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GROUP EMERGENCE UNDER STRESS: A STUDY OF COLLECTIVE BEHAVIOR

DURING THE EMERGENCY PERIOD OF COMMUNITY CRISSES

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

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* * * * * * * * *

The Ohio State University
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CHAPTER I

STATEMENT OF THE PROBLEM
AND MAJOR CONCEPTS

Introduction

The formulation of the research problem is the major purpose of this chapter. We begin with a statement of purpose and proceed to a discussion of the major concepts. We conclude with an outline of each chapter.

The Purpose

Broadly stated the goal of our research is the study of human behavior in modern American society under stressful or extreme circumstances. We wish to acquire knowledge about how collectivities function in different disaster situations, and in so doing to at least partially validate a formulation of the behavior of collectivities under stress. We approach this study from a sociological perspective with groups, organizations, and social systems being the foci of research. This study has two broad goals: (1) to advance sociological knowledge in disaster research and theory and (2) to draw conclusions useful for understanding and predicting behavior in times of emergency and for mitigating the harm wrought by disasters.
More specifically, this study focuses upon the development of emergent groups during the emergency period of community crises. Major attention is devoted to the stress conditions conducive to group emergence. We analyze in this study organized behavior in disaster rather than the social psychology of individual response to crises or the phenomena of mass behavior. In other words, our research centers on the behavior of collectivities that comprise numbers of individuals rather than the behavior of individual human beings.

We have chosen to focus upon group emergency in this study primarily for theoretical reasons. It is our aim to expand and extend collective behavior theory by analyzing the conditions conducive to the development of such behavior. Collective behavior does not develop in isolation or a social vacuum. It is embedded in a social and cultural environment as is all other human behavior. However, the conditions facilitating the development of collective behavior have generally been ignored in both theory and research.\(^1\) In fact, sociologists have given very little emphasis to the origins of collective behavior. Our analysis of group emergence in this study seeks to remedy this situation by dealing with the conditions conducive to the development of collective behavior through the examination of empirical evidence from situations in which such behavior occurs, i.e., community disasters.

Our analysis of empirical data focuses upon the nature of the emergency context out of which groups emerge. We seek to identify the social processes and structural conditions conducive to group emergence.
In other words, we hope to be able to isolate for study the variables which increase the probability of emergent groups developing in stress situations. In fact, one of the major goals of this study is the formulation of a typology of conditions under which group emergence occurs in a social system. This emphasis upon the social milieu is, in part, related to the claim by Form and Loomis "that if behavior during and after disasters is to be adequately understood, more research is needed concerning the social and cultural attributes of the social systems involved."2

Specifically, we are interested in such questions as: (1) In which community crises do emergent groups arise and in which ones do they not? (2) What are the differences in social processes and cultural and social structures between social systems in which there is group emergency and in which there is no emergence? (3) What are the structural similarities of stress situations which are characterized by group emergence?

The research of this study is intended to be both basic and applied. We look to sociological principles to explain behavior under critical conditions and at the same time we shall utilize observed features of disaster behavior to throw light on sociological theory. Suggestions will be made for conceptualizing and conducting future studies of group emergency in community disasters. The practical goals are to understand and predict human behavior under stress with the ultimate practical purpose being to achieve minimum disruption in the event of a disaster.
Major Concepts

In this section we deal with the four major concepts of this study: (1) community, (2) disaster, (3) emergent group, and (4) emergency period. An attempt is made to show the relevance of each concept to the research being undertaken, and thus further elaborating the scope of the study.

Community as a Social System

We view the community as a type of social system within which needs arise and resources must be found to meet them. The community as a social system has a number of interrelated components including organizational structure, beliefs and values, social stratification, patterns of interpersonal relationships, power structure, population base, and geographic base which can be separated for analytical purposes. In the present study we deal primarily with the organizational structure in relation to disaster situations.

Many previous studies of human behavior under stress have been designed to assess the effects of disasters on individual personality systems rather than on strategic social systems such as the community. Form and Loomis suggest that much disaster analysis has been phrased in individualistic terms because of "the commonly held premise that disasters completely destroy social systems, and they somehow strip the person of his social references and throw him back on individual resources. Such reasoning automatically turns the research problem into one of studying the individual's morale, his adjustment, and
personal reorganizations." This premise is inconsistent with observations of human behavior in community emergencies, and consequently we shall proceed to use the community as a major concept in our analysis.

The community social system is chosen as our focus because community rather than societal disasters have been the most common type during the past two decades in the United States. As well, in the United States responsibility for disaster activity rests primarily with the local community. Local authority is normative in disaster situations, but this does not, however, exclude the participation of regional, state, and federal organizations and governmental agencies. In fact, in most major disasters extra community organizations and agencies become involved in the disaster response at the local community level.

Disaster

The concept disaster encompasses three major components. There are disaster agents such as floods, tornadoes, hurricanes, earthquakes, explosions, plane crashes, and others. There is also disaster impact which refers to the physical impact of the agent and the accompanying physical disruption including property damage, loss of life, etc. In addition, disaster when defined sociologically refers to disruption of a social system, such as a community, or any other form of social organizations. Disaster occurs according to Fritz when "the social structure is disrupted and the fulfillment of all or some of the essential functions of the society is prevented."
Similarly, Dynes has defined a disaster as an event located in time and space in which a community undergoes severe danger so that the social structure is disrupted and the fulfillment of all or some of its essential functions is prevented. From this definition we select out and emphasize the element "disruption of the social structure." Since our focus is the community, we are concerned with disruption of the structure and functioning of this social system. More specifically, we look at the effects of the disaster event upon the operations of the community emergency organizations and their interrelationships. Indices of community stress include (1) community emergency organizations experiencing demands exceeding their response capabilities, (2) other organizations assuming unfamiliar activities and functions during the emergency period, and (3) the development of the need for new patterns of coordination and control among the involved organizations.

There are several terms that are often used interchangeably with the term disaster. For example, a disaster is often referred to as a stress, crisis, or emergency situation. However, in this study when referring to disaster as the disruption of a community social system, we shall consistently use the term community crisis.

In addition, we distinguish between consensus and dissensus types of community crises. In consensus type community emergencies, the type considered in this study, there is general agreement among community members about community goals. With this consensus on community goals, all the resources are put at the disposal of the total community
until emergency needs are met. In contrast, in a conflict type community crisis, such as a civil disturbance, there is disagreement concerning such matters as property rights and access to existing resources.

In a consensus type community crisis situation an event occurs for which the social organization offers insufficient directives or means for action and there may be the necessity of temporarily replacing an inoperative social organization. In a conflict type community crisis a segment of the population opposes the operative social order and seeks to set it aside or replace it. Thus, for purposes of this study, the disaster agent can be of any kind as long as it precipitates a consensus type community crisis.

**Emergent Group**

The concept of emergent group is viewed as one of four different types of organized behavior in community crises. This fourfold conceptualization of organizations and groups by Quarantelli and Dynes is used to account for the range of organized activities which actually can be observed during the emergency period. Organized behavior is classified on the basis of two variables: (1) the nature of the disaster tasks which are undertaken by community organizations and groups and (2) the post impact structure which the organizations and groups develop. The tasks carried out by organizations and groups during an emergency may be old, routine, assigned, everyday ones or new, unusual, assumed ones. Organizations and groups can be divided into those having regular or nonregular, traditional or disaster generated tasks. Organizations and groups can also be
distinguished as having an old or established structure or a new or emergent structure. An organization with an established structure is one in which the members have definite predisaster social relationships with one another, especially in their work activities. The organization or group exists as an entity prior to the disaster event. On the other hand, a new group structure may develop during the emergency. These groups may develop from a small predisaster core or they may involve the crystallization of some totally new entity. Their most crucial feature is that they have no actual pre-emergency existence, at least in the form that they take during the emergency.

By cross-classification of these two variables, a fourfold typology of organized behavior in disasters is derived. There are established organizations with old structures performing regular tasks. An example would be the official members of a city police force directing traffic around the impact zone after a tornado has struck a community. There are expanding organizations with new structures and regular tasks. Red Cross volunteers operating a refugee shelter after a hurricane, supervised by a permanent Red Cross official would constitute an expanding organization. There are also extending organizations which have old structures and undertake nonregular tasks. An example is a construction company which uses its men and equipment to dig through the debris and assist during rescue operations. Finally, there are emergent groups that have new structures and engage in emergency tasks. An example of a clearly defined emergent group would be the search and rescue teams that typically develop in the immediate post impact emergency period.
Commenting about emergent groups, Dynes and Quarantelli state:

... they have no predisaster existence and when the emergency is over they generally tend to dissolve. They also are often relatively small groups, usually bear no name, and typically do not develop any clear-cut boundaries. Yet, they do emerge in large-scale disasters, are treated by outsiders and members as if they were entities, and play a very important role in the overall collective response.9

In this study we distinguish emergent groups from the vast roster of organizations which become involved in community crisis situations, and by analyzing this form of organized behavior we seek to increase the range of human behavior studied in unstructured and ambiguous disaster settings.

Emergency Period

A large-scale community disaster can be seen as having several phases in which rather different things go on. The emergency period is the phase of disaster operations in which the following functions receive priority and are performed: (1) search and rescue and assessment of impact effects including evacuation, movement of the injured to the hospitals, and reporting of physical damage especially to essential services; (2) medical care such as first aid in the field, hospital treatment of casualties, identification of the dead, and mass immunization; (3) relief activities involving the feeding, clothing, and sheltering of refugees; (4) restoration of essential services such as telephone, electricity, water, gas, sewage, and transportation; (5) protection from continuing threat involving precautionary activity against secondary threats, such as electrocution by fallen wires, fire
from escaping gas, and badly damaged buildings; (6) maintenance of public order including traffic control and security of the impact area; and (7) maintenance of community morale by reuniting and re-assuring primary group members and locating missing persons. 10

We are concerned with emergent groups which develop and function when emergency tasks are being performed. The performance of emergency tasks begins immediately after impact and usually goes on for a number of hours or it may cover several days. Consequently, the emergency period is divided from the succeeding rehabilitation period by indistinct boundaries.

Chapter Outlines

Chapter II deals with the theoretical orientation of the study. The emergent norm approach to collective behavior is expanded and extended, and it is used as a basis for developing a contextual model for group emergence. The purpose of this chapter is to set forth a theoretical context in which to analyze variables associated with emergence.

In Chapter III we turn to a review of the relevant research and literature. The studies reviewed are empirical investigations which deal in part with the variables associated with the development of new groups during the emergency period of disasters. The relevant literature focuses upon the origins of collective behavior.

Our purpose in Chapter IV is to formulate a research design. The study is divided into two phases: (1) phase one is devoted to
the generation of hypotheses relevant to group emergence under conditions of stress, and (2) phase two focuses upon the systematic testing of these hypotheses. In this chapter we deal extensively with the techniques of data collection and analysis.

