storing emergency supplies, or knowing evacuation routes (11).

Most city and county CAOs were unable to identify any disaster mitigation programs in their jurisdictions, other than building codes and zoning regulations. However, 82 percent of the city and 93 percent of the county respondents said they had a formal emergency management plan, and over three-fourths said their plans had been updated in 1980 or later. Most of the remaining CAOs intended to develop a formal plan in the near future or were already part of a regional plan. However, cities and counties with the larger populations were more apt to have a formal plan (Ibid., 12-15).

Other findings of the 1982 Hoetner and Herrera study were these:

--Most CAOs consider their communications systems adequate for potential emergencies.

--Most jurisdictions have an alerting and warning system, a central communications system, a mobile command post, and linkages with voluntary CB and radio organizations.

Only about 40 percent have an emergency 911 communications system.

--In most jurisdictions an elected or appointed CAO or an emergency preparedness specialist (by delegation) has the

power to activate the local disaster plan, to request state disaster assistance, and to order a major local evacuation. With the exception of curfew powers, fewer than half of the CAOs have other emergency powers.

In 44 percent of the cities and 61 percent of the counties, information collection and reporting procedures were in place for potential emergencies.

--Most CAOs (87 and 89 percent) said that more emergency training was needed in their jurisdictions. Over 89 percent of public officials, about 60 percent of EMDs and staff, 75 percent of public safety personnel (police, firefighters), were said to need additional training.

--Fifty-nine percent of city CAOs and 73 percent of county CAOs said they exercise their emergency plan at least annually.

--The type of federal and state help considered most useful is assistance in hazardous material incidents, followed by assistance in floods and tornadoes.

--Most respondents said they are familiar with their state disaster office programs and activities.

## C. RESEARCH ON RISK PERCEPTION

### 1. The Risk of War

Research on the perceived risk of war has usually been part of studies of emergencies and civil defense. For example, the University of Pittsburgh's national survey of attitudes towards civil defense issues (Nehnevajsa, 1983) included several items on the perceived likelihood of nuclear war and nuclear attack. Twenty-nine percent of their sample said that it was likely or very likely that we were "in for" another world war, one in which nuclear weapons would be used; another 31 percent said there was a 50-50 chance of such a war. Assuming that there were a nuclear war, 56 percent said that there was certain or great danger that their community would be a nuclear target, and only 20 percent anticipated little or no danger that their locality would be targeted. Whether their vicinity was targeted or not, nearly everyone (88 percent) foresaw danger from nuclear fallout, with 51 percent predicting certain or great danger and 37 percent predicting some danger. These findings suggest that among the general public there exists a credible threat of war, of being at risk as a direct target in a nuclear exchange, and of being threatened by nuclear fallout even if one's home community is not a target (10, 14, 22, 29, 34).

One index to public perception is where the public ranks military spending as compared to spending for other

things. Between 1973 and 1980 the General Social Survey of the National Opinion Research Center included a question in which persons interviewed indicated their satisfaction with government spending for various purposes. Possible responses were "too little," "about right," "too much," and "don't know." The category "the military, armaments, and defense" was included in a series of 11 categories.

In the composite sample (N = 10,472) created by summing the data from seven surveys, 25 percent of the respondents said the country spent too little on the military, armaments, and defense. Within that composite figure, there was a trend toward acceptance of higher levels of military/defense spending. In 1973 only 11 percent of the sample said the country spent too little. That figure rose to 17 percent in 1974 and 1975, 24 percent in 1976 and 1977, 27 percent in 1978 and 56 percent in 1980. By way of comparison, the proportion of the composite sample saying the nation spent too little on health was 59 percent; on drug abuse 59 percent; on improving the condition of blacks, 27 percent; and on foreign aid, only 4 percent.

The NORC General Social Survey included a question on the estimated risk of U.S. involvement in war in four of the seven years (1973, 1975, 1976 and 1978). The question read, "Do you expect the United States to fight in another war within the next 10 years?" The estimated risk of

national involvement in a war, indicated by a "yes" response, varied between 54 percent (1978) and 70 percent (1975). It was never under 50 percent.

In other words, the average American adult expected that within the coming decade or so the U.S. would be involved in a war somewhere. However, when that war was defined as a world war, in a follow-up question asked only in 1976, the proportion expecting such a war within the decade dropped to 44 percent. Almost half of the nation's adults expected in 1976 to face the mass emergencies that would accompany involvement in a world war within the ensuing ten years (National Opinion Research Center, 1980:83). The NORC questions did not refer explicitly to the use of nuclear weapons, and so we cannot estimate how many respondents expected the world war to be a nuclear war. It may be concluded that many did, for in the 1978 national civil defense survey (Nehnevajsa, 1983:14) 29 percent of a national sample said a world war with nuclear weapons was "likely" or "very likely", and an additional 31 percent put the chances around 50-50.

Some background to contemporary perceptions of the risk of war is available in a study of personal and national hopes and fears by Cantril and Roll (1971:22-23). At three points in time--1959, 1964, and 1971--they asked a national sample about their hopes and fears for their own futures and for the future of the nation. The leading

hope expressed for the U.S. was international peace, and the percentage expressing that hope did not change much between 1959 and 1971 (48 and 51 percent). Over the same period, "war (esp. nuclear war)" remained the most frequently mentioned fear, but the percentage of respondents mentioning it dropped from 64 percent in 1959 to 50 percent in 1964 and to 30 percent in 1971. Thus, during this 12-year period, the perceived likelihood that the U.S. would become involved in nuclear war declined rather sharply.

Cantril and Roll (1971:18-19) concluded that personal anxiety about international tensions, apart from fears for the nation as a whole, had also declined somewhat.

Responding to a query about whether the chance of a major world war had increased or decreased in recent years, 46 percent of the 1971 national sample said that the likelihood had increased, and only 33 percent said the threat of war had lessened. Those who said chance for a major war had increased were asked to specify reasons. The main reasons mentioned, in order of mention, were that there would always be sources of conflict the major powers would not be able to control, that Communist China and the Russians would continue to cause trouble, and that the U.S. experience in Viet Nam would encourage Communist expansion elsewhere (Ibid., 42-45).

Recent studies reveal continued concern about nuclear war in the 1980s. In January, 1980, 69 percent of a sample

of the general public said they "worry a lot" about the possibility of nuclear war. Other studies in 1980 and 1983 showed consistently high concern. In six separate surveys, in 1980 and 1983, between 50 and 62 percent of the general public gave the "worry a lot" response (Yankelovich, et al., 1983:5).

## 2. The Risk of Disaster

Acceptable levels of risk with regard to natural hazards vary by region, social group, and historical era. Societies and organizations are extremely sensitive to some risks and remarkably insensitive to others. White and Haas (1975:89) note that recent trends in acceptability of risk are not congruent; tolerance of some risks, such as potential for flooding, has decreased, while tolerance of other risks, such as vulnerability to landslides and hurricanes, seem to have increased.

The federal government, according to White and Haas in 1975, had underestimated the social impact of earthquakes, relative to floods.

If Federal agencies were to put effort proportionate to potential catastrophic losses into reducing deaths from earthquakes--as they do for tornadoes--the nation now would have a huge system for identification of seismic areas and explicit provision of a variety of adjustments to hold down the deaths which surely will come if earthquakes of a magnitude of 7 on the Richter Scale strike those zones (Ibid., 87-88).

Factors affecting individual risk-taking behavior with respect to natural hazards include 1) experience with hazards; 2) the resources of the individual including available capital, access to information, and security against crippling losses; and 3) the individual's sense of efficacy with reference to his environment (White and Haas, 1975:99-104).

Public and group decisions about risk-taking and acceptable levels of risk are influenced by similar factors. Among the parameters affecting levels of acceptable risk are the probabilities imputed to catastrophic events and roughly calculated cost/benefit ratios.

Public decision-making about natural hazards is greatly affected by recent major disasters (Ibid., 104) and organizational preparedness reflects group experience. Efforts to mitigate natural hazards are limited by available resources. Even when a community expects an earthquake at some future time, limited available resources are likely to be used for more certain and immediate problems.

Like individuals, communities and groups have histories of success or failure, and those with successful disaster-management experiences are more likely to take preventive action. When they do, they are more likely to apply available quick "fixes" to natural hazards than to attempt long-term "solutions" (Ibid., 104-105). For example, a

quick "fix" for flood plain damage is to prohibit future development in the plain, with no provision for households and businesses already located there.

Among the factors affecting national policies towards hazards are definitions of acceptable degrees of risk, population size and distribution, private and corporate economic interests, government regulation of private action in the name of safety, consumer protection and environmental protection, local building codes, environmental impact legislation, policies on casualty losses and safety investments, and communications capabilities (Ibid., 105-116).

Dynes and Quarantelli (1975:21-23), in the study of civil defense and disaster planning in 12 cities cited earlier in this chapter, obtained community disaster risk estimates from more than 300 staff members in civil defense and other emergency response agencies. They found that perceptions of risk were not directly related to objective probabilities of risk; that the perceived threat from technological hazards, in contrast to natural hazards, was low; and that there was low consensus about the probability of mass emergencies. Emergency management personnel were most sensitive to disaster agents relevant to their own responsibilities (for example, firemen were more likely than policemen to anticipate major fires). Personnel in civil defense positions had high sensitivity

to a wide range of disasters. Community emergency planning was more related to subjective than to objective estimates of risk. Among personnel involved in civil defense and disaster management, a growing awareness of technological threats (e.g., toxic spills, nuclear accidents) was not matched by increased planning for technological disasters.

In addition to the literature on perceptions of risk--people's guesses about the likelihood of wars, nuclear exchanges, or natural disasters--there is the actuarial science of risk estimation. The calculation of probabilities of loss of life and property damage from specific hazards is now a well-developed scientific specialty. The preparation of community safety plans ideally involves hazard identification and assessment, the estimation of acceptable risks or losses, the setting of community safety goals and the adoption of strategies to achieve the goals (Foster, 1980:5-42).

Quantitative analyses of accidental death rates and public acceptance of risk-taking have revealed that the acceptability of risk is a mathematical function of perceived associated benefits; that the public is willing to accept risks from voluntary activities such as dangerous sports that are about 1000 times greater than risks it will tolerate from involuntary situations and activities; that acceptable levels of risk are inversely proportional to the number of people exposed to the risk; and that

the level of tolerable risk in voluntarily accepted hazards is comparable to the level for disease (Foster, 1980: Starr, 1969). It has been concluded that "long-term societal adjustment to the involuntary risk of death from technological systems seems to approach the average natural disease rate at the upper limit of benefits. . . . any higher risk levels are unacceptable in Western society" (Foster, 1980:19).

Estimation of average risk levels in terms of fatalities per person-hour of exposure to activities, events, or situations puts life-risk levels from natural disasters at 1 fatality per 100 billion person-hours of exposure, far lower than those associated with working in fossil power plants (2 fatalities per 10 billion person-hours), hunting (9 per 10 million), commercial aviation (1 per 1 million) or general aviation (3 per 10 thousand) (Foster, 1980:19).

The apparent low priority given by the public to preparation for natural disasters (Rossi, et al., 1982) in contrast to expenditures for other social problems, is understandable in light of the objective probabilities of fatality from natural disaster as compared to those associated with high risk activities in which relatively large proportions of the population participate voluntarily, such as skiing (9 fatalities per 10 million person-hours of exposure), smoking (5 per 10 million person-hours of

exposure), or use of motor vehicles (1 per 1 million).

(Foster, 1980:19)

The depiction of mass emergencies as periods of collective stress has led to the introduction of other indicators analogous to the actuarial estimates of fatalities per person-hours of exposure. Foster (1980: 37-39; 1976) has devised a community stress index for natural disasters. The index takes into account the number of deaths, serious injuries or illnesses attributable to the disaster, the extent of the damage to the community infrastructure, and the number of people affected by the event. It makes it possible to scale the impact of disasters more accurately than the conventional measures of lives lost and the dollar value of damage.

Examining how local "political elites" perceive natural hazards, Rossi et al. (1982: 52, 59) found that concern about potential natural hazards is strongly influenced by recent disaster. Among state emergency management officials, the state's prior experience was the strongest predictor of perceived risk of hazards, and among the local political elites, a community's prior disaster experience, and the recency of that experience, were the best predictors of perceived threat. But even in those communities which had relatively recent experience with natural disasters, they were not counted among the most critical problems facing the community. Taking the entire population of respondents in the Rossi study (Ibid.,

34-40, 50) the most serious natural hazard, flooding, was ranked 12th among 18 serious problems, and possible natural hazards were clustered among the less serious problems. Excessive economic growth was considered a more serious problem than possible earthquakes.

Even local hazard specialists, such as police chiefs and fire chiefs, Red Cross officials, and Civil Defense officials regarded natural hazards as less serious social problems in their communities. City and county civil defense specialists identified inflation, welfare, crime, drugs and unemployment - in that order - as the most serious problems confronting the community. In a list of 18 potential problems, they rated fires, hurricanes, tornados, and earthquakes in 10th, 12th, 15th, 16th and 18th in seriousness. The general conclusion is that:

. . . local elites do not see natural hazards as a serious problem. This is generally true of all elite groups, even the hazards specialists, and it tends to remain true regardless of the degree of objective risk . . . . The opinion of most elites in the large majority of American communities is apparently that there are far more important things to worry about (Ibid., 62).

Another approach to risk estimation predicts the number of disasters in a region or country within a given time span, instead of the likelihood that a particular locality will experience a disaster. It is estimated that about 30 major natural disasters occur each year somewhere in the world,

about half of these affect cities. Considering only U.S. cities, it is estimated that one or two small to medium-size cities will be severely damaged every year and that a great city will be devastated once in every several decades. (Dworkin, 1974; Haas, et al., 1977:261).

Human settlement is remarkable persistent in the face of natural hazards. In fact, explaining the concentration of population in hazardous locales is a persistent problem for geographers (Burton, 1972:184-188). After disaster strikes they tend to return to the dangerous area and rebuild instead of relocating in a safer area (Burton, Kates, and White, 1968).

The frequency and cost of natural disasters is likely to increase, partly because of growing population concentration in hazardous areas, and partly because the proportion of people occupying hazardous areas is expected to increase, "reflecting the common tendency of different cultures to occupy hazard areas and the propensity of individual decision makers to take risks with nature" (Burton, 1972:187). Ways of dealing with potential hazards include what has been called the "folk-adjustment pattern" and the "industrial pattern." The former reduces the impact of small-scale emergencies but offers little protection against major disasters: "while exercising great ingenuity in the design of small-scale adjustments, populations often tend to be fatalistic

about the consequences of major geophysical events." The modern or "industrial" pattern relies on technology to control or modify nature, sometimes by very extensive "adjustments," such as flood control dams. These adjustments provide some protection against small-scale hazards, but often are insufficient for extreme events. Moreover, the modest protection offered by modern technology may have unanticipated negative consequences because people acquire a false sense of security and may omit the elementary precautions typical in folk-adjustment cultures. (Ibid., 192-193).

Studies of people who live in areas of high natural hazard show that they minimize the risk, avoid recognizing it explicitly, adopt apathetic and fatalistic attitudes, and redefine the risk unrealistically, accepting false definitions, probabilities, and decision-rules.

For example, people living in the flood plain of the Rock River in Illinois, when questioned about their perceptions of risk in 1970, when there was no threat of flood, and again in 1971, following one of the worst floods in memory, manifested no differences in perceptions of risk. The researchers concluded that "perceptions are so firmly established that an individual flood, regardless of its severity, is not likely to cause noticeable changes." There was surprisingly little planning for future floods: "Only when a flood approaches do most people start worrying about damages, inconveniences, emergency services, and the

money needed to repair damages" (Moline, 1974: 55).

A majority of respondents emphasized the region's advantages. Most respondents had suffered directly from the 1971 flood: 57 percent had experienced flood damage and a third of these had "substantial" or "total" damage, but only 7 percent planned to move.

Most of those surveyed said that floods could occur in any year, but beyond that, there was remarkable divergence in risk perception; about 12 percent said that when one flood occurred, others would soon follow; six percent said that several years had to pass between major floods; 46 percent said that another flood would come again in their lifetimes. According to the investigators, the people they talked to took pride in "river living", the recreational opportunities and their uncongested environment, and their self-reliance. They were not inclined to move away from the flood plain (Ibid., 55-56).

Folk adjustments and minor technological adjustments comprise the planning for volcanic hazard among Hawaiians in the eastern Puna District (Murton and Shimabukuro, 1974: 154-155, 158). They appeal to the supernatural, channel and dam lava flows, and evacuate when necessary. Their perceptions of risk are not much influenced by their proximity to volcanic hazard ("objective risk"), by their socio-economic status, or by property ownership. Most respondents

said there would be eruptions in the future, that they could happen anytime, and there was nothing predictable about them.

There has been considerable scientific effort to understand the rationale of decisions about natural hazards. Both experts and ordinary citizens seem to cope with the stress of making decisions about natural hazards by leaving decision-making to authoritative others. Many people follow what has been called the "law of small numbers"; they drew conclusions from a few unrepresentative cases, neglecting contrary evidence, or they calculate the probability of a hazard from very short periods of record (Slovic, Kunreuther, and White, 1974:197-198).

The gist of the research finding on perceptions of risk in objectively dangerous situations is that the persons exposed either underestimate the risk or choose to bear their losses. Nichols (1974) mentions the Turkish villagers who continue to rebuild along the Anatolian fault, despite 11 devastating earthquakes since the mid-1940s. It is also clear that people in developed countries are as willing to risk natural hazards as people in folk societies, and that in relation to the economic and social costs of disasters, the application of existing knowledge to protection against natural hazards receives surprisingly low priority. It is estimated that "the cost of the San Fernando earthquake (1971) would have funded earthquake research for the next 10 years in the United States" (Ibid., 238).

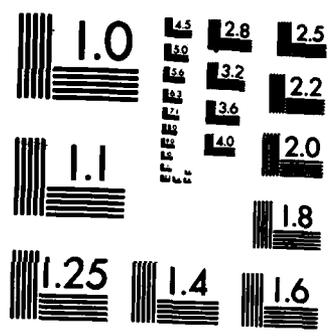
### 3. Natural and Technological Disasters

A 1973 survey of civil defense personnel and other emergency agency personnel in 12 cities judged to be highly vulnerable to disasters included the risks they assigned to 36 "disaster events," including both natural and technological hazards. Respondents were asked to rate each event on a five-point scale ranging from "Not applicable to my community" through "Not probable," "Low probability," "High probability," and "Nearly certain." The 36 events, arranged alphabetically from avalanche to water shortage, included chemical contamination spill, dam break, epidemic, hurricane, major gas main break, massive automobile wreck, meteorite fall, mine disaster, pipeline explosion, radiation fallout, ship disaster, sudden waste disposal problem, tsunami or tidal wave, and volcanic eruption. Analysis of the probabilities ascribed to the 36 listed events by the 300+ respondents led the investigators to these conclusions:

1. The perception of threat to a community is not directly related to the objective probability of that threat within the community. . . .
2. In general, the threat produced by "technological" disaster is seen as being low . . . .
3. There is a lack of consensus within the community as to the probabilities of technological disasters as well as certain relatively infrequent natural disasters.
4. Those events which affect masses of people are seen as being more probable than those events which are selective in their effects . . . .

5. Organizational personnel are most sensitive to those disaster agents which have important implications for their own activities.
6. Personnel in civil defense offices had a high "sensitivity" to a wide range of disaster agents.
7. Planning within the community is more closely related to "subjective" threat than to "objective" threat . . . .
8. The increasing awareness of the threats posed by technological disasters is not reflected by an increasing attention being given these events in planning. (Dynes and Quarantelli, 1975: 22-23)





#### D. PUBLIC OPINION AND NATIONAL POLICIES

The history of civil defense and emergency management in the United States is well documented elsewhere. A brief account of civil defense before World War II is found in Fitzsimons (1968). More comprehensive treatments are Kerr's (1983) Civil Defense in the U.S., Perry's (1982) The Social Psychology of Civil Defense, and Blanchard's (1980) American Civil Defense 1945-1975, all of which have extensive bibliographies (395, 270, and 229 items respectively).

For our present purposes it is sufficient to note that in the past, responsibility for civil defense and other forms of emergency management was scattered among numerous government agencies. Since the late 1970s there has been an effort at the federal level to combine and coordinate civil defense and emergency management programs.

Federal agencies have been concerned with managing emergencies, both man-made and natural, since the 1930s. Distinct agencies for dealing with war-related and other emergencies were established in 1950. The Office of Emergency Planning (later the Office of Emergency Preparedness) was responsible for domestic disaster planning from 1961 to 1973, when OEP was dissolved and its operations assigned to other federal agencies. Until 1979 civil defense was located in a different agency, The Defense Civil Preparedness Agency, previously the Office of Civil Defense.

Huntington (1961: 353-368) contrasts the contributions of civil defense and arms limitation to strategic policy. He writes that civil defense was not designed initially as a contribution to deterrence but as a hedge against the failure of deterrence. The continuing gaps between civil defense plans and the programs which materialized in the 1940s and 1950s are described.

Civil defense, instituted in the 1940s to save lives, was justified by its deterrence potential in the mid 1950s. Harrington depicts the "assimilation: of both civil defense and arms control programs, a process involving a reduction in initial hopes and goals," . . . a lowering of sights, an acceptance of limited goals requiring limited actions." At the same time there was an accretion of new resources into the nation's emerging major deterrent, arms programs. Civil defense and arms control programs are held up as possible examples of policy making "in which the grand schemes and plans are first proposed and perform a useful, if negative function, by revealing their impracticality (Huntington, 1961: 368)."

#### 1. Public Attitudes About Civil Defense

Public opinion about civil defense has been periodically gauged in national surveys sponsored by federal civil defense agencies. The results of these surveys, conducted every three or four years since 1950, are archived in a data bank at the University of Pittsburgh (Kerr, 1983: 224). They

know that a majority of the public has consistently favored civil defense, but the affirmative attitudes expressed in opinion surveys have not necessarily translated into strong support or a high priority for civil defense. Fitzsimons (1968) characterizes civil defense as "the shepherd boy who cried 'wolf' too often - even though the wolf may have actually lurked close to the flock,"

The problem was that the wolf never became apparent to the public, so a mild resentment often displaced the patriotic fervor of those citizens who supported civil defense. Also, Americans have, traditionally, a tremendous confidence in their military to keep the war away from their homeland. Civil defense, in fact, implied that the military might fail in their task. This tended to create an uncomfortable feeling among the public and indignation among the military. (Ibid., 28-29).

The public support, if not intense, has certainly been consistent. A 1956 survey of community leaders showed that 83 percent supported the objectives of the civil defense program. In 1965, 71 percent of a national sample said they favored a major civil defense program, and 13 years later over three-fourths of those surveyed in another national study said that fallout shelters, blast shelters, or an evacuation program would raise their chances of surviving nuclear war to over 50 percent (Kerr, 1983: 139; Nehnevajsa, 1979: 16).

If public opinion has been consistently pro-civil defense, it has also uniformly accorded civil defense a

very low priority. A 1963 survey of public attitudes towards civil defense asked respondents to choose from among eight public issues the ones they thought were most and least important. One percent chose "fallout shelters" as most important, and 43 percent chose it as least important. Five years later a national sample rated the importance of 15 social problems, including civil defense; civil defense turned out to be defined as no problem at all. Among the factors contributing to the low priority accorded civil defense by the general public is the unpleasantness of the civil defense message. There is a popular tendency to view it as a governmental rather than an individual responsibility and to assume that the things that need to be done are being done (Kerr, 1983: 139-140; Levine and Modell, 1964: 110-111; Garrett, 1979: 23, 25, 41).

In 1962 the United States Office of Civil Defense began a program of surveying, licensing, marking and stocking public fallout shelters. In 1964 and 1966 there were national surveys of public awareness of, and attitudes towards, shelters. In both surveys approximately 1500 respondents provided information about their intentions regarding the use of public fallout shelters. In 1964 almost half (45 percent) of the people surveyed were unaware that public fallout shelters existed. By 1966 the percentage unaware had dropped to 21 percent.

The increased dissemination of information about public shelters was not matched by an increase in the percentage of people intending to use them. In fact, the percentage of all respondents who said they would use the public shelters was lower in 1966 than in 1964 (16 percent, versus 18 percent in 1964) despite a two year information campaign by the Office of Civil Defense.

Other findings from the 1966 national survey were that 68 percent of those surveyed correctly identified the civil defense fallout shelter sign, 53 percent could recall the location of a specific public shelter, 48 percent had been in a building having a public fallout shelter, 16 percent said they had actually entered a shelter area, and the same percentage said they knew of local public shelters stocked with supplies.

A comparison of the attitudes of civil defense directors and community leaders (including elected community officials, persons named as leaders by Chamber of Commerce executives, and persons mentioned in interviews as exercising influence without holding office) revealed that the community leaders were less hopeful about the usefulness of individual efforts to prevent war (68 percent of the civil defense directors thought individual citizens could do some good in preventing war, and 91 percent thought an organization's efforts might be efficacious, compared to 46 and 83 percent, respectively, of community leaders). Civil defense directors were also more likely to

expect another world war (79 percent and 40 percent) and to expect it within the next five years (37 percent and 17 percent) (Locke, Locke, and Dean, 1966: 417-420).

Inasmuch as they were less likely to believe in the usefulness of individual efforts to prevent war, and less likely to regard war as imminent, it is not surprising that the community leaders were less supportive of civil defense than the civil defense professionals, although most of them agreed that civil defense had been neglected in the U.S. (59 percent of community leaders, 91 percent of civil defense directors) and that a civil defense program would reduce the probability of war (80 percent and 56 percent, respectively). The community leaders were much more likely to agree with negative statements about civil defense. Thirty-eight percent said there could be no adequate defense against nuclear attack, 25 percent said that civil defense efforts were creating a false sense of security, 18 percent that civil defense activities were a waste of money and energy, and 14 percent that civil defense should be abandoned because even if civil defense measures saved lives, nuclear war would make life on earth impossible for the survivors. The percentage of civil defense directors agreeing with any of these statements was miniscule (8, 5, 2 and 2 percent, respectively) (Ibid., 424-425). The investigators concluded that:

. . . the relatively greater complacency and apathy of the community leaders in this sample . . . will continue to frustrate civil defense directors in their efforts to build more effective organizations. Barring a major international crisis, it is probable that the public will continue to be relatively unconcerned about the threat of war and the necessity for preparedness. (Ibid., 430).

Some of the problems of civil defense organizations in the 1960s and 1970s were attributable to the low prestige of civil defense directors in many communities. Dynes (1978: 52-53) points to the identification of civil defense with nuclear attack as undermining the credibility of civil defense participation in the management of a natural disaster. Moreover, involvement in non-war emergencies had a relatively low priority in many civil defense organizations in the pre-FEMA years, and other organizations were likely to exclude civil defense from emergency planning. Local offices sometimes had to wait for federal authorization to participate in a local emergency. Moreover, according to Dynes, civil defense in the 1960s and 1970s had problems with its public image:

. . . Civil Defense . . . on the local level . . . is usually unable to establish legitimacy by the quality of its leadership. The low evaluation of civil defense leadership becomes critical if the local Civil Defense office considers itself especially suited for the task of community coordination. Other organizations are extremely reluctant to allow an organization that has little legitimacy in the community - and even less in a disaster context - to act as the major determiner of their functioning and legitimacy. (Dynes, 1978: 53).

In 1978 a national probability sample of 1620 adults was surveyed about civil defense and preparedness issues. The survey covered the perceived threat of nuclear war, civil defense costs, attitudes toward crisis relocation, and related topics (Nehnevajsa, 1983). It focused on the threat of, and potential reactions to, nuclear attack. Among the findings were these:

Only some 3 in 10 Americans "expect" to survive a nuclear war of the "next week's" variety . . . .

Fallout sheltering, blast sheltering or crisis relocation is seen to approximately double this . . . survival rate . . . .

People were convinced that the nation was spending much more on civil defense than, in fact, it had been doing . . . A factor of 7 to 10 in this regard is involved.

. . . even more "ought" to be spent - on the average representing a shift from \$1 billion (estimate of current spending) to some \$1.6 billion (desirable investment) - and this at a time of civil defense budgets around \$100 million per year (Nehnevajsa, 1983:216-217).

Most of those surveyed did not believe there would be sufficient time available to evacuate in a real nuclear emergency. However, the concept of crisis relocation was acceptable to the general population; more than two-thirds of those responding supported the need for crisis relocation planning. More than half said that in a "dramatically deteriorating international situation" they would evacuate on their own, even without a relocation program." Most of these intending to evacuate said they would prefer to

receive directions rather than having to choose their own relocation site.

Persons in "high risk" areas were more likely than others to support crisis relocation as a national policy, and were more likely to say that under highly threatening international conditions they would spontaneously relocate. Respondents in "low risk" areas were more likely to expect to survive a nuclear war by using fallout shelters. Preference for following instructions in directed relocation efforts did not vary between the high and low-risk areas, suggesting that, if directed to do so, people in low-risk areas might indeed "stay put" rather than seeking safety elsewhere (Ibid., 219-221).

## 2. The Integrated Emergency Management Era

In 1979 three agencies - the Federal Preparedness Agency, the Federal Disaster Assistance Administration, and the Defense Civil Preparedness Agency, together with some smaller emergency-related programs from other federal jurisdictions, were combined into the Federal Emergency Management Agency (Perry, 1982).

The idea was to concentrate all federal efforts in the FEMA and thereby create a single federal focal point for the management of all types of emergencies, whether they arise from natural hazards, defense-related issues, or man-made or technological sources. At present, the FEMA is still in the process of evolving as an organization but has firmly adopted a philosophy of comprehensive emergency management. . . .

In 1982 FEMA adopted an Integrated Emergency Management System (IEMS) for managing all of its programs. A 1983 civil defense program reassessment (FEMA, 1983) emphasized that IEMS applies not only to civil defense but to all emergency management activities:

. . . it is essential that there exists a clear understanding that IEMS is not uniquely applicable to civil defense activity. It is applicable to the total scope of FEMA responsibilities and thus complementary to the purposes leading to the creation of FEMA and placement of various emergency management responsibilities into a single agency for purposes of efficiency, coordination and focused national leadership (Ibid., 1).