In Chapters V and VI we generate a number of hypotheses about the conditions facilitating group emergence in community crises. Through an inductive process, each hypothesis is derived from the analysis of empirical evidence from seven crisis situations.

The purpose of Chapter VII is to test the hypotheses that were developed in Chapters V and VI. This is done by systematically bringing empirical evidence to bear on specific propositions about the generation of emergent groups under conditions of stress.

In the final chapter, Chapter VIII, we summarize the findings and relate them to our theoretical perspective, consider the basic and applied implications of the findings, and make some suggestions for further research.

Summary

This is a study of group emergence in critical situations. The principal purpose is to examine the dependence of group emergence upon elements of the community structure during an emergency. The incidence of group emergence is studied within the context of a community social system's dominant social processes and cultural and social patterns with disaster being treated as a type of system stress. It is anticipated the results will have practical as well as theoretical importance.
FOOTNOTES: Chapter I


6. Russell R. Dynes, Organized Behavior in Disaster: Analysis and Conceptualization, Disaster Research Center Monograph Series (Columbus: Disaster Research Center, The Ohio State University) (in press).


CHAPTER II

THEORETICAL PERSPECTIVE

Introduction

This chapter is concerned with the theoretical basis of the study and our goal is to develop a theoretical perspective for analytical purposes. Our underlying assumption is that human behavior during a community emergency has to be explained as a product of the simultaneous operation of what Turner calls an institutional causal system and a collective behavior causal system. In focusing upon group emergence, we use the collective behavior causal system and at the same time borrow concepts and formulations from the institutional or organizational causal system. We utilize primarily collective behavior theory in our study of the behavior associated with group emergence since this type of human behavior is subsumed in Turner and Killian's definition of collective behavior. For them collective behavior involves the study of collectivities which "are not guided in a straight forward fashion by the culture of the society." Collective behavior is not governed by formalized norms and it lacks tradition-imposed stability. Group emergence is the nontraditional behavior of collectivities and is thus studied within a collective behavior framework.
One of the goals of this study is to seek to relate collective behavior to the core of sociological analysis and thereby reverse those developments which have led to a detached and separate field of study. We are concerned with incorporating theoretical developments from other aspects of sociology. For example, we make use of the definition of the situation notion, and we draw upon formulations about values and subcultures. By means of these theoretical incorporations, our theoretical perspective is developed.

As to our fundamental theoretical orientation, we utilize the emergent norm approach of collective behavior which has its historical roots in the writings of Park and Burgess. Since this early formulation, the approach has been undergoing a limited and checkered development with contributions being made to it by Blumer, Turner and Killian in their text, and others. Turner in making the most explicit statement of the emergent norm approach has made a swing back in some respects to the position formulated by Park and Burgess.

The emergent norm approach is chosen over other collective behavior approaches because it permits us to stress continuity rather than discontinuity between emergent and conventional behavior. The emergent norm approach to collective behavior places stress on "locating the conditions and sequences under which a new or special rule comes to be recognized and accepted as the basis for a coordinated response." This new rule or norm is specific to the situation to some degree and hence is an emergent norm. The important point is that collective behavior is normative and is governed by norms as is conventional or institutional behavior.
A Contextual Model

Within the confines of the emergent norm approach, we seek to formulate a contextual model for the study of group emergence. Single or multiple factor models are not considered here since no factor or event has any meaning outside of the context in which it occurs. The factorial models according to Turner only "supply the starting point for a more refined analysis of causation." In this study group emergence is viewed as the product of a contextual development. In formulating this model, we seek to identify variables which warrant consideration when analyzing the conditions conducive to group emergence.

Conditions Facilitating Group Emergence

It has frequently been claimed that emergence in the disaster context is spontaneous. For example, according to Form and Loomis, "almost immediately after the impact of the destructive agent, a disaster system arises spontaneously to meet the human problems created and to restore a social equilibrium." Rather than being spontaneous, this group emergence we propose is directly related to the social processes and structural properties of the community social system in which it arises. In other words, continuity exists between the old and the emergent social systems. Thus, in our analysis of emergence we shall pay particular attention to the cultural and organizational contexts of the stricken communities. Turner in his discussion of the emergence of collective behavior claims that
"such behavior cannot be explored apart from the relationships with the existing order."10

In analyzing the conditions that generate emergent groups, we shall take into consideration three major types of variables: (1) social process variables such as definition of the situation and communication possibility; (2) cultural structure variables including norms and values; and (3) social structure variables such as authority patterns, social control, and organizational interrelationships. We shall now deal with these three types of variables in relation to facilitating group emergence.

Conducive Social Processes. Group emergence will be analyzed in relation to the development and existence of a definition of the emergency situation. According to Lindesmith and Strauss, situations "have to be recognized, named, and catalogued by the individual so that appropriate action may be taken."11 It follows that there must be a collective definition of the situation as the basis for collective action. Turner and Killian state:

An essential feature of the type of situation which is conducive to the development of collective behavior is a lack of cognitive clarity. There may be a lack of clarity as to what has happened. At other times, part of the cognitive picture is clear, but other parts are not, as when a crime has been committed but the identity of the criminal is unknown. Or, what has happened may be fairly evident but its significance for the individuals to whom it is important may not be apparent -- this new element in their life-space cannot be immediately assimilated.12

We shall seek to ascertain whether emergence is related to how adequately the emergency is assessed and validated since in most
community crises there initially tends to be many variations of the reports of the situation and usually no individual or organization has the preassigned responsibility of assessing the situation to find out just what the situation is and what it means. In addition, the existing organizations often cease to give adequate direction.

Formulating a conception of the situation on a community-wide basis is directly related to several aspects of communication. Inadequacy of communication is related to comprehending a critical, unfamiliar situation and to the development of collective behavior since functional and normative integration depend upon the free flow of communication within a society. Inadequacy of communication channels or inaccuracy of content account for much collective behavior according to Turner and Killian. "Particularly in large, complex societies, individuals and subgroups are dependent upon other members whom they may never see and with whom they may never interact directly. Yet they interact through a chain of communication which is essential to the smooth operation of the social system."14

Along the same lines, Dynes claims that "a large part of the disorganization which follows a disaster stems from the fact that normal methods of communication are often disrupted while the necessity for communication is increased. Individuals have to be contacted immediately for mobilization. Materials have to be requested. Information has to be sought in order to make decisions. . . . In addition, individuals experiencing a disaster often want information about what is happening and what has happened in their own community."15 Thus, we
shall be concerned in this study with the social processes involving definition of the situation and communication possibility as they are related to emergence.

**Conducive Cultural Structure.** We now turn our attention to the impact of value systems upon group emergence. The norms and values which govern the community social system prior to the onset of disaster must be considered when analyzing group emergence. There is apt to be emergence of new forms of collective behavior, according to Blumer, when group life cannot be carried on satisfactorily in accordance with rules or cultural definitions.\(^\text{16}\)

Our concern shall be whether group emergence is associated with a priority of values which is unique to the emergency period of the community crisis. During the emergency period, Barton claims that an "emergency social system" arises.\(^\text{17}\) That is, certain values are underscored and a general consensus develops that these values have the highest priority. "It appears," according to Loomis, "that in most disaster systems, short of those which embrace whole societies such as war in which both life and property are sacrificed, the value of human life is generally elevated and the primacy of private property is lowered."\(^\text{18}\)

We are interested in finding out if group emergence occurs so that certain high priority values can be realized during the emergency period. This concern will lead us to a consideration of the concept of disaster subculture that focuses upon the norms and values which exist in certain communities in relation to disaster behavior.\(^\text{19}\) A
disaster subculture serves as a blueprint for individual and group behavior before, during, and after the impact of a disaster event. It includes norms, values, knowledge, and technology. A community with a disaster subculture develops standby mechanisms to meet the demands it has previously experienced in repetitive disasters. Consequently, we shall see whether group emergence is related to the existence or non-existence of a disaster subculture in the community.

Conducive Social Structure. The development of new forms of human behavior and social organization must be studied in the context of the community social structure. In other words, the understanding of group emergence requires systematic reference to the underlying social structure, as the structural context of group emergence is of crucial importance. In fact, there is amorphous, unstructured behavior surrounding emergence, and different community crises vary in social structural conduciveness for group emergence. Thus, there will be differential distribution of group emergence in community stress situations, and we now turn to a consideration of the social structure features which might facilitate emergence.

Turner and Killian view collective behavior as arising from changes in social organization, namely the breakdown of a system of social control. This breakdown centers around the failure of persons to play properly the roles in which social control is concentrated. The sudden and obvious breakdown of a formal system of social control may come about as a result of the dereliction of the role occupants of a police force in a community. This breakdown will contribute to
the emergence of a new social structure with new norms, but "the breakdown of a system of social control need not be so sudden or dramatic . . . in order to lead to the emergence of collective behavior," according to Turner and Killian. Even the disruption of an informal, semi-official system of social control, such as the inmate organization of a prison, may lead to collective behavior. Since group emergence is an elementary form of collective behavior, it follows that emergence is related to the manner in which social control operates during a community crisis.

The emergence or nonemergence of collective behavior is frequently related to disruption of the social structure. When considering the disruption of the existing organization, Turner states: "Here is the typical disaster situation in which police, civilian defense officials, militia, fire departments and other such groups should normally be directing action, but in which the organization of these groups has been impaired by disaster." As well as organizational impairment, new tasks may occur for which there is no prior assignment of organizational responsibility, thus leaving elemental functions unperformed. Thompson and Hawkes speak of a fragmenting community during the emergency period as a collection of independent parts. This means that there is fragmentation of the community's allocation and integration processes and a disruption of regular interorganization-
with an accompanying failure of community organizations to function effectively, insufficient social control, and uncoordinated interorganizational relationships. Our analysis will center around whether the existing social organization after impact is adequate or inadequate to cope with the critical community situation.

Indeterminacy of Conditions. Any one of the conducive conditions may exist in a community stress situation and not lead to group emergence. The social processes and cultural and social structure conditions are interdependent and interacting features of a community social system. Turner and Killian point out that "collective behavior arises out of a complex of societal roots and not from a single condition." In different instances one condition may be more important than others, and in most instances several conditions in conjunction will facilitate group emergence. We can, however, specify generally applicable although not necessary or sufficient conditions for group emergence.

Figure 1 summarizes the major variables which will be devoted attention in our analysis of group emergence. This figure diagramatically presents the contextual model which has just been formulated in the preceding pages.
FIGURE 1

CONTEXTUAL MODEL OF CONDITIONS ASSOCIATED WITH GROUP EMERGENCE

- Definition of the Situation
- Communication Possibility
- Conducive Social Processes
- Existence of Disaster Subculture
- Emergency Priority of Values
- Conducive Cultural Structure
- Community Social System Under Stress
- Organizational Capability
- Social Control
- Inter-organizational Relationships
- Conducive Social Structure
- Group Emergence
Summary

Theoretically, this study is based upon the emergent norm approach to collective behavior. We attempt to expand and extend the emergent norm schema by incorporating into it propositions from other areas of sociology. The contextual model developed emphasizes disruption of the social processes and cultural and social structure properties of community social systems in the facilitating of group emergence.
FOOTNOTES: Chapter II


3. Robert E. Park and Ernest W. Burgess, Introduction to the Science of Sociology (Chicago: The University of Chicago Press, 1921). As well as the emergent norm approach, Turner identifies two other approaches to the study of collective behavior. There is the contagion approach which explains collective behavior on the basis of some process whereby moods, attitudes, and behavior are communicated rapidly and accepted uncritically. In the other approach, the convergence approach, collective behavior is explained on the basis of the simultaneous presence of people who share the same predispositions and preoccupations. See Turner, op. cit. There is also Smelser's value-added approach which represents a marked shift from other theoretical perspectives. Using the value-added notion from economics and a Parsonian social action model, Smelser formulates a modification of the traditional life cycle or natural history approach. See Neil J. Smelser, Theory of Collective Behavior (New York: The Free Press of Glencoe, 1963).


6. Ibid., p. 394.

7. Class notes from lectures and seminars in collective behavior given by E. L. Quarantelli at The Ohio State University are used extensively to develop the emergent norm approach as the theoretical basis of this study.


13. Since we emphasize the inadequacy and inaccuracy of communication rather than patterns and channels of communication, we have chosen to consider communication in relation to social processes rather than structural conduciveness.


19. For further discussion of this concept see Harry E. Moore, *and the winds blew* (Austin: The University of Texas, 1964), pp. 195-213; Dynes, *op. cit.*, (in press).


CHAPTER III

RELEVANT RESEARCH AND LITERATURE

Introduction

In this chapter we shall examine relevant, empirical research by social scientists in the field of disaster and some relevant literature about the emergence of collective behavior. The prior disaster research generally has been done on three levels of study: (1) mass, (2) individual, and (3) organizational. Studies dealing with the mass frequently focus on warning, evacuation and protection of large numbers of people. The individual's interpretation of the warning process, his reactions to potential threat, and his subsequent behavior under stress are the areas of emphasis in studies at the individual level. It is at the third level, the organizational, that the research is most relevant to the present study, and this level has been least studied. The majority of the disaster activities are carried out by community organizations, but little attention until recently has been given in the disaster literature to the functions of such organizations.

The previous studies of emergence in the disaster context are limited in number and generally do not deal extensively with the topic being analyzed in the current study. However, a few studies deal at least tangentially with the topic of conditions associated with group
emergence. The findings of these empirical studies are reviewed in the first section of this chapter, and in the following section we broaden our scope to encompass some of the relevant literature as well as research about emergence in a non-disaster context.

**Emergence in a Disaster Context**

Four studies are examined in this section. The first two focus on community flood situations and the next two studies deal with tornado disasters.

**Emergence in Flood Crises**

**Eagle Pass, Texas Flood.** -- Some findings are reported about informal evacuation and rescue groups that developed during the 1954 Rio Grande River flood in Eagle Pass, Texas, although "no attempt was made to study closely these informal rescue groups. . . ."¹ These groups tended to form spontaneously and to disperse after helping a particular family. The more permanent rescue groups in three-fourths of the cases were composed of friends, neighbors, acquaintances, and chance acquaintances. The others were made up of members of particular families and kinship groups. Thus, most of these groups were composed almost entirely of persons with predisaster informal relationships.

**Great Falls, Montana Flood.** -- The examination by Yutzy of inter-organizational relationships during the emergency period of the 1964 Great Falls, Montana flood encompasses emergent group behavior.² The emergent group was composed of top level city and county officials who met as a group four times to deal with the flood situation.
Although Yutzy's report does not explicitly deal with conditions conducive to the development of this emergent group, we are able to tentatively identify certain conditions considered related to emergence. One of these concerns disaster planning. "Despite experience with a major flood a decade earlier, when the weather bureau indicated that another flood was imminent June 8, 1964, there were no official plans anywhere in the city for dealing with such emergencies."³ Yutzy adds: "With no emergency plan designating interagency or departmental responsibilities, communication and authority, Great Falls officials were less than adequately prepared for a disaster requiring widespread coordination and cooperative effort."⁴

Another condition relates to the capability and functioning of a key organization. "The role of Civil Defense was not clearly defined," according to Yutzy. "While some city officials felt CD should assume responsibility for the entire effort, it was clear that the local director, a part-time appointee with a staff of volunteers, had only limited capabilities to provide overall coordination and control. . . . In addition, although a capable man in his own right, the director himself was unclear concerning the responsibilities of his office in natural disasters."⁵

There was an executive authority vacuum as the various city departments prepared to meet the emergency since the mayor, in whose office the executive authority resided, was absent until near the end of the emergency period. Neither the acting mayor or council assumed command of the situation. Yutzy states: "The activities of the
department heads during the emergency period clearly demonstrated a searching for and a shifting allocation of executive authority."

Task duplication occurred on several occasions in the Great Falls flood crisis, thus increasing the need for overall coordination. Both the city engineer and army corps of engineers working with civil defense and the county engineer began plotting probable areas and the possible extent of the inundation. There were instances when several organizations responded to the same request for flood assistance. As well, the civil defense office was issuing passes at the same time as passes were being issued by the city engineer's office.

**Emergence in Tornado Crises**

**Waco, Texas Tornado.** -- Group emergence is reported in Moore's study of the 1953 Waco tornado. The emergence of a group called the Central Control Committee is related to the absence of effective overall control and coordination according to Moore. "The disaster destroyed the social organization of the city for a time. Lacking plan or direction, persons and groups moved in and tackled whatever problems they saw. . . . Rescue groups worked at cross-purposes." Moore adds:

Because of the lack of a single top headquarters or directing authority, chaotic conditions resulted during the first hours following the tornado. The National Guard commander, surveying the scene later, said, "There were thousands of persons milling around. It looked like the storming of the French Bastille." . . . As an official later reported: "Little coordination between the many headquarters existed at first. Red Cross and other representatives, seeking someone in command, found nowhere to report." Or, as the Chief of Police put it more graphically: "For the first twenty-four hours
we went around in circles in one direction, for the next twenty-four, we went around in circles in the other direction."9

There is evidence revealing that official authority was not exercised during the early disaster efforts. Moore states: "Partly because of the lack of communication facilities and partly, it would seem, because of inexperience, some responsible officials did not go into action promptly."10 This included the local civil defense director who was newly appointed and lacked organizational resources. The organization of civil defense had reached only the "paper" stage and disaster plans were practically nonexistant. Concerning another authority position encumbent, Moore reports:

The Mayor later explained that he had not known that as chief city official he was required to take charge. Realizing that there were, in his words, "better qualified" men to take over, he had side-stepped this responsibility. However, when the military insisted that they could act only on request and that the request must be initiated by the city, the Mayor reluctantly assumed authority.11

Flint-Beecher, Michigan Tornado. -- The studies of the 1953 Flint-Beecher tornado report findings about emergent group behavior.12 Form and others found that the rescue activities that needed to be done after the tornado seemed to have been performed almost "miraculously," and they thus conclude that there are integrative forces at work during the first hours after impact.

The explanation of these integrative forces is that people in interaction rely for guidance upon some previously established behavior patterns. They introduce the idea of group emergence by stating that "it is also apparent that most of the relationships found in the disaster
system emerged from previously existing patterns of interaction."\(^{13}\) Their analytical tool became the emergent group rather than spontaneous group since "the concept emergent group is more fruitful in that it implies that the relationships between members of any group are tied to a previously existing social system."\(^{14}\) Spontaneous group was considered inappropriate as a concept since it suggested a fortuitous convergence of random individuals.

Form and Nosow report three case studies of "groups that were more or less enduring, more or less effective, and more or less 'spontaneous'."\(^{15}\) One group, a family rescue group, consisted of six functioning adult members. Another group consisted of three adolescent boys who all lived on the periphery of the impact area. The third group arose as a first aid station was established at an auto parts plant located at the edge of the impact area.

Turning to the conditions which facilitated the development of these emergent groups, it is reported that the prior planning for disaster by the Beecher community was limited. "It is clear," according to Form and Nosow, "that the plans that Beecher had prior to the disaster were vague and ineffective to meet the emergency."\(^{16}\) There was a lack of overall community planning and a lack of an integrated disaster plan for organizational involvement. Form and Nosow claim that the involved organizations "could have performed more effectively had adequate planning been achieved."\(^{17}\)

In this disaster study Form and Nosow tangentially analyze inter-organizational relationships. An examination of the functioning of the
state police, two volunteer fire departments, The Salvation Army, Red Cross, and civil defense during the emergency period of the Flint-Beecher tornado reveals that interorganization relationships were critical. On the basis of their findings, Form and Nosow stress the importance of the need for integration of organized behavior during disaster response. They state:

> While in everyday affairs organizations implicitly are dependent on one another to meet routine problems, they are rarely called out in force to function effectively together as one unit. Yet this is precisely what is required in a disaster -- the full mobilization and cooperation of interdependent organizations, which normally operate autonomously. Hence organizational integration is the most crucial dimension in disaster performance.18

**Other Studies**

There are a number of other studies that deal with emergent groups in a disaster context although they do not focus upon the aspects of emergence being analyzed in this research. For example, there is the participation observation case study by Zurcher of a volunteer work crew during tornado disaster recovery in the 1966 Topeka crisis, and the research by Forrest of organizational emergence in the 1967 civil disturbance in Detroit.19 Our research is concerned with emergence that occurs in the emergency period of consensus-type community crises. The Zurcher study deals with a new group that developed and functioned during the rehabilitation rather than the emergency period of the crisis. In the case of the study by Forrest, a dissensus rather than a consensus-type crisis was the setting in
which the emergent organization arose. Consequently, neither of these studies have a direct relevance to the current research.

**Emergence in a Non-disaster Context**

The foregoing empirical studies have focused upon the emergence of a particular type of collective behavior, i.e., new groups in a disaster context. There is also a body of literature on emergence of other types of collective behavior to which we shall now turn our attention since the goal of our research is to throw light upon the origins of collective behavior in general. Our specific purpose in reviewing some of the literature on the origins of collective behavior is to identify those variables which have been repeatedly associated with the emergence of new social forms.