The combination of civil defense and disaster management in a single federal agency has brought upon that agency the criticisms formerly leveled at civil defense alone. The continuing anti-civil defense arguments that civilization will be utterly destroyed in a nuclear war, that civil defense plans are provocations for nuclear attack, and that there is no credible defense against nuclear attack, are responded to by a FEMA official (Holton, 1983) who points out that FEMA's congressional mandate is to provide for the defense of the populace in any cataclysmic event, including nuclear war. FEMA is therefore required, says Holton, to keep its plans for defense against nuclear attack as current and efficacious as possible. Furthermore, because the potential damage from both natural disasters and technological

emergencies are increasing. FEMA's current all-hazards approach is seen as the most likely way to enhance the nation's capability to cope with all sorts of calamities, including nuclear accident and nuclear war.

Related to the public's support of higher funding for civil defense and their expressed willingness to follow instructions in an emergency is the finding that civil defense directors have much higher prestige than formerly: 51 percent of a sample of the general public recently said that statements about nuclear power by civil defense officials were "highly believable" (Yankelovich, Skelly and White, 1983).

### 3. Salient Points of Previous Research

The foregoing review of previous research is generally congruent with our own findings, as reported in the remaining sections of this report. The following points, emerging from the previous research, are especially important.

1. The general public responds to emergencies by clustering into family and neighborhood groups, by evacuating the endangered area, and by intelligent improvisation. The role of emergency management agencies is to supplement and support the spontaneous efforts of the affected population to help themselves.

2. There is no single, best way to organize an emergency management network. Such networks are very complex and exhibit many different patterns of decision-making, communication and control.
3. The convergence of outside persons, agencies and material resources towards a disaster site creates as many problems as it resolves.
4. Panic, mass hysteria and looting are relatively rare in large-scale emergency situations. Morale is more likely to be high than low in the aftermath of disaster. Local organizations often function better in a crisis than under normal conditions.
5. Communities which have experienced disasters are better prepared for future emergencies than those without such experience.
6. Locally circumscribed disasters are generally quite manageable. Given the lack of experience with wide-area disasters, we do not know if there is a size threshold beyond which the typical sequence of disaster response and recovery would not occur.
7. Studies of the personnel involved in emergency management and emergency management planning associate personal success with professionalization, extensive "vertical" and "horizontal" contacts, and supportive public opinion.

8. Studies of local emergency management planning show numerous communication gaps, role conflicts, and failures of coordination among local officials and agencies responsible for such planning.
9. The mere existence of a plan facilitates effective response to emergencies by defining them as manageable. But emergency management professionals on the local level do not agree among themselves as to whether nuclear attacks are potentially manageable.
10. Studies of risk-taking indicate that the public will tolerate much greater risks in voluntary activities than from involuntary situations, such as natural disasters, but that populations particularly exposed to natural disasters tend systematically to underestimate the objective probability of a recurrence. Most persons in objectively dangerous situations either underestimate the risk or choose to bear their losses.
11. In general, the perception of threat to a community is not related to the objective probability of that threat. Responsible personnel are selectively sensitive to those types of emergency for which they are directly responsible.

12. In U.S. opinion surveys dating back to 1950, the public has been consistently favorable towards civil preparedness activities but has never assigned them a high priority.

HORIZONTAL INTEGRATION  
THE COMMUNITY ACTION NETWORK

## Chapter 3

## HORIZONTAL INTEGRATION - THE COMMUNITY ACTION NETWORK

## A. THE FIFTEEN SAMPLED COMMUNITIES

The fifteen communities we studied are mid-sized American cities. There are no New Yorks, Chicagos, or Los Angeles in the sample. The largest city in our set has 350,000 population, and the smallest only 18,000. In 1980 there were 2,881 cities in the United States in the range from 10,000 to 500,000 population. These cities contain 44.1% of the American population and it was this range that the study focused on. Stating the exact population of each community would announce its identity, but Table 3-1 gives the approximate population of each city, the region in which it is located, and, if applicable, the approximate size of its Standard Metropolitan Statistical Area (SMSA). As the table shows, the cities were selected across the country to provide a diverse sampling. Cities are the units of study but in several cases, emergency management is handled at the county level in cooperation with the city. In our observation of the emergency management network, we started with the official who has overall responsibility for dealing with emergencies in that locality regardless of his location in the governmental structure.

All but two of the sampled communities have full-time civil defense or emergency management directors. One has a part-time director, who does his emergency

TABLE 3-1

## POPULATION AND GEOGRAPHICAL LOCATION OF SAMPLED COMMUNITIES

Community Number	Population, 1980		Geographical Location
	City <sup>1</sup>	SMSA <sup>2</sup>	
1	Under 50,000	2,900,000	Southwest
2	50,000-100,000	130,000	Midwest
3	50,000-100,000	100,000	Midwest
4	50,000-100,000	120,000	Midwest
5	Over 100,000	280,000	Northwest
6	Under 50,000	190,000	Southwest
7	Over 100,000	170,000	Rocky Mountain
8	Over 100,000	940,000	Rocky Mountain
9	Under 50,000	200,000	Southeast
10	Under 50,000	-----	Southwest
11	50,000-100,000	280,000	West Coast
12	50,000-100,000	2,800,000	Northeast
13	Under 50,000	-----	Northeast
14	50,000-100,000	360,000	East Coast
15	Under 50,000	640,000	East Coast

1. Grouped to conceal identity.

2. Rounded to conceal identity.

work at night or on weekends. The other had assigned this responsibility to the fire chief as part of his duties. One of the primary duties of a civil defense or emergency management director is to prepare a written emergency management plan projecting emergency utilization of available community resources including people, equipment, and supplies. Twelve of the communities had such written plans. The plans specify the chain of command during an emergency, who is to work in the command center, who is to be in the field, and the responsibilities of different officials, departments, and agencies, including volunteer agencies. Two of the communities have fragmentary plans, beginning with measures for coping with toxic spills, and intend to add other components until they have a complete plan. In the remaining community, a plan had been prepared but was rejected during a noisy public hearing, and then abandoned.

An important component of a sound emergency management program is an operations center with the necessary people and equipment to deal with a major emergency. We rated the emergency management operations centers in each city and the results are presented in Table 3-2. Each center was rated on the following features: 1) built to withstand a nuclear blast and natural forces such as hurricanes and tornadoes; 2) secured by guards or special locks; 3) food and water stored; 4) sleeping accommodations for personnel; 5) emergency communications equipment. The best center, in

TABLE 3-2  
 SOME ASPECTS OF EMERGENCY MANAGEMENT  
 IN FIFTEEN SAMPLED COMMUNITIES

Community Number	Written Plan	Quality of Operations Center <sup>1</sup>	Major Emergency In Past 10 Years	Self-rating of EM Effectiveness <sup>2</sup>
1	Yes	4	No	78%
2	Yes	2	No	39
3	Yes	9	No	91
4	No	1	No	63
5	Yes	None	No	80
6	Yes	9	Yes	98
7	Yes	9	No	56
8	Yes	10	Yes	95
9	Yes	4	No	70
10	No	None	No	35
11	Yes	9	No	71
12	Parts	1	No	63
13	Yes	1	No	71
14	Yes	10	No	81
15	Yes	9	No	48

1. Rated on a scale of 1 to 10.

2. Percent who responded "Above Average" or "Excellent" to:  
 "Compared to most other communities, how would you expect  
 \_\_\_\_\_ to react to an emergency?"

the largest of the sampled communities, is an underground complex with excellent communications equipment, sleeping quarters, a stocked kitchen and a small hospital. The least equipped centers were offices with one telephone. As the table shows, the centers clustered in two groups at opposite ends of the scale. Seven cities have excellent operations centers that rate 9 or 10. The eight inadequate centers at the low end of the scale rate 4 or lower; most are 1s and 2s.

Only two of the sampled communities had used their emergency management personnel, plans and operations centers to cope with a major emergency involving extensive property damage or loss of life during recent years. One had suffered a hurricane and the other a serious flood. Most of the others had experienced lesser emergencies such as windstorms, tornadoes, flash floods, fires, multi-vehicle traffic accidents, spills of hazardous materials and small aircraft crashes, which have provided some feedback about the community's ability to respond to a major emergency. It is interesting to note that both of the communities that have experienced a major emergency have excellent operations centers. Considerable pride developed in these two cities about the successes in their difficult situations together with further commitments to improve their programs. In one of them, a new addition was being added to the center to allow media people to watch the activities inside via closed-circuit TV

in order to keep the public informed while keeping the media people out from underfoot.

The sampled communities differed considerably in how they rated their capacity to cope with a major emergency. We asked informants how they would expect their community to react to an emergency, compared to most others. Table 3-2 contains the percent of informants in each of the sampled communities who rated it as "excellent" or "above average." The lowest figure was 35 percent, in a community that has neither a written plan nor an operations center. The highest were 95 and 98 percent in the two communities that have experienced actual recent major emergencies. Both have excellent written plans, well trained and experienced personnel, fully equipped operations centers and ample emergency supplies.

The fifteen sampled communities cover a large section of the possible range in emergency management preparedness, from unprepared to partially prepared to fully-prepared for both man-made and natural disasters.

## F. THE ROLE OF THE EMERGENCY MANAGEMENT DIRECTOR

In 11 of the sampled communities the civil defense (CD) or emergency management (EM) director is a county employee, in three, he is a city employee. Two communities have both county and city EM directors. The titles of Civil Defense Director and Emergency Management Director (or Coordinator) are equally frequent. In two instances, the change from the former to the latter title had been made with considerable publicity to emphasize the integrated emergency management concept and had apparently improved community support. On the other hand, two of the very best integrated emergency management programs that we observed were operated by persons still called Civil Defense Director.

Most of the EM directors have been in their jobs for a considerable length of time. The median tenure was 10 years and only three had less than five years.

The EM Directors described their duties as planning for emergencies, training community leaders in emergency management, and the coordination of various agencies and departments. About one-third of the EM directors play an active role in the daily management of minor emergencies like fires, traffic accidents, storms and flash floods. Four of them do this by operating a 911 or similar communications system and dispatching the appropriate units to the scene. Another manages emergency medical services. One director has had himself appointed to positions in other agencies and

departments so that he can bring emergency management to them. Direct involvement in the police department, sheriff's office, Fire Department, and emergency medical services has greatly enhanced this director's status and influence.

The level of recognition given to the EM directors by other community leaders is shown in Table 3-3. In two communities, nearly everyone in the EM network identified the director as the central figure in emergency planning and management. At the other extreme, in the community which does not have an EM director, only 8 percent of the people in the EM network considered the position important. In the community which has a part-time EM director, only 36 percent of the key people mentioned him.

The EM director apparently must earn his position in the community power structure. In the two high recognition communities, the directors were dedicated to emergency management and energetic in the performance of their duties. In another community with mediocre recognition of the EM director, respondents made it clear that they omitted him deliberately and had not just forgotten him. They criticized him as incompetent and reported that when a serious emergency (not a major one as defined earlier) had occurred six years before, the EM Director had ignored it, and had even neglected to come into City Hall and unlock the Command Center. The mayor eventually ordered the door broken down so that other officials coping with the emergency could go to work. The

TABLE 3-3

PROPORTION OF INFORMANTS WHO IDENTIFY THE EMERGENCY  
MANAGEMENT DIRECTOR AS KEY PERSON IN EMERGENCY  
MANAGEMENT PLANNING

Community Number	Percent
1	87%
2	56
3	98
4	74
5	36
6	98
7	86
8	65
9	71
10	8
11	56
12	85
13	70
14	75
15	92

emergency was a severe blizzard that paralyzed the city for several days; at one point, martial law was declared. During all this, the EM director remained at home and left the work to others. The EM Director's failure to perform when needed, seemed to have discredited him and his program.

Those directors who work hard at their job and who badger other officials for funds and participation are generally well-recognized. There are exceptions to this rule; one young man who has been EM director for three years has worked very hard to develop emergency management in his community with no visible success. He and his program are regarded as unnecessary. A county commissioner complained to us that this "young upstart" was wasting county resources by responding to emergencies that the police and fire departments could handle. He had been gently told to slow down, but had refused to do so. The county commission was studying how to limit the activity of the Emergency Management Unit. In another community, several respondents said that the EM director is too zealous, that he "sees communists under the bed" and "is always crying wolf." They do not feel that the potential hazards justify the time and expense demanded for emergency management. Both these EM directors are trying to do a reasonable job, but have encountered considerable resistance.

It is informative to examine the EM director's designation of other key persons in emergency management. As Table 3-4 shows, EM directors look to the control sector for interaction and support. Mayors, commissioners, city and county managers, provide authority to back up emergency management policies. Police chiefs, fire chiefs and county sheriffs are already in the emergency management business.

The heads of city departments in the public service sector, such as Public Works, and Water and Sewer department, are key people for EM directors because they must clean up some of the damage of a disaster, and because their trucks and other vehicles would be required to carry out an evacuation.

School superintendents were rarely identified as key people, by EM directors, although most of them have approved agreements allowing the schools to be used as mass shelters. But in one community, where school buses would be used to evacuate residents, the school district had a major role in the emergency plan and the superintendent was part of the planning team.

Hospitals, like police and fire departments, deal with emergencies on a daily basis, but only in the limited context of their emergency rooms. While hospitals are an important component in emergency plans, hospital administrators have not been directly involved in the emergency planning process in most of the sampled communities.

TABLE 3-4

KEY POSITIONS IN EMERGENCY PLANNING, ACCORDING TO  
EM DIRECTORS IN 15 SAMPLED COMMUNITIES

Sector and Position	Number
<u>Control Sector</u>	
Mayor	6
City manager	3
City council member	4
County executive	2
County commissioner	10
Fire chief	13
Police chief	9
County sheriff	8
Subtotal	<u>55</u>
<u>Public Service Sector</u>	
City department heads	14
School superintendents	2
Hospital administrators	2
Public health officials	1
College official	1
Subtotal	<u>20</u>
<u>Voluntary Sector</u>	
Red Cross	2
Church leaders	2
Subtotal	<u>4</u>
<u>Industrial/Commercial Sector</u>	
Business executive	1
Subtotal	<u>1</u>
TOTAL	<u><u>80</u></u>

Very little participation in planning was allowed to the voluntary sector. Only two Red Cross directors and two religious leaders were mentioned by the EM directors. Most of the voluntary agencies we observed seemed eager to be involved and in several instances were offended that they had been ignored. In actual emergencies, voluntary groups have made vital contribution to emergency management in their communities. In the most recent disaster experienced by any of them - a flood in 1984 - volunteers from Red Cross, the Salvation Army, and church groups, made it possible for the county and city to reduce the loss of life and property and to hasten the cleanup.

The industrial/commercial sector contributed only one person to the EM directors' lists of key persons. In several of the sampled communities this sector is the major source of potential emergencies with respect to toxic and hazardous materials and their transport, storage, use and disposal. They have large concentrations of people who would be at risk if a disaster were to happen. The general practice is for companies in the industrial/ commercial sector to develop their own emergency management plans, personnel and equipment. We found very little coordination between community emergency management and the industrial/ commercial sector.

### C. THE FOUR COMMUNITY SECTORS

One way to examine the dynamics of local emergency management, especially the coordination among agencies and departments, is to analyze the interplay between the four community sectors; control, public service, voluntary, and industrial/commercial.

#### 1. The Control Sector

The officials in this sector are responsible for the maintenance of order and of essential safeguards against disaster. They include mayors, city managers, city council members, county commissioners, police officials, fire officials, and county sheriffs. In each community we ascertained the person ultimately responsible for emergency management, the person with whom the well known buck stops. In every community, this was either an elected official or body of officials. In a few instances the emergency management authority has been delegated to an appointed official: EM director, city manager, police chief, county sheriff or fire chief. But even in these places it is understood that if a major disaster occurs, the elected officials would eventually take charge, respond to the disaster, and supervise the recovery.

A few of the appointed officials claimed that they had the ultimate authority for emergency management in their communities. But when pressed, they acknowledged that even though they have authority to initiate an emergency

response, they must surrender the baton when the appropriate elected official enters the situation.

The elected officials of the control sector also set emergency management policy, appropriate budget, and authorize the recruitment of personnel and the purchase of equipment to arm emergency management units. They alone have the authority to impose evacuation or a curfew.

The police, sheriffs, and firemen are critical to emergency management and planning. They are called upon to handle most of the minor emergencies that occur in the community. Automobile accidents, fires, explosions, toxic spills, severe weather, civil disturbances and so on are routinely handled by police and fire departments. Police are trained to render first aid, to route traffic away from trouble, to summon rescue and medical personnel and to maintain order at the scene. They are generally given the task of conducting an evacuation and protecting evacuated areas from looting and vandalism. Firemen are trained in first aid; many are paramedics. Most of the larger departments have a Hazardous Materials Team (Hazmat Team) which has been trained to recognize and deal with hazardous materials. Almost every community we observed has experienced toxic spills. In one place, a tanker full of gasoline was ruptured in an accident on a downtown street. In another, the fumes of a cleaning solvent released in a business establishment sent more than 50 people to the hospital. In

another, several prisoners in the county jail died from toxic smoke caused by a fire in a cell. The risk of toxic spills is greater if railroads and interstate highways pass through the community.

Table 3-5 shows the number of times that individuals within the four different sectors were mentioned as key people in the emergency management networks. The importance of the control sector is obvious. 63% of all mentions refer to the control sector, although, as usual, there is considerable variation among the sampled communities.

## 2. The Public Service Sector

This sector administers such public services as electricity, water, sewers, gas, telephone, hospitals, roads, schools, newspapers, radio and television. Persons in this sector may work either for government agencies or for private companies.

Emergency planning must provide for the protection of public services and the means to restore them quickly if knocked out. In addition these organization have equipment and skilled manpower that can be pressed into service on special assignment during an emergency.

Public service administrators, particularly those in public agencies, were heavily involved in emergency planning, as appears in Table 3-5. The highest rate of mention in the fifteen communities was 54 percent, the lowest was 13

TABLE 3-5

MENTIONS OF PERSONS IN FOUR COMMUNITY  
SECTORS IN CONNECTION WITH EMERGENCY PLANNING

City	Control		Public Service		Voluntary		Industrial		Total
	#	%	#	%	#	%	#	%	#
1	116	74%	37	24	3	2%	0	0%	156
2	155	64	71	29	16	7	1	0	243
3	142	64	62	28	12	5	5	2	221
4	97	65	38	26	10	7	4	3	149
5	95	49	76	39	22	11	0	0	193
6	136	80	27	17	2	1	4	2	169
7	136	67	57	28	11	5	0	0	204
8	91	41	111	50	21	9	1	0	224
9	115	69	42	25	8	5	1	1	166
10	138	87	20	13	1	1	0	0	159
11	132	59	72	32	14	6	5	2	223
12	93	68	32	23	10	7	2	1	137
13	90	65	33	24	16	12	0	0	139
14	122	69	46	26	10	6	0	0	178
15	136	69	46	23	14	7	0	0	196
TOTALS	1,794	65	770	28%	170	6%	23	1%	2,757

percent and the average was 30 percent.

### 3. The Voluntary Sector

Organizations in this sector provide such services as fire fighting and rescue work, meals for disaster workers, food and shelter for displaced persons. Volunteer fire departments, including their rescue squads, play a significant role in emergency management in many communities at no cost to taxpayers. In one of the communities we studied, the volunteer fire department has a Water Rescue Team with trained scuba divers and full gear, a Mountain Rescue Team with four-wheel-drive trucks and CB radios. In another the volunteer fire department mans and maintains the ambulance service, and they raise the funds to buy fire trucks and ambulances.

Charitable organizations like the Red Cross, the Salvation Army and church groups routinely distribute money, food, and clothing, and find shelter for the victims of personal disaster; they are well-prepared to help in major emergencies. In most of the sampled communities, the Red Cross has formal responsibility for mass shelters and food service in major emergencies. In several, the Salvation Army has a parallel role.

These organizations can raise large numbers of volunteers when needed. In one of the sampled communities, which experienced a severe flood, a local church group was asked to

raise an army of volunteers to fill and place sand bags to contain the water. Two major highways were converted into deep canals in a matter of hours by the labor of thousands of volunteers. The Salvation Army provided meals to the workers and the Red Cross sheltered families displaced by rising water or by mudslides.

Not all emergencies require volunteer manpower, but the inclusion of voluntary agencies in the planning process facilitates the hurried raising of volunteers when need arises. Missing person searches, evacuations, flood control, and the clean ups that follow most natural disasters, can make good use of volunteers.

Given the large resources of the voluntary sector, it was surprising to discover that voluntary agencies are virtually excluded from emergency planning in the sampled communities. As appears from Table 3-5, their highest rate of mention was only 11 percent. In several communities, respondents in voluntary agencies expressed puzzlement about their exclusion from the planning team.

There are, of course, some problems associated with the use of volunteers in emergencies. Police officials reported a few incidents in which too many volunteers had appeared at the scene of an emergency and interfered with police efforts to bring the situation under control. In one instance, volunteers flooded the airwaves with their CBs and short wave radios and made it difficult for the

police to communicate with each other and with other official agencies. In another place, personnel of a paid ambulance service accuse the voluntary ambulance service of being slower to respond and of providing inferior medical care. We also encountered cases where the volunteers and their services had been exploited in one way or another. Volunteer ambulance services have been known to arrive at a home in response to a request for emergency aid, and to find a family ready to go to a shopping mall, with the explanation that one of them needed to visit the doctor.

The excessive enthusiasm of volunteers and their lack of training are not insurmountable problems if the agencies are brought into the emergency management community. It appears to us that the resources of the voluntary sector could be more efficiently utilized in most of the sampled communities than has heretofore been the case.

#### 4. The Industrial/Commercial Sector

This sector includes the managers of enterprises engaged in the competitive production of goods and services for profit. The sampled communities have assembly plants, meat packing plants, electronic firms, fabric mills, and many other industrial enterprises. These companies gather large numbers of people together under a single roof so that any disaster that strikes there is serious. They also create disaster risks in their use of hazardous chemicals and dangerous procedures. Most of these companies are required by federal and state regulations to undertake

safety measures that turn out to be emergency management procedures. We observed plants with their own fire departments, their own hospitals and their own emergency communications centers. But, we rarely encountered formal or informal agreement that equipment or facilities would be made available to the general community in a major emergency.

Many companies rely on community agencies to handle in-plant emergencies, and we observed several that work closely with the nearest fire department to insure speedy and efficient assistance. One company had recently re-numbered its buildings and driveways and given a color coded map to the fire department to make it easier for them to respond to calls. But these same companies have no plans to lend assistance to the community in a major emergency. There is very little coordination of industrial emergency planning with that of the community.

As can be noted in Table 3-5, in most of the sampled communities, nobody from the industrial/commercial sector was included in the emergency management network. The highest rate of mention was three percent.

The EM directors in the sample have perhaps neglected a resource by not initiating more contact with the industrial/commercial sector. Industrial companies have considerable expertise about how to identify and contain hazardous materials. The heavy equipment, skilled manpower, and

organizational resources of these companies can be effectively used in emergency management. In one of our sampled communities the owner of a construction company was asked to coordinate requests for volunteers and the delivery of manpower in an emergency. Because he was able to estimate the manpower, supplies, and equipment needed to accomplish a given task, he was able to get these elements to the scene together. Before he assumed this role, there had been cases where frantic officials had asked for four or five times too many volunteers, with resulting confusion. On occasion, it was impossible to deliver the sand for volunteers to bag because of the traffic. Many volunteers went home convinced that officials had misjudged the situation; they will probably be less willing to respond the next time. The confusion disappeared after the recruitment of a coordinator from the industrial/commercial sector.

To summarize, the control sector is the focus of emergency management in the fifteen sample communities. It has been ably assisted by the public service sector. The voluntary and industrial commercial/sectors have been underutilized in emergency planning in these communities.

#### D. FORMAL AND INFORMAL PROCESSES IN EMERGENCY MANAGEMENT

The project proposal anticipated that informal relationships would play a large part in emergency management networks. We tested this expectation by asking key people in these community networks who would call them if an emergency happened at night, and whom they would call in turn, and then ascertaining which of the persons named were personal friends of the informant. It was anticipated that they would prefer to notify their friends first rather than to follow channels of communication. The evidence in Table 3-6 soundly refutes this idea. In most places, activation of the network in an emergency would follow the formal lines rigidly. Very few personal friendships were recorded in the fifteen networks. The highest proportion was only four percent; in three communities, no personal friendships were recorded in the network.

Moreover, the communication process was not left to a haphazard chain of contacts. Almost every network relies on a central dispatcher to inform everyone in a systematic fashion. A large number of emergency management people carry pagers, walkie-talkies or radios with them, to give the dispatcher instant access.

The typical emergency management network, it appears, is a predominantly formal structure, not seriously dependent on friendship and informal ties. Gone are the days, if they ever existed, of spreading an alert through a grapevine

TABLE 3-6  
 FRIENDSHIP LINKS IN THE EMERGENCY  
 MANAGEMENT NETWORK

Community Number	Contacts In (Friends)		Contacts Out (Friends)		Total Contacts
	#	%	#	%	#
1	14	4	18	6	320
2	6	2	20	6	336
3	9	3	18	6	326
4	1	0	2	1	320
5	5	2	10	3	320
6	6	2	2	1	336
7	8	2	9	3	360
8	2	1	6	2	328
9	1	0	2	1	344
10	5	2	9	3	320
11	3	1	14	4	336
12	1	0	3	1	320
13	9	3	9	3	328
14	2	1	17	5	328
15	5	2	6	2	320
<b>TOTALS</b>	<b>77</b>	<b>2%</b>	<b>145</b>	<b>3%</b>	<b>4,942</b>

of friends and relations. Instead, a call to a 911 emergency number reporting a disaster is automatically recorded on a computer tape. The dispatcher is notified, a communication network is activated, and within minutes the entire emergency management team is on its way to the Operations Center.

#### E. FORMAL PLANNING AND INFORMAL IMPLEMENTATION

The first step in emergency management is the development of a community plan that spells out the roles of community leaders and organizations. As mentioned earlier, twelve of the sampled communities had complete plans, two had partial plans, and one had none. Generally, the CD or EM director had taken the lead in writing the plan, but had relied for the details upon other key community officials, especially elected officials, and public service administrators. The superintendent of schools was involved where schools are designated as mass shelters and school buses are used for emergency transportation. In one community the school garage has equipped a number of buses with removable plywood bunks so that elderly, disabled and handicapped people could be evacuated during a hurricane. The Red Cross and Salvation Army are often assigned the responsibility for managing mass shelters and providing food, bedding, clothing and medical care. In several cities the Red Cross has a program to train shelter managers. In the typical plan, the EM director would assume control of the emergency under the general direction of the appropriate elected official. The Operations Center would be activated and the emergency management team gathered there for the duration of the crisis. The media would be used to warn and inform the public.

The police and fire departments, with help from the school district, conduct necessary evacuations and the police seal off the evacuated area to prevent looting. The fire department has the job of containing fires, explosions and toxic spills. Ambulance services and hospital emergency rooms treat the injured. Schools are used as mass shelters under the supervision of the Red Cross. The Salvation Army and other volunteers provide meals to the evacuees and to those fighting the emergency. Public service departments and companies clean up debris, repair damage and restore such services as water, electricity, telephones and transportation.

A great deal of creativity has gone into some of the plans. In one community, the EM director has assigned the Parks and Recreation Department to send physical education teachers from the local high school into the mass shelters, if they are ever activated, with programs of exercise and sports. In another community the Animal Control Department is prepared to send a vehicle along with each bus evacuating senior citizens to collect their pets. They have discovered that elderly persons often resist evacuation if it means abandoning their pets.

It is interesting to know how many people in each community are involved in the planning process, if only because involvement in planning is often a motive for later participation. Table 3-7 shows the median number

TABLE 3-7  
 AWARENESS OF COMMUNITY EMERGENCY MANAGEMENT  
 PLANS IN FIFTEEN SAMPLED COMMUNITIES

Community Number	Median Number of Planners	Knows About Plan %	Has Copy %	Familiar With %	Would Follow %
1	5	78%	48%	38%	48%
2	6	74	31	33	26
3	7	86	57	50	55
4	4	63	43	33	45
5	6	70	50	55	25
6	7	95	71	74	76
7	6	89	69	64	51
8	6	83	46	46	49
9	4	84	77	77	70
10	4	18	5	5	5
11	6	88	55	57	60
12	5	55	32	30	25
13	4	56	44	44	39
14	5	78	39	46	49
15	6	90	83	80	63

of persons identified by the respondents in each as key persons involved in emergency planning. A few strategically-placed people develop the community plan, in most instances. Although a small number do the planning, many more are involved in carrying out the plan.

The proportion of respondents who knew that a community plan existed is also shown in Table 3-6. The plans have high visibility in most of the sampled communities. In only four of them were fewer than 70 percent of the respondents familiar with the plan and in three of these, the emergency plan was missing or incomplete.

The written plans have been widely distributed. In seven of the sampled communities, more than half of the people with whom we talked (selected, of course, for involvement in emergency management) had a copy of the plan. Most of the plans are book-length documents in a looseleaf binder. One EM Director reported that each copy costs \$45 to produce.

Occasionally we met someone who lacked a copy of the plan, but had studied a borrowed copy or worked with it in a training exercise. A considerable number remarked that although they were not familiar with the entire plan, they knew their own part of it in detail. Others said they were not familiar with the plan, but would pull it down from the shelf and study their assignment when an emergency threatened.

Most respondents say they would follow the plan in an emergency. Those who hesitate about committing themselves, usually refer to flexibility in one way or another. For example "It is a good plan, but each hurricane is different and we have to adjust to the situation. The plan is a good place to start, but then we may need to revise our thinking." In two of the sampled communities, the plan was seen as outdated and inadequate. In these two cases many of the positions and agencies integral to the plan have disappeared, and it is meaningless without them.