Sociologists have dealt with the emergence of a number of types of collective behavior including crowds, sects, and social movements. The emergence of crowds occurs in a fairly compressed period of time as does group emergence in a disaster context. Consequently, we shall illustrate the nature of the literature and research in this area by reviewing examples of it in the following section.  

**Crowd Emergence**

First we deal with relevant literature on the origins of crowds including the writings of Turner, Smelser, Turner and Killian, Lang and Lang, and Blumer. These works attempt to generalize about crowd emergence rather than report the findings of specific studies. We then
consider three empirical studies that analyze the conditions associated with the emergence of crowds.

General Works. -- Turner specifies three situations conducive to collective behavior and because of its prototypical character, the crowd is used as the focus of his discussion. In the first and simplest situation an event occurs for which the social organization offers insufficient directives or means for action. Secondly, there is the situation in which the absence of directive is accompanied by the necessity to replace a temporarily inoperative social organization. In the third and most complex situation the operative social order must be set aside and it must be actively opposed as a condition for carrying out the indicated action.

Although Smelser does not deal specifically with crowd behavior as a separate and distinct form of collective behavior, several of his types of collective behavior encompass crowd behavior, primarily the craze and hostile outburst. Using Parsons' social action model, Smelser sets forth the conditions conducive to the development of collective behavior. These include: (1) structural conduciveness, (2) some kind of strain, (3) growth of a generalized belief, (4) precipitating factors, (5) mobilization for action, and (6) social control.

In the case of a hostile outburst, an example of structural conduciveness would be the gathering of people into an intimate setting such as an audience in a public square. A source of strain in the the genesis of a hostile outburst may be real or threatened deprivation. The generalized belief may consist of a specific fear or hatred of a
minority group. Defeat in war that leads to an attempt to assign responsibility to some group in the home population is often a precipitating factor. Mobilization for action involves among other things leadership that might consist of an individual perpetrating a triggering act. An example of social control encouraging a hostile outburst would be a governor who procrastinates in deciding to call in the National Guard to put down a developing disturbance.

Turner and Killian trace the development of a crowd. For them the initial stages of the development of crowd behavior include: (1) a situation that is ambiguous or unstructured, (2) a situation in which the participants do not share pre-existing, traditional expectations as to how they should behave, (3) a situation in which the outcome is uncertain, and (4) a situation demanding immediate action, a sense of urgency, and a feeling that something must be done now.

In analyzing the formation of crowd behavior Lang and Lang focus upon immediate factors such as social processes and interactions within a collectivity rather than emphasizing the larger social context. For a collectivity to be transformed into a crowd, the members must enter into a condition of rapport which is developed through the following five steps: (1) A certain number of people must be together in intense interaction. (2) There must be heightening of ordinary feelings as a result of a series of events or possibility of only one extraordinary event. (3) For the assembly of people to form a crowd, the heightened feelings must culminate in a common mood -- a mood that is shared. (4) For this common mood to be translated into overt action,
those in rapport must first begin to redefine the situation. (5) The temporary definition of the situation culminates in the formation of a specific crowd when a large part -- not necessarily all -- of those assembled in close proximity begin to respond in a similar fashion.

Lang and Lang claim that "redefinition of the situation is perhaps the most important prerequisite for the formation of a crowd." A significant proportion of the participants must redefine the situation as a chance for self-indulgence in which ordinary experience can be evaded. When this occurs, the crowd becomes a psychological unity whose specific outlook is situationally determined and action and sentiment fall under the influence of the crowd milieu.

Blumer who defines collective behavior as the study of "the ways by which the social order comes into existence, in the sense of the emergence and solidification of new forms of collective behavior," deals with the formation of crowds. He identifies the following steps in crowd formation: (1) An exciting event occurs which catches the attention and arouses the interest of people. (2) The individual loses some of his ordinary self-control and starts to become dominated by the exciting object. (3) This experience establishes a condition of tension that presses the individual on to action. (4) The individuals begin to move around and to talk to one another and in this milling the incipient excitement becomes greater. (5) The milling disseminates a common mood, feeling, or emotional impulse. (6) The individuals become very sensitive and responsive to one another. (7) A common object of attention emerges on which the impulses,
feelings, and imagery of the individuals become focused. (8) There is interstimulation and fostering of impulses up to the point where the individuals are ready to act on them.

Empirical Studies. -- Quarantelli and Hundley empirically test some of the basic conditions that Smelser posits as necessary for the development of crowd behavior.27 Analyzing an instance of large-scale crowd behavior of students from a state university located in a major metropolitan area, they found that while their "data were consistent with four of the conditions advanced, that is, with respect to structural conduciveness, structural strain, precipitating factors, and the reactions of social control agencies, the data do not equally support the two most crucial conditions posited: a generalized hostile belief and mobilization-for-action."28

The structural conduciveness consisted of the police department being clearly perceived as responsible for the disturbing event, i.e., a student arrest for jaywalking, and a whole series of prior events; on-campus channels for expressing grievances to off-campus sources being visualized as ineffective and often nonexistent; and conducive conditions for communications among students. As far as structural strain is concerned, it was definitely present with strong mutual dislike characterizing police-student relationships in general.

Concerning the generalized belief, Quarantelli and Hundley found that the crowd "was and remained a heterogeneous group held together neither by a common hostile belief, nor by a shared, single definition of the situation (i.e., a common mass perception)."29 The news of
the jailing of the student and other deliberate cases of jaywalking were precipitating factors.

This study found that the leader-follower relationship was a complex pattern and in the early period there were four different sequential foci of leadership. According to Smelser, leaders supposedly spur the outward expression of the hostile attitude, however, in the examined crowd behavior there was no automatic or direct response by spectators to the ongoing behavior. "In fact, at different points in time 'leaders' failed to provoke the outward expression of the supposed underlying hostile attitude." The data further reveal that interactional aspects of the crowd rather than the degree of pre-existing structure, ecological factors, and the spread of a hostile belief lead to the development of diversity and changes of direction of behavior.

The major social control agency, the police, abandoned the university area to the students and retreated when the marchers moved downtown. This evidence generally supports Smelser's statements about the effect of the behavior of social control agencies on the development and continuation of crowd activity.

Smith in analyzing crowd behavior of adolescents at a beach resort from 1959 to 1964 tangentially deals with the conditions facilitating this behavior. He points out that there is a general absence of parental controls at the beach resort, and the adolescents are "'on their own,' away from parents and familiar authorities, with the chance to exercise their growing sense of autonomy." One may
infer that many of the adolescents find themselves in an ambiguous and unstructured situation. In addition, the adolescent finds himself in the presence of a large number of peers who are occupying a rather limited geographical area. This condition may also be conducive to the development of crowd behavior.

Dahlke using data from the 1903 Russian programs and the 1943 Detroit race riot focuses upon the aspects of the larger social context that lead to violent crowds. Within the historical context, he deals with transitional periods, such as industrialization, periods of stresses and strains, such as a major war, and periods of considerable horizontal and vertical mobility. Concerning the role of the press and other means of communication, emergence is facilitated when the press as official or covert policy indulges in race-minority baiting or in general reports the group in an unfavorable way, and the minority does not have or has limited access to the agencies of mass contact, particularly those reaching the members of the dominant group. Dahlke also claims:

Upper class, professionals, and more wealthy merchants contribute indirectly through the circulation of rumors, and some may participate more actively in the organization of a riot if they have an opportunity to gain by the elimination of competition...

It is the working together of these conditions, according to Dahlke, that logically culminates in violent crowd behavior.

Summary

This review of research relevant to group emergence in community crises and literature relevant to the origins of collective behavior
reveals that the field remains very underdeveloped. In general, organized behavior, particularly in reference to group emergence, in a disaster setting has not been extensively studied by social scientists. As a consequence, the current research is innovative and exploratory and largely lacks the specific direction and concrete guidelines which might have been derived from prior research.

However, from the findings of this prior research in a disaster context several generalizations which have relevance for the current research about the development of emergent groups can be abstracted. First, group emergence should be analyzed in relation to the underlying social structure and predisaster patterns of interaction. Previous research findings reveal that the development of new groups after disaster impact is not spontaneous or fortuitous. Rather, the emergence is closely related to the development of a need for integration or coordination of the behavior of responding organizations. For example, as problems of overall community control and coordination occur after disaster impact, the probability of emergent groups developing increases. More specifically, the findings of previous research indicate that group emergence may occur when there is a lack of effective disaster planning, key community organizations respond in a limited capacity, an authority vacuum or ambiguity over legitimate authority sources occurs, and tasks are duplicated.

From our examination of the literature and research on crowd emergence, we find that a number of writers, including Lang and Lang and Blumer, emphasize the social processes involved in crowd emergence.
They identify such processes as milling and development of rapport, and in general their focus is upon immediate factors occurring within a fairly compact collectivity. On the other hand, other writers, such as Smelser, have paid more attention to the larger social context from which crowds emerge. In so doing, they have devoted attention to the structural variables associated with emergence of crowds.
FOOTNOTES: Chapter III

1. Informal Group Actions in the Rio Grande Disaster, Report to the National Research Council Committee on Disaster Studies, February, 1955, p. 42.

2. Daniel Yutzy, "Authority, Jurisdiction and Technical Competence: Interorganizational Relationships at Great Falls, Montana, During the Flood of June 8-10, 1964," Research Note No. 7 (Columbus: Disaster Research Center, The Ohio State University, September 25, 1964.) (Mimeographed.) Two other Disaster Research Center reports tangentially deal with group emergence. See Thomas E. Drabek, Disaster in Aisle 13: A Case Study of the Coliseum Explosion at the Indiana State Fairgrounds, October 31, 1963 (Columbus: The Ohio State University, College of Administrative Science, 1968.); Daniel Yutzy, A Bad Good Friday: Community Priorities in the Anchorage, Alaska Earthquake, 1964 (Columbus: The Ohio State University, College of Social and Behavioral Sciences). (in press). Since the data from the two community emergencies on which the reports are based are analyzed in the current study, the relevant research findings from the Drabek and Yutzy reports are not considered here.


4. Ibid., pp. 7-8.

5. Ibid., pp. 8-9.

6. Ibid., p. 16.


9. Ibid., p. 11.

10. Ibid., p. 10.

11. Ibid., p. 15.


15. Form and Nosow, op. cit., p. 34.


17. Ibid., p. 242.

18. Ibid., pp. 243-244.


25. Ibid., p. 120.


28. Ibid., pp. 540-541.

29. Ibid., p. 545.

30. Ibid., p. 547.


32. Ibid., p. 178.


34. Ibid., p. 425.
CHAPTER IV

RESEARCH DESIGN

Introduction

In this chapter we are concerned mostly with research methods. Some improvisation has been necessary in disaster research although by and large the usual methods of social research have been used. For this study the methods were selected within the framework of the problem being investigated, and we attempted to select methods which would optimize the contribution of the research to the specified problem. As well, the plan of research had to be constructed in the light of a realistic evaluation of existing resources.

It has often been said that the community in disaster provides a natural laboratory for testing hypotheses about organizational and group behavior under realistic conditions of severe strain and stress. In our research the disaster is a vehicle through which a community social system is studied in other than its normal state. We worked out a basic design in advance and then fitted it to the particular community crisis. The design was somewhat flexible so it could be applied to "available" disasters. The standing research plan had to be tailored to the practicalities of the immediate crisis situation. It was found that the field situation often required a maximum of ingenuity and improvisation.
Basically, we made use of a somewhat controlled approach in the field and it is hoped that we thereby avoided the limitations of the laboratory, but gained some of its classical advantages. We might describe our methods as a natural experiment, consisting of a partially controlled design. The study was divided into two phases. Phase one of the design was devoted to the generation of hypotheses, and in phase two we proceeded to systematically test the hypotheses.

We shall now turn to a consideration of how the data were collected and analyzed during both phases of the study.

Data Collection

The Disaster Research Center of The Ohio State University since its inception in 1963 has conducted studies of over fifty different disasters, the bulk of these being large-scale natural disasters. The Center has given high priority to those disasters which are quick and unexpected, which affect a major community, where there is heavy property damage, where there are personal casualties, and which elicit the participation of national organizations during the emergency period. From the existing collection of disaster studies of the Center, we selected four in which there was group emergence for analysis in phase one of the study. The four disasters include (1) the 1963 Indianapolis coliseum explosion, (2) the 1964 earthquake in Anchorage, Alaska, (3) the mid-August, 1967 flooding in Fairbanks, Alaska, and (4) the tornado which hit Jonesboro, Arkansas in May 1968. Three of
these disasters, the explosion, flood, and tornado are matched with three control disasters in which there was no group emergence during the emergency period. The control disasters include (1) the 1964 flooding in Cincinnati, Ohio, (2) the jet tanker crash in Wichita, Kansas in June, 1965, and (3) the tornado which hit Topeka, Kansas in June, 1966. Although the two disaster agents are not identical, the jet tanker crash and the coliseum explosion are matched for comparison purposes since they are both localized disasters occurring in urban areas. The earthquake is not matched with another disaster situation since this study does not encompass cross-cultural analysis and there is no recent, relevant data available from an American community which has experienced an earthquake. In any case, it is anticipated that there will be group emergence in any community disaster caused by a major earthquake, and thus it would not be possible to have a comparable control disaster in which there was no group emergence. Table 1 deals with the community crises considered in phase one of this study.

TABLE 1
COMMUNITY CRISSES USED FOR HYPOTHESIS GENERATION

<table>
<thead>
<tr>
<th>Experimental Disasters (Group Emergence)</th>
<th>Control Disasters (No Group Emergence)</th>
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</thead>
<tbody>
<tr>
<td>1964 Anchorage, Alaska Earthquake</td>
<td>No matching control emergency</td>
</tr>
<tr>
<td>1967 Fairbanks, Alaska Flood</td>
<td>1964 Cincinnati, Ohio Flood</td>
</tr>
<tr>
<td>1963 Indianapolis, Indiana Coliseum Explosion</td>
<td>1965 Wichita, Kansas Plane Crash</td>
</tr>
<tr>
<td>1968 Jonesboro, Arkansas Tornado</td>
<td>1966 Topeka, Kansas, Tornado</td>
</tr>
</tbody>
</table>
The data from six of these community crises were collected during field trips to the scenes of the disasters by Disaster Research Center personnel, including the author on one of the trips. Since the primary concern was with the emergency period, a field team reached the disaster site as soon as possible. The length of time in the field ranged from several days to ten days, with follow-up trips being made in several instances.

In the case of these seven disasters, the bulk of the data were collected through semi-structured, tape-recorded interviews with members of the disaster-involved organizations. Cisín and Clark claim that interviews "have been the mainstay of data collection in the field of disaster research." In excess of 450 interviews varying in length from twenty minutes to several hours with approximately 20 per cent of them containing data on group emergence were recorded and transcribed for these seven crises. In addition, the available data at the Disaster Research Center included organizational charts, written emergency operations procedures, disaster plans, operation logs, recordings of radio and television broadcasts, maps showing impact areas, minutes of meetings, and numerous after-action reports.

For phase two of this study, data were collected from four community crises including (1) Glendora, California floods and mudslides, January, 1969, (2) Minot, North Dakota flood, April, 1969, (3) Sioux Falls, South Dakota flood, April, 1969, and (4) Salina, Kansas tornadoes, June, 1969. There was group emergence in the Glendora and Minot disasters. In the Sioux Falls flood and Salina tornadoes there was no group
emergence, and consequently these disasters are used as control cases in this study. Table 2 shows the crises considered in phase two of this study for purposes of hypothesis testing.

**TABLE 2**

COMMUNITY CRISSES USED FOR HYPOTHESIS TESTING

<table>
<thead>
<tr>
<th>Experimental Disasters (Group Emergence)</th>
<th>Control Disasters (No Group Emergence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glendora, California Floods and Mudslides, January, 1969</td>
<td>Sioux Falls, South Dakota Flood, April, 1969</td>
</tr>
<tr>
<td>Minot, North Dakota Flood, April, 1969</td>
<td>Salina, Kansas Tornadoes, June, 1969</td>
</tr>
</tbody>
</table>

For purposes of data collection, two interview schedules were structured to secure data for hypothesis testing in the area of disaster conditions conducive to the generation of group emergence.\(^5\) One of the interview schedules was used for interviewing members of emergent groups, and the other one was used for interviewing members of organizations heavily involved in the emergency. As well as data collection by interviewing, on-the-spot observation was another method used as frequently as possible. Such documents as minutes of meetings, logs of daily operations, receipts of sale and purchase transactions, and others were collected and analyzed for relevant data.

Several guidelines were used in selecting interview subjects from whom data could be gained. We sought subjects who could provide information adequate for testing the hypotheses of the study. We commenced
interviewing by logically selecting members of organizations that were expected to have been heavily involved in the disaster such as fire and police departments. Then we followed leads given by the initial subjects. "This approach may be useful," according to Cisin and Clark, "in collecting data on group processes, particularly when the groups emerged spontaneously under the stimulus of the disaster itself." Generally, three or more members of each emergent group were interviewed and at least two people (the head of the organization and the person in charge of the operation at the time of the disaster) were interviewed in those community organizations most critically involved during the emergency period.

The subjects were used as both respondents and informants. As respondents, especially if they were emergent group members, they were asked to describe their own personal experiences, and as informants, they were asked to report events of which they had first-hand knowledge.

In all, sixty interviews were recorded and then analyzed in phase two of this study for purposes of testing hypotheses. Table 3 shows the organizations contacted and the number of interviews obtained. We now turn to a consideration of how the data were analyzed.
TABLE 3

NUMBER OF ORGANIZATIONS CONTACTED AND INTERVIEWS OBTAINED
IN FOUR "NEW" COMMUNITY CRISSES

<table>
<thead>
<tr>
<th>Organization</th>
<th>Number of Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Glendora Floods and Mudslides</strong></td>
<td></td>
</tr>
<tr>
<td>Los Angeles County Civil Defense</td>
<td>1</td>
</tr>
<tr>
<td>Los Angeles County Sheriff's Department</td>
<td>1</td>
</tr>
<tr>
<td>Los Angeles County Road Department</td>
<td>2</td>
</tr>
<tr>
<td>Los Angeles County Flood Control District</td>
<td>2</td>
</tr>
<tr>
<td>Los Angeles County Fire Department</td>
<td>1</td>
</tr>
<tr>
<td>Glendora City Government</td>
<td>2</td>
</tr>
<tr>
<td>Glendora Public Works Department</td>
<td>2</td>
</tr>
<tr>
<td>Glendora Planning Department</td>
<td>1</td>
</tr>
<tr>
<td>Glendora Police Department</td>
<td>1</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>13</strong></td>
</tr>
</tbody>
</table>

**Minot Flood**

<table>
<thead>
<tr>
<th>Organization</th>
<th>Number of Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ward County Civil Defense</td>
<td>1</td>
</tr>
<tr>
<td>Ward County Sheriff's Department</td>
<td>1</td>
</tr>
<tr>
<td>Ward County American Red Cross</td>
<td>5</td>
</tr>
<tr>
<td>Ward County Commissioners</td>
<td>1</td>
</tr>
<tr>
<td>Minot City Government</td>
<td>2</td>
</tr>
<tr>
<td>Minot Department of Public Works</td>
<td>1</td>
</tr>
<tr>
<td>Minot Fire Department</td>
<td>1</td>
</tr>
<tr>
<td>Minot Police Department</td>
<td>1</td>
</tr>
<tr>
<td>Organization</td>
<td>Number of Interviews</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>YMCA of Minot</td>
<td>1</td>
</tr>
<tr>
<td>The Salvation Army of Minot</td>
<td>1</td>
</tr>
<tr>
<td>The National Guard</td>
<td>1</td>
</tr>
<tr>
<td>The Minot Daily News</td>
<td>1</td>
</tr>
<tr>
<td>KMOT-TV of Minot</td>
<td>1</td>
</tr>
<tr>
<td>KTYN Radio of Minot</td>
<td>1</td>
</tr>
<tr>
<td>Northern States Power Company</td>
<td>1</td>
</tr>
<tr>
<td>J. B. Reed Transfer and Storage Co., Inc.</td>
<td>1</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

**Sioux Falls Flood**

<table>
<thead>
<tr>
<th>Organization</th>
<th>Number of Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Army Corps of Engineers</td>
<td>1</td>
</tr>
<tr>
<td>South Dakota Air National Guard</td>
<td>1</td>
</tr>
<tr>
<td>Minnehaha County Civil Defense</td>
<td>2</td>
</tr>
<tr>
<td>Minnehaha County American Red Cross</td>
<td>1</td>
</tr>
<tr>
<td>Sioux Falls Flood Control Project</td>
<td>2</td>
</tr>
<tr>
<td>Sioux Falls City Government</td>
<td>2</td>
</tr>
<tr>
<td>Sioux Falls Police Department</td>
<td>1</td>
</tr>
<tr>
<td>Sioux Falls Light Department</td>
<td>1</td>
</tr>
<tr>
<td>Sioux Falls Citizens' Band Club</td>
<td>1</td>
</tr>
<tr>
<td>The Salvation Army of Sioux Falls</td>
<td>1</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>13</strong></td>
</tr>
</tbody>
</table>
TABLE 3--Continued