Some respondents were not concerned about the community wide plan because their organizations had their own plans or standard operating procedures for dealing with emergencies. Law enforcement officers, firemen and Red Cross Directors, public service managers, telephone officials, industrial executives, and others said their organizations had plans for coping with emergencies. The proportion of respondents who knew about their organization's plans, who had a copy, were familiar with them and would follow them are shown in Table 3-8. The levels of awareness and acceptance are similar to those for overall community plans. Most respondents assumed there was no disagreement between the two plans and that they could be followed simultaneously. A few respondents noted potential conflicts, almost invariably preferring the organizational plan. In those communities where emergency planning is well-developed, organization plans have been conformed

TABLE 3-8

AWARENESS OF ORGANIZATIONAL PLANS  
IN FIFTEEN SAMPLED COMMUNITIES

Community Number	Knows About %	Has Copy %	Familiar With %	Would Follow %
1	53	47	43	43
2	38	36	33	31
3	48	45	45	41
4	35	30	30	30
5	60	58	58	43
6	38	33	31	36
7	53	51	53	47
8	85	85	83	76
9	40	37	37	35
10	33	33	28	25
11	33	33	33	33
12	43	35	35	30
13	24	24	19	14
14	44	37	39	42
15	25	25	23	20

to the overall plan to preclude disagreement.

The energy with which the sampled communities have developed plans, disseminated them and convinced residents to follow them, is impressive. Most of these communities have worked hard to be ready for an emergency that has yet to arrive. It is a difficult task to keep community support and resources flowing to a program focused on a problem that may never present itself.

FUNCTIONAL INTEGRATION:  
THE GAMUT OF DISASTER

## CHAPTER 4

## FUNCTIONAL INTEGRATION; THE GAMUT OF DISASTER

## A. VARIATIONS IN COMMUNITY EXPERIENCE

Only two of the 15 sampled communities had experienced a major disaster during the past ten years involving substantial loss of life and/or property damage. One suffered a destructive hurricane that took several lives and caused extensive damage. The other has experienced two major floods, which took very few lives, but wreaked havoc. Both of these communities have developed active emergency management programs. The EM directors are widely respected and city and county officials have rallied around them and supported their work. Planning has been taken seriously and preparations made for future emergencies. In the former community, building codes have been strengthened to make homes and public buildings more wind-resistant, early weather warning equipment has been installed, public education has prepared the population for future occurrences, and new legislation gives the municipal government more authority to enforce evacuation orders. In the latter community, rivers and streams have been dredged, storm drains expanded, monitoring equipment installed and sand-bags stockpiled.

The other sampled communities have had less actual experience to motivate their emergency management planning. All of them have experienced some minor emergencies.

In one place, the storm which the weather bureau missed (labeled "the No Name Storm") and an unusual high tide caused sudden flooding in the middle of the night. The full emergency management team was called out, and orders were given to evacuate large sections of the city before the condition abated. It did not turn out to be a major emergency but gave valuable practice to the emergency management team and showed some weaknesses in their planning. It apparently increased community support for emergency management.

These minor emergencies were recalled by only a few people in the affected communities. In most of the sampled communities, some remembered floods, fires, windstorms or toxic spills that they qualified as emergencies. There were also scattered reports of riots, a plane crash, a blackout, and an "invasion" all within the past ten years. The invasion was an influx of young people for a massive rock concert which became unruly.

It remains the case that major emergencies are rare occurrences in American communities.

## B. PERCEPTIONS OF RISK

### 1. Common Hazards

The most probable type of disaster anticipated in each community is reported in Table 4-1. Six communities identify windstorms as the major threat. Four were most concerned about floods, three about toxic spills and one each about fire and earthquake. The imminence of each type of disaster was obviously determined by geography.

In ten of the sampled communities, the majority of informants identified a single type of emergency as most probable. In Community 9, the expectation of another hurricane was virtually unanimous. The other five communities showed a greater diversity of apprehension. In Community 12, for example, without any recent disaster experience, various informants mentioned fires, floods, toxic spills, blizzards, explosives, plane crashes, and nuclear attack as the most likely disasters.

Considering the fifteen cities together, windstorms are the most frequently perceived threat (see Table 4-2). One out of three informants saw a hurricane or a tornado as the most likely disaster for their communities. Flooding threatens five of the communities to some extent. Floods, of course follow a pattern, and are relatively predictable. In several of the communities flooding was formerly recurrent, but has been alleviated by flood control measures.

Toxic or hazardous material spills are a new type of

TABLE 4-1  
 MOST LIKELY EMERGENCIES AND  
 ESTIMATED PROBABILITIES IN FIFTEEN COMMUNITIES

Community	Type of Emergency	Percent Mentioning	Mean Estimated Probability*				
			10%	10-40%	40-60%	60-90%	90%
1	Windstorm	67%	37%	47%	8%	8%	0%
2	Windstorm	62	69	17	5	7	2
3	Windstorm	74	59	22	15	2	2
4	Windstorm	58	71	13	8	8	8
5	Toxic Spill	33	53	30	10	8	0
6	Windstorm	85	5	15	33	40	8
7	Flooding	58	47	24	18	11	0
8	Flooding	90	0	7	2	7	83
9	Windstorm	98	26	28	13	31	8
10	Toxic Spill	33	60	28	8	5	0
11	Earthquake	79	28	25	13	28	8
12	Fire	26	61	11	14	14	0
13	Flooding	49	68	19	8	5	0
14	Flooding	37	42	29	20	5	5
15	Toxic Spill	73	46	38	10	5	0

\*Of major occurrence within the next five years, as estimated by members of EM network in each community.

TABLE 4-2

## MEAN ESTIMATED PROBABILITY\* OF VARIOUS "MOST LIKELY" EMERGENCIES\*

Type of Disaster	Respondent Mentions	
	Number	Percent
Windstorm	203	34
Flood	119	20
Toxic Spill	113	19
Fire	54	9
Earthquake	39	7
Plane Crash	25	4
Nuclear Accident	14	2
Blizzard/Icestorm	13	2
Nuclear Attack	8	1
Blackout	4	1
Other	5	1

\* Of major occurrence within the next five years, as estimated by members of EM networks in 15 sampled communities.

emergency which has received considerable recent attention. Most of the fire departments in the sample have a hazardous materials team (Hazmat team) whose members have been trained to identify hazardous materials and to contain, neutralize, and clean up such materials. Specialized equipment includes foam trucks and acid suits. We detected a serious respect for hazardous material among firemen and police officers. We were repeatedly told about emergency personnel who were incapacitated by a toxic substance at the scene of a traffic accident. In some fire departments it is standard procedure to approach an accident involving a tanker truck with a breathing pack. In two communities, the emergency management plan calls for the registration of hazardous material sites with the fire department.

Fires are a special concern in urban areas with old buildings and in rural areas where access to water is limited. The other potential disasters listed in Table 4-2 were mentioned infrequently, but illustrate the variety of possible emergencies.

The degree of probability which informants assigned to the most likely emergency is presented in Table 4-1. The percentages in the table refer to the type of disaster each informant identified as most likely. Informants in Community 8 were convinced that floods would occur this year (1984). They pointed to the snow pack in the mountains with confidence that flooding would follow in the spring.

At the other end of the continuum, most informants in Communities 4, 2, and 13 set the probability of the most likely disaster that might occur in the next five years at under 10 percent. The other communities fall between.

These probabilities are more than wild guesses; most informants gave the subject considerable thought. They reviewed the community's emergency history, considered the experience of neighboring communities, and noted changes in the technological environment that are relevant to man-made disasters like toxic spills, fires, explosions, blackouts, nuclear accidents and plane crashes. Although we encountered a few paranoid souls who envisioned disasters just over the horizon and a few eternal optimists who felt that emergencies always happen to someone else, most informants gave a thoughtful estimate of the probability of future emergencies. These forecasts by knowledgeable community leaders appear directly related to the content of emergency management planning in each place.

## 2. The Perceived Risk of Nuclear War

To compare the perception of EM people with those of the general public regarding the risk of nuclear war, we borrowed three questions from a national survey of adults, conducted in 1978 by researchers at the University of Pittsburgh (Nehnevajsa, 1983). The first of these items is:

"How likely do you think it is that we're in for another world war--one where nuclear weapons would be used?"

The response from both studies to this question are presented in Table 4-3. Emergency management people appear to be significantly less apprehensive about nuclear war than the general public; 63% of them, compared to 40% of the 1978 survey sample, regard a world war in which nuclear weapons would be used as unlikely or very unlikely. The 6-year interval between the two studies weakens their comparability, of course, but we are inclined to accept the finding for two reasons: first, the relative unconcern of key people in civil preparedness and emergency management about nuclear war, is consistent with our field observations and with earlier studies of civil defense personnel; second, the weight of survey evidence indicates that the general public's concern has intensified rather than diminished since 1978.

The assessment of the likelihood of a nuclear war by informants in each of the fifteen sampled communities is shown in Table 4-4. There is considerable variation but no clear patterns. Concern about nuclear war is not associated with region, community size, official position, family composition, or political affiliation, in this sample.

The second Pittsburgh item has a more local reference: it refers to target risk:

TABLE 4-3

PERCEIVED LIKELIHOOD OF NUCLEAR WAR.  
GENERAL POPULATION, 1978; EMERGENCY MANAGEMENT RESPONSIBLES, 1984

Likelihood	Pittsburgh Survey, 1978*		URS Study, 1984	
	Number	%	Number	%
Very Likely	220	14%	37	6%
Likely	244	15	55	9
50-50 Chance	484	31	130	21
Unlikely	420	27	265	43
Very Unlikely	213	13	123	20
TOTAL	1,581	100%	610	99%

"How likely do you think it is that we're in for another World War--one where nuclear weapons would be used?"

\* (Nehnevajsa, 1983:14)

TABLE 4-4

LIKELIHOOD OF NUCLEAR WAR PERCEIVED BY EMERGENCY MANAGEMENT  
RESPONSIBLES IN FIFTEEN COMMUNITIES

Community	% Saying					Total
	Very Likely	Likely	50-50	Unlikely	Very Unlikely	
1	0%	7%	45%	40%	8%	100%
2	17	14	14	41	14	100
3	5	5	20	46	24	100
4	8	13	25	38	18	102*
5	13	13	13	47	13	99
6	5	10	14	31	41	101
7	2	12	30	47	9	100
8	5	5	17	56	17	100
9	2	7	9	51	30	99
10	10	10	23	46	10	99
11	5	0	31	38	26	100
12	5	13	13	41	28	100
13	3	15	18	43	23	100
14	8	0	28	40	25	101
15	5	12	20	47	15	99

\* Percentages may not equal 100 due to rounding.

"In case of nuclear war, how great a danger do you think there is that the area around here would be a target?" (Nehnevajsa, 1983:10).

The responses from the two studies are compared in Table 4-5, and again we find EM personnel to be less apprehensive than the general public, but the difference is smaller. 31% of the EM sample, compared to 20% of the general public see little or no danger that their own community would be a target.

These responses, however, are strongly associated with locational factors, and there is wide variation among the 15 sampled communities (Table 4-6). Among the relevant factors for the EM population are: official assessments of target risk; community size; proximity to large metropolitan areas; amount and types of industry; proximity to military bases; and position in transportation networks, all positively associated with perceived target risk.

The third Pittsburgh item has to do with the danger of fallout.

"If a nuclear war occurred and this area itself was not the target of a direct attack, how great a danger do you think there would be from fallout?" (Nehnevajsa, 1983:10).

The results, in Table 4-7, show EM personnel to be more apprehensive than the general public about fallout risk. One event that may have influenced responses to

TABLE 4-5

PERCEIVED TARGET DANGER  
 GENERAL POPULATION 1978;  
 EMERGENCY MANAGEMENT RESPONSIBLES, 1984

Danger	Pittsburgh Survey 1978*		URS Study 1984	
	Number	Percent	Number	Percent
Certain Danger	403	26%	96	16%
Great Danger	480	31	148	24
Some Danger	381	24	176	29
Little Danger	237	15	161	26
No Danger at all	<u>71</u>	<u>5</u>	<u>31</u>	<u>5</u>
TOTAL	1,572	101%	612	100%

"In case of a nuclear war, how great a danger do you think there is that the area around here would be a target?"

\* (Nehnevajsa, 1983:22)

TABLE 4-6

TARGET DANGER PERCEIVED BY EMERGENCY MANAGEMENT  
RESPONSIBLES IN FIFTEEN COMMUNITIES

Community	% Saying					Total
	Certain	Great	Some	Little	None	
1	32%	24%	26%	13%	5%	100%
2	2	14	24	48	12	100
3	10	24	41	26	0	101*
4	8	18	38	30	5	99
5	10	13	28	45	5	101
6	26	26	26	21	0	99
7	4	27	42	24	2	99
8	32	51	12	5	0	100
9	5	17	31	40	7	100
10	28	23	20	25	5	101
11	12	31	41	12	5	101
12	42	26	16	16	0	100
13	0	13	23	45	20	101
14	15	29	37	20	0	101
15	15	28	25	23	10	101

\* Percentages may not equal 100 due to rounding.

TABLE 4-7

PERCEIVED FALLOUT DANGER, GENERAL POPULATION 1978,  
AND EM RESPONSIBLES, 1984.

Danger	Pittsburgh Survey 1978*		URS Study 1984	
	Number	Percent	Number	Percent
Certain Danger	272	18%	202	33%
Great Danger	510	33	252	41
Some Danger	570	37	127	21
Little Danger	162	11	29	5
No Danger at all	24	2	3	0
TOTAL	1,538	101%	613	100%

"If a nuclear war occurred and this area itself was not the target of a direct attack, how great a danger do you think there would be from fallout around here?"

\* (Nehnevajsa, 1984:29)

this item was the showing of the TV documentary The Day After, just as we started data collection. The publicity surrounding that film may have heightened the perceived risk of fallout, but aside from that possibility, it appears that both the general public and the EM population are more apprehensive about fallout than about direct bomb damage in a nuclear attack.

The difference among the 15 sampled communities in response to this item are presented in Table 4-8. The considerable variation is again explicable by locational factors. Communities located next to priority targets would be in obvious danger, as well as communities with prevailing winds from the direction of nearby targets. Cities in Florida and on the West Coast would be at less risk because the prevailing winds are from the west and open ocean lies in that direction. In one of our sampled communities the EM director calculates the hypothetical fallout from the nearest target each Friday afternoon, using the observed wind and weather conditions at that time. Other informants were not that meticulous in their calculations but they did, in most cases, consider the risk of fallout to be grave and unavoidable.

We asked all of our informants what they would do personally in response to a nuclear alert. The initial reaction was typically something like, "Oh my God, what kind of a question is that? I don't know what I would do."

TABLE 4-8  
 FALLOUT DANGER PERCEIVED BY  
 EM RESPONSIBLES IN FIFTEEN COMMUNITIES

Community	Danger					Total
	Certain	Great	Some	Little	None	
1	59%	38%	3%	0%	0%	100%
2	31	57	12	0	0	101*
3	45	24	29	2	0	101
4	31	41	18	8	3	100
5	15	40	18	25	3	100
6	38	38	19	5	0	100
7	17	44	34	5	0	100
8	44	37	12	7	0	100
9	9	61	28	2	0	100
10	48	35	18	0	0	101
11	24	24	45	5	2	100
12	75	23	3	0	0	101
13	0	63	34	2	0	99
14	29	42	24	5	0	100
15	33	50	13	5	0	101

\* Percentages may not equal 100 due to rounding.

Then, after reflection, most of them responded with some variant of either "do my duty" or "take care of my family."

The more frequent reply was an affirmation of duty: to do the job for which one had trained. In most cases this means reporting to the Operations Center, the police station or the fire station for further orders. Some informants see a conflict between duty to job and to family. A frequent solution is to combine them by bringing the family to the Operations Center. Several police and fire departments handle this situation by planning for family members to perform support functions such as answering telephones, preparing meals, and doing laundry. A few informants say their families would have to fend for themselves. A few others say they would ignore their official responsibilities to be with their families. Some others would do their duty, while thinking it to be useless. But most responsables say they would report for duty and carry out their responsibilities under the plan. There is no reason to doubt them.

We did encounter a few hard-core survivalists who said they would take their families and head for the wilderness--mountain, swamp, desert or forest. One urban survivalist would ". . . go home, get in the bath tub, take a portable radio, pull a mattress on top and put on my motorcycle helmet."

Many EM responsables are convinced that nuclear war

means total destruction. At least half a dozen of them repeated the cliché: "I would bend over and kiss my ass goodbye." Others spoke of running outside to be among the first to go. One said, "My backyard is next to a cemetery, I would climb the fence and lie down." A few would join their families in order to die together.

Prayer and alcohol are frequently mentioned in this connection. Many people say that the first thing they would do in a nuclear attack would be to pray. A lesser but substantial number would reach for a bottle.

### 3. Ordinary and Exceptional Risk

An interesting way to examine the most likely disasters faced by the fifteen sampled communities is to place them in a 2 x 2 table according to the scale of the most likely disaster and its estimated probability. Table 4-9 presents this analysis. In three communities the most likely disasters were small (e.g., toxic spills, fires) and relatively improbable (mean estimated probability of occurrence within five years < .10). In three communities the potential disasters were great (e.g., earthquakes, hurricanes) and relatively improbable. In one community, the most likely disaster is small (toxic spill) and highly probable. Seven communities anticipate a great and fairly probable disaster.

To assess the relationship between risk and quality of emergency management programs we created a composite

TABLE 4-9

EM NETWORK EFFECTIVENESS SCORES BY SCALE  
AND PROBABILITY OF MOST LIKELY DISASTER

IMMINENCE	MAGNITUDE	
	Small	Large
Probable	Communities: 15, 10, 12	Communities: 2, 3, 4, 13
	Effectiveness Score $\bar{x}$ 11.0	Effectiveness Score $\bar{x}$ 12.9
Improbable	Communities: 15	Communities: 1, 6, 7, 8, 9, 11, 14
	Effectiveness Score $\bar{x}$ 15.7	Effectiveness Score $\bar{x}$ 15.9

measure of EM program effectiveness. This Network Effectiveness Score was calculated for each community by summing four components: (1) mean rating of emergency management capability by responsables; (2) mean rating of community response to hypothetical emergency; (3) mean rating of evacuee-reception capabilities; and (4) observers' quality ratings of the local Operations Center. It was hypothesized: (1) that communities confronting large emergencies would have more effective programs than communities confronting small emergencies; (2) that communities planning for probable emergencies would have more effective programs than those planning for improbable emergencies. Table 4-9 supports the first hypothesis strongly and the second hypothesis weakly. The communities confronting probable emergencies had significantly more effective EM programs than those confronting improbable emergencies. The scale of the anticipated emergencies made little difference, although in the expected direction. The imminence of disaster is the strongest motivation for community leaders to develop good emergency management programs and for the public to support them.

### C. PERCEPTIONS OF EMERGENCY RESPONSE CAPACITY

Informants were asked to rate their community's ability to cope with the major disaster they considered most likely to occur. As shown in Table 4-10, most of them were optimistic about their capacity to deal with potential disasters. The majority anticipated "excellent" or "above average" performance by their emergency managers. Over and over, they say "We would handle it", "We would take care of it", or "We would be okay." We probed this general optimism by asking what would be done well and what would be done badly, but that question only reinforced their collective confidence.

We also asked informants how they would expect their community to react to an emergency, compared to other communities. The typical response was "excellent" or "above average"; there were only a few ratings of "below average" or "poor." The community without an EM Director, Number 10, was the most self-critical. But Community 15, which has an outstanding program, sets such high standards for itself that no one in the emergency network rates the program as "excellent;" they regard it as "average," or at best, "above average." (See Table 4-11)

A special type of emergency management we studied was the ability to receive evacuees from another community. This type of emergency shifts the burden from the police and fire departments to the social services, voluntary

TABLE 4-10

RATINGS OF EMERGENCY MANAGEMENT NETWORK'S CAPACITY TO MANAGE  
A MAJOR EMERGENCY IN FIFTEEN SAMPLED CITIES

Community	Excellent	Above Average	Average	Below Average	Poor	Total
1	3%	55%	35%	5%	3%	101%*
2	5	38	50	5	2	100
3	33	55	12	0	0	100
4	5	58	32	3	3	101
5	8	55	28	8	3	102
6	26	69	5	0	0	100
7	18	44	24	9	4	99
8	17	76	5	2	0	100
9	5	78	17	0	0	100
10	3	35	28	25	10	101
11	29	41	31	0	0	101
12	18	44	33	5	0	100
13	2	66	29	2	0	99
14	29	49	12	7	2	99
15	0	48	52	0	0	100

\* Percentages may not equal 100 due to rounding.

TABLE 4-11

RATINGS OF COMMUNITY REACTION TO A HYPOTHETICAL  
EMERGENCY IN FIFTEEN SAMPLED COMMUNITIES

Community	Excellent	Above Average	Average	Below Average	Poor	Total
1	2%	55%	35%	5%	3%	101%*
2	5	38	50	10	2	100
3	33	55	12	0	0	100
4	5	55	30	3	3	101
5	8	55	28	8	3	102
6	26	69	5	0	0	100
7	18	44	24	9	4	99
8	17	76	5	2	0	100
9	5	78	17	0	0	100
10	3	35	28	25	10	101
11	29	40	31	0	0	100
12	18	43	33	5	0	99
13	2	66	29	2	0	99
14	29	49	12	7	2	99
15	0	48	52	0	0	100

\* Percentages may not equal 100 due to rounding.

groups, schools and others involved in mass sheltering. We asked informants whether their community could receive a number of evacuees equal to five percent of their own population, within their existing emergency management plan. Most of them wanted to know if this would be in response to a nuclear attack and how damaged their own community would be. We insisted that the hypothetical emergency was unspecified but that their community would not have been damaged in any way. The replies are presented in Table 4-12. Seventy-two percent of all informants said that the task could be accomplished without difficulty. They were quite sure that transportation could be arranged, shelter found in homes or public buildings and that sufficient food, bedding, and medical supplies could be rounded up. In several places, existing tourist facilities, motels, and hotels and restaurants are said to be capable of handling more than the specified number.

Those who foresaw problems in sheltering evacuees referred to traffic congestion, long-term food supply and the availability of cots and bedding. They proposed to borrow from neighboring cities, state or federal agencies, or from private citizens. A few informants, about seven percent of the total, opposed the general idea of relocation.

There was quite a bit of variation among cities in their willingness to play host. The highest proportion of "no problem" responses was 93 percent and the lowest was

TABLE 4-12

RATINGS OF EVACUEE-RECEPTION CAPABILITY  
IN FIFTEEN SAMPLED COMMUNITIES

City	Positive	Mixed	Negative	Total
1	77%	20%	3%	100%
2	71	21	7	99*
3	74	24	2	100
4	47	42	11	100
5	75	18	8	101
6	70	20	10	100
7	93	4	2	99
8	88	10	2	100
9	67	23	9	99
10	60	25	15	100
11	88	10	2	100
12	43	43	15	101
13	56	29	15	100
14	93	2	5	100
15	80	20	0	100

\* Percentages may not equal 100 due to rounding.

41 percent. But the highest proportion of "can't do" responses was only 15 percent. It seems clear that the fifteen communities could and would respond to a real disaster in a neighboring city by opening their doors and caring for a substantial number of strangers. The people managing this type of emergency would be quite different from those who would deal with a tornado, flood or hurricane. The Red Cross in most cities would manage the mass shelters, usually located in schools, convention halls, or churches. The Salvation Army would help with food and field kitchens. The schools would allow use of school lunch provisions with the understanding that they be replaced later. Social service agencies would help people adjust to shelter life and assist them to set up housekeeping in the community if they could not return home. We have no doubt that the job would be done well.

5

VERTICAL INTEGRATION  
THE COMMUNICATION CHAIN

VERTICAL INTEGRATION: THE COMMUNICATION CHAIN

## A. INVOLVEMENT WITH STATE AGENCIES

The 15 states represented in our sample are diversely organized for emergency management. That function may be located in the Governor's office, in the Department of Public Safety, as a freestanding state department, as a commission, as a branch of a civil defense office, or as an office including civil defense as a subsidiary function. The names vary accordingly: Bureau of Emergency Management, State Director of Civil Defense, Bureau of Disaster Services, Office of Emergency Preparedness, and so forth.

The actual operation of the link between local and state emergency management shows, by contrast, considerable uniformity. In all but one of the 15 states, state agencies do not ordinarily react to a disaster until a request is received from the locality. The request ordinarily comes in the form of a telephone call from a local official. Although most of the sampled communities have made some effort to assign the responsibility for calling up state agencies to a particular official - most commonly the mayor, city manager, EMD, or police chief - there is only one of the 15 communities in which a majority of the key people in emergency management planning recognize that assignment. In all of the other networks, there are a number of persons who are entitled to take the initiative of requesting state assistance on behalf of a local community and in one instance it is generally believed that any citizen is entitled to do so.

The allocation of costs for state assistance varies from state to state, and from situation to situation. In most of the 15 states, local governments are expected not to call for state assistance until they have exhausted their own resources; and in two communities informants referred to their obligation to reimburse the state for National Guard assistance.

The list of state personnel who may become involved in local emergencies is almost inexhaustible. It includes fish and game wardens, prison administrators, laboratory technicians, construction crews, and seismic teams, among many others. But, in practice, the important functions of the state, viewed from the perspective of the local community, are remarkably uniform from state to state. Localities in disaster turn to the state for:

(1) Uniformed manpower - to direct traffic, control crowds, prevent looting, seal off areas, evacuate civilians, clear debris, fill sandbags, shore up dikes, and provide supplementary communications.

(2) Expensive equipment - especially helicopters, terrain vehicles, boats, trucks, heavy pumps, earth-moving equipment.

For these two primary functions, local EM people look first to the state police (called "troopers" or "the highway patrol" in some states) and then, if the resources of the state police are insufficient for a large-scale emergency, to the National Guard. The intervention of the state police is easily obtained; in several of the 15 states, they may

come in on their own initiative and in the others, they can be summoned by nearly any public official. So far as we know, there is never any charge for their services. Activating the National Guard is a much more formal action. It invariably entails going through the Governor's office, and it may impose substantial expense on the locality. While the reaction time of the state police is measured in minutes, it usually takes at least a day or two to call out the National Guard. Hence major emergencies tend to be marked by the presence of the National Guard, and minor emergencies by their absence.

The other situations that are almost universally recognized as calling for the involvement of a state agency are what might be called high-tech emergencies: toxic spills, nuclear contaminations, chemical fires, unexploded munitions. In emergencies of this kind, local governments tend to assign primary responsibility to state agencies which have the specialized personnel and equipment for handling them.

Although state agencies ordinarily enter a local emergency at the request of local authorities, they do not - once on the scene - put themselves under the orders of local authorities. This may explain why (1) communications between local and state officials involved in the same emergency tend to be more formal than friendly, and (b) many of the members of EM networks in our sampled communities are reluctant to call on state assistance in an emergency unless they are overwhelmed.

## B. INVOLVEMENT WITH FEDERAL AGENCIES

The pattern of communication between local EM networks and federal agencies shows none of the uniformity that characterizes the communication of the EM networks with state agencies. There is extreme diversity among the sampled communities both as to the federal agencies they mention, and the functions they ascribe to those agencies. There is little agreement among communities or even within communities as to the appropriate channels for reaching federal agencies or as to their modes of operation. This uncertainty is particularly striking in the case of FEMA, but applies also to the numerous (about 45) other federal agencies that informants mentioned as actually or potentially involved in their emergency management operations. Very few of our informants were able to visualize any federal agency clearly, except for federal facilities located in or adjacent to their communities. In those cases, direct lines of communications have been established between local officials and the federal facility without reference to formal channels. These co-located facilities included a major Army base and a regional FEMA center.

Among the federal agencies most frequently mentioned as potential sources of assistance - after FEMA - were: Environmental Protection Agency, Corps of Engineers, Federal Bureau of Investigation, Department of Agriculture, Small Business Administration, Federal Aeronautic Administration and the various reserve branches. But this by no

means exhausts the list. Indeed, each type of disaster seems to generate a different list of federal agencies that can be involved in local emergency management. A nuclear plant incident does not activate the same agencies as a tornado.

The key persons involved in local emergency management do not regard their lack of precise information about federal agencies as an operating problem, for three persuasive reasons: (1) unlike state agencies, federal agencies are not expected to respond to local initiatives; the responsibility for calling in federal assistance is situated at the state level; (2) the intervention of federal agencies is associated in most communities with large-scale disasters (although in fact federal involvement in relatively minor problems is common); (3) the role of federal agencies, including FEMA, is repeatedly described as "after the fact" so that activation is not regarded as urgent.

The image of FEMA held in local EM networks varies from one community to another. The proportion of our informants who are unfamiliar with FEMA varies from fewer than 5% in Community 8 to more than 60% in Community 3. By "unfamiliar" we mean they had no information about what FEMA does or how it operates. Many said they had never heard of it.

Among those who know something about FEMA, there is a tendency to emphasize one of the agency's functions and overlook the others. In order of mention, the functions ascribed to FEMA by local responsables were (1) providing funds to repair disaster damage; (2) coordinating the

management of major emergencies; (3) damage assessment; (4) advice and technical assistance; (5) training; (6) providing emergency equipment and supplies.

Fewer than 10% of all informants ascribed a comprehensive role, combining two or more of the foregoing functions, to FEMA. Community 5 thinks of FEMA in terms of disaster teams, Community 6 emphasizes the coordination of services after a disaster, Community 8 sees FEMA as principally engaged in damage assessment; Community 11 expects FEMA to coordinate financial assistance by other federal agencies; Community 2 associates FEMA with subsidized snow removal.

In those communities that reported FEMA involvement in recent emergencies, there were scattered complaints about slowness and red tape in the processing of claims, and a few negative comments about the technical qualifications of FEMA representatives. No other criticisms of the agency were recorded; the general tone of respondents' comments ranged from neutral to favorable.

### C. AWARENESS OF NATIONAL POLICY

The loose linkage between local EM networks and the federal EM establishment, described in the previous section, does not seem to interfere with effective performance on either side. Nor does it seem to hinder the development of effective cooperation between them when an emergency occurs that requires active cooperation.

The communication of policy changes from the federal to the local level is another matter. In the absence of well-defined channels to carry such information, much of it is not transmitted at all, and there is a high incidence of noise and error in what does get through.

Much of the information about national policy that informants played back to us came from the mass media rather than through official channels.

Thus, some informants described the present administration's "cutback on federal support for civil defense" as an established fact while others in the same networks told us about a "new, higher priority for civil defense."

Even the concepts of comprehensive and integrated emergency management cannot be said to have reached the majority of local EM personnel. Those who did have some awareness of the newer directions in emergency management often perceived them in somewhat distorted ways: Thus, recent changes in emergency management policy were variously interpreted by respondents as:

"Civil defense stepping into police issues."

"More use of volunteers."

"More emphasis on man-made disasters; less interest in crisis relocation."