<table>
<thead>
<tr>
<th>Organization</th>
<th>Number of Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Salina, Kansas Tornadoes</strong></td>
<td></td>
</tr>
<tr>
<td>Kansas State Civil Defense Division</td>
<td>1</td>
</tr>
<tr>
<td>Kansas State Highway Patrol</td>
<td>1</td>
</tr>
<tr>
<td>Kansas National Guard</td>
<td>1</td>
</tr>
<tr>
<td>Saline County Sheriff's Department</td>
<td>1</td>
</tr>
<tr>
<td>Salina-Saline Civil Defense</td>
<td>2</td>
</tr>
<tr>
<td>Salina City Government</td>
<td>1</td>
</tr>
<tr>
<td>Salina Police Department</td>
<td>1</td>
</tr>
<tr>
<td>Salina Fire Department</td>
<td>1</td>
</tr>
<tr>
<td>North Central Chapter of the American Red Cross</td>
<td>1</td>
</tr>
<tr>
<td>The Salvation Army of Salina</td>
<td>1</td>
</tr>
<tr>
<td>Kansas Power and Light Company</td>
<td>1</td>
</tr>
<tr>
<td>Southwestern Bell Telephone Company</td>
<td>1</td>
</tr>
<tr>
<td>Subtotal</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
</tr>
</tbody>
</table>

Data Analysis

The analysis of group emergence in disaster situations has been largely qualitative. In phase one of this study the analysis is descriptive for the purpose of generating hypotheses. This descriptive part serves the function of introducing propositions to be tested
more formally by further analysis. For purposes of generating hypotheses about conditions conducive to emergent group development, we analyze data from four community crisis situations in which there was group emergence. In this preliminary analysis we identify conditions which were present in the four stress situations and which might be associated with group emergence. In other words, in the generation of hypotheses, regularities are observed and consistencies are noted.

Phase one also involves comparative analysis of the data. By comparing three of the community stress situations characterized by group emergence with three situations without emergence, we identify differences between emergent and nonemergent situations. We look at the data from the three crises in which there was no group emergence to find out if the conditions identified as being associated with emergence are present or absent. If these conditions are absent, we interpret this as evidence that a particular variable or condition facilitates group emergence since emergent groups do not develop in its absence.

In phase two we move on to the testing of the hypotheses that have been formulated in phase one of the analysis. This is done by bringing qualitative data to bear on the specific propositions. Much of the analysis centers around determining whether the trends of group emergence which were evident in the community emergencies previously analyzed also occur in a similar manner in the four "new" disasters. We ascertain whether the conditions identified as conducive to the generation of emergent groups are present or absent in the "new" disaster situations characterized by group emergence. For example, we
test the hypothesis that group emergence is facilitated when the legitimate encumbents of authority positions do not play their roles during the emergency period by determining how many organizations came under the immediate direction of their heads and how many functioned in an uncoordinated manner. If it is found that group emergence occurs when the heads of the organizations were present and controlling and coordinating activities immediately after impact, the hypothesis will have been tested and found to be unsupported by the data from the "new" community emergencies. In a similar manner we test a number of other hypotheses by looking for the presence or absence of factors which are posited as being related to group emergence.

Summary

The research design of this study encompasses two phases: (1) phase one is devoted to the generation of hypotheses relevant to group emergence under conditions of stress, and (2) phase two focuses upon the systematic testing of these hypotheses. We use primarily qualitative data from eleven disaster situations. Much of our data were collected through interviewing on the site of a disaster very soon after impact. The analytic techniques applied to the data involve mainly comparative analysis with emphasis upon identifying and empirically supporting trends, regularities, and consistencies relating to group emergence under stress.
FOOTNOTES: Chapter IV


2. Although there was no group emergence during the emergency period of the Topeka tornado, emergent groups did develop later in the disaster and a case study was made of one of these new groups. See Louis A. Zurcher, "Social-Psychological Functions of Ephemeral Roles: A Disaster Work Crew," Human Organization, XXVII (Winter, 1968), pp. 281-297.

3. We have access to the original data from the study of the jet tanker crash in Wichita, Kansas. This data was collected and reported in a research project independent of the Disaster Research Center. See Cornelius P. Cotter, Jet Tanker Crash (Lawrence: The University Press of Kansas, 1968).


5. See Appendix A for copies of the interview schedules.

6. Cisin and Clark, op. cit., p. 27.
CHAPTER V

GENERATION OF HYPOTHESES RELATING SOCIAL PROCESSES
AND CULTURAL STRUCTURE TO GROUP EMERGENCE

**Introduction**

The purpose of this chapter and the following one is to develop hypotheses concerning the conditions conducive to group emergence. Using an inductive approach to generate the hypotheses, we draw upon data from seven community crises, four in which there was group emergence and three in which there was no emergence during the emergency period. In formulating each hypothesis, we present the findings revealed by the analysis of the data from the earthquake in Anchorage, the floods in Fairbanks and Cincinnati, the explosion in Indianapolis and plane crash in Wichita, and the tornadoes in Jonesboro and Topeka. In dealing with the results of the current research, we first consider the stress situation in which there was group emergence, and we then turn to the matched situation in which there was no group emergence. Since the Anchorage earthquake has not been matched with another disaster, we always deal with two stress situations in which there was group emergence before dealing with one in which there was no emergence. Our general approach is to state a major hypothesis and several subhypotheses that are derived from the empirical evidence.
The hypotheses are formulated at two levels of abstraction. The major hypotheses are the most abstract and encompassing. The other hypotheses are more concrete and operational in nature.

In this chapter we focus upon the social processes and cultural structure variables of the community social system that are associated with group emergence. In the following chapter we proceed to analyze social structure conduciveness, and then at the end of Chapter VI a summary of all of the hypotheses is presented. This should enable the reader to quickly and accurately ascertain the results of the empirical analysis undertaken in Chapters V and VI.

The Hypotheses

Hypotheses Relating to Social Processes

I. Group emergence is facilitated when the community crisis situation remains inadequately defined and disaster information remains unvalidated.

This major hypothesis encompasses the following subhypotheses.

Hypothesis 1. When initial information about the crisis situation is limited, emergent groups are likely to develop.

Anchorage Earthquake. -- In analyzing our data about the emergency situation following the earthquake in Anchorage we find that information concerning the nature of the crisis was not readily available. The following comments by a city official reveal that the city department heads had little pertinent knowledge about the scope of damage at least one hour after impact. "Now up to that time, I didn't have much information except what I saw over here on Fourth Avenue."... Most of them
city department heads were congregated and had little idea at this point of what damage had been done and so forth." At 9:00 and 11:00 p.m. this city official made tours of damaged areas to assess the emergency situation.

Much of the lack of knowledge during the first hours of the emergency in Anchorage pertained to a degree of uncertainty about the status of the dead and injured. Both the nature and extent of the casualties was not clear. Very apparent damage to structures seemed to suggest large numbers of injured and dead. Yet, no one knew how many or where they were.

The problem of lack of pertinent information tended to persist for some time as is revealed by a city civil defense worker in Anchorage who stated that the "first day in fact was pretty hectic in trying to find who was doing what and where they were located. Is there a phone in? Do they have a phone?"

**Fairbanks Flood.** -- In Fairbanks the very early part of the emergency period was insufficiently defined for the organizational members and residents of the city. Information about river conditions was not readily available to the members of key community organizations as the measuring devices upstream were either destroyed or nonexistent. In addition, the imminent flood danger was not disseminated in a systematic manner to the residents of Fairbanks.

**Cincinnati Flood.** -- Our data reveal that there was ample initial information readily available in the Cincinnati flood emergency. Official weather reports and two community organizations were the primary
sources of information about the nature of the emergency situation. The local Red Cross chapter has a survey committee which functions during the flooding. Concerning this committee, a Red Cross member stated: "We've got to know what is going on in the field. So we now have three, well actually we have four disaster cars who are equipped with two-way FM radio." These cars were dispatched to the area where flooding was anticipated and the Red Cross headquarters thus received current, on-the-spot reports of the developing flood conditions. A member of the Red Cross communications committee elaborated: "The first thing in the early phases of the flood, of course, we are concerned in this type of disaster with survey. ... Now this means that our cars go out and members make a record of the situations as they exist. ... And it's so much simpler to report back by radio than it is to stop at telephone booths." A Red Cross member pointed out that "the committee has an outstanding relationship with the various community fire departments and police departments and this was one of the major sources of information Monday night and early Tuesday morning and we relied heavily on the advice of these people as to what they thought was going to happen. ..."

Similarly, the communications division of the city of Cincinnati which handles nearly all the emergency communications in the city performed systematic surveys and assessments of the flood area. An employee of the communications division reported: "Two or three days last week, each morning they came in, we sent a couple of crews to the east and west side of town and they toured along the river front just
visually inspecting where we would have to get in and what we could disregard for awhile and so forth."

**Indianapolis Explosion.** — In Indianapolis both the police and fire dispatchers had insufficient information about the explosion at the coliseum. From the time of the initial fire alarm which was received right after the explosion until the emergency period was almost over the dispatchers were not fully aware of the details of the emergency situation. They were not certain about the extent of damage, the kinds of needed supplies and equipment, the number of dead and injured, and the number of types of organizational personnel required. The following excerpts from the fire and police logs reveal the lack of knowledge which existed about the crisis near the beginning of the emergency period.

*Fire dispatcher:* Hospital?
*Switchboard operator:* Yes
*Fire dispatcher:* Call about three ambulances to the coliseum at the fairgrounds. They've got a big explosion out there. Will you?
*Switchboard operator:* My God, what is it?
*Fire dispatcher:* Don't know, lady. Just got an explosion is all that I know.

*Car 3:* Car 3 to headquarters, Car 3.
*Police dispatcher:* Car 3.
*Car 3:* What's going on out there at the fairgrounds and can I be of assistance?
*Police dispatcher:* It was an explosion. We're not sure yet what the conditions are.

**Wichita Plane Crash.** — After the plane crash in Wichita there was sufficient information available to enable the key emergency organizations to respond adequately and appropriately to the emergency. The fire department received the first alarm from a resident of the area
right after the plane crashed. The first fire company to reach the scene reported the extent of the fire and requested a second alarm.

As soon as the fire chief arrived at the crash site, he turned in a third alarm and received a report from the district chief who was the first to arrive at the fire. The district chief also reported to the deputy chief once he arrived at the fire. The deputy chief said that the district chief "gave me all the information that was available to him at that time. He told me about what they had. I remember him saying we had one hell of a mess. This is the first thing I remember him saying, and it was established that it was a military aircraft." A fire captain who lived in the area and responded immediately also made a report to the deputy chief.

This is standard procedure when one of the ranking officers comes in is for the line officers to report. So, I proceeded to tell him what had been done, how many victims I had seen, up to this point. I told him how far that the fire at the time we attacked it had not spread. We had cut it off from the time that the first engine arrived until we got into action there was nothing that started to fire, started to burn.

Immediately after the crash, the Wichita police department was alerted about the location and that it was a large military plane. Another organization, the power supply company, sent a radio patrol car into the area to identify the trouble and a report was immediately made to the service operator. An employee of this organization stated: "I think the time schedule kind of indicates how fast this happened. The circuit tripped out at 9:31. At 9:32 he dispatched the men to the area and at 9:40 we had heard on
the radio that it was a plane crash. But by 9:42 they had already opened the sectionalizing switch at 20th and Piatt which isolated the circuit going into the area." An official of the county Red Cross chapter reported information about the number of casualties was not immediately known and "we began funnelling this information back from the disaster scene as quickly as it was available."

A mailman in Wichita also assisted in defining the situation by establishing the addresses of burning homes and the number and names of the occupants. He was also able to inform the fire department about how many adults and children lived in each house.

**Jonesboro Tornado.** -- The emergency situation in Jonesboro remained quite undefined for a number of hours after the tornado struck. This hampered disaster operations as is revealed by the following statement of a telephone company supervisor: "The first thing you have to do is find out what the extent of damage is, of course, and really before you can make a move, before you know how much manpower you need or material or anything." It was noon of the day after the tornado before the telephone company had completed a survey of damage to their equipment.

There was a general lack of awareness on the part of many residents that a crisis had developed in the Jonesboro community. "People did not really know until the next day," according to one respondent, "how serious the thing was. If they had made people aware of the fact that this was a very serious situation. It needed all the cooperation we could get. It would have been, you know, things would
not have been as congested." A gas company crewman pointed out:
"People just a mile or two north of us didn't even realize what had
happened. If they weren't around the hospital where they hear the
sirens, they weren't aware of it. . . . They thought it was a bad
storm. We've had 'em before."

The scope of impact of the Jonesboro tornado was not immediately
known. For example, a Seventh Day Adventist pastor stated: "We had
not been aware of the fact that the tornado had actually missed the
downtown area and that there would be large sections of the city
completely intact yet."

Topeka Tornado. -- The lack of information in the early stages
of the tornado emergency in Topeka did not impede the response of the
community organizations. In fact, an assessment of the path of the
tornado and the amount of damage emerged quite soon after impact.
Such organizations as the police and fire departments, city engineering
department, telephone company, citizens' band club, Red Cross, and
The Salvation Army, had members reconnoitering the area of impact and
making reports. Members of the police department at various locations
along the tornado's 12 mile path radioed reports of the extent of
damage to the dispatcher. Even the police chief who had actually wit-
nessed the tornado as it passed 150 yards from his residence was
involved in reporting the scope of impact. A major in the police
department said:

And I heard the chief say: "These houses are down. These
houses are down out here." And he gave us the location.
And pretty soon why he repeated two or three times that
these houses are down. And so there was no doubt in my
mind what the conditions of the southwestern part of the
city was. And then we received additional transmissions
about this disaster area being extended there around 13th
and Harrison and Topeka Avenue.

The police department was soon able to outline the general path of
the tornado and major areas of destruction on a map. Maps showing the
impact area proved very useful and were distributed widely to the in-
volved organizations.

Early in the evening the governor and a colonel in the highway
patrol toured the Topeka tornado area. The purpose was "to more or
less to get an idea of the magnitude of the storm and to get an idea
of the manpower which was going to be needed later on in the evening."
At approximately 11:00 p.m. the same evening the police chief toured
the impact area to further assess the situation. The chief explained:
"I wanted to take a tour of the area to see just where we were at."
The next morning the telephone company undertook an aerial reconnaissance
of the impact area.

Summary. -- The initial information about the emergency situations
in Anchorage, Fairbanks, Indianapolis, and Jonesboro was quite limited
during the early part of the emergency period, and emergent groups
developed in these four communities. In contrast, no emergent groups
developed in Cincinnati, Wichita, and Topeka during the emergency
period, and in these three communities an overall picture of the
disaster situation arose rather rapidly. In other words, there was no
group emergence in the disaster situations where the nature and extent of
damage and danger was quickly and accurately ascertained.
Hypothesis 2. When disaster information is not shared or pooled on an interorganizational or community-wide basis, emergent groups are likely to develop.

Anchorage Earthquake. -- In Anchorage the accumulation of knowledge of impact damage was the responsibility of no particular organization within the community so it developed haphazardly. Without such knowledge, the selection of tasks and the assignment of priorities was difficult. Almost every organization within the community was involved initially in an inventory of damage to its own facilities and services, but this information tended to remain within the organization that gathered it. No centralized information center emerged or was arranged for during the first few hours.

Initial efforts to define the situation in Anchorage were confined either to individuals or organizations. There was no arrangement to pool or share information on a community-wide basis nor on an interorganizational basis. Thus, the fire department sent trucks and crews to various parts of the city to check on the condition of streets, make a brief survey of damage and potential fire hazards and remove victims wherever they found them. This information was reported to fire headquarters at the Public Safety Building over their radios. Returning crews also reported directly. In addition, the chief made several tours in his car to inspect damaged areas.

The police department followed much the same procedure, sending patrol cars to various areas of the city where they checked on conditions generally and reported on their radios.
The director of public works in a city vehicle outside the Public Safety Building asked his foremen to reconnoiter conditions in their areas. When the city manager called him on the radio, he reported what he had learned up to that point. The city manager then made a personal inspection of as much of the downtown area as he could before he came to the Public Safety Building.

The mayor of Anchorage accumulated information from the public works director, city manager, and other city officials who were in turn receiving reports from their crews in the field. At no single source, however, could one get a very clear picture of the overall dimensions of the problem.

**Fairbanks Flood.** -- The situation was very similar in Fairbanks during the flooding with no particular community organization fulfilling the function of collecting and disseminating disaster relevant information on a community-wide basis. The organizations which might have performed this task either suffered impairment of capacity to respond or were carrying out other crucial disaster functions.

**Cincinnati Flood.** -- In Cincinnati several community organizations became involved in the collection and dissemination of information about the flood emergency. There is a River Forecast Center which forecasts river conditions for practically the entire Ohio River, and the Cincinnati District of the United States Weather Bureau receives the portion of the forecast from the River Forecast Center which applies to the Cincinnati area. The weather bureau in turn passes on the forecasts to designated community organizations. A weather bureau employee
said that "when we get flood warnings or high water warnings, we have a list of calls to make and we get those out right away, as soon as we have the warnings."

One of the key organizations to receive information about river conditions from the weather bureau is the highway maintenance division of the public works department of Cincinnati. This organization has a teletype connection with the weather bureau and as the flood stage approaches, the highway maintenance division receives hourly reports from the weather bureau about river conditions. This information is passed on to the division of water pollution control and it is this organization which makes the decisions about flood prevention measures such as the installation of flood gates. Once the decisions are made, the division of highway maintenance performs the function of informing other organizations about the preventive measures. An employee of the highway maintenance division stated:

It's also part of the job of highway maintenance division once they're notified to put up a flood gate to notify all the various agencies that are affected such as police, fire, and news. We take care of our own press releases. We have a man who's trained in that work. He knows just exactly who to contact in the various communications media within the city and he knows exactly what to do. . . . He is also expertly trained in giving out these press releases and knowing where to go to get the information in order to prepare a press release. Our dispatcher's office, they will notify the police and fire of any particular fire lanes or main routes that are closed so that safety can be maintained both in the matter of traffic and the matter of protection to buildings and property in case any fire or looting or anything breaks out.

The superintendent of the communications division pointed out that hourly reports of the river stages are received from the highway
maintenance division once the river reaches flood stage. Since the communications division handles all fire department communication, each fire station is informed about the flood conditions. "We are just an agency for transmitting information or dispatching assistance," according to a respondent from the communications division.

A police captain indicated that his department relied upon the highway maintenance division for information about river stages. The division of traffic engineering also receives reports about river levels and installation of flood gates from the highway maintenance division and is thus able to plan detours around flooded areas. Thus, it is the highway maintenance division which is the community organization responsible for disseminating data about flood conditions. Through the efforts of this organization, official weather forecasts and reports of flood control operations are shared with a number of key community organizations.

Indianapolis Explosion. -- In Indianapolis information about the coliseum explosion was not shared among key emergency organizations. For example, a crane was required to lift debris under which victims were trapped. Both the fire and police departments unsuccessfully attempted to locate this piece of equipment. Civil defense which had a list of available equipment in the community for emergency use was not immediately informed of the need. Thus, the locating of this vital piece of equipment was delayed for nearly an hour because disaster relevant information was not pooled on a community-wide basis. Initial notification of the disaster among various community organizations was
largely fortuitous, spontaneous, and arbitrarily selective in nature. The police dispatcher alerted one hospital and asked the switchboard operator at the hospital to alert the other hospitals. This was not accomplished and a number of hospitals only found out about the emergency when victims arrived at the hospital.

Wichita Plane Crash.-- The facilities in Wichita for pooling disaster information on a community-wide basis were excellent. Several of the community organizations were connected by direct, emergency telephone lines which facilitated the speedy notification and alerting of organizations. The police department has a direct line to the ambulance company and the ambulance company has the responsibility of notifying a number of organizations such as the hospitals. An employee at the municipal airport pointed out that "our notification, of course, was immediate because the tower operator just picks up this telephone in the control tower and it rings our fire equipment here in the administration building and then alerts the fire and police dispatchers in town . . . . This is an emergency line." The fire dispatcher explained that a file of cards exists of organizations to be notified in an emergency and "when we get a second alarm we just pull these cards out and start calling. There is the Red Cross, Salvation Army, and all these other organizations like this."

At the Wichita disaster scene, the police chief's car which was the center of police communications and the fire department's communications truck were parked next to each other. This arrangement facilitated quick oral communication between the two departments. When asked
if there was any breakdown in communication, the fire chief replied:

Not really, because in this particular case here it was concentrated in such a small area with all the agency heads there that we didn't have that breakdown as much as it would if it was out in a rural section and we are scattered.

Jonesboro Tornado. -- During the first few hours of the tornado emergency period in Jonesboro there was no arrangement to share or pool disaster information on a community-wide basis. There were some limited facilities for disseminating emergency information at the interorganizational level. The police department can monitor the weather bureau communications and the county coroner's office can monitor the communications of the police department. There is no evidence that either of these arrangements were used extensively during the emergency period.