"Greater protection of the infrastructure in case of nuclear war."

"The new programs seem to concentrate on private-public partnership."

"Coordination among national, state and local levels."

"New programs to take advantage of the experience of other countries."

"New emphasis on local autonomy and building independence from federal money."

"Less emphasis on nuclear activity."

"This Administration is emphasizing decentralization."

"Demanding more accountability from state and local civil defense."

"Improved forecasting."

"Stockpiling medical supplies instead of cots and candy."

"New emphasis on anti-terrorist activity."

"More control and money to local authorities."

"Renewed emphasis on preparedness for nuclear attack."

"More emphasis now on ordinary emergencies, and not just on nuclear war."

"Greater interest in helping localities develop plans and providing educational materials for them."

"A new interest in beefing up civil defense."

"Crisis relocation rather than mass evacuation."

"They're trying to bring back the old civil defense idea and provide underground shelters."

"The biggest and best thing is a new emphasis on hazard analysis."

"FEMA wants to play a more active role in the communities."

There was no discernible relationship between community size and the amount or quality of information about FEMA policy available in the local EM network.

THE RESPONSIBLE POPULATION

## 6. THE RESPONSIBLE POPULATION

### A. CRITERIA FOR SELECTION

The informants who provided most of the data collected by this study are a coherent population consisting of 40 or more persons in each of 15 sampled communities who were identified by each other as carrying significant responsibility for emergency management and emergency management planning. They are not equivalent to the local government because fewer than half of them are in the control sector. They cannot be described as "influentials" because in most cases their EM duties are part of a formal job assignment. And, although they are an elite group, they are not the elite; most of them have modest incomes and not much personal power. Their identifying characteristic is responsibility. They are the people to whom others look to keep the community prepared for emergencies, and to confront collective dangers as they arise. We will call them the responsibles for the purpose of this discussion.

Compared to the general adult population, the responsibles are a distinctive group, predominantly male, white, middle-aged, locally rooted and "good citizens." The overwhelming majority are married and living with their wives; a large proportion have children; they divide their votes between the two major parties. Most of them are churchgoers, and attend churches in main-line denominations. They are conventional, serious and reliable in their jobs and

in their private lives.

Although the 619 responsables in this study do not constitute a random sample, they seem to match the total U.S. population of persons in positions of this kind. In 1977, Rossi and his associates studying natural disaster recovery processes under a grant from the National Science Foundation, conducted a national survey of 2000 persons engaged in "the management of environmental risk." At the local level, their sample included representatives from the four community sectors that we identify as: the control sector, the public service sector, the commercial/industrial sector and the voluntary sector. The resemblance between Rossi's "local elites" (Ross et al., 1982:36) and our "responsibles" is quite striking.

	Rossi 1977 "Local elites"	URS 1984 "Responsibles"
Percent male	90	88
Percent non-Hispanic white	96	96
Median age	48	45
Years in community	27	24

No conscious selection is exercised to put people of the same type in charge of emergency management nearly everywhere. The social processes which accomplish this selection are part of the institutional structure of American towns and cities. Although the distribution of characteristics is highly skewed from that of the general public, it is not currently regarded as a problem by anyone we talked to in

the course of the study, since few issues of representation or fairness are currently raised in connection with emergency management.

#### B. PROFILE OF THE RESPONSIBLES

Gender The sample of responsables includes 77 women (12%). All 15 networks have some female members, ranging from 7% in Community 14 to 18% in Community 7. The women involved in the EM network were either elected representatives, on city councils and county commissions, or social welfare administrators or assistants to an EMD.

Ethnicity There were only three blacks in the entire sample, one each in Communities 11, 14, and 15. They held peripheral positions in their respective networks. Most of the 19 Hispanics in the sample were in Community 17 which has a large Hispanic population, and were centrally located in that network.

Positions held The responsible sample includes 65 elected public officials, 411 incumbents of appointive public positions, and 143 persons in non-public positions. These figures mask considerable variation among communities, especially with regard to the proportion of elected officials in the network, which varies from one person in Community 9 to 9 in Community 2, and the proportion of non-public positions which varies from 12% in Community 9 to 40% in Community 4.

Local Origin About one-third of the responsables (32%)

were born and brought up in their present communities, but this figure masks large disparities. In communities 13 and 14, in the Northeast, 68% of the responsables are natives of the locality. In Community 9, a resort city in the south, fewer than 5% of the responsables are native. But even in the more recently settled communities, the responsables are well-rooted. The proportion of newcomers (less than 5 years in the locality) is under 20% in every one of the 15 communities.

Age As previously noted, the median age of the responsables is 45. There is considerable concentration around that age. Fewer than 10% are under 30; and five of the networks have only a single member under 30. Fewer than 7% are over 65, and five of the networks have no members over 65.

Family Composition More than half of the responsables (55%) have wives and children at home. Most of the others (27%) live with wives alone, ordinarily because their children are grown. The 10% who live alone are almost evenly divided between single and widowed persons, and nearly all the 7% with other arrangements share households with their parents, siblings or children. The responsables are more family-centered than the general population, and most of them attach a high priority to assuring the safety of their families in an emergency.

Political Affiliation Two-thirds (67%) of the responsables describe themselves as Republicans or Democrats. There is a slight preponderance of Republicans but this varies dramatically by region, from 5% Republican in one southern community to 66% in a northeast community. Those respondents who oppose or favor specific civil defense policies, do not seem to connect those stands with local party politics.

Religious Affiliation 52% of the responsables describe themselves as Protestant, 20% as Catholic. There are 0.9% non-Christians and 26% who do not state any religious affiliation. Only three individuals belong to Pentecostal churches - an extraordinarily low proportion. As would be expected, the denominational distribution differs greatly from one community to another. Catholics predominate in three communities and Mormons in another.

Voluntary Associations Aside from church membership, the responsables show low rates of participation in voluntary associations; 39% report no memberships at all and 24% report only one, so that the median number of memberships is 0.4, far below the general population. Observers probed for civic, fraternal, recreational and cultural associations but the responses were definite.

We are not entirely sure of the reasons for this low participation, which is just the opposite of what we expected to find. Many of the responsables said that they had resigned from former memberships either to meet the demands

of their jobs, or to maintain impartiality.

Community Size This study does not cover the entire range of community size in the U.S. The fifteen communities range from 18,000 to 350,000. Communities under 18,000 are not represented at all. Thirteen of the sampled communities are included in SMSAs, but the largest SMSA has a population of only 2.9 million. Despite the constricted range, we do find that community size affects the responsible population in various ways. The proportion of natives in the EM network decreases with increasing size; while the number of women increases. Familiarity with written emergency plans increases with increasing community size, but actual experience in emergency management decreases. The proportion of responsibles who have made provision for personal survival in an emergency decreases with increasing size.

### C. SOCIOMETRIC WEIGHT IN THE EMERGENCY MANAGEMENT NETWORK

We measured an informant's sociometric weight by counting the number of other persons in his emergency management network who mentioned him when asked to designate key persons. The possible range of the measure in this study is from 0 to 45. The actual range is from 0 to 40.

Analyzing these networks sociometrically, we note the centrality of EMDs who have a median sociometric weight of 30, and of four other positions (mayor, city manager, police chief, fire chief) which have median sociometric weights above 10. Thereafter, the dropoff is rapid. Of the numerous other positions that recur in these networks, only hospital superintendent has a median sociometric weight as high as 2.

But although the networks are organized in every case around a few central positions and their operating effectiveness depends upon the personal competence of the incumbents, the peripheral members of these networks should not be disregarded. Their low weights may reflect the fact that the networks are efficiently organized and that internal communications are highly structured. For example, a typical case, the hospitals and the schools are integrated into the system by interaction with the EMD and with, at most, one other official, who may be the city manager or the fire chief or the county sheriff according to the local allocation of responsibility. There will be no direct

lines of communication between the hospital director and the school superintendent although the emergency plan may call for rather close coordination between them under certain circumstances. None are needed provided that the coordinating function is successfully performed at the center of the network.

Nevertheless, the diagrams in Chapter 7 exhibit a good deal of variation in network structure. Each diagram shows the established lines of communication among the categories of positions normally involved in emergency management. There are 22 of these categories grouped under the major functional sectors represented in every community: the control sector, the public service sector, the commercial/industrial sector, and the voluntary sector. It is inconceivable that an action network could operate effectively in any American community without enlisting cooperation from all four sectors, but it is entirely appropriate, and compatible with their normal modes of operation, for such a network to be centered in the control sector.

## D. THREAT AND RESPONSIBILITY

The sampled communities vary greatly in disaster experience, and in the threats presented by their natural and industrial environments. Each informant was asked to specify the most likely disaster threatening his or her community and the probability of such an event occurring within the next five years. There is substantial, but not complete, agreement within communities about which disasters are most likely, and a lesser, but still impressive, amount of agreement about their probabilities. The most likely emergencies, by frequency of mention, were:

windstorm	33%
flood	21
toxic spill	18
fire	9
earthquake	6
major plane crash	4
nuclear accident	2
blizzard/icestorm	2
explosion	2
nuclear attack	1
all others	<u>4</u>
TOTAL	102*

With respect to the most likely disaster, whatever it was, 20% of the responsables estimated the probability of an occurrence within 5 years at over 6 in 10, 44% at under 1 in 10; 36% in between.

\* Percentage does not equal 100 due to rounding

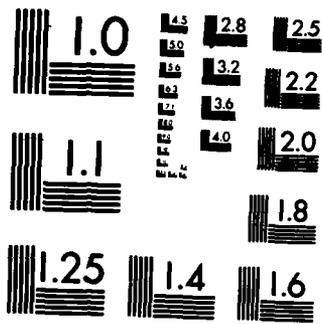
Floods are assigned the highest probability. More than half of the informants for whom a flood is the most likely disaster estimate the probability of a flood within the next five years at more than 9 in 10. Windstorms are the next most likely. More than half of those anticipating disastrous windstorms put the probability within the next five years at more than 5 in 10. The probability assigned all other disasters are much lower.

The probability of occurrence of the most likely disaster turns out to be the most important factor affecting the behavior of the responsables with regard to emergency management planning. The higher the probability that responsables assign to the most likely disaster, the more seriously they take their duties and the more effectively they operate, as noted in chapter 4 above. When we compare respondents who assign a high probability to the most likely local disaster with those who assign a low probability, we find that the former group - the "realistic planners" - are more active and more involved than the latter group, who may be called the "hypothetical planners." The realistic planners identify more key people engaged in emergency planning, and they are more familiar with written emergency plans at both community and organizational levels. More of the realistic planners have actual experience with their written plans, and those who don't are more inclined to follow their plans closely than are the hypothetical planners.

The realistic planners give much higher ratings to their communities' past handling of emergencies. They have much more information about state and federal agencies engaged in emergency planning, about state and national policies, and about channels of communication to higher echelons. They have more extensive plans for the protection of key personnel and key equipment in a major emergency. They are more confident of their ability to shelter evacuees from other places. And they are much more likely to have made personal preparations to protect themselves and their families in an emergency.

The strong influence of a realistic - as compared to a hypothetical threat - on the behavior and attitudes of emergency planners, led us to inquire whether respondents' perception of the danger of nuclear attack had similar effects. Although nuclear attack is almost never mentioned as the most likely disaster threatening a local community, 36% of the responsables estimate the probability of U.S. involvement in a nuclear war at some unspecified future time as "likely" or "very likely". We might reasonably expect that this segment of the responsible population would approach the problems of emergency planning somewhat differently than their associates who regard nuclear war as unlikely, but that does not turn out to be the case. The only weak differences we found between responsables who anticipate a nuclear war and those who do not, are that the





former group are more critical of existing emergency plans in their communities, and that fewer of them have made personal preparations to protect themselves and their families.

EFFECTIVENESS OF COMMUNITY NETWORKS

## Chapter 7

EFFECTIVENESS OF COMMUNITY EM NETWORKS

## A. RATING NETWORK EFFECTIVENESS

The calculation of a composite score to measure the effectiveness of the emergency planning and management network in each of the 15 sampled communities was described in Chapter 4 above. The effectiveness score was calculated for each community by combining four components: 1) the mean self-rating of emergency management capability by network members; 2) the mean self-rating of the community's capacity to cope with a hypothetical major emergency; 3) the mean self-rating of the community's capacity to receive and shelter evacuees; 4) the rating, by URS observers, of the plant, facilities and equipment of the local operations center.

The distribution of network effectiveness scores is shown in Table 7-1. The range is from 10.1 to 17.6, which represents a very wide range of effectiveness when translated back into the behavioral components of the score. As can be seen from the table, the scores seem to divide into three groups, corresponding to high effectiveness, moderate effectiveness, and low effectiveness with mean scores of 16.8, 14.3, and 11.3, respectively.

In Chapter 4, we identified the imminence of a major disaster, as estimated by network members, as an important determinant of network effectiveness. This part of the report examines other correlates of network effectiveness that

185  
Table 7-1

NETWORK EFFECTIVENESS SCORES FOR SAMPLED COMMUNITIES

Community Number	Network Effectiveness Score
1	13.59
2	11.84
3	17.02
4	11.29
5	11.52
6	16.94
7	16.22
8	17.62
9	13.48
10	10.07
11	16.60
12	11.39
13	11.58
14	16.66
15	15.73

may be of interest.

High effectiveness networks have many more members who were not born and raised in the community where they now work; presumably because they are more professionalized. The members of high effectiveness networks have more experience in detailed emergency planning and a wider range of local contacts.

High effectiveness networks rely much more on written plans, are much more familiar with existing plans, and much more disposed to follow their plans, or to use them as a starting point for improvisation in situations not covered by prior planning. They are much more likely to have had hands-on experience in the management of floods and windstorms. The key people in high effectiveness networks have much more familiarity with federal and state emergency agencies, especially state agencies, and more and better information about the policies and procedures of these agencies. They have made more progress in identifying key personnel and key equipment, and devising procedures to protect these. Members of high effectiveness networks have made more preparations for personal survival in an emergency than members of low effectiveness networks. They take the whole matter of emergency planning more seriously.

## B. THE BEST AND WORST NETWORKS IN THE SAMPLE

It is illuminating to examine the two EM networks at the high and low extremes of the scale. The most effective network is found in Community 8, with an effectiveness score of 17.62; the least effective network was in Community 10, with a score of 10.07.

The most effective network has a very active EM director, who has worked out a comprehensive emergency management plan in close collaboration with other community leaders. He operates out of a secure underground Operations Center with emergency communication equipment, sleeping accommodations for staff, a kitchen and a small hospital. Community leaders are heavily involved in the emergency management system, in part because of a major recent flood that rallied officials to emergency management. The EMD, either by accident or design, remained in the background of the flood control activities and allowed the political leaders to receive the credit for a job well done. The emergency demanded the round-the-clock attention of officials and of city and county employees for nearly three weeks.

When we visited Community 8 in the Spring of 1984, flooding was again anticipated, as the snow melted on the surrounding mountains. This risk, near 100 percent, generated action at all levels of government and in the private sector as well. The public works departments had been busy during the entire year increasing the capacity of the drain system,

building holding ponds, dredging streams, and lowering the water level in existing reservoirs. The media kept up a Flood Watch 1984 campaign that sustained public interest. A significant feature of the emergency preparedness system in community 8 is its reliance on volunteer participation. Thousands of residents had worked during the previous flood filling sand bags and putting them in place and were expecting to do the same whenever flooding threatened. This community involvement has generated real enthusiasm for emergency management.

Once the current danger passes, it will be interesting to see what happens to the emergency management system. Undoubtedly there will be some partial dismantling as officials and agencies return to their regular duties. But given the high quality of management displayed by the EMD and other key members of the network we would not expect the effectiveness score to decline appreciably.

The network scoring lowest on the scale, in Community 10, currently has no EMD for lack of community support. The former EMD and community leaders prepared an emergency management plan, including crisis relocation, that was emotionally rejected in a public hearing. The proponents put the plan in a drawer, let the EMD position fade away and have since ignored the whole subject of emergency management.

At the time of our visit, there was no EM director, no Operations Center, and no plan. Discussions with department and agency heads revealed a general lack of coordination. No one was sure who would be in charge in an emergency or what the responsibilities of municipal departments would be. The police and fire chiefs were aware that their forces had not been trained in emergency management and did not have the specialized equipment required to deal with toxic spills or other emergencies.

The EM network in this community is very small. Few agreements or working relationships had been developed among departments and agencies. They go their own ways with no thought of coordination.

The volunteer groups are out of touch with the public agencies, and also resist coordination. The Red Cross and the Salvation Army have plans to open mass shelters and to provide food, bedding and emergency medical care in an emergency. But both made it clear that they operate under the orders of their respective national bodies and have no joint plans with the city. Community leaders confided to us that they rely upon the state to bail them out in the event of a major disaster.

The examination of these two extreme cases appears to confirm what we learned by analyzing the whole set of EM networks in this sample.

The effectiveness of an emergency management system is

largely dependent on two factors, one external to the network and the other internal. The external factor is the intensity of threat (the estimated probability and imminence of the most likely disaster); the internal factor is managerial competence, which translates into the ability of the EMD (and to a lesser extent, other EM personnel) to motivate key people in the control, public service, industrial/commercial and voluntary sectors to take emergency planning seriously, and coordinate their subsequent contributions into an emergency management system.

### C. VARIATIONS IN THE PATTERN OF EM NETWORKS

Figures 1 through 15 present in graphic form the operating patterns of the 15 emergency management networks we observed. For convenience of inspection, they are arranged by their effectiveness scores in order of declining effectiveness, from Community 8, whose emergency management network earned an effectiveness score of 17.62 to Community 10 with the abysmal score of 10.07.

Each line connecting positions in these diagrams represents an active working relationship between positions. Such a relationship may involve a pair of individuals, say EMD and police chief, or multiple pairs, as when several people in the EM office interact on a regular basis with several police administrators. Thus, the diagrams tell us only whether a given functional position is in active contact with another functional position.

The positions are arranged in a circle, with emergency management at the top, flanked by the control sector (mayor/city manager, elected council members, city/county administrators, law enforcement and fire protection) on one side and the public service sector on the other. The voluntary sector (churches, Salvation Army, Red Cross, United Way) and the commercial/industrial sector (industry, business, and the media) fill out the circle, the Chamber of Commerce being located on the margin between the voluntary sector and the commercial/ industrial sector.

A glance at the set of diagrams tells us immediately that emergency management networks, good and bad, are concentrated in the upper left quadrant and involve a web of contacts within the control sector. The public service sector is much more irregularly represented, and the commercial/industrial sector is not engaged at all in 11 of the networks, and only peripherally in three others.

The relationships of emergency management with the control sector are incomplete in four of the 15 networks. All four have low effectiveness scores, and the network with the most incomplete set of control sector relationships has the lowest score of all.

Relationships with the public service sector are highly variable and have a less obvious influence on network effectiveness. There is a connection between emergency management and public works in all of the networks, but welfare agencies are included in only four of the high-effectiveness networks and two of the low-effectiveness ones; hospitals in four of the high-effectiveness networks and three of the low-effectiveness ones.

These are not very impressive differences. It would be theoretically agreeable to discover that the widest networks were the most effective, but the data do not support that hypothesis. The best coverage of all sectors appears in Communities 11 and 15, both falling towards the middle of the effectiveness distribution. The communities that exclude

the voluntary and commercial/industrial sectors altogether are Number 6, with an effectiveness score of 16.92, Number 14, with a score of 16.66, Number 7 with a score of 16.22, and Number 10, with a score of 10.07; three outstanding networks and one very poor network.

We conclude that, provided the relationships of the EMD with the control sector are fully developed, it does not matter very much, from the standpoint of operating effectiveness, whether other sectors of the community are excluded from the emergency planning and management network. Indeed, from the standpoint of administrative efficiency it may be advantageous to exclude them, and that may be why several highly competent EMDs in this sample do so. From the standpoint of mobilizing public opinion and community resources in a severe emergency, it is implausible to attribute any eventual advantage to those networks that do not extend beyond the control sector.

194  
Figure 7-1

NETWORK DIAGRAM, CITY 8  
NETWORK EFFECTIVENESS SCORE = 17.62

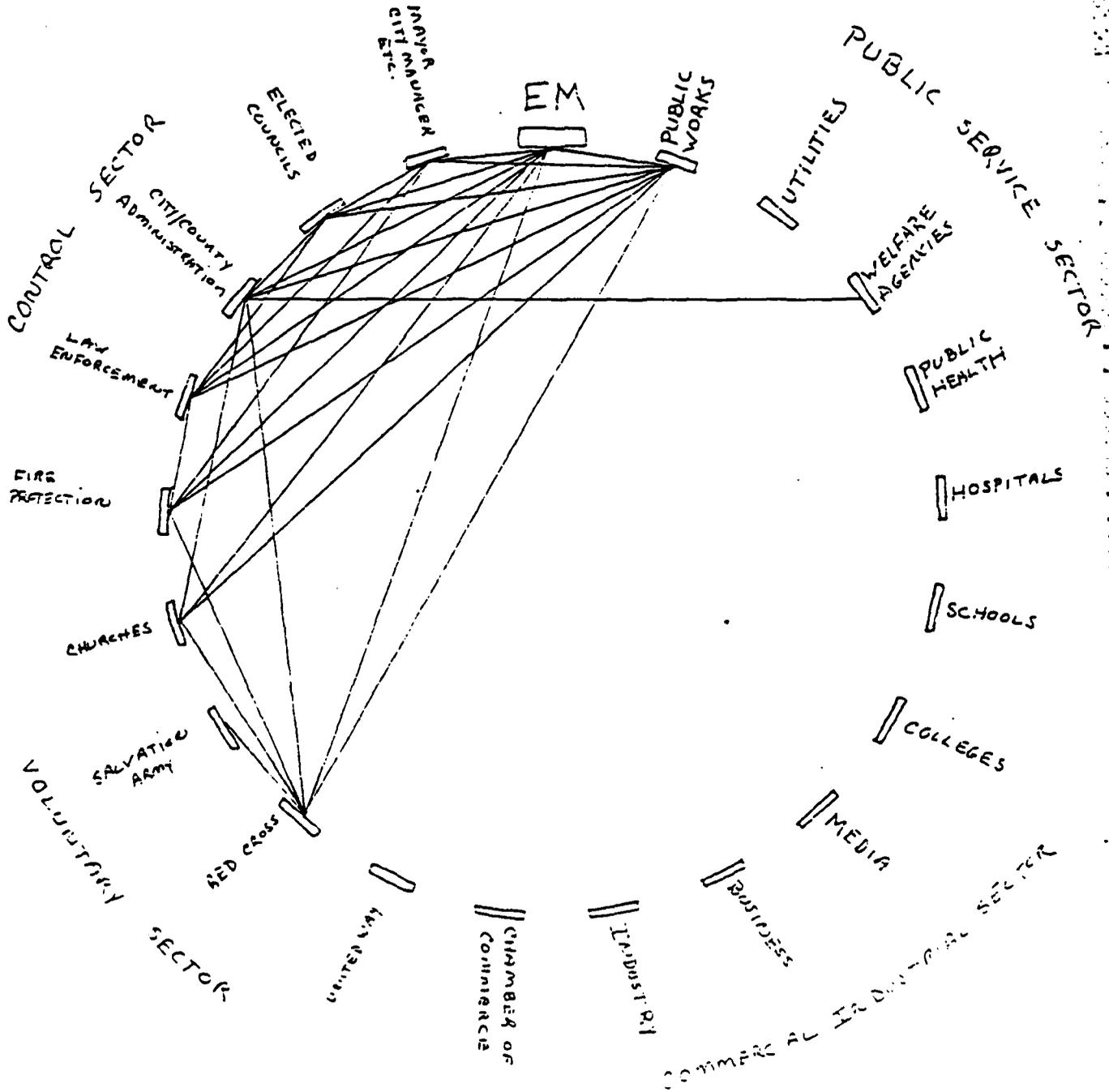
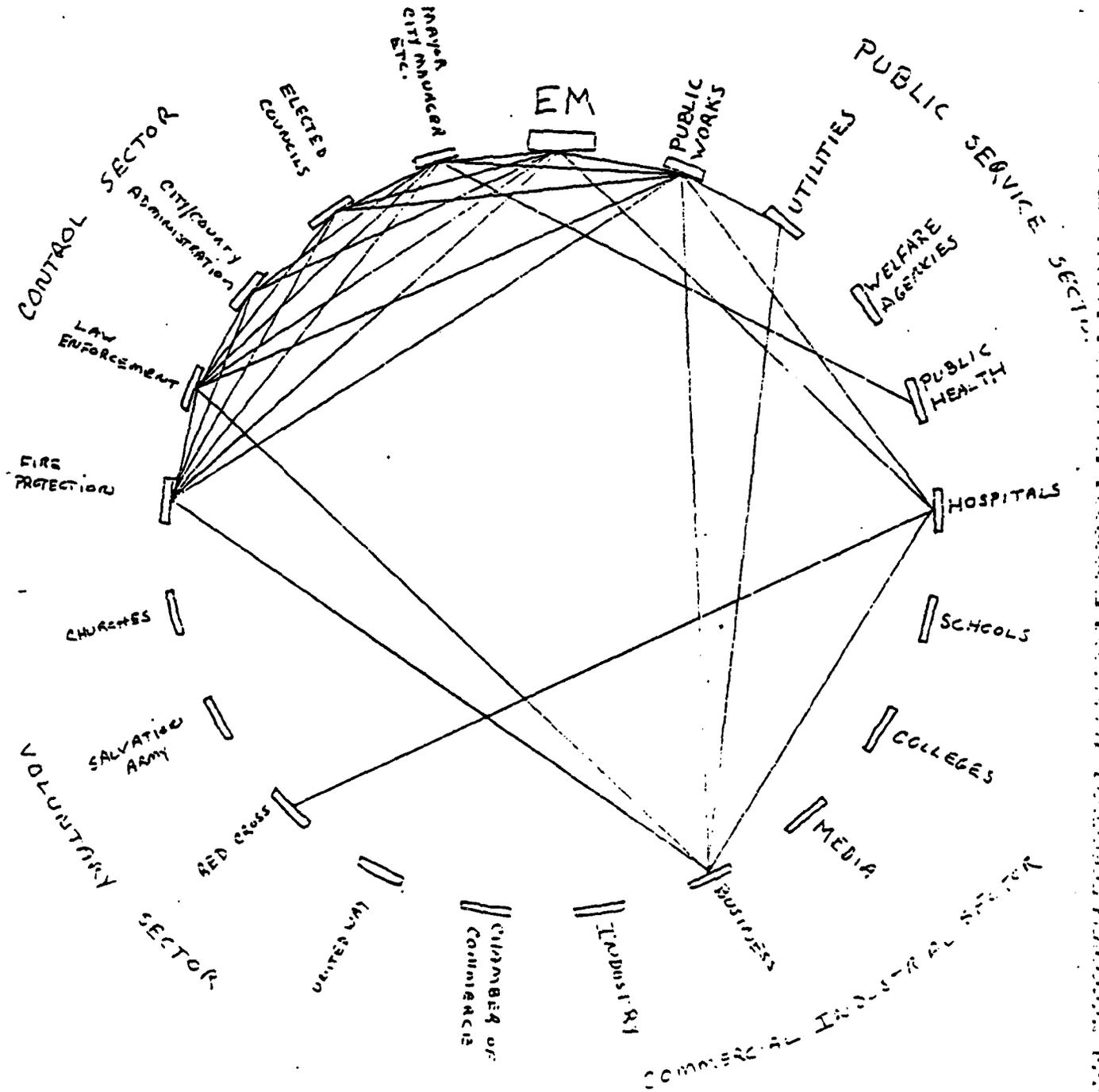


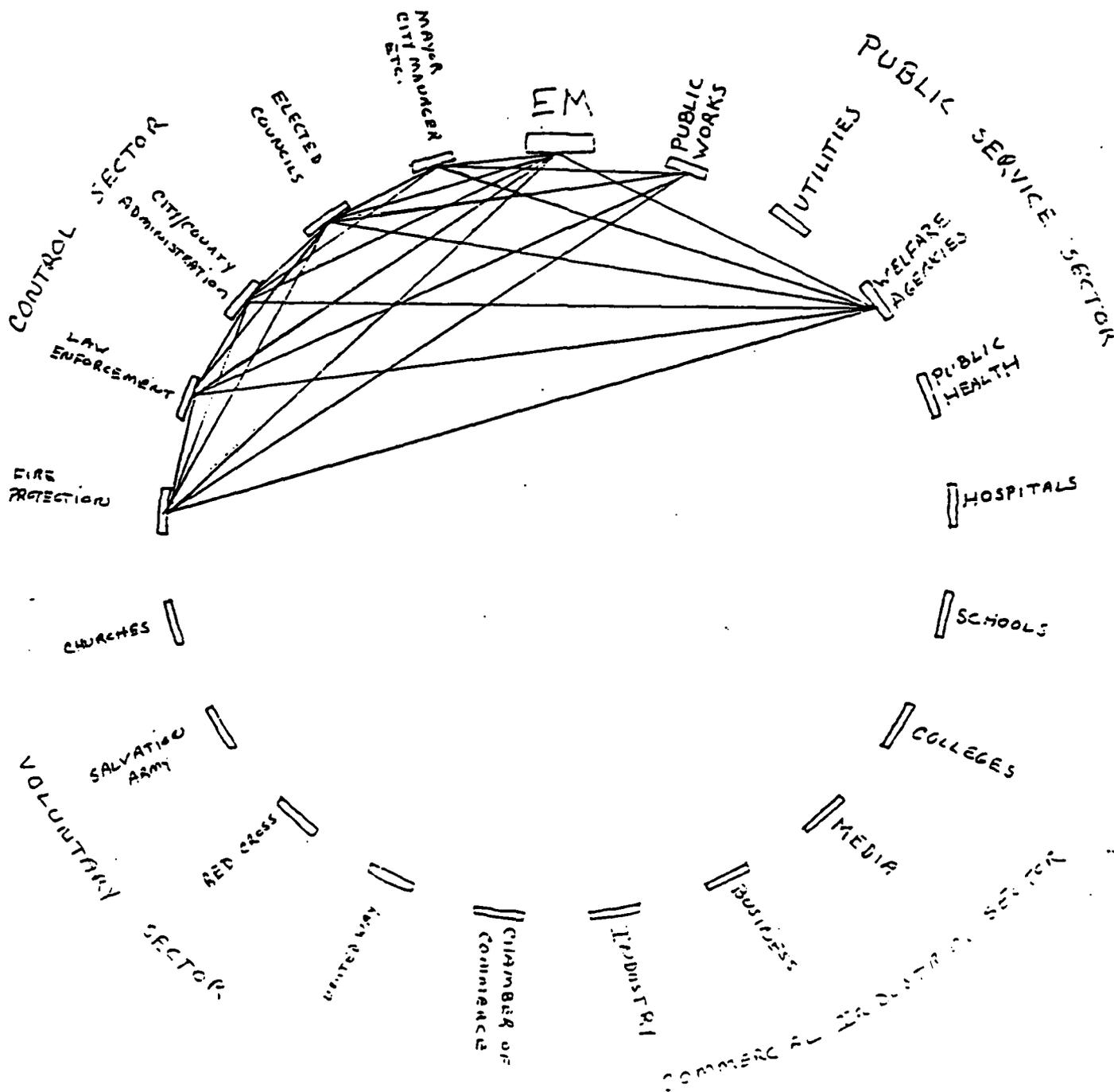
Figure 195<sup>1</sup>-2

NETWORK DIAGRAM, CITY 3  
NETWORK EFFECTIVENESS SCORE = 17.02



196  
Figure 7-3

NETWORK DIAGRAM, CITY 6  
NETWORK EFFECTIVENESS SCORE = 16.94



197  
Figure 7-4

NETWORK DIAGRAM, CITY 14  
NETWORK EFFECTIVENESS SCORE = 16.66

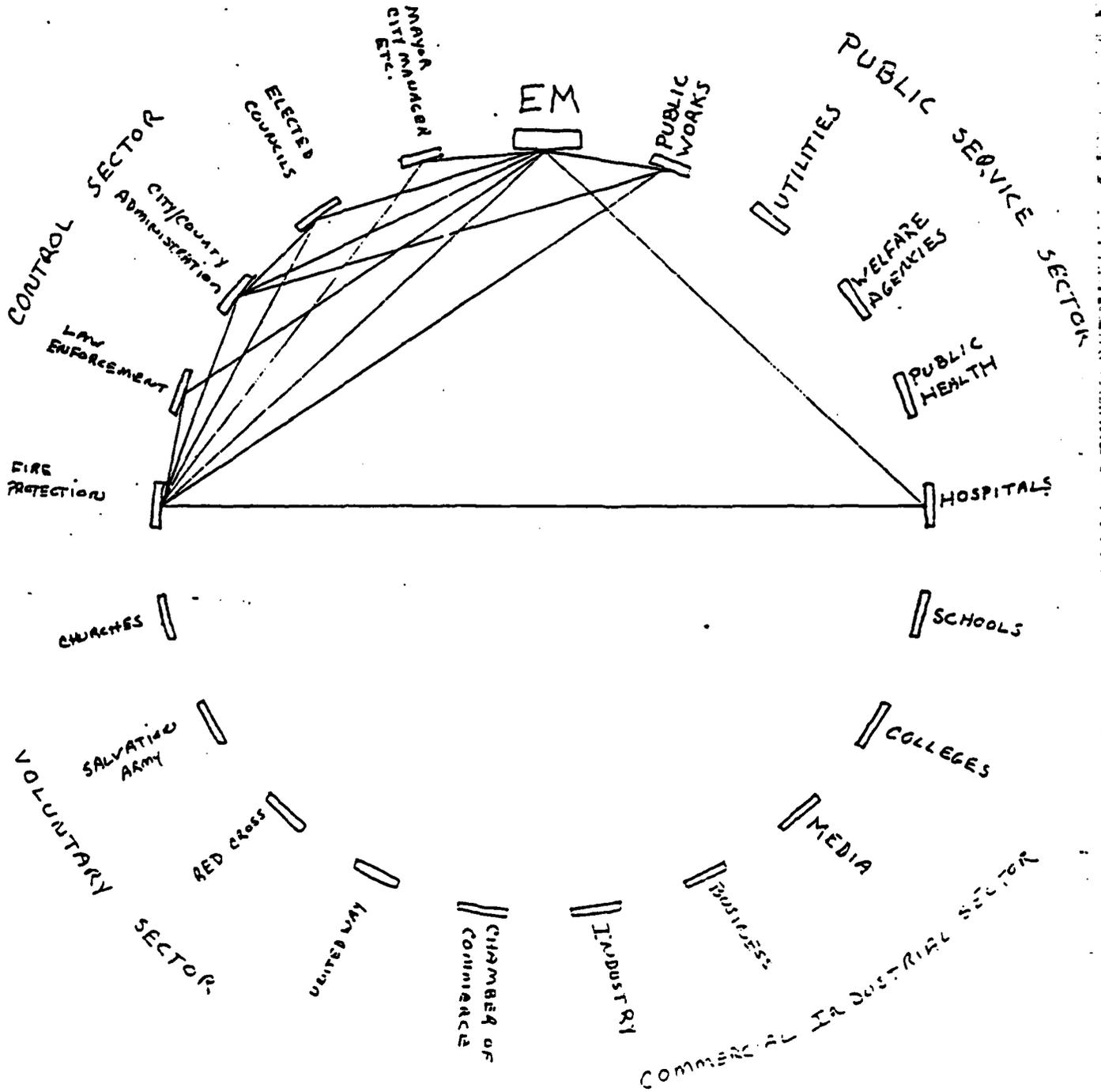
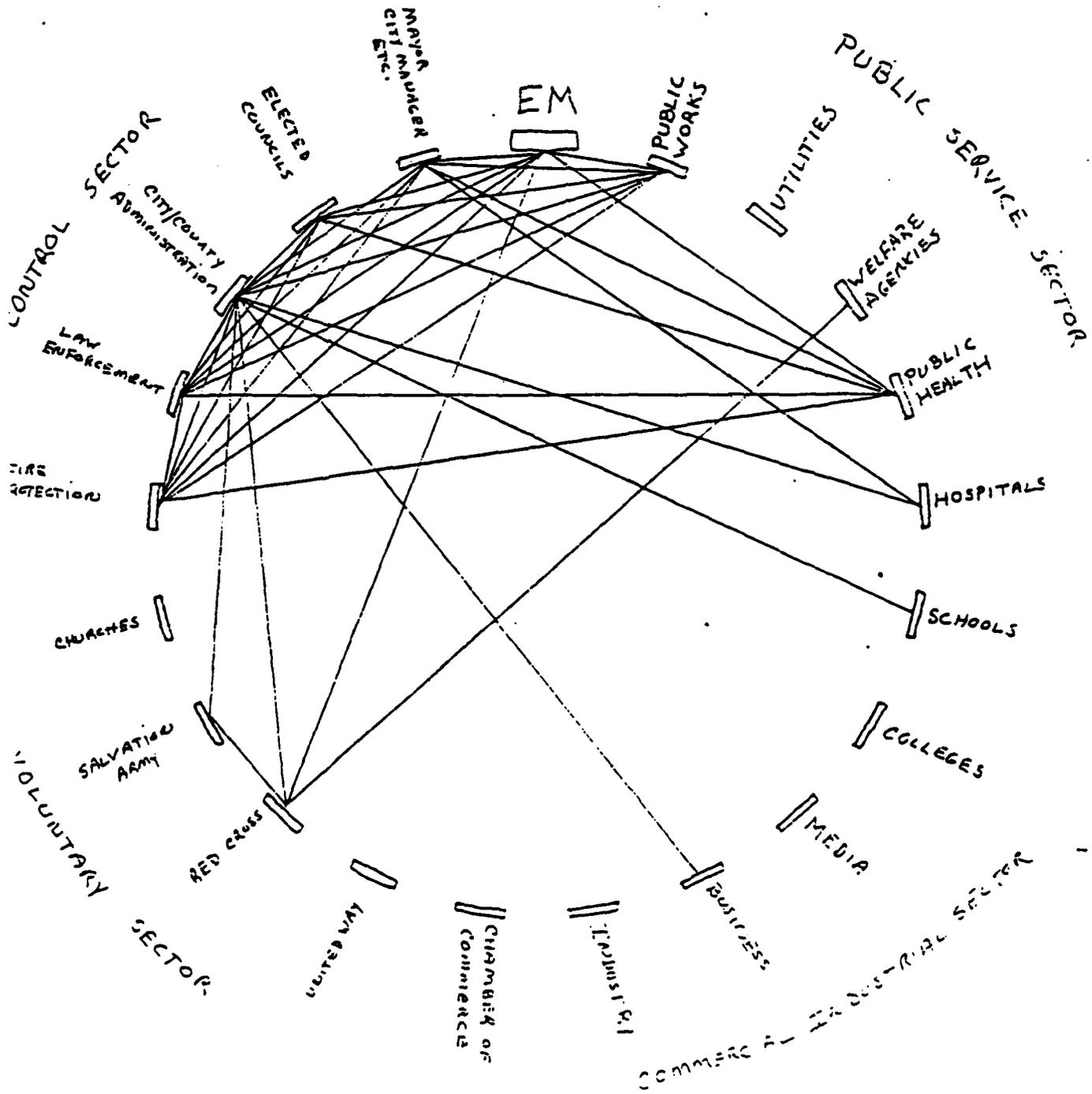


Figure 1987-5

NETWORK DIAGRAM, CITY 11  
NETWORK EFFECTIVENESS SCORE = 16.60



199  
Figure 7-6

NETWORK DIAGRAM, CITY 7  
NETWORK EFFECTIVENESS SCORE = 16.22

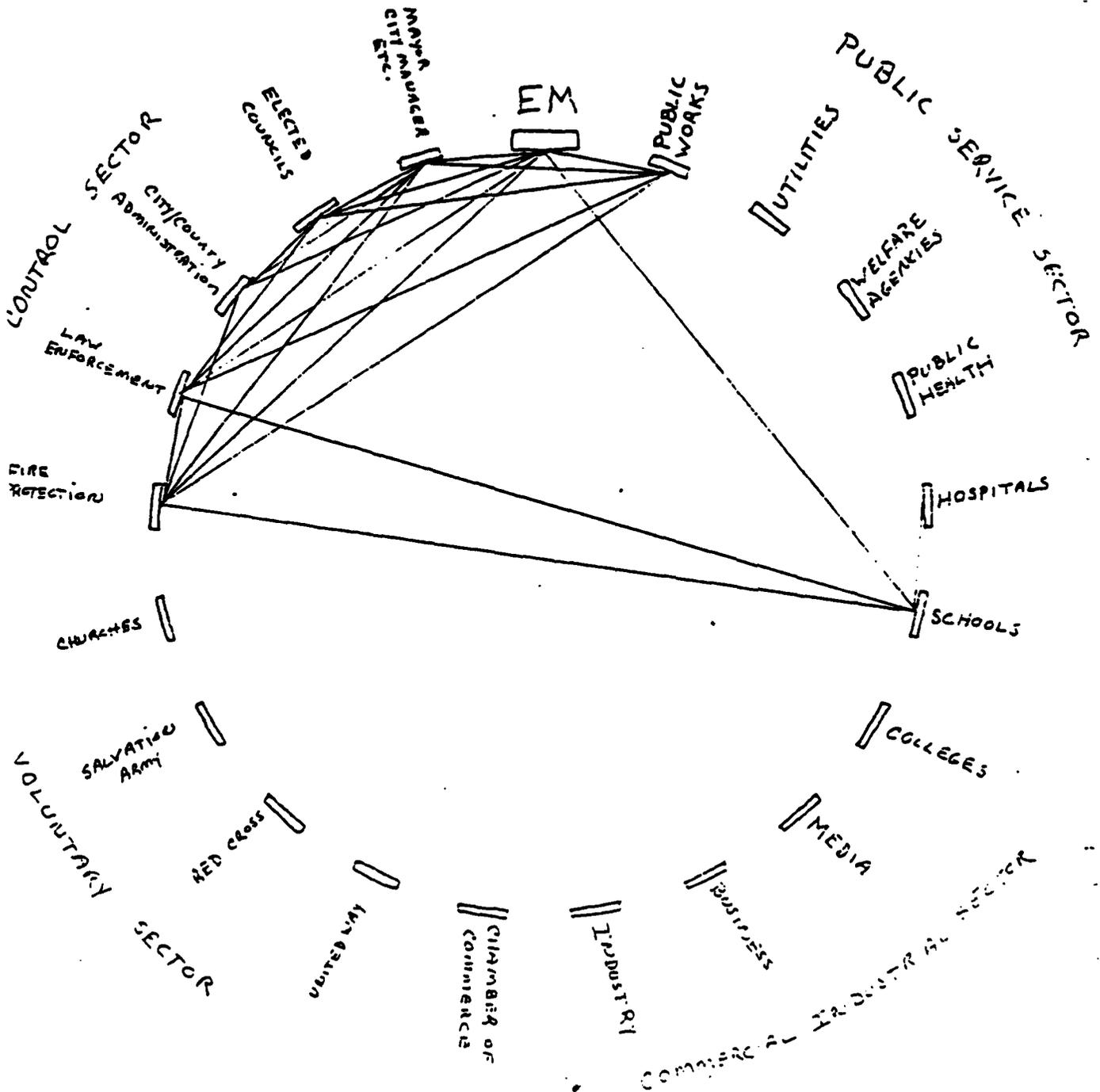
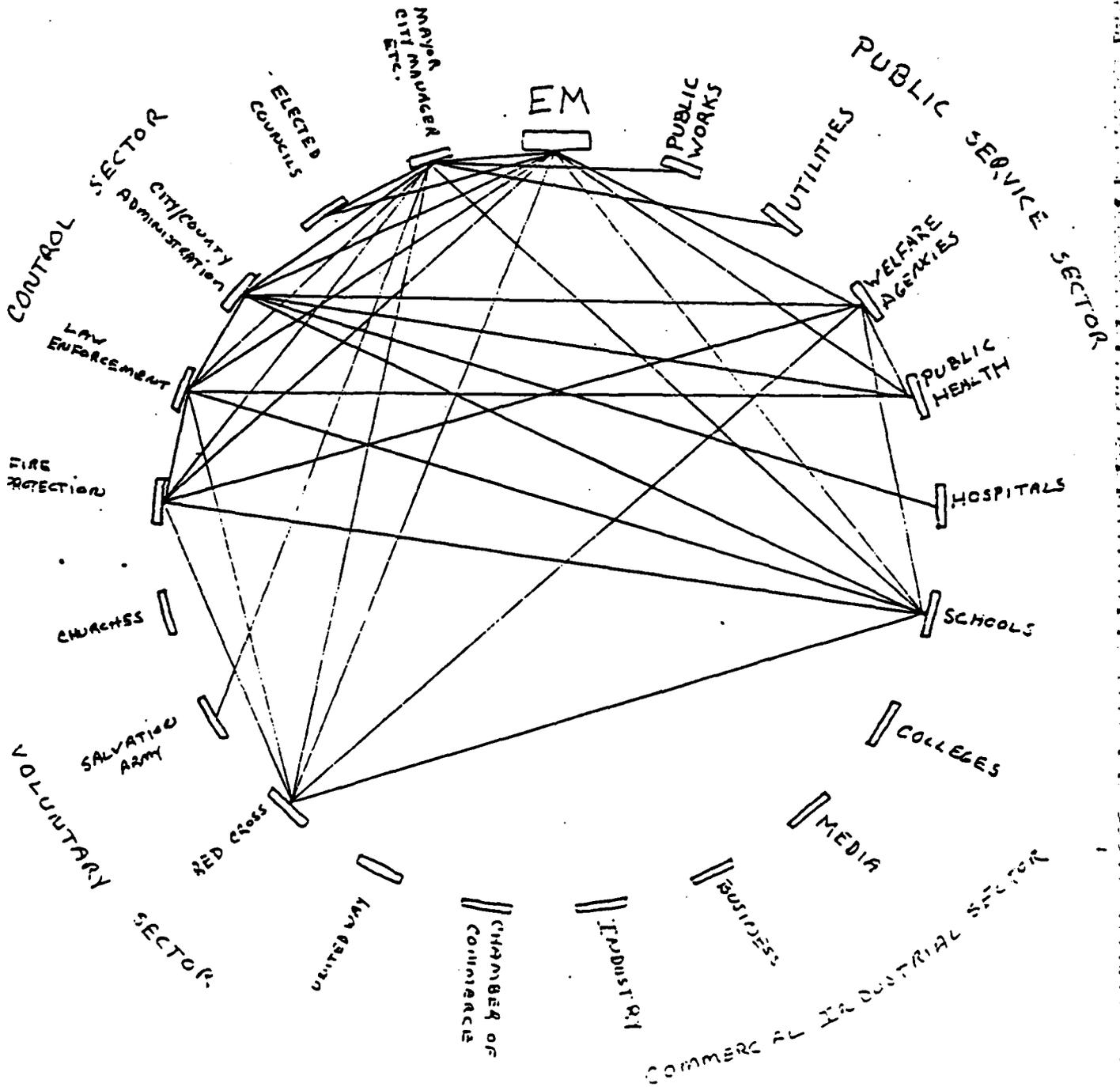


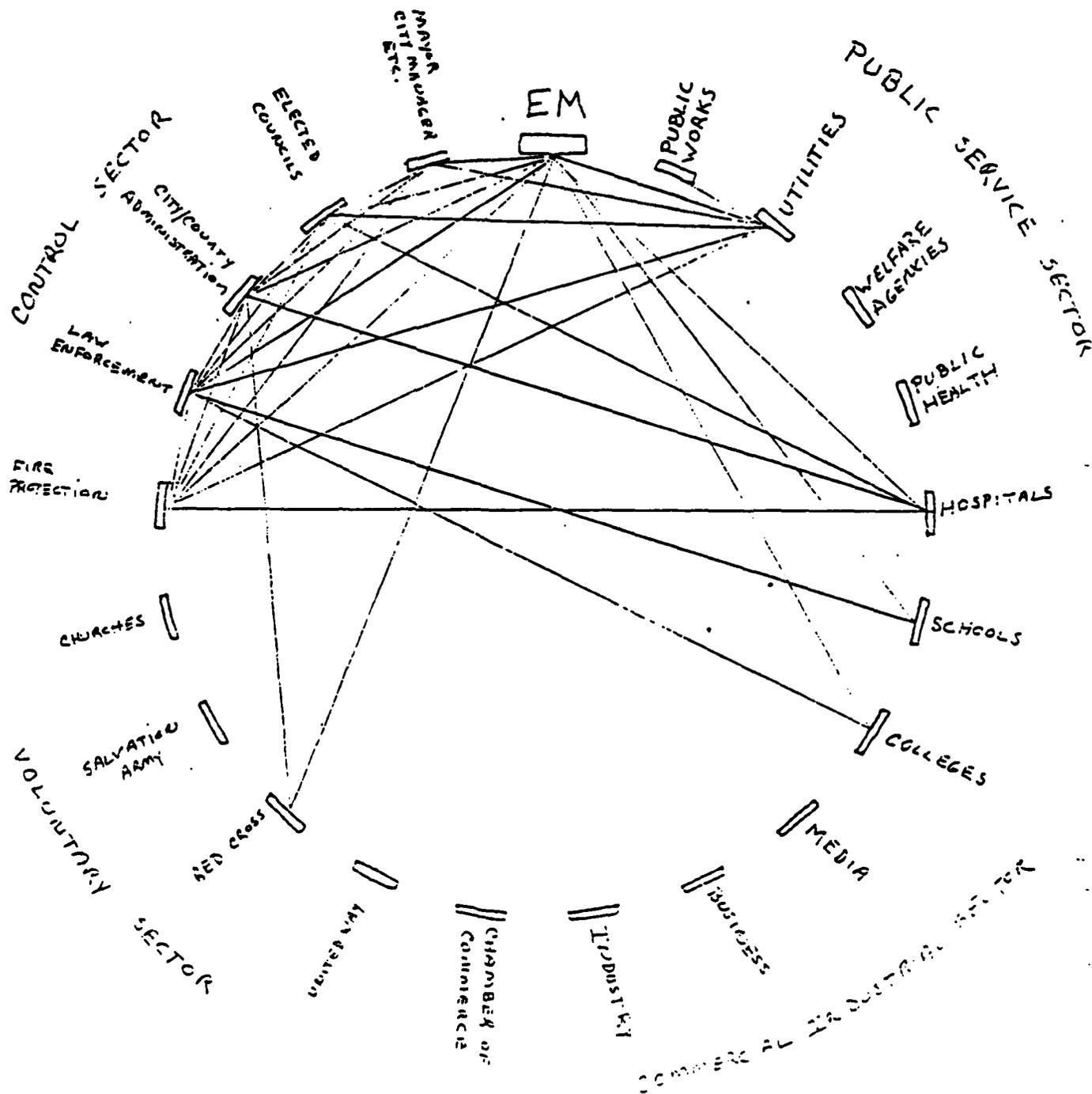
Figure 7-7

NETWORK DIAGRAM, CITY 15  
NETWORK EFFECTIVENESS SCORE = 15.73



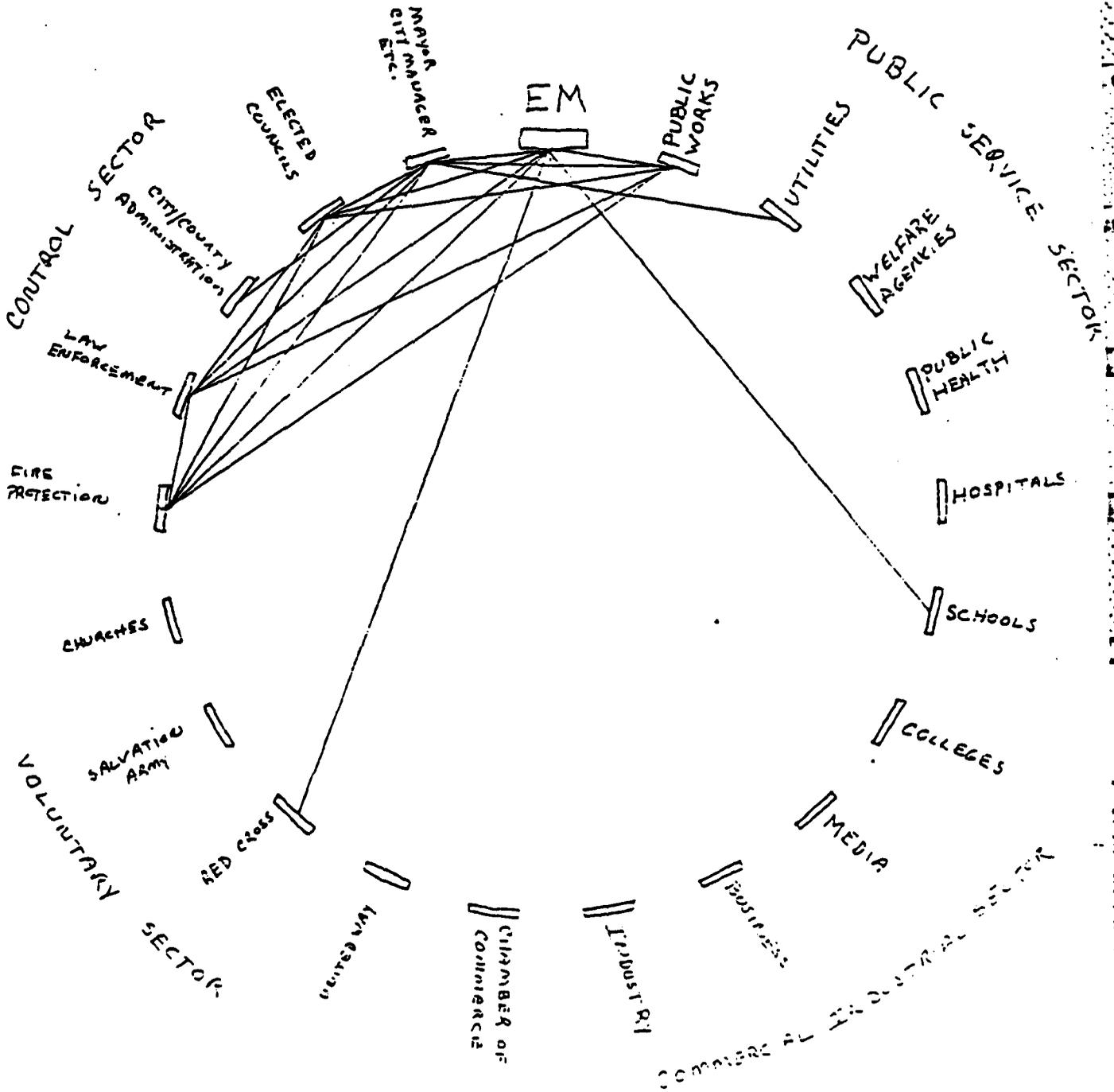
201  
Figure 7-8

NETWORK DIAGRAM, CITY 1  
NETWORK EFFECTIVENESS SCORE = 13.59



202  
Figure 7-9

NETWORK DIAGRAM, CITY 9  
NETWORK EFFECTIVENESS SCORE = 13.48.



203  
Figure 7-10

NETWORK DIAGRAM, CITY 2  
NETWORK EFFECTIVENESS SCORE = 11.84

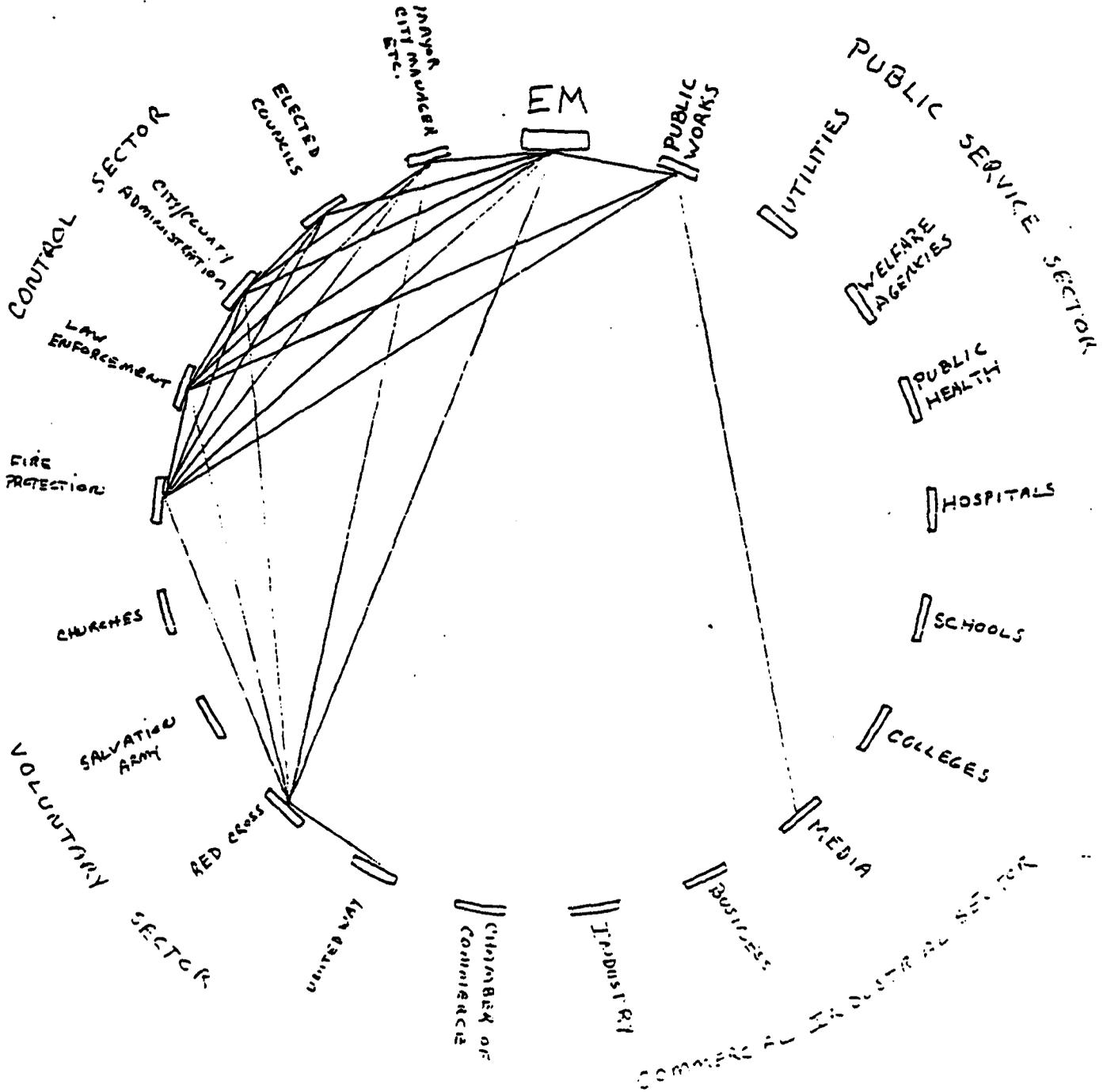
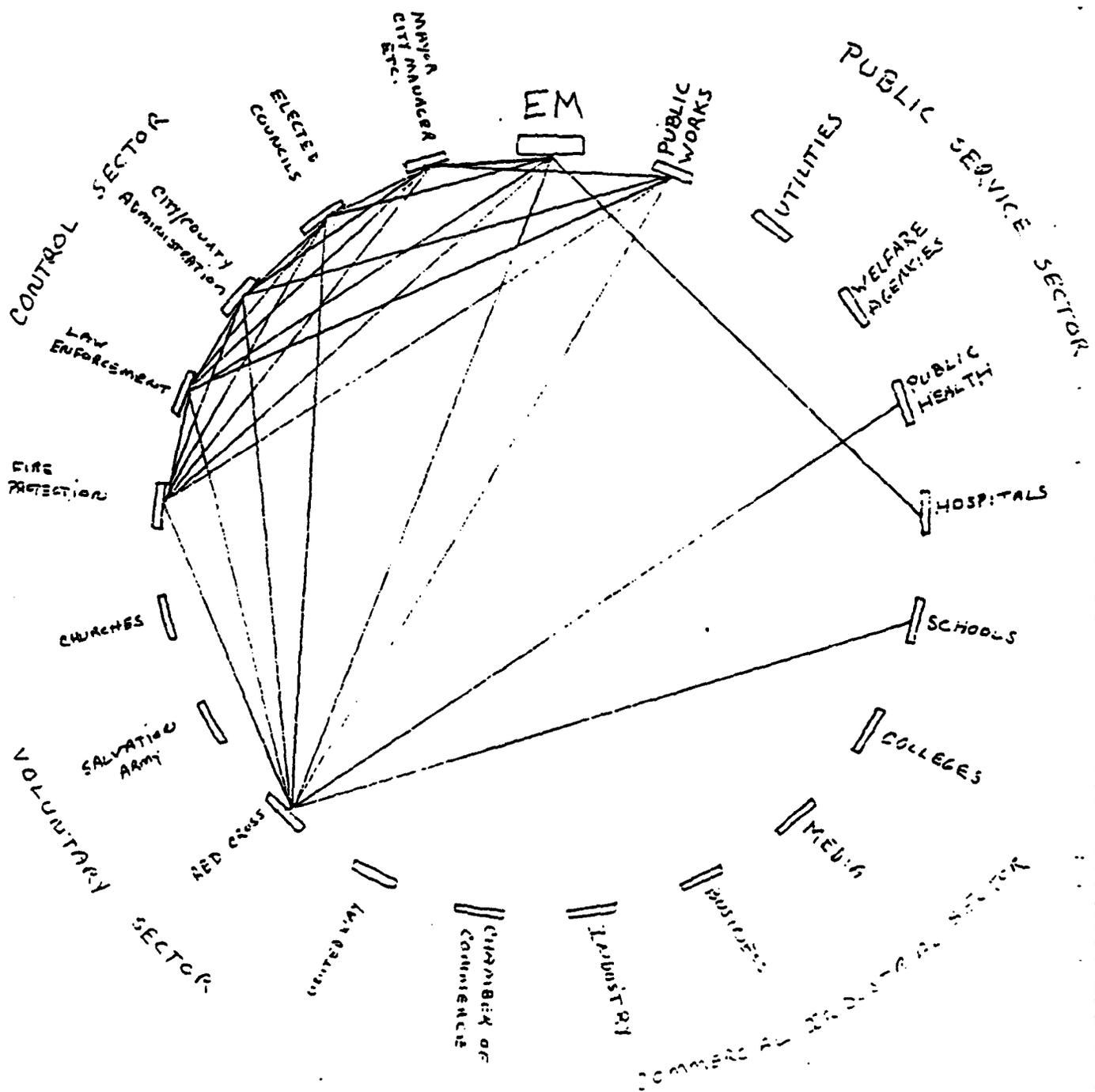




Figure 7-12

NETWORK DIAGRAM, CITY 5  
NETWORK EFFECTIVENESS SCORE = 11.52



206  
Figure 7-13

NETWORK DIAGRAM, CITY 12  
NETWORK EFFECTIVENESS SCORE = 11.39

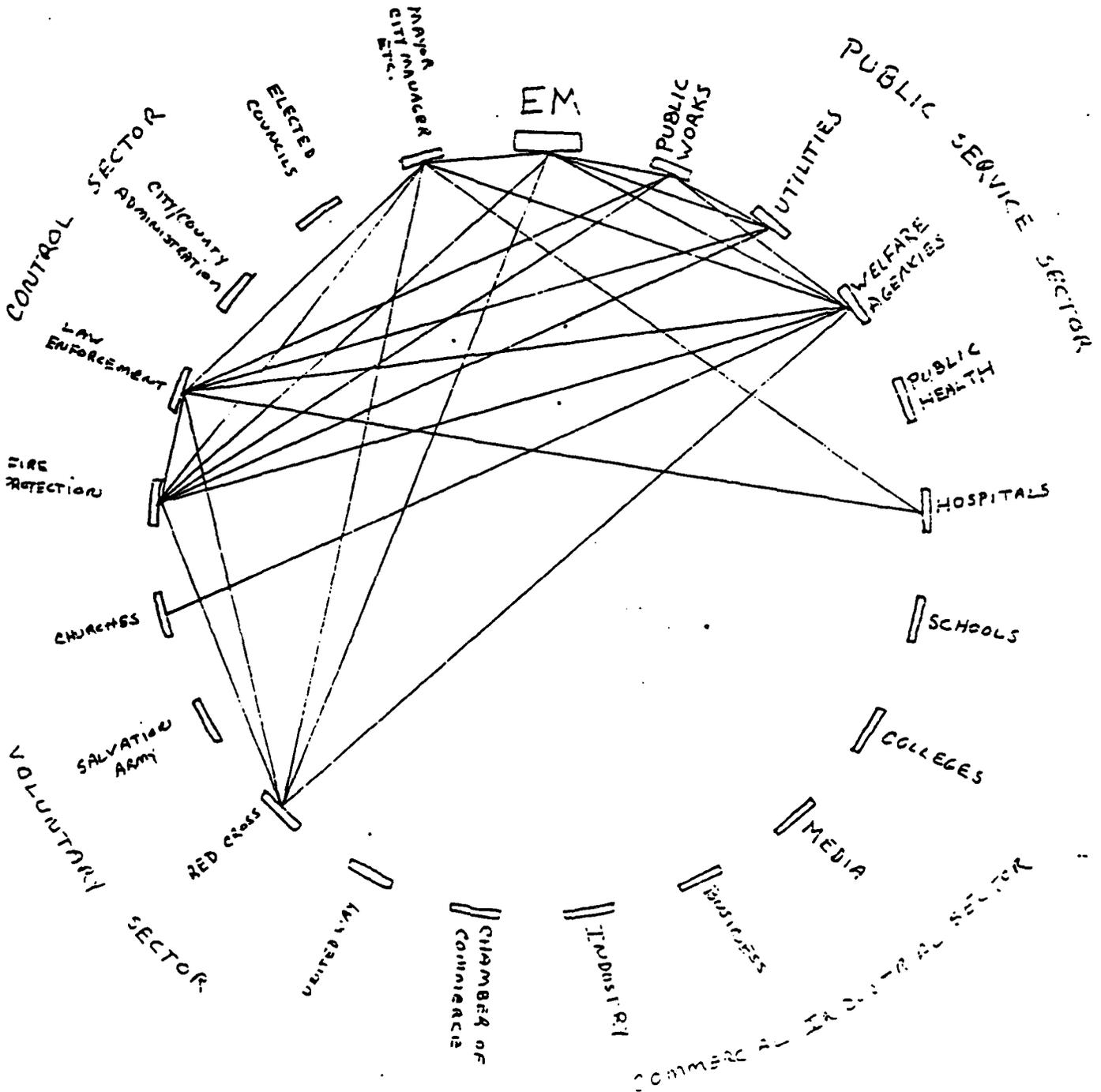
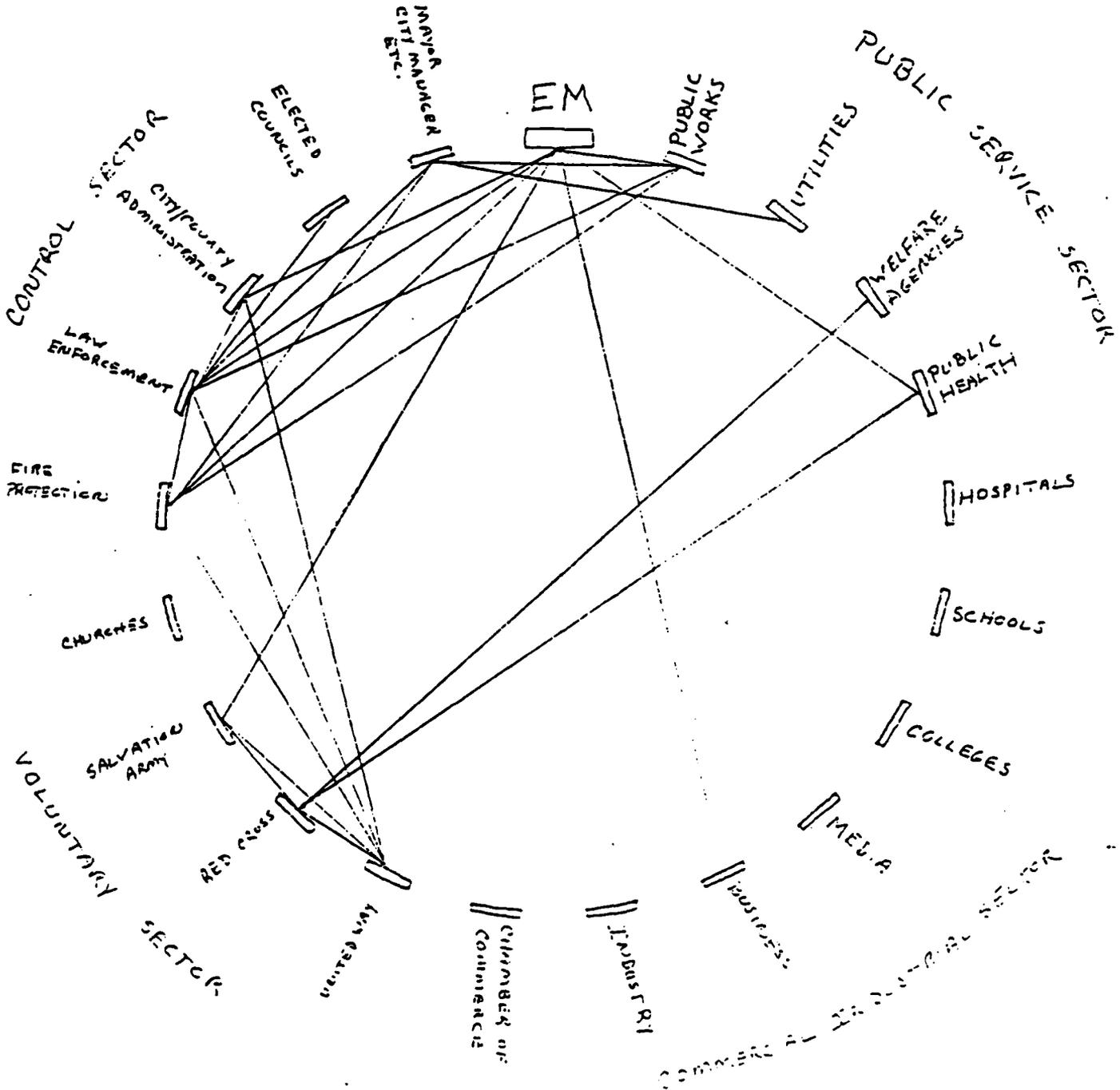


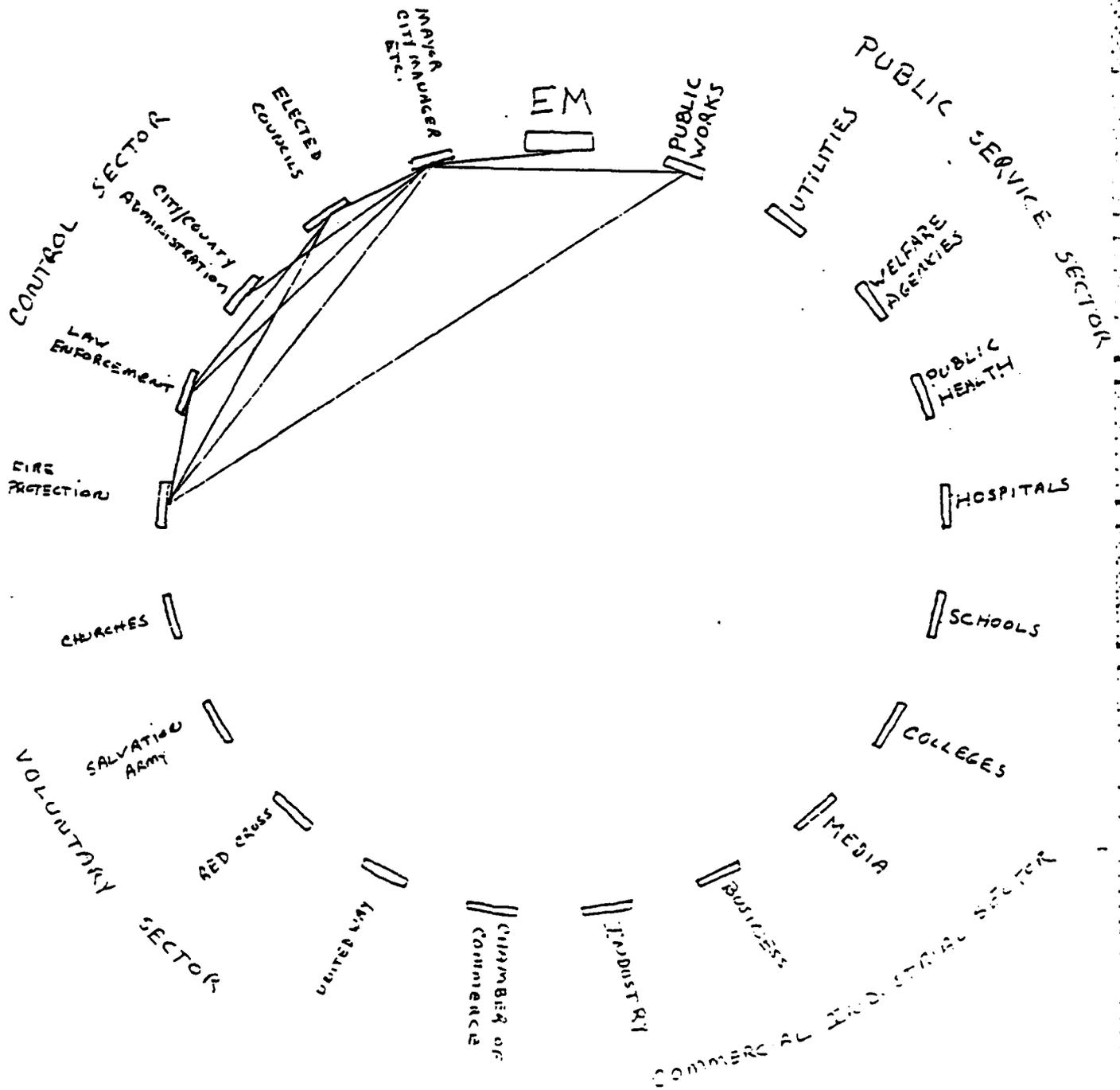
Figure 7-14

NETWORK DIAGRAM, CITY 4  
NETWORK EFFECTIVENESS SCORE = 11.29



208  
Figure 7-15

NETWORK DIAGRAM, CITY 10  
NETWORK EFFECTIVENESS SCORE = 10.07



SALIENT ISSUES IN LOCAL EMERGENCY PLANNING  
AS OF 1984

## SALIENT ISSUES IN LOCAL EMERGENCY PLANNING AS OF 1984

For convenience of reference, we summarize here the salient issues derived from our observation of emergency management networks in 15 sampled communities.

1. The EM networks in many - probably most - U.S. communities are reasonably well-organized. Many of them are strikingly effective, especially those that have both a high probability of encountering a major local disaster in the near future and able, experienced personnel in key positions, especially as EMD. But a considerable fraction of emergency networks are ineffective either because residents of those communities do not anticipate any near-term disasters, or because of personnel problems, or because of local accidents of one kind or another, including in a few places, organized opposition to civil defense concepts. Because emergency planning and management in the U.S. is set up to maximize local autonomy, there is little that higher echelons can do to repair a defective community network when it is recognized. Moreover, the information about local networks available at higher levels is so sparse that there is a distinct possibility that an ineffective local network will not be recognizable at a distance. What this means, from the standpoint of national policy is that the quality of local emergency planning and management when viewed overall is somewhat uneven.

2. EM networks are appropriately centered on the EMD and a few key officials in the control sector, especially city and county CEOs, police chiefs and fire chiefs. In the course of developing good working relationships with the control sector, many EMDs are tempted to scant other sectors of the community, particularly the voluntary sector, with its enormous resources of experience, volunteer manpower, and good will; and the industrial-commercial sector, with its enormous resources of specialized equipment, trained manpower and technological knowledge. The tendency to minimize contact with at least one of these sectors can be clearly seen in the network diagrams in the preceding section. Several adverse consequences follow from this neglect: (a) the often elaborate emergency planning of organizations in the voluntary sector and of companies in the commercial/industrial sector is not coordinated with the overall community planning for which the EMD is responsible; (b) the extensive resources of these two sectors are not made available to the community as a whole and might go unused in an actual emergency; (c) drills and simulations conducted to exercise the overall plan do not, as they easily could, exercise the plans of these other sectors; (e) conflicts of purpose and procedure often arise among uncoordinated emergency plans, and impair the response to actual emergencies when they occur.

3. In communities where the linkage of the EM network with the voluntary and commercial/industrial sectors is weak, the connection with the general public is even weaker. Very little information about emergency planning is available to ordinary citizens and what there is, is not well-publicized. This condition is not experienced as a problem by the key people in emergency management networks, partly because they enjoy working with each other and partly because some of them have had trouble in obtaining public acceptance of civil defense measures in the past and are more comfortable if they can get their work done without any attention from the media. The lack of publicity does entail some hidden costs, however, since it deprives the emergency management program of political and other resources that might be useful in an actual emergency, and deprives the public of the psychological security that a system of emergency management ought to provide.

4. Because most of the networks we studied are isolated from their local publics, they are very hesitant to stage full-size simulations and drills to exercise emergency plans. In general the emergency drills practiced by these networks are limited in scale and infrequent, so that most of the people who would be involved in an actual emergency are not even aware that a drill is being staged, and many of the problems that would appear in an actual emergency are not raised by the drill. For example, several of the

networks we observed have no liaison with the coroner's office, and no plans at all for disposal of bodies.

5. The shift from a separate system of civil defense to an integrated emergency management system is being well-received in most of our sample communities and the Yankelovich data on public confidence in civil defense officials, quoted in Chapter 2 above, suggests some favorable predisposition on the part of the general public, however scanty their information about the details of emergency planning may be. Besides an increase in public confidence, the beneficial effects anticipated by EM directors and their staffs include improved access to city and county resources, higher prestige, and more opportunity to influence policy.

6. Very few distinctive civil defense activities are currently ongoing in the 15 sampled communities. Although most of them have marked public shelters, we found only four communities where the shelters are still periodically inspected, and some supplies are still rotated. Public warning systems have either been abandoned or have been inactive so long that our informants typically could not tell us whether the sirens were still operational. And, of course, the general public would not know how to respond if they did go off. It was not uncommon for key officials to learn from our observers that the building in which they work contains a clearly marked public shelter.

7. In the opinion of the URS observers who studied the 15 sampled communities, the absence of specific civil preparedness elements in the routine activities of emergency managers in these communities probably does not adversely affect their capacity to deal with a hypothetical nuclear attack or other wartime emergency, within the limits of available resources. It seemed to our observers that a well-exercised emergency network would probably be readier for a civil defense emergency than a specialized civil defense system without opportunity for realistic exercise of emergency capabilities. On the other hand, there is considerable confusion on the local level, even in written emergency plans, about whether shelters would be used, how evacuation would be organized, and what procedures would be used for warning and instructing the public in case of a nuclear alert.

8. Aside from this reservation, it appears that in at least nine of the fifteen sampled communities, emergency management has been effectively integrated and the emergency management network in place is sufficiently practiced and flexible to handle any emergency that bears a reasonable relationship to their current resources, and to readjust rapidly to new configurations of natural or technological threat.

TECHNICAL SUMMARY

## 9. TECHNICAL SUMMARY

### A. TASK 1 AND PROVISIONAL WORKPLAN

The contract for this project was approved 27 September 1983; work began 1 October 1983.

Task 1 was described in the contract as follows:

"Identify areas of community action, values and beliefs relevant to civil preparedness and emergency management, particularly the relative acceptance of FEMA and the concept of integrated emergency management planning. This will be done by integrating results of United Research Service's previous community research efforts, documents relevant to national preparedness furnished by FEMA, and the general literature. This task will produce the major information categories about which data will be collected. Task 1 results and a workplan for completing the study will be submitted by URS to FEMA for review and approval prior to continuation of the research effort."

Task 1 was completed on schedule, and a report entitled RESULTS OF TASK 1 AND PROVISIONAL WORKPLAN was submitted 27 October 1983 and reviewed by the FEMA project officer and other Agency representatives at a conference in Washington that same date, at which time URS was authorized to continue.

The research effort began with a close review of the following documentary sources: (1) previous published and unpublished research of URS and URS personnel; (2) previous research on civil preparedness commissioned by FEMA and

predecessor agencies, especially the Iowa State Sociological Studies in Civil Defense (1962-1972); the disaster planning studies of the Ohio State Disaster Research Center (1970-1976); the Pittsburgh National Opinion Survey (1978) and some documents from the 1983-84 updating of the Pittsburgh Survey; (3) documents explaining current FEMA policy with respect to the Integrated Emergency Management System; (4) the general literature on community response to disaster.

This review provided a considerable list of conceptual expectations, some of which were eventually confirmed by our field observations, while others had to be rejected.

For example, from previous URS studies we derived the expectation that community action networks would exhibit long-term stability, which on the whole was supported by our data. But the expectation that networks would be reinforced by friendship and kinship ties was not confirmed. We anticipated from the Iowa studies that the effectiveness of an emergency management network would be heavily influenced by the training and motivation of EMD's, which turned out to be the case. But, we anticipated more unofficial influence in emergency planning than we discovered.

Other aspects of Task 1 were the design of a Discussion Guide. Form 1 of this instrument was based on a checklist of relevant topics drawn from the project proposal and the research literature, supplemented by a series of in-depth discussions with knowledgeable persons in emergency management roles. Following the interrogation of this "pre-sample",

a pilot study was conducted in Roanoke, Virginia, October 17-26 which involved a test of procedures for gaining access to the community and acceptance by respondents, the identification of 17 key persons engaged in emergency management planning in that community and two revisions of Form 1 to improve its information yield. Four subsequent revisions of the Discussion Guide were made in November and December, during the early observation of Communities 1 and 3, until a final version was achieved with form 7. (Attached as Appendix A).

The original plan for obtaining data from the 15 communities was to send a training team of senior scientists on a circuit trip to all of them to recruit and train local observers. A preparatory session for the training team was held in Provo, Utah, in October 1983, but the attempt to write a training manual for the project disclosed problems that required revising the research design. It became apparent that the original plan did not adequately provide for failures in recruitment and training, although such failures had to be considered as inevitable, and would not provide adequate quality control, with only a single site visit to be made by the training team. After exploring alternatives, it was decided to omit the recruitment of local observers, and to use the senior scientists originally designated as trainers in two- or three-person field observation teams. The labor costs of assigning these highly skilled and experienced persons to field observation were

somewhat lower than that contemplated by the original plan and the quality and yield of information was very much higher. However, travel costs were considerably increased by the change since observers had to return to base between sites.

## B. ACCESS PROCEDURE

An important part of Task 1 was the development of a satisfactory access procedure, i.e. one that would give advance notice of a site visit to all interested parties at the regional, state and local levels, and assure that their full cooperation would be forthcoming. Under the initial procedure, a letter from the Chief of the Civil Systems Divisions was circulated to all echelons to advise them of forthcoming URS site visits. The letter identified the contractor, and described the research in the following terms:

"This effort will entail study and analysis of the decision-making networks in local communities relevant to civil defense and emergency management issues. The URS personnel and their research methods do not represent a policy position of FEMA or other agencies of the Government. Their work is of a scientific nature and employs hypothetical situations and scenarios."

About two weeks prior to a site visit, state directors were telephoned both by FEMA and URS to appraise them of the schedule.

This procedure did not seem to provide adequate notice to participants, or to reassure them completely about the non-evaluative character of the study. Beginning in December 1983, therefore, a more elaborate access procedure was devised, whereby initial mail and memorandum contacts between the project officer and the relevant regional and state offices were followed by a series of telephone calls

from the project's principal investigator to the regional and state directors to brief them more fully about the purpose of the research and to request that they (1) delegate someone in their offices to handle communications concerning the project and (2) verify that the next lower level was fully apprised of the forthcoming site visit and judged the schedule to be convenient; and (3) record the names and telephone numbers of URS personnel connected with the project to facilitate subsequent communication. Thereafter, both the principal investigator and the leader of the site team established advance contact with the local EMD to work out a schedule convenient to him and to other local key persons. Following the adoption of these measures, relations with respondents were uniformly good. None of the 625 key people we identified refused to talk with us, and only 6 of them offered excuses that might have been polite refusals.

Nearly half of the people contacted in regional and state emergency management offices, and more than a fourth of our local informants expressed an interest in seeing the study's results, without prompting.

### C. FIELD PROCEDURES

Observers delineated the local emergency management network at each site by moving from one person to another, along paths indicated by the respondents themselves, until virtually all of the key people in the network had been identified and contacted for face-to-face discussion. A minimum of 40 positions were covered at each site; the maximum was 45. In every case, as shown by the network diagrams in Chapter 7 above, the active core of the network was considerably smaller than the population covered and the peripheral informants were relatively inactive.

A standard check list of positions was developed to assure that no potentially active network member was overlooked, and in instances where the normal practice of allowing the network to generate itself did not turn up a check-listed position, field observers obtained sufficient information to verify the non-inclusion. The check-listed positions were these:

Emergency Management Director

Mayor and/or City Manager

City Councilman and/or County Commissioner

Police Chief and/or Director of Public Safety and/or

County Sheriff

Fire Chief

Superintendent of Schools

Hospital Superintendent

Manager, Power Facility

Manager, Water Facility

Chamber of Commerce Executive

Manager, Largest Enterprise

Pastor, Largest Church and/or Ministerial

Association Executive

Red Cross Executive

Salvation Army Officer

In order to assure full and candid responses, respondents were assured that individual attitudes and activities would be held confidential by URS.

#### D. CODING AND QUALITY CONTROL

Field coding was specified in the Discussion Guide whenever the coding of an item seemed to require professional judgment based on firsthand observation. The specifications for field coding are included in the Form 7 Discussion Guide appended to this report as Appendix A.

For example, responses to item 5.2, "Were you personally involved (in a specified disaster)?" were field-coded as follows:

- 0 No
- 1 Witness
- 2 Victim
- 3 Secondary Actor
- 4 Principal Actor

All verbatim responses and field codings were closely reviewed by field observers in the course of preparing the typed Field Report from the longhand notes entered on the Discussion Guide. The Field Report was forwarded immediately upon completion to the Charlottesville office of URS by express mail or other overnight service, and routed thence for outside review on the same day, so that inconsistencies and omissions could be corrected before field observers lost contact with informants. The form of this review is shown in Appendix B.

A third review of the Field Report was effected in the Field Supervisor's office in Charlottesville prior to coding.

Both the field-coded and office-coded items on each Field Report were transcribed to an individual code sheet (Appendix C) for convenient key-punching. The process of review, coding and computer entry was conducted almost concurrently with the field observations so that computer entry of the entire data inventory was completed within three weeks after the conclusion of the last site visit in April, 1984.

## E. DATA ANALYSIS

The data contained in the field reports were analyzed by three different methods, as follows:

(1) Computer entries were based on the Codebook shown in Appendix D, designed for analysis by means of SPSS (Statistical Package for Social Science). Following the acceptance of the original proposal that stipulated the use of the SPSS program, it was discovered that a more powerful program called SAS (Statistical Analysis System) was available. The use of this latter program required no changes in the data format on the code book and so SAS was used to perform the data analysis. The original tabulation plan called for the following scheme of 2- variable cross-tabulations, to be supplemented by ad hoc and contextual tabulations as required in the course of analysis:

- All marginals by community
- All responses by community size
- All responses by regional location
- All responses by official position
- All responses by time in position
- All responses by time in community
- All responses by EM experience
- All responses by CD experience
- All responses by EM role
- All responses by perceived disaster risk

- All responses by perceived nuclear risk
- All responses by family protection index
- All responses by informant's sociometric weight

(2) Extensive verbatim comments were grouped by informant categories and copied on to transfer sheets to facilitate content analysis and the recognition of thematic regularities in attitudes and practises related to emergency management.

The items designated for thematic analysis were:

- Item 2.0 Informant's description of own responsibilities
- Item 5.3 Appraisal of local reaction to recent emergency
- Item 5.6 Appraisal of probable local reaction to future emergency
- Item 5.7 Suggested improvements in existing EM machinery
- Item 6.4 Which state agencies involved in emergency management, with what responsibilities?
- Item 6.5 Which federal agencies involved, with what responsibilities?
- Item 8.3 Arrangements for protecting key people and essential equipment
- Item 8.6 Informants' civil defense experience
- Item 8.7 Dispositon of facilities and supplies remaining from earlier CD programs

Item 8.8 Informants' evaluation of CD experience

Item 8.9 Knowledge of recent changes in federal  
EM policy

Item 9.0 Informants' personal emergency planning

Item 9.1 Reactions to a hypothetical nuclear  
alert

(3) The sociometric information generated by informants' designation of other key persons in the emergency management network, and their designation of persons who would have specified roles in emergencies, were originally prepared for computergraphic display, but it developed in the course of analysis that better results could be obtained by translating an SAS version of the sociometric matrix into diagrammatic form.

APPENDICES

APPENDIX A  
DISCUSSION GUIDE - FORM 7

1 Name \_\_\_\_\_

1.1 Official Position \_\_\_\_\_

field  
code  
field  
code

1.2 \_\_\_\_\_ elected \_\_\_\_\_ appointed; \_\_\_\_\_ public \_\_\_\_\_ private

1.3 Tenure \_\_\_\_\_ years position; 1.4 \_\_\_\_\_ years organization

1.5 \_\_\_\_\_ years community: check if lifetime ( )

Duties of position: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Do you have to deal with planning for civil defense or public emergencies? (probe for detailed responsibility)

Central \_\_\_\_\_

Advisory \_\_\_\_\_

Informed \_\_\_\_\_

None \_\_\_\_\_

3. Who are the key people responsible for emergency management planning in this community?

	Name	Position	office co
3.1	_____	_____	_____
3.2	_____	_____	_____
3.3	_____	_____	_____
3.4	_____	_____	_____
3.5	_____	_____	_____
3.6	_____	_____	_____
3.7	_____	_____	_____
3.8	_____	_____	_____



## SELECT AND SPECIFY EPISODE FOR Q 5.2

5.2 Were you personally involved?  
(tell me about it)

- 0  No  
1  Witness  
2  Victim  
3  Secondary actor  
4  Principal actor

5.3 Looking back, was that emergency well-managed?

5.31 What was well done?

5.32 What was done badly?

5.4 What do you consider the most likely type of  
emergency to occur here?

- Flood  
 Earthquake  
 Fire  
 Windstorm  
 Toxic spill  
 Explosion  
 Blackouts  
 Epidemic  
 Nuclear accident  
 Riots  
 Invasion  
 Nuclear attack  
 Plane crash  
Other \_\_\_\_\_

5.5 How would you estimate the probability of such an occurrence in the next five years?

Under 10% \_\_\_\_\_

10-40% \_\_\_\_\_

50+% \_\_\_\_\_

60-90% \_\_\_\_\_

Over 90% \_\_\_\_\_

5.6 How well could the present machinery cope with a big \_\_\_\_\_? (write in)

Excellent \_\_\_\_\_

Above average \_\_\_\_\_

Average \_\_\_\_\_

Below average \_\_\_\_\_

Poor \_\_\_\_\_

5.61 What would be done well?

5.62 What would be done badly?

5.7 How should the existing machinery be improved to handle a big \_\_\_\_\_? (write in)

6.1 If there were a sudden emergency in the middle of the night, who would inform you?

Name	Position	Personal Friend?
6.11 _____		6.111 _____
6.12 _____		6.112 _____
6.13 _____		6.113 _____
6.14 _____		6.114 _____
6.15 _____		6.115 _____
6.16 _____		6.116 _____
6.17 _____		6.117 _____
6.18 _____		6.118 _____

6.2 Whom would you have to inform?

Name	Position	Personal Friend?
6.21 _____		6.211 _____
6.22 _____		6.212 _____
6.23 _____		6.213 _____
6.24 _____		6.214 _____
6.25 _____		6.215 _____
6.26 _____		6.216 _____
6.27 _____		6.217 _____
6.28 _____		6.218 _____

6.4 Which state agencies would become involved?

6.41 What would their responsibilities be? (by agency)

6.42 At what stage would they come in? (NOTE: Record answer re "stage"; then if necessary probe)

PROBE: About how long, minutes, hours or days?

PROBE: Who would call them or authorize them to get involved?

6.5 Which federal agencies would become involved?

(Probe for FEMA if not mentioned)

6.51 What would their responsibilities be? (by agency)

6.52 . At what stage would they come in?  
(NOTE: Record answer re "stage"; then if necessary probe.)

PROBE: About how long in minutes, hours, or days before they became involved?

PROBE: Who would call them or authorize them to get involved.

7.0 Compared to most other communities, how would you expect \_\_\_\_\_ to react to an emergency?  
(write in)

Excellent \_\_\_\_\_  
Above average \_\_\_\_\_  
Average \_\_\_\_\_  
Below average \_\_\_\_\_  
Poor \_\_\_\_\_

8.0 How likely do you think that we're in for another world war - one where nuclear weapons would be used?

Very likely \_\_\_\_\_  
Likely \_\_\_\_\_  
50-50 chance \_\_\_\_\_  
Unlikely \_\_\_\_\_  
Very unlikely \_\_\_\_\_

8.1 In case of nuclear war, how great a danger do you think there is that the area here would be a target?

Certain danger \_\_\_\_\_  
Great danger \_\_\_\_\_  
Some danger \_\_\_\_\_  
Little danger \_\_\_\_\_  
No danger at all \_\_\_\_\_

8.2 If a nuclear war occurred and this area itself was not the target of a direct attack, how great a danger do you think there would be from fallout around here?

Certain danger \_\_\_\_\_  
Great danger \_\_\_\_\_  
Some danger \_\_\_\_\_  
Little danger \_\_\_\_\_  
No danger at all \_\_\_\_\_

8.31 What arrangements are there in your emergency planning for protecting key people?

8.32 How do you identify key people?

8.33 What about protecting essential equipment?

8.34 How do you identify essential equipment?

- 8.4 Suppose, for example, that \_\_\_\_\_ was asked to receive \_\_\_\_\_ (n=5% of total pop.) people evacuated from a large city in response to any major emergency would you be able to do it within the existing plan?

Positive \_\_\_\_\_  
 Mixed \_\_\_\_\_  
 Negative \_\_\_\_\_

- 8.41 Who would be the key people in such an effort?

	Name	Position
8.411	_____	_____
8.412	_____	_____
8.413	_____	_____
8.414	_____	_____
8.415	_____	_____
8.416	_____	_____
8.417	_____	_____
8.418	_____	_____

- 8.5 What would you expect of the state and federal authorities in such a case?

8.6 Did you have anything to do with civil defense before 1980? (narrate)

(if no) What do you know about it?

8.7 What became of the facilities and supplies provided by those earlier programs?

8.8 What lessons should we draw from the experiences of these earlier programs?

8.9 What have you heard about recent changes in federal policy toward emergency management planning?

8.10 How have you found out about these developments?

9.0 Have you made any preparations for the protection of your own family in a critical emergency? (probe for details)

9.1 What would you do personally in response to a nuclear alert?

PROBE: What if the alert came while you were at work?

PROBE: What if it came while you were at home?

COMPLETE face sheet data

1.6 H \_\_\_\_\_ F \_\_\_\_\_

1.61 Age \_\_\_\_\_ (years)

1.62 Ethnicity \_\_\_\_\_

1.63 Usual occupation \_\_\_\_\_

1.7 Affiliated: Republican \_\_\_\_\_ Democrat \_\_\_\_\_ Independent \_\_\_\_\_

1.8 Civic and church memberships: \_\_\_\_\_  
\_\_\_\_\_

1.9 Household composition: \_\_\_\_\_  
\_\_\_\_\_

10.0 DISCUSSION CONTEXT

Date \_\_\_\_\_

Observer \_\_\_\_\_

APPENDIX B  
OBSERVATION REPORT TRANSMITTAL FORM

240  
UNITED RESEARCH SERVICES  
Project #183

OBSERVATION REPORTS SUBMITTED FOR AUDIT

DATE: \_\_\_\_\_

TO: \_\_\_\_\_

FROM: \_\_\_\_\_

REPORT NUMBERS: \_\_\_\_\_

SITES: \_\_\_\_\_

1. Please audit the enclosed Observation Reports and them to \_\_\_\_\_ at \_\_\_\_\_
2. Your findings are to be made directly on the Reports in red ink, using the following conventional signs as appropriate:

<i>k</i>	information missing
<i>wavy</i>	unclear
<i>?</i>	implausible response
<i>Q</i>	suitable for quotation
<i>I [ ]</i>	Internal contradiction - see question(s) _____ in same report
<i>E [ ]</i>	external contradiction - see interview(s) _____ at same site
<i>X<sub>sp</sub></i>	spelling error
<i>X<sub>#</sub></i>	numerical error
<i>X<sub>fc</sub></i>	field coding error
<i>¢</i>	uncodable

APPENDIX C  
CODE SHEET

UNITED RESEARCH SERVICES  
Project #183

CODE SHEET

Variable Number	Variable Name	Field	Code	Variable Number	Variable Name	Field	Code
001	LOCATE	1-2		024	DENOMR	41-42	
002	RNAMEX	3-5		025	RHOUSE	43	
003	CRDNUM	6	1	026	NHOUSE	44	
004	FLDREP	7		027	RPLANS	45	
005	OFFPOS	8-9		028	KEYNM1	46-48	
006	SELECT	10		029	KEYPS1	49-50	
007	TENURE	11-12		030	KEYNM2	51-53	
008	YRSORG	13-14		031	KEYPS2	54-55	
009	YRSCOM	15-16		032	KEYNM3	56-58	
010	LFTIME	17		033	KEYPS3	59-60	
011	GENDER	18		034	KEYNM4	61-63	
012	AGEYRS	19-20		035	KEYPS4	64-65	
013	ETHNCY	21		036	KEYNMS	66-68	
014	POLAFF	22		037	KEYPS5	69-70	
XXX	XXXXXX	23-24	BLANK	038	KEYNM6	71-73	
015	GROUP1	25-26		039	KEYPS6	74-75	
016	GROUP2	27-28		XXXXXXXXXXEND CARD NUMBER XXXXXXXXXXXXX			
017	GROUP3	29-30		001	LOCATE	1-2	
018	GROUP4	31-32		002	RNAMEX	3-5	
019	GROUP5	33-34		003	CRDNUM	6	2
020	GROUP6	35-36		040	KEYNM7	7-9	
021	GROUP7	37-38		041	KEYPS7	10-11	
022	GRPNUM	39		042	KEYNM8	12-14	
023	CHURCH	40		043	KEYPS8	15-16	

UNITED RESEARCH SERVICES  
Project #183

CODE SHEET

Variable Number	Variable Name	Field	Code	Variable Number	Variable Name	Field	Code
044	KEYNUM	17		068	RIOTXX	41	
045	COMPLN	18		069	NUCATT	42	
046	COMCPY	19		070	PLNCRS	43	
047	COMFAM	20		071	OTHDIS	44	
048	COMLIT	21		072	DISPIK	45-46	
049	COMUSE	22		073	RINVLV	47	
050	GUTONE	23		074	WLHNDL	48	
051	ORGPLN	24		075	DISLIK	49-50	
052	ORCCPY	25		076	ESTPRB	51	
053	ORGFAM	26		077	COPWL	52	
054	ORGLIT	27		078	INFNM1	53-55	
055	ORGUSE	28		079	INFPS1	56-57	
056	GUTTWO	29		080	INFFR1	58	
057	EMNUMB	30		081	INFNM2	59-61	
058	FLOOD	31		083	INFPS2	62-63	
059	ERTHQK	32		084	INFFR2	64	
060	FIRE	33		085	INFNM3	65-67	
061	WNDSTM	34		086	INFPS3	68-69	
062	TXSPLL	35		087	INFFR3	70	
063	EXPLSN	36		XXXXXXXXXEND CARD XXXXXXXXXXXXXXXXXXXXXXX			
064	BLKOUT	37		001	LOCATE	1-2	
065	EPDMEC	38		002	RNAMEX	3-5	
066	NUCACC	39		003	CRDNUM	6	
067	INVASN	40					

UNITED RESEARCH SERVICES  
Project #183

CODE SHEET

Variable Number	Variable Name	Field	Code	Variable Number	Variable Name	Field	Code
088	INFNM4	7-9		112	CALFR3	55	
089	INFPS4	10-11		113	CALNM4	56-58	
090	INFR4	12		114	CALPS4	59-60	
091	INFNM5	13-15		115	CALFR4	61	
092	INFPS5	16-17		116	CALNM5	62-64	
093	INFR5	18		117	CALPS5	65-66	
094	INFNM6	19-21		118	CALFR5	67	
095	INFPS6	22-23		119	CALNM6	68-70	
096	INFR6	24		120	CALPS6	71-72	
097	INFNM7	25-27		121	CALFR6	73	
098	INFPS7	28-29		XXXXXXXXXEND CARD XXXXXXXXXXXXXXXXXXXXXXXX			
099	INFR7	30		001	LOCATE	1-2	
100	INFNM8	31-33		002	RNAMEX	3-5	
101	INFPS8	34-35		003	CRNUM	6	4
102	INFR8	36		122	CALNM7	7-9	
103	INFNUM	37		123	CALPS7	10-11	
104	CALNM1	38-40		124	CALFR7	12	
105	CALPS1	41-42		125	CALNM8	13-15	
106	CALFR1	43		126	CALPS8	16-17	
107	CALNM2	44-46		127	CALFR8	18	
108	CALPS2	47-48		128	CALNUM	19	
109	CALFR2	49		129	AGENM1	20-21	
110	CALNM3	50-52		130	AGERS1	22-24	
111	CALPS3	53-54		131	AGEEN1	25	

UNITED RESEARCH SERVICES  
Project #183

CODE SHEET

Variable Number	Variable Name	Field	Code	Variable Number	Variable Name	Field	Code
132	AGENM2	26-27		156	FEDEN4	74	
133	AGERS2	28-30		XXXXXX	End Card =	4XXXXXXXXXXXXXXXXXX	
134	AGEEN2	31		001	LOCATE	1-2	
135	AGENM3	32-33		002	RNAMEX	3-5	
136	AGERS3	34-36		003	CRDNUM	6	
137	AGEEN3	37		157	FEDNMS	7-8	
138	AGENM4	38-39		158	FEDRS5	9-11	
139	AGERS4	40-42		159	FEDEN5	12	
140	AGEEN4	43		160	FEDNUM	13	
141	AGENM5	44-45		161	COMECT	14	
142	AGERS5	46-48		162	NUCWAR	15	
143	AGEEN5	49		163	TARGET	16	
144	AGENUM	50		164	FLOUT	17	
145	FEDNM1	51-52		165	KEYPER	18	
146	FEDRS1	53-55		166	KEYIDS	19	
147	FEDEN1	56		167	KEYEQP	20	
148	FEDNM2	57-58		168	EQPMID	21	
149	FEDRS2	59-61		169	EVCPLN	22	
150	FEDEN2	62		170	EVCNM1	23-25	
151	FEDNM3	63-64		171	EVCPS1	26-27	
152	FEDRS3	65-67		172	EVCNM2	28-30	
153	FEDEN3	68		173	EVCPS2	31-32	
154	FEDNM4	69-70		174	EVCNM3	33-35	
155	FEDRS4	71-73		175	EVCPS3	36-37	

UNITED RESEARCH SERVICES  
Project #183

CODE SHEET

Variable Number	Variable Name	Field	Code	Variable Number	Variable Name	Field	Code
176	EVCNM4	38-40		196	CITSZE	11	
177	EVCPS4	41-42		197	REGION	12-13	
178	EVCNM5	43-45					
179	EVCPS5	46-47					
180	EVCNM6	48-50					
181	EVCPS6	51-52					
182	EVCNM7	53-55					
183	EVCPS7	56-57					
184	EVCNM8	57-60					
185	EVCPS8	61-62					
186	EVCNUM	63					
187	STAFED	64-66					
188	CD1980	67					
189	CHANGE	68					
190	SOURCE	69-71					
191	RPREFD	72					
192	CONTEX	73					
193	DISDAT	74-79					
XXXXXX	END CARD	5	XXXXXXXXXXXXXX				
001	LOCATE	1-2					
002	RNAMEX	3-5					
003	CRDNUM	6					
004	INDTYR	7-9					
005	INDSIC	10					

APPENDIX D

CODE BOOK

United Research Services  
Project #183

CODE BOOK

(January 1, 1984)

Variable Number	Name	Description	Card/Field
001	LOCATE	Location: The name of the city in which the discussion took place	All/1-2
		00. 01. 02. 03. 04. 05. 06. 07. 08. 09. 10. 11. 12. 13. 14. 15.	
002	RNAMEX	Respondent's Name  CODE FROM CARD FILE BLUE	ALL/3-5
003	CRDNUM	Card number: The number identifying each card in a given respondent's file  Code 1 through 6	All/6
004	FLDREP	URS Field Representative I.D.  1. Bahr 2. Chadwick 3. Meyer 4. Albrecht 5. Kelleher 9. Missing Data	1/7

005	OFFPOS	Q1.1 R's Official Position CODE FROM APPENDIX #1	1/8-9
006	SELECT	Q1.2 Selection: Method by which R attained current position  1. elected/public 2. appointed/public 3. elected/private 4. appointed/private 5. other 9. no response	1/10
007	TENURE	Q1.3 The number of years that R has held his or her current position  00. less than one year 01. one year 02. two years . . 99. no response/missing data	1/11-12
008	YRSORG	Q1.4 The number of years that R has been in his or her current organization  00. less than one year 01. one year 02. two years . . 99. no response/missing data	1/13-14
009	YRSCOMM	Q1.5 The number of years that R has lived in the community  00. less than one year 01. one year . . 88. R does not live in community 99. no response/missing data	1/15-16

010	LFTIME	Q1.51 Has R lived in community since birth baring absences for military service or education?	1/17
		1. yes	
		2. no	
		8. R does not live in community	
		9. no response/missing data	
TTT		Q1.52 What are the duties of R's position?	
		SEE TRANSFER SHEETS	
011	GENDER	Q1.6 Gender of R	1/18
		1. male	
		2. female	
		9. missing data	
012	AGEYRS	Q1.61 R's age in years	1/19-20
		Two(2) digit code for years	
		99. no response/missing data	
013	ETHNCY	Q1.62 Ethnicity of R	1/21
		1. white	
		2. black	
		3. spanish	
		4. other	
		9. no response/missing data	
014	POLAFF	Q1.7 Political affiliation of R	1/22
		1. Democrat	
		2. Republican	
		3. Independent	
		4. Other	
		5. no response/missing data	
XXX		Q1.8 Civic and social group memberships mentioned by R	1/23-24
015	GROUP1	First group mentioned	1/25-26
016	GROUP2	Second group mentioned	1/27-28
017	GROUP3	Third group mentioned	1/29-30
018	GROUP4	Fourth group mentioned	1/31-32
019	GROUP5	Fifth group mentioned	1/33-34
020	GROUP6	Sixth group mentioned	1/35-36
021	GROUP7	Seventh group mentioned	1/37-38
		00. no mention	
		98. uncodable	

022	GRPNUM	Q1.81 Number of civic or social groups mentioned by R	1/39
		0. none	
		1. one	
		2. two	
		3. three	
		4. four	
		5. five	
		6. six	
		7. seven	
		8. eight	
		9. nine	
023	CHURCH	Q1.82 General church membership specified by R	1/40
		1. Catholic	
		2. Protestant	
		3. Jewish	
		4. Other	
		5. no religious preference	
		9. no response/missing data	
024	DENOMR	Q1.83 Detailed denominational affiliation specified by R	1/41-42
		01. Methodist	
		02. Baptist	
		03. Roman Catholic	
		04. Protestant (unspecified)	
		05. Presbyterian/Christian/Episcopalian	
		06. Pentecostal/Evangelical	
		07. Lutheran/Church of Christ/Bretheran	
		08. Special Creed/Christian	
		09. Universalist/Unitarian	
		10. nonchristian	
		11. no denomination	
		12. no religious preference	
		99. no response/missing data	
025	RHOUSE	Q1.90 R's household composition	1/43
		1. lives alone	
		2. lives with spouse only	
		3. lives with spouse and children	
		4. other configuration	
		9. no response/missing data	

026	NHOUSE	Q1.91 Number of people living in R's house	1/44
		1. one person	
		2. two people	
		3. three people	
		.	
		.	
		8. more than seven people	
		9. no response/missing data	
027	RPLANS	Q2.00 Do you have to deal with Civil Defense or public emergency planning?	1/45
		1. no	
		2. informed	
		3. advisory	
		4. central	
		9. no response/missing data	
TTT		Q2.10 Details of R's planning activities	
		SEE TRANSFER SHEETS	
XXX		Q3.0 Who are the key people responsible for emergency management planning in this community?	
028	KEYNMI	Name of first person mentioned	1/46-48
		CODE FROM CARD FILE BLUE	
		000. no mention	
		777. name unknown	
029	KEYPS1	Position of first person mentioned	1/49-50
		CODE FROM APPENDIX #1	
		00. no position mentioned	
		99. missing data/uncodable	
030	KEYNM2		1/51-53
031	KEYPS2		1/54-55
032	KEYNM3		1/56-58
033	KEYPS3		1/59-60
034	KEYNM4		1/61-63
035	KEYPS4		1/64-65
036	KEYNM5		1/66-68
037	KEYPS5		1/69-70
038	KEYNM6		1/71-73
039	KEYPS6		1/74-74

040	KEYNM7		2/7-9
041	KEYPS7		2/10-11
042	KEYNM8		2/12-14
043	KEYPS8		2/15-16
044	KEYNUM	Q3.10 The number of persons mentioned as key people in community planning	2/17
		0. none	
		1. one	
		2. two	
		.	
		.	
		.	
		9. more than eight	
045	COMPLN	Q4.1C Is there a written plan for the community?	2/18
		0. no/don't know	
		1. yes	
		9. no response/missing data	
046	COMCPY	Q4.2C Do you have a copy?	2/19
		0. no/don't know	
		2. yes	
		9. no response/missing data	
047	COMFAM	Q4.3C How familiar are you with its contents?	2/20
		0. not familiar/slightly familiar	
		3. pretty familiar/very familiar	
		9. no response/missing data	
048	COMLIT	Q4.4C Would you follow the plan literally in an emergency?	2/21
		0. no	
		4. yes	
		9. no response/missing data	
049	COMUSE	Q4.5C Has any part of the plan ever been operated?	2/22
		0. no	
		5. yes	
		9. no response/missing data	

050	GUTCNE	Q4.0C Guttman Scale/community plan	2/23
		0. zero	
		1. one	
		2. two	
		3. three	
		4. four	
		5. five	
		9. unworkable/uncodable	
051	ORGPLN	Q4.10 Is there a written (organizational) plan?	2/24
		0. no	
		1. yes	
		8. no relevant organization	
		9. no response/missing data	
052	ORGPCY	Q4.20 Do you have a copy (or the organizational plan?)	2/25
		0. no	
		2. yes	
		8. no relevant organization	
		9. no response/missing data	
053	ORGFAM	Q4.30 How familiar are you with the contents of the organizational plan?	2/26
		0. not familiar/slightly familiar	
		3. pretty familiar/very familiar	
		8. no relevant organization	
		9. no response/missing data	
054	ORGLIT	Q.4.40 Would you follow the organizational plan literally in an emergency?	2/27
		0. no	
		4. yes	
		8. no relevant organization	
		9. no response/missing data	
055	ORGUSE	Q4.50 Has any part of the organizational plan ever been operated?	2/28
		0. no	
		5. yes	
		8. no relevant organization	
		9. no response/missing data	

056	GUTTWO	Q4.00 Guttman Scale: Organizational plan	2/29
		0. none	
		1. one	
		2. two	
		3. three	
		4. four	
		5. five	
		8. no relevant organization	
		9. unworkable/ucodable	
057	EMNUMB	Q5.1 Number of emergencies identified by R	2/30
		0. none in last 10 years	
		1. one in last 10 years	
		2. two in last 10 years	
		3. three in last 10 years	
		4. four in last 10 years	
		5. five in last 10 years	
		6. six in last 10 years	
		7. seven in last 10 years	
		8. eight in last 10 years	
		9. no emergencies mentioned	
XXX	TYPES OF EMERGENCIES MENTIONED BY R.		
058	FLOODX	Flood	2/31
		0. no	
		1. yes	
059	ERTHQK	Earthquake	2/32
		0. no	
		1. yes	
060	FIREXX	Fire	2/33
		0. no	
		1. yes	
061	WNDSTM	Windstorm	2/34
		0. no	
		1. yes	
062	TXSPLL	Toxic Spill	2/35
		0. no	
		1. yes	

063	EXPLSN	Explosion	2/36
		0. no 1. yes	
064	BLKOUT	Blackout	2/37
		0. no 1. yes	
065	EMDEMC	Epidemic	2/38
		0. no 1. yes	
066	NUCACC	Nuclear Accident	2/39
		0. no 1. yes	
067	INVASN	Invasion	2/40
		0. no 1. yes	
068	RIOTXX	Riot	2/41
		0. no 1. yes	
069	NUCATT	Nuclear Attack	2/42
		0. no 1. yes	
070	PLNCRS	Plane Crash	2/43
		0. no 1. yes	
071	OTHDIS	Other Disaster	2/44
		0. no 1. yes	



- 075 DISLIK Q5.4 What do you consider the most likely type of emergency to occur here? 2/49-50
01. Flood
  02. earthquake
  03. fire
  04. windstorm
  05. toxic spill
  06. explosion
  07. blackout
  08. epidemic
  09. nuclear accident
  10. invasion
  11. riot
  12. nuclear attack
  13. plane crash
  14. other disaster
  88. not applicable
  99. no response/missing data
- 076 ESTPRB Q5.5 How would you estimate the probability of such an occurrence in the next five years? 2/51
0. under 10%
  1. 10% to 40%
  2. 50%
  3. 60% to 90%
  4. over 90%
  9. no response/missing data
- 077 COPEWL Q5.6 How well could the present machinery cope with a big... (name of disaster)? 2/52
1. excellently
  2. above average
  3. average
  4. below average
  5. poorly
  9. no response/missing data
- TTT Q5.61 What would be done well?  
SEE TRANSFER SHEETS
- TTT Q5.62 What would be done badly?  
SEE TRANSFER SHEETS

TTT		Q5.70 How should the existing machinery be improved?	
		SEE TRANSFER SHEETS	
XXX		Q6.1 If there were a sudden emergency in the middle of the night, who would you have to inform?	
078	INFNM1	Name of first person informed	2/53-55
		000. no name mentioned 777. name unknown	
079	INFPS1	Position of first person informed	2/56-57
		00. no position mentioned 77. uncodable 99. missing data	
080	INFFR1	Friendship status with first person informed	2/58
		0. not a friend 1. a friend 9. missing data/uncodable	
081	INFNM2		2/59-61
083	INFPS2		2/62-63
084	INFFR2		2/64
085	INFNM3		2/65-67
086	INFPS3		2/68-69
087	INFFR3		2/70
088	INFNM4		3/7-9
089	INFPS4		3/10-11
090	INFFR4		3/12
091	INFNM5		3/13-15
092	INFPS5		3/16-17
093	INFFR5		3/18
094	INFNM6		3/19-21
095	INFPS6		3/22-23
096	INFFR6		3/24
097	INFNM7		3/25-27
098	INFPS7		3/28-29
099	INFFR7		3/30
100	INFNM8		3/31-33
101	INFPS8		3/34-35
102	INFFR8		3/36

103	INFNUM	Q6.11 The number of people informing R of disaster	3/37
		0. zero	
		1. one	
		.	
		.	
		9. more than eight	
XXX		Q6.2 Whom would you have to call?	
104	CALNM1	Name of the first person called by R	3/38-40
		000. No name mentioned	
		777. Name unknown	
		999. Missing data	
105	CALPS1	Position of first person called by R	3/41-42
		00. no position mentioned	
		77. uncodable	
		99. missing data	
106	CALFR1	Friendship status with first person called	3/43
		0. not a friend	
		1. a friend	
		9. missing data	
107	CALNM2		3/44-46
108	CALPS2		3/47-48
109	CALFR2		3/49
110	CALNM3		3/50-52
111	CALPS3		3/53-54
112	CALFR3		3/55
113	CALNM4		3/56-58
114	CALPS4		3/59-60
115	CALFR4		3/61
116	CALNM5		3/62-64
117	CALPS5		3/65-66
118	CALFR5		3/67
119	CALNM6		3/68-70
120	CALPS6		3/71-72
121	CALFR6		3/73

122	CALNM7		4/7-9
123	CALPS7		4/10-11
124	CALFR7		4/12
125	CALNM8		4/13-15
126	CALPS8		4/16-17
127	CALFR8		4/18

128	CALNUM	The number of people mentioned as called by R	4/19
-----	--------	---	------

- 0. zero
- 1. one
- .
- .
- .
- 9. more than eight

XXX		Q6.4 Which state agencies would become involved.	
-----	--	--	--

CODE FROM APPENDIX #2

129	AGENM1	Name of first agency	4/20-21
-----	--------	----------------------	---------

- 00. no agency mentioned

130	AGERS1	Responsibilities of first agency mentioned (MULTIPUNCH)	4/22
-----	--------	---	------

- 0. no agency mentioned
- 1. training
- 2. funds
- 3. information
- 4. advice
- 5. supplies
- 6. equipment
- 7. manpower
- 8. other response
- 9. no response/don't know

131	AGEEN1	Entrypoint of first state agency	4/23
-----	--------	----------------------------------	------

- 0. no agency mentioned
- 1. before disaster
- 2. at outset of disaster
- 3. during disaster
- 4. after disaster
- 5. when requested
- 6. when disaster is declared
- 7. don't know
- 9. no response/missing data

132	AGENM2		4/24-25
133	AGERS2		4/26
134	AGEEN2		4/27
135	AGENM3		4/28-29
136	AGERS3		4/30
137	AGEEN3		4/31
138	AGENM4		4/32-33
139	AGERS4		4/34
140	AGEEN4		4/35
141	AGENM5		4/36-37
142	AGERS5		4/38
143	AGEEN5		4/39
144	AGENUM	The number of state agencies mentioned	4/40
		0. none	
		1. one	
		.	
		..	
		.	
		8. more than five	
		9. no response/missing data	
XXX	Q6.50 Which federal agencies would become involved?		
	CODE FROM APPENDIX #3		
145	FEDNM1	Name of first federal agency mentioned	4/41-42
		00. no name mentioned	
		98. other	
		99. no response/missing data	
146	FEDRS1	Responsibilities of first agency mentioned	4/43
		0. no mention	
		1. training	
		2. funds	
		3. information	
		4. advice	
		5. supplies	
		6. equipment	
		7. manpower	
		8. coordination	
		9. other response	

147	FEDEN1	Entry point of first federal agency	4/44
		0. no mention	
		1. before disaster	
		2. at outset of disaster	
		3. during disaster	
		4. after disaster	
		5. when requested	
		6. when disaster is declared	
		7. don't know	
		9. no response/missing data	
148	FEDNM2		4/45-46
149	FEDRS2		4/47
150	FEDEN2		4/48
151	FEDNM3		4/49-50
152	FEDRS3		4/51
153	FEDEN3		4/52
154	FEDNM4		4/53-54
155	FEDRS4		4/55
156	FEDEN4		4/56
157	FEDNMS		4/57-58
158	FEDRS5		4/59
159	FEDEN5		4/60
160	FEDNUM	Number of federal agencies mentioned	4/61
		0. none	
		1. one	
		.	
		.	
		.	
		8. more than five	
		9. no response/missing data	
161	COMRCT	Q7.0 Compared to most other communities how would you expect (CITY NAME) to react in an emergency?	4/62
		1. excellently	
		2. above average	
		3. average	
		4. below average	
		5. poorly	
		9. no response/missing data	

- 162        NUCWAR        Q8.0 How likely do you think it is that we're in for another world war - one where nuclear weapons would be used?        4/63
- 0. very unlikely
  - 1. unlikely
  - 2. 50-50 chance
  - 3. likely
  - 4. very likely
  - 9. no response/missing data
- 163        TARGET        Q8.1 In case of nuclear war, how great a danger do you think there is that the area around here would be a target?        4/64
- 0. no danger at all
  - 1. little danger
  - 2. some danger
  - 3. great danger
  - 4. certain danger
  - 9. no response/missing data
- 164        FLLOUT        Q8.2 If a nuclear war occurred and this area itself was not the target of direct attack, how great a danger do you think there would be from fallout around here?        4/65
- 0. no danger at all
  - 1. little danger
  - 2. some danger
  - 3. great danger
  - 4. certain danger
  - 9. no response/missing data
- 165        KEYPER        Q8.31 What arrangements are there in your plan for the protection of key people?        4/66
- 1. full plan
  - 2. skeletal plan
  - 3. no plan
  - 4. no intention of planning
  - 9. no response/missing data
- 166        KEYIDS        Q8.32 How do you identify key people?        4/67
- 1. full list
  - 2. skeletal list
  - 3. no list
  - 4. no intention
  - 9. no response/missing data

167	KEYEQP	Q8.33 What about protecting essential equipment? 1. full plan 2. skeletal plan 3. no plan 4. no intention 8. not applicable 9. no response/missing data	4/68
168	EQPMID	Q8.34 How do you identify essential equipment? 1. full list 2. skeletal list 3. no list 4. no intention 8. no applicable 9. no response/missing data	4/69
169	EVCPLN	Q8.4 Suppose for example, that (city name) was asked to receive (Insert number) of people from a larger city. Would you be able to do it within the existing plan? 1. positive 2. mixed 3. negative 8. don't know 9. no response/missing data	4/70
XXX		Q8.41 Who would be the key people in such an effort?	
170	EVCNM1	Name of first key person CODE FROM CARD FILE BLUE 000. no mention 777. name unknown	5/7-9
171	EVCPS1	Position of first key person 00. no mention 77. uncodable	5/10-11
172	EVCNM2		5/12-14
173	EVCPS2		5/15-16
174	EVCNM3		5/17-19
175	EVCPS3		5/20-21

176	EVCNM4		5/22-24
177	EVCPS4		5/25-26
178	EVCNM5		5/27-29
179	EVCPS5		5/30-31
180	EVCNM6		5/32-34
181	EVCPS6		5/35-36
182	EVCNM7		5/37-39
183	EVCPS7		5/40-41
184	EVCNM8		5/42-44
185	EVCPS8		5/45-46
186	EVCNUM	Q8.41 The number of key people mentioned in relation to the evacuation effort.	5/47
		0. none	
		1. one	
		.	
		.	
		.	
		9. more than eight	
187	STAFED	Q8.5 What would you expect of state and federal authorities in such a case? (MULTIPUNCH)	5/48
		0. nothing	
		1. advice	
		2. information	
		3. supplies	
		4. equipment	
		5. personnel	
		6. funds	
		7. coordination	
		8. don't know/other response	
		9. no response/missing data	
188	CD1980	Q8.6 Did you have anything to do with civil defense before 1980?	5/49
		0. no	
		1. informed	
		2. advisory	
		3. central	
		9. no response/missing data	

- TTT Q8.61 What do you know about it?  
(If answer to Q8.6 was "0")
- SEE TRANSFER SHEETS
- TTT Q8.7 What became of the facilities and  
supplies provided by those earlier programs?
- SEE TRANSFER SHEETS
- TTT Q8.8 What lessons should be drawn from  
the experience of these earlier programs?
- SEE TRANSFER SHEETS
- 189 CHANGE Q8.9 What have you heard about recent 5/50  
changes in federal policy toward  
emergency management planning?
0. nothing
  1. vague knowledge/rumor
  2. specific knowledge
  3. no response/missing data
- TTT Q8.91 Details of R's knowledge of new  
policies
- SEE TRANSFER SHEETS
- 190 SOURCE Q8.10 How have you found out about these 5/51  
developments?
0. no knowledge
  1. community interaction
  2. local official sources
  3. regional directives
  4. state directives
  5. federal directives
  6. media
  7. conferences
  8. other source
  9. no response/missing data
- 191 RPREPD Q9.0 Have you made any preparations for 5/52  
the protection of your own family in a  
critical emergency?
0. no
  1. food and water stored at home
  2. equipment stored at home
  3. evacuation plan
  4. supplies and equipment in a secure area  
other than home
  5. no intention of planning
  6. other
  7. no response

TTT		Q9.1 What would you do personally in response to a nuclear alert?	
		SEE TRANSFER SHEETS	
192	CONTEX	Q10.0 Discussion context	5/53
		1. positive 2. mixed 3. negative 9. missing data	
193	DISDAT	Q11.0 Discussion date	5/54-55
		00. month 00. day 00. year 99. missing data	
194	INDTYP	(ADDED) Type of industry in which R is is employed	5/56-58
		CODE FROM NORC CODEBOOK	
		888. not applicable/uncodable 999. missing data	
195	INDSIZ	(ADDED) Size of R's organization	5/59
		1. 0-250 2. 251-500 3. 501-1,000 4. 1,001-1,500 5. 1,501-2,000 6. 2,001 or more 8. not applicable 9. missing data	
196	CITSZE	(ADDED) City size	5/60
197	REGION	(ADDED) Region in which city is is located	5/61

01	Emergency Management Coordinator
02	Mayor
03	City Manager
04	City Council
05	Public Health Director
06	Director of Social Welfare/Human Resources
07	Director of Public Safety
08	Director of Public Utilities
09	Other City Administrator
10	Police Chief
11	Other Police Administrator
12	Fire Chief
13	Other Fire Administrator
14	Superintendent of Schools
15	Other School Administrator
16	Hospital Superintendent
17	Other Hospital Administrator
18	Newspaper Executive
19	Television/Radio Executive
20	Red Cross Executive
21	Salvation Army Officer
22	Minister/Priest
23	Other Church Official
24	Chamber of Commerce Executive
25	Executive - Industry
26	Executive - Business
27	College Official
28	National Guard Officer
29	YMCA Official
30	Airport Manager
31	Telephone Co. Official
32	County Executive
33	County Sheriff
34	County Commissioner
35	State Police
36	State Office nec
37	Federal Office nec
38	Regional Office nec
39	Charity, Volunteer Group Official

## STATE OFFICES

- 01 State Office of Emergency Services
  - 02 State Police/Department of Public Safety
  - 03 National Guard
  - 04 Health Department/State Epidemiologist/Health Programs
  - 05 State Environmental Protection/Quality Agency
  - 06 Department/Commission of Transportation/Highways
  - 07 Department/Board/Commission of Education
  - 08 Department of Social Services/Human Services/Welfare
  - 09 Department of Water/Land/Natural Resources
  - 10 State Communications
  - 11 Department of Public Services
  - 12 Fire Marshall
  - 13 Governor/Governor's Office
  - 14 State Attorney General's Office
  - 15 State Coroner
  - 16 State Grant Program
  - 17 Department of Community Affairs
  - 18 Nuclear Radiation Division
  - 19 District Congressman's/Representative's Office
  - 20 State Laboratory
- 
- 
- 
- 
-

## FEDERAL AGENCIES

- 01 Federal Emergency Management Agency (FEMA)
- 02 Farmer's Home Administration (FHA)
- 03 Small Business Administration (SBA)
- 04 Nuclear Regulatory Agency (NRA)
- 05 Department of Agriculture
- 06 Food and Drug Administration (FDA)
- 07 Federal Aeronautics Administration (FAA)
- 08 Environmental Protection Agency (EPA)
- 09 Federal Disaster Relief Agency
- 10 Department of Transportation
- 11 Military (general)
- 12 Military Reserves
- 13 Corps of Engineers
- 14 Treasury Dept.-Alcohol, Tax, and Firearms (ATF)
- 15 Federal Bureau of Investigation (FBI)
- 16 Federal Marshall's Office
- 17 National Health Service-Center for Disease Control (CDC)
- 18 Housing and Urban Development (HUD)
- 19 National Weather Service
- 20 Federal Courts
- 21 Bureau of Reclamation
- 22 Civil Air Patrol
- 23 Veteran's Administration

- 00. No mention
- 01. Chamber of Commerce
- 02. Junior Chamber of Commerce
- 03. Lions
- 04. Rotary
- 05. Optimists
- 06. Shriners
- 07. Other Civic Clubs
- 08. Men's Club
- 09. Union Club
- 10. Veteran's Associations
- 11. Hobby Associations
- 12. Philanthropic Associations
- 13. Alumni Associations
- 14. Ethnic Associations
- 15. Geneological Associations
- 16. Lobbying Associations
- 17. Lodges (K of C, Masons, Etc.)
- 18. Kiwanis
- 19. Professional Associations
- 20. Civil Rights Groups
- 21. YMCA
- 22. Scouting/youth groups
- 23. Women's organizations
- 88. Other Associations
- 99. no response/missing data

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ANALYSIS OF THE READINESS OF LOCAL COMMUNITIES FOR  
INTEGRATED EMERGENCY MANAGEMENT PLANNING(U) UNITED  
RESEARCH SERVICES INC CHARLOTTESVILLE VA

4/4

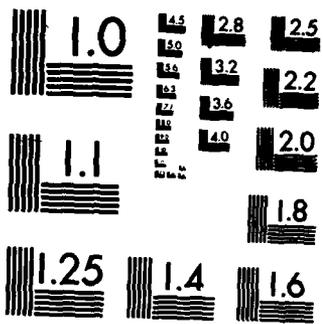
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APPENDIX E  
BIBLIOGRAPHY

Abe, Kitao

- 1978 "Levels of Trust and Reactions to Various Sources of Information in Catastrophic Situations," pp. 147-158 in E. L. Quarantelli, ed., Disasters: Theory and Research, Beverly Hills, Calif.: Sage Publications.

Adams, David

- 1970 "The Red Cross: Organizational Sources of Operational Problems," American Behavioral Scientist 13 (Jan/Feb):392-403.

Baisden, Barbara and E. L. Quarantelli

- 1981 "The Delivery of Mental Health Services in Community Disasters: An Outline of Research Findings," Journal of Community Psychology 9 (July):195-203.

Baker, George, W.

- 1964 "Comments on the Present Status and the Future Direction of Disaster Research," pp. 315-330 in George H. Grosser, Henry Wechsler, and Milton Greenblatt, eds., The Threat of Impending Disaster: Contributions to the Psychology of Stress, Cambridge, Mass.: M.I.T. Press.

Baker, George W., and D. W. Chapman (eds.)

- 1962 Man and Society in Disaster, New York: Basic Books.

Baker, John W. and Hiram J. Friedsam

- 1960 "Disaster-Scale Medical Care Problems: A Study of Medical Management of Casualties Resulting from a Tornado in Dallas, Texas," Journal of the American Medical Association 173 (No. 11, July 16): 1239-1244.

Barton, Allen H.

- 1963 Social Organization Under Stress: A Sociological Review of Disaster Studies, Disaster Study Number 17, Disaster Research Group, Washington, D.C.: National Academy of Sciences-National Research Council.

Barton, Allen H.

- 1969 Communities in Disaster: A Sociological Analysis of Collective Stress Situations, Garden City, N.Y.: Doubleday & Company.

Blanchard, B. Wayne

- 1980 "American Civil Defense 1945-1975: The Evolution of Programs and Policies," unpublished doctoral dissertation, Department of Government and Foreign Affairs, University of Virginia.

- Blanshan, Sue A.  
 1978 "A Time Model: Hospital Organizational Response to Disaster," pp. 173-198 in E. L. Quarantelli, ed., Disasters: Theory and Research, Beverly Hills, Calif.: Sage Publications.
- Bohlen, Joe M., George M. Beal, Gerald E. Klomglan and John L. Tait  
 1965 "Community Power Actors and Civil Defense: A Delineation of Community Power Actors and an Analysis of Their Civil Defense Attitudes, Knowledge, Behavior, and Sources of Information," Rural Sociology Report No. 40, Ames, Iowa: Iowa State University.
- Bolin, Robert and Patricia Trainer  
 1978 "Modes of Family Recovery Following Disaster: A Cross-National Study," pp. 233-247 in E. L. Quarantelli, ed., Disasters: Theory and Research, Beverly Hills, Calif.: Sage Publications.
- Brouillette, John R.  
 1970 "The Department of Public Works: Adaptation to Disaster Demands," American Behavioral Scientist 13 (Jan/Feb): 369-379.
- Brouillette, John and E. L. Quarantelli  
 1970 "Types of Patterned Variation in Bureaucratic Adaptions to Organizational Stress, Sociological Inquiry 41 (Winter): 39-46.
- Burton, Ian, R. W. Kates and Gilbert F. White  
 1968 "The Human Ecology of Extreme Geophysical Events," Natural Hazard Research Working Paper No. 1, Toronto: Department of Geography, University of Toronto.
- Burton, Ian  
 1972 "Cultural and Personality Variables in ther Perception of Natural Hazards," pp. 184-195 in Joachim F. Wohlwill and Daniel H. Carson, eds., Environment and the Social Sciences: Perspectives and Applications, Washington, D.C.: American Psychological Association.
- Burton, Ian, Robert W. Kates and Gilbert F. White  
 1976 The Environment as Hazard, New York: Oxford University Press.
- Cantril, Albert H. and Charles W. Roll, Jr.  
 1971 Hopes and Fears of the American People, New York: Universe Books.

- Chapman, Dwight W., Ed.  
 1954 "Human Behavior in Disaster: A New Field of Social Research," Journal of Social Issues, 10 (No. 3): 1-73.
- Cuny, Frederick C.  
 1983 Disasters and Development, New York: Oxford University Press.
- Davis, Nancy Yaw  
 1970 "The Role of the Russian Orthodox Church in Five Pacific Eskimo Villages as Revealed by the Earthquake," pp. 125-148 in National Academy of Sciences, The Great Alaska Earthquake of 1964: Human Ecology, Washington, D.C. National Academy of Sciences.
- Disaster Research Group  
 1961 Field Studies of Disaster Behavior: An Inventory Disaster Study Number 14. Washington, D.C. National Academy of Sciences-National Research Council.
- Drabek, Thomas E.  
 1969 "Social Processes in Disaster: Family Evacuation," Social Problems 16: (Winter): 336-349.
- Drabek, Thomas E.  
 1983 "Shall We Leave? A Study on Family Reactions When Disaster Strikes," Emergency Management Review I (Fall): 25-29.
- Drabek, Thomas E. and Keith S. Boggs  
 1968 "Families in Disaster: Reactions and Relatives," Journal of Marriage and the Family (August): 443-451.
- Drabek, Thomas E., Harriet Tamminga, Thomas S. Kilijanek and Christopher R. Adams  
 1981 Managing Multiorganizational Emergency Responses: Emergent Search and Rescue Networks in Natural Disaster and Remote Area Settings, Program on Technology, Environment and Man Monograph #33, Boulder: Institute of Behavioral Science, University of Colorado.
- Dworkin, Judith  
 1974 "Global Trends in Natural Disasters 1947-1973," Working Paper No. 26, Natural Hazard Research Program of the Institute of Behavioral Science, University of Colorado, Boulder.

- Dynes, Russell R.  
1970 "Organizational Involvement and Changes in Community Structure in Disaster," American Behavioral Scientist 13 (Jan/Feb): 430-439.
- Dynes, Russell R.  
1970 Organized Behavior in Disaster, Lexington, Mass.: Heath Lexington Books, D. C. Heath and Company.
- Dynes, Russell R. and E. L. Quarantelli  
1975 The Role of Local Civil Defense in Disaster Planning, Disaster Research Center Report Series, No. 16, Disaster Research Center, Ohio State University, Columbus.
- Erikson, Kai T.  
1976 Everything in its Path: Destruction of Community in the Buffalo Creek Flood, New York: Simon and Schuster.
- Federal Emergency Management Agency  
1983 "Highlights of the Civil Defense Program Reassessment," October, Washington, D.C.: Federal Emergency Management Agency.
- Fitzsimons, Neal  
1968 "Brief History of American Civil Defense," pp. 28-46, in Eugene P. Wigner, ed., Who Speaks for Civil Defense? New York: Charles Scribner and Sons.
- Form, William H. and Sigmund Nosow  
1958 Community in Disaster, New York: Harper & Brothers.
- Forrest, Thomas R.  
1978 "Group Emergence in Disasters," pp. 105-125 in E. L. Quarantelli, ed., Disasters: Theory and Research, Beverly Hills, Calif.: Sage Publications.
- Foster, Harold D.  
1976 "Assessing Disaster Magnitude: A Social Science Approach," The Professional Geographer 28 (No. 3): 241-247.
- Foster, Harold D.  
1980 Disaster Planning: The Preservation of Life and Property, New York: Springer-Verlag.

- Friesema, H. Paul, James Caporaso, Gerald Goldstein, Robert Lineberry, and Richard McCleary  
1979 Aftermath: Communities After Natural Disasters, Beverly Hills: Sage Publications.
- Fritz, Charles E. and Eli S. Marks  
1954 "The NORC studies of Human Behavior in Disaster," Journal of Social Issues 10 (no. 3): 26-41.
- Fritz, Charles E. and J. H. Mathewson  
1957 Convergence Behavior in Disasters: A Problem in Social Control, Disaster Study No. 9, Committee on Disaster Studies, Washington, D.C.: National Academy of Sciences - National Research Council.
- Fritz, Charles E., Mark J. Nearman and Devorah K. Rubin  
1959 An Inventory of Field Studies on Human Behavior in Disasters, Washington, D.C.: National Academy of Sciences - National Research Council.
- Garrett, Ralph L.  
1976 "Civil Defense and the Public: An Overview of Public Attitude Studies," Research Report No. 17, Washington, D.C.: Defense Civil Preparedness Agency, reprinted by Federal Emergency Management Agency.
- Gist, Richard and Stephanie B. Stolz  
1982 "Mental Health Promotion and the Media," American Psychologist 37 (October): 1136-1139.
- Green, Stephen  
1977 International Disaster Relief: Toward a Responsive System, New York: McGraw-Hill Book Company.
- Grosser, George H., Henry Wechsler, and Milton Greenblatt, eds.  
1964 The Threat of Impending Disaster: Contributions to the Psychology of Stress, Cambridge, Mass.: M. I. T. Press.
- Haas, J. Eugene, Robert W. Kates and Martyn Bowden, eds.  
1977 Reconstruction Following Disaster, Cambridge, Mass.: M. I. T. Press.
- Hartsough, Don M.  
1982 "Planning for Disaster: A New Community Outreach Program for Mental Health Centers," Journal of Community Psychiatry 10 (July): 255-264.

- Hoetmer, Gerald J. and Cindy Herrera  
no date "Assessing Local Government Emergency Management Needs and Priorities," Washington, D.C.: International City Management Association.
- Holton, James L.  
1983 "In Defense of Civil Defense," Society 20 (Sept/Oct): 11-16.
- Hostetter, C. Nelson  
1983 "Mennonite Disaster Service," Emergency Management Review 1 (Fall): 30-32.
- Huntington, Samuel P.  
1961 The Common Defense: Strategic Programs in National Politics, New York: Columbia University Press.
- International City Management Association  
1981 "Local Government Disaster Protection," Final Technical Report, Washington, D.C.: ICMA.
- Janis, Irving L.  
1954 "Problems of Theory in the Analysis of Stress Behavior," Journal of Social Issues 10 (No. 3): 12-25.
- Katz, Arthur M.  
1982 Life After Nuclear War: The Economic and Social Impacts of Nuclear Attacks on the United States, Cambridge, Mass. Ballinger Publishing Co.
- Kennedy, Will C.  
1970 "Police Departments: Organization and Tasks in Disaster," American Behavioral Scientist 13 (Jan/Feb) 354-661.
- Kerr, Thomas J.  
1983 Civil Defense in the U.S.: Bandaid for a Holocaust? Boulder, Colo.: Westview Press.
- Killian, Lewis M.  
1954 "Some Accomplishments and Some Needs in Disaster Study," Journal of Social Issues, 10 (No. 3): 66-72.
- Kinston, Warren and Rachel Rosser  
1974 "Disaster: Effects on Mental and Physical State," Journal of Psychosomatic Research 18: 437-456.

- Klingman, Avigdor and Zion Ben Eli  
 1981 "A School Community in Disaster: Primary and Secondary Prevention in Situational Crisis," Professional Psychology 12 (August): 523-533.
- Klonglan, Gerald E., George M. Beal and Joe M. Bohlen  
 1966 "Adoption of Public Fallout Shelters: A 1964 National Study, A summary of the Final Report," Rural Sociology Report No. 49S, Ames, Iowa: Department of Sociology and Anthropology, Iowa State University.
- Klonglan, Gerald E., George M. Beal, Joe M. Hohlen and E. Walter Coward, Jr.  
 1966 "Adoption of Public Fallout Shelters: a 1966 National Study," Rural Sociology Report No. 54, Ames, Iowa: Department of Sociology and Anthropology, Iowa State University.
- Klonglan, Gerald E., George M. Beal, Joe M. Bohlen, and Charles L. Mulford  
 1966 Prediction of Local Civil Defense Directors' Role Performance: Minnesota, Georgia and Massachusetts, Rural Sociology Report No. 52S, Ames, Iowa: Department of Sociology and Anthropology, Iowa State University.
- Klonglan, Gerald E., George M. Beal, Joe M. Bohlen and John R. Nye  
 1967 "Local Governing Bodies: Their Relation to Civil Defense," A Summary of the Final Report, Rural Sociology Report No. 46S, Ames, Iowa: Iowa State University.
- Lang, Kurt and Gladys Engel Lang  
 1964 "Collective Responses to the Threat of Disaster," pp. 58-75 in George H. Grosser, Henry Wechsler, and Milton Greenblatt, eds., The Threat of Impending Disaster: Contributions to the Psychology of Stress, Cambridge, Mass.: M.I.T. Press.
- Levine, Gene N. and John Modell  
 1964 "The Threat of War and American Public Opinion," New York: Bureau of Applied Social Research, Columbia University.
- Lindy, Jacob D., Mary C. Grace and Bonnie L. Green  
 1981 "Survivors: Outreach to a Reluctant Population," American Journal of Orthopsychiatry 51 (July): 468-478.

- Locke, Katherine D., Edwin A. Locke, and Lois R. Dean  
 1966 "A Comparison of the Attitudes of Civil Defense Directors and Community Leaders," Journal of Applied Behavioral Science 2 (No. 4): 413-430.
- McDermott, Edward A.  
 1962 "Public Support of Civil Emergency Planning," pp.3-6 in George W. Baker and Leonard S. Cottrell, Jr., eds., Behavior Science and Civil Defense, Disaster Study No. 16, Disaster Research Group, National Academy of Sciences - National Research Council.
- Moline, Norman T.  
 1974 "Perception Research and Local Planning: Floods on the Rock River, Illinois," pp. 52-59 in Gilbert F. White, ed., Natural Hazards: Local, National, Global, New York: Oxford University Press.
- Mulford, Charles L., Gerlad E. Klonglan, Dan L. Tweed, Joseph P. Kopachevsky, and Sue Faisal  
 1972 Local Civil Defense Directors in Action: Perceived Problems and Patterns of Interaction, Sociology Report No. 101D, Ames, Iowa: Department of Sociology and Anthropology, University of Iowa.
- Murton, Brian J. and Shinzo Shimabukuro  
 1974 "Human Adjustment to Volcanic Hazard in Puna District, Hawaii," pp. 151-159 in Gilbert F. White, ed., Natural Hazards: Local, National, Global, New York: Oxford University Press.
- Nehnevajsa, Jiri  
 1979 "National Perspectives on Civil Defense: 1978-Credibility and Acceptance," Pittsburgh: University Center for Social and Urban Research, University of Pittsburgh.
- Nehnevajsa, Jiri  
 1983 Some Ecological Contexts of Attitudes Concerning Issues of Civil Defense, Pittsburgh: University Center for Social and Urban Research, University of Pittsburgh.
- Nichols, Thomas C., Jr.  
 1974 "Global Summary of Human Response to Natural Hazards: Earthquakes," pp. 274-284 in Gilbert F. White, ed., Natural Hazards: Local, National, Global, New York, Oxford University Press.

Nunnally, Jim C.

- 1962 "Public Apathy Toward Civil Defense: A Case of Anxiety," pp. 73-79 in George W. Baker and Leonard S. Cottrell, Jr., eds., Behavioral Science and Civil Defense, Disaster Study No. 16, Disaster Research Group, National Academy of Sciences - National Research Council.

Parr, Arnold R.

- 1970 "Organizational Response to Community Crises and Group Emergence," American Behavioral Scientist 13 (Jan/Feb): 423-429.

Perry, Helen Swick and Stewart E. Perry

- 1959 The Schoolhouse Disasters: Family and Community as Determinants of the Child's Response to Disaster, Washington D.C.: Disaster Study No. 11, Disaster Research Group, National Academy of Sciences - National Research Council.

Perry, Joseph B. Jr., and Meredith David Pugh

- 1978 Collective Behavior: Response to Social Stress, St. Paul, Minnesota: West Publishing Co.

Perry, Ronald W.

- 1982 The Social Psychology of Civil Defense, Lexington, Mass.: Lexington Books, D.C. Heath and Company.

Perry, Stewart E., Earle Silber, and Donald A. Bloch

- 1956 The Child and His Family in Disaster: A Study of the 1953 Vicksburg Tornado, Committee on Disaster Studies, Report No. 5, Washington, D.C.: National Academy of Sciences - National Research Council.

Pittman, Stewart L.

- 1968 "Government and Civil Defense," pp. 47-74 in Eugene P. Wigner, ed., Who Speaks for Civil Defense?, New York: Charles Scribner's Sons.

Powell, John W.

- 1954 "Gaps and Goals in Disaster Research," Journal of Social Issues 10 (no. 3): 61-65.

Prince, Samuel Henry

- 1920 Catastrophe and Social Change: Based Upon a Sociological Study of the Halifax Disaster, New York: Columbia University Press.

Quarantelli, E. L.

- 1970 "The Community General Hospital: Its Immediate Problems in Disasters," American Behavioral Scientist 13 (Jan/Feb): 380-391.

- Quarantelli, E. L., (ed.)  
1978 Disasters: Theory and Research, Beverly Hills:  
Sage Publications.
- Quarantelli, E. L. and Russell R. Dynes  
1972 "When Disaster Strikes (It Isn't Much Like What  
You've Heard & Read About)," Psychology Today  
(February):67-70.
- Raker, John W., Anthony F. C. Wallace, Jeannette F. Rayner  
and Anthony W. Eckert  
1956 Emergency Medical Care in Disasters: A Summary of  
Recorded Experience, Disaster Study No., 6, Committee  
on Disaster Studies, Washington, D.C.: National  
Academy of Sciences--National Research Council.
- Rayner, Jeannette F.  
1957 "Studies of Disasters and Other Extreme Situations--  
An Annotated Selected Bibliography," Human  
Organization 16 (Summer):34-40.
- Ridington, Robin  
1982 "When Poison Gas Come Down Like a Fog: A Native  
Community's Response to Cultural Disaster," Human  
Organization 41 (Spring):36-42.
- Rogers, George Oliver and Jiri Nehnevajsa  
1984 Behavior and Attitudes Under Crisis Conditions:  
Selected Issues and Findings, Pittsburgh: University  
Center for Social and Urban Research, University of  
Pittsburgh.
- Rosow, Irving  
1954 Public Authorities in Two Tornadoes, Washington,  
D.C.: National Academy of Sciences--National  
Research Council.
- Ross, G. Alexander  
1980 "The Emergence of Organization Sets in Three  
Ecumenical Disaster Recovery Organizations: An  
Empirical and Theoretical Exploration, Human  
Relations 33 (No. 1):23-39.
- Ross, James L.  
1970 "The Salvation Army: Emergency Operations."  
American Behavioral Scientist 13 (Jan/Feb):  
404-414.
- Rossi, Peter H., James D. Wright, and Eleanor Weber-Burdin  
1982 Natural Hazards and Public Choice: The State and  
Local Politics of Hazard Mitigation, New York:  
Academic Press.

- Sorokin, Pitirim A.  
1942 Man and Society in Calamity, New York: Dutton.
- Stallings, Robert A.  
1970 "Hospital Adaptations to Disaster: Flow Models of Intensive Technologies," Human Organization 29 (Winter):294-302.
- Starr, C.  
1969 "Social Benefit Versus Technological Risk," Science 165:1332-1338.
- Stoddard, Ellwyn R.  
1969 "Some Latent Consequences of Bureaucratic Efficiency in Disaster Relief," Human Organization 28 (Fall): 177-189.
- Taylor, James B., Louis A. Zurcher, and William H. Key  
1970 Tornado: A Community Responds to Disaster, Seattle: Univ. of Washington Press.
- Tierney, Kathleen J. and Verla A. Taylor  
1977 "EMS Delivery in Mass Emergencies: Preliminary Research Findings," Mass Emergencies 2:151-157.
- Waxman, Jerry L.  
1973 "Local Broadcast Gatekeeping During Natural Disasters," Journalism Quarterly 50:751-758.
- Webster, Murray, Jr.  
1973 "Psychological Reductionism, Methodological Individualism, and Large-Scale Problems," American Sociological Review 38 (April):258-273.
- Weller, Jack M. and E. L. Quarantelli  
1973 "Neglected Characteristics of Collective Behavior," American Journal of Sociology 79 (November): 665-685.
- Wenger, Dennis E.  
1978 "Community Response to Disaster: Functional and Structural Alterations," pp. 18-47 in E. L. Quarantelli, ed., Disasters: Theory and Research, Beverly Hills: Sage Publications.
- White, Gilbert F. and J. Eugene Haas  
1975 Assessment of Research on Natural Hazards, Cambridge, MA: MIT Press.
- Whyte, Anne V., and Ian Burton, eds.  
1980 Environmental Risk Assessment, New York: John Wiley and Sons.

- Wigner, Eugene P., ed.  
1968 Who Speaks for Civil Defense?, New York: Charles Scribner's Sons.
- Williams, Harry B.  
1954 "Fewer Disasters, Better Studied," Journal of Social Issues 10 (No. 3):5-11.
- Wolfenstein, Martha  
1957 Disaster: A Psychological Essay, Glencoe, Ill.: Free Press & Falcon's Wing Press.
- Wright, James D. Peter H. Rossi, Sonia R. Wright, and Eleanor Weber-Burdin  
1979 After the Clean-Up: Long Range Effects of Natural Disasters. Beverly Hills, Calif.: Sage.
- Yankelovich, Skelly and White, Inc.  
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**Theodore Caplow, Howard M. Bahr, Bruce A. Chadwick**  
**United Research Services Incorporated**  
**Charlottesville, Virginia**

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