Topeka Tornado. -- In Topeka the facilities and arrangements for disseminating tornado watch and warning information are well-developed. A weather bureau teletype system located at the weather station at the Topeka Municipal Airport is monitored by the local radio and television stations, the city police department, the county sheriff's office, and the local post of the state highway patrol. The local weather station supplements this network with a telephone calling list and notifies the superintendent of schools, citizens' band radio organization and a ham radio operators' club. A telephone hot line system links the police and fire departments, county sheriff's office, highway patrol, and civil defense. The first agency notified of a tornado watch relays this information to the other organizations. A back-up
telephone fan out system goes into operation after the public alert sirens have been sounded. The police department places five calls which actually initiate the back-up chain. Each agency in turn places additional calls until all the community organizations have been contacted.

**Summary.** -- Group emergence occurred in those communities where disaster information was not shared on an interorganizational or community-wide basis during the early part of the emergency period. In contrast, in Cincinnati, Wichita, and Topeka there were facilities and arrangements whereby the overall dimensions of the emergency situation were quickly and accurately ascertained by the key community organizations. For example, the highway maintenance division of the department of public works in Cincinnati disseminates flood information in a systematic fashion on a community-wide basis. Consequently, in these three communities there was no group emergence.

**Hypothesis 3.** When regular communication facilities are inadequate or inoperative during the emergency, emergent groups are likely to develop.

Availability of information about the emergency is frequently related to the functioning of communication facilities. As well as physical damage to communication equipment, inadequacy and overloading of facilities and noisy communication channels contribute to the difficulties.

**Anchorage Earthquake.** -- Our data reveal that there was nearly a complete failure of telephone facilities after the earthquake in
Anchorage and service was very limited for the first few days. Runners were used frequently as a means of communication. Inadequate communication at the Public Safety Building was described by an employee from the city planning department. "The communication at the Public Safety Building was by paging only. If you wanted to get somebody, you just had to walk around and shout and wave your hands in the air until you found them."

Fairbanks Flood. -- In Fairbanks during the flood, one of the major problems was inadequate communication facilities. The nature of the communication problem is revealed in the following comment. "We had numerous links from Fairbanks into Anchorage via ham radio. The major problem was again very short distance communication, communication between the Toll Building to the City Safety Building a matter of no more than eight or ten blocks. . . . Upon my arrival at the ACS Toll Building the Department of Health and Welfare, the Red Cross, Alaska Disaster Office, about five different shelters, Corps of Engineers, etc. were all on one frequency." Telephone facilities were practically nonexistent and the one radio station which was broadcasting was isolated from sources of news such as the emergency operations center.

The following remarks further reveal the severity of the intricacy communication problem in Fairbanks. "This was our biggest problem above and beyond anything else. We could not communicate. For that first 24 hours we could not communicate with anybody except the outside world. As Chief ________, the Secretary of State, so graphically put it last night, you could talk to Paris or London out of the ACS Building much quicker than you could talk one block down the street to the
Lathrop School. And because you had to get into a boat to go down to the Lathrop School to see what was going on, but you could pick up the phone and call Paris or London." A police department member pointed out that the department had direct communication with city civil defense and the fire department because they were located in the same building, "but other than that we didn't have much communication with anybody. Now being that the phones were out we lost all communication."

Cincinnati Flood. -- During the flood in Cincinnati the regular communication facilities such as telephones operated very adequately. In addition, there are emergency standby mechanisms that have been developed and can be activated if the regular communication facilities are inadequate or inoperative. For example, there is the Queen City emergency network of radio amateurs who are prepared to provide emergency communication services. This amateur network is quite extensive with 75 permanent stations and 25 mobile stations.

The local Red Cross chapter has a radio communication set-up consisting of a communications trailer, a permanent and portable base station, and four mobile units (radio cars). The trailer contains all types of communication equipment, and the portable base station can be moved into the disaster area and set up in a refugee shelter or some other desirable location. The mobile units are used for surveying the emergency situation and for maintaining contact with field workers.

Indianapolis Explosion. -- In Indianapolis the regular communication facilities were all operative, but they were not adequate for
handling communications about the explosion at the coliseum. The communication systems for both the fire and police departments were overloaded during the emergency. The dispatchers were flooded with outside calls requesting information. Since there was a lack of adequate communication feedback from the disaster scene, the dispatchers could make only limited replies to the inquiries. Interorganizational communication facilities did not function adequately. Recorded police communications show that a dispatcher from the department telephoned the local Red Cross chapter house to make sure it had been notified of the disaster. This occurred soon after the explosion at approximately 11:23 p.m. A very confused conversation took place. The call was taken by a person with the telephone answering service utilized by the Red Cross when the chapter house is closed. She attempted to check with someone and then said she would call back. During this critical time, one police line was tied up for about three minutes and fifteen seconds.

Similarly, intraorganizational communication facilities in Indianapolis did not function adequately. The police department headquarters had difficulty ascertaining what its personnel were doing at the scene and generally finding out what was going on. At one point an officer in a police car in the field suggested to the dispatcher: "Why don't you set up one car out there to control things so we can find out what's going on?" Later this same officer requested that his unit be sent to the coliseum. "May we have permission to go out there and set up communications so we can stop some of this confusion?"
Wichita Plane Crash. -- The existing communication facilities in Wichita were very adequate for handling emergency communications after the plane crash. The facilities of the police department in particular were most adequate. A police department member pointed out: "We were fortunate in that we had an extra channel assigned to us in our radio operations and therefore we could maintain fairly well our normal run of business and still have a channel open to us to take care of this disaster operation." The regular facilities at headquarters are set up to handle a heavy influx of calls from the police seeking information about the emergency. "We have a group of extension phones in our office area here that could be thrown open to handle just this sort of thing," according to the respondent. "We could put, I think, a total of seven people right in a group on seven different phones and this information could all be channeled, I mean the requests and things of that sort, could all be channeled to this group."

At the Wichita disaster site the telephone company provided several cars containing telephones which were used extensively. A Red Cross official said: "We didn't send our communications unit out to the scene because we had ample communications to the chapter. ... You had land lines, I mean telephones as close as the nearest car. ... You could just go to the telephone company car and call any place in the city on a regular telephone."

Jonesboro Tornado. -- In Jonesboro the regular communication facilities were not adequate during the emergency period following the tornado. In particular, the police department experienced difficulties
with emergency communications. A member of the police department stated: "I wish we had better communications. Yes, I certainly do. I wish we had a high band frequency and in fact I will ask for a high band frequency, an entire system with a private line for the city police department." Both the police and sheriff's departments are on the same frequency and this quickly became very busy and remained over-loaded for much of the emergency period. In addition, the sheriff's department had no central dispatcher, and in the car to car communications some cars would be in locations where they could not be contacted by other cars.

The telephone facilities in Jonesboro became overloaded and this created a problem in communications for a number of organizations. "We were having telephone trouble too," according to a gas company crewman. "You see the dial tone, you could only get a dial tone about every ten minutes." This situation developed shortly after impact. A county official claimed: "By this time our phones were tied to the point that not only we could not get out, we couldn't get a dial tone on account of the phone system was so jammed that you just couldn't get it." He added: "So we put up a system of runners. In other words these people who got a station wagon or something wanting to haul people and we couldn't find any more people injured at this time. So we used them as runners to take a message to the radio station."

Other organizations in Jonesboro also had communication problems. A county civil defense official stated: "Our communications, communications network just wasn't there. Everyone knows that communications
is very important when something like this comes and we had to rely on citizens' band radio. . . ."

Topeka Tornado. -- In Topeka even though the phones were not always operative, other communication facilities were adequate for handling the emergency situation after the tornado. A respondent from the local Red Cross chapter claimed that "generally speaking that communications was better than on the average. Much better than the average." The radio communications of the police department functioned very satisfactorily as the following quotation reveals.

Interviewer: How frequently did you need information from someone in the organization, but couldn't get it? Police lieutenant: None. I mean nothing that would be important where I just had to get a hold of somebody.

Another police officer made similar favorable comments concerning intraorganizational communications.

We had a new console. When we remodelled this building, we put in a new console and I don't believe that when I call my dispatchers upstairs on my phone here I ever get a busy signal. In other words I think they had six or seven operators up there and I picked up this phone to call my dispatchers and I got directly through each time . . . . And I didn't have a bit of trouble any time I wanted to contact a car in the field or a command post in the field. I had no trouble whatsoever working that out with my dispatcher.

Both the citizens' band radio club and the ham operators' club in Topeka assisted community organizations in maintaining emergency communication facilities. A member of the ham operators' club stated:

"Any place where we were requested to supply communications, we did."

Summary. -- The regular communication facilities such as telephones were inadequate or inoperative during much of the emergency period in
Anchorage, Fairbanks, Indianapolis, and Jonesboro, and in these communities emergent groups developed. For example, in Fairbanks there was a complete failure of intracity telephone service for several days of the emergency, and in Jonesboro the telephone facilities quickly became overloaded after the tornado struck. In the control disaster situations where there was no group emergence, communication problems were not severe. Even when some of the regular communication facilities became inoperative, the disaster operations were not significantly hampered or curtailed. In Topeka, for example, telephone communications were severely disrupted, but other facilities such as the radio communications of the police department functioned adequately.

Hypothesis 4. When the content of the communication about the emergency remains inaccurate, emergent groups are likely to develop.

Anchorage Earthquake. -- At first there tend to be many variations of the reports of the crisis situation. For example, in Anchorage, a problem in defining the situation centered around inaccuracy of some information. Some initial reports of damage were quite inaccurate as an organizer of search and rescue teams pointed out: "And of course we had persistent rumors that there were many people in the Penny's Building. Now and I now learned this morning from the construction fellow who was working over there... from what he said the destruction to Pennys was not as complete as it seemed to be. In other words, I had envisioned from the early reports that I got that the entire structure had collapsed." As well, inaccurate reports and rumors of all kinds soon developed and were repeated over the broadcast media as in the
case of the rumor that the governor had declared martial law in Anchorage.

Fairbanks and Cincinnati Floods. -- Most of the inaccurate information during the Fairbanks flood centered around reports dealing with the flood conditions of the Chena River. The prediction of when the river would crest was very inaccurate. River advisories were predicting that the flood crest would occur approximately twelve hours prior to the time it actually crested. In other words, there was about a twelve hour discrepancy between the predicted and actual time of cresting. The advisories were also highly inaccurate in specifying the level at which the river would crest. Early advisories predicted levels lower than the actual crest level and the final advisory preceding the crest predicted a level which was higher than the level at which the river crested.

In contrast, the River Forecast Center was able to very accurately predict the level at which the Ohio River would crest in Cincinnati. The river crested at 66 feet and 4 inches and it had been predicted that it would crest at 66 feet.

Indianapolis Explosion and Wichita Plane Crash. -- Inaccurate information about the emergency situations in Indianapolis and Wichita was not a problem. In both of these disasters the emergency period lasted for only a matter of hours and in this time there were no reported instances of organizations having to deal with varying reports of the crises.

Jonesboro and Topeka Tornadoes. -- In Jonesboro and Topeka inaccurate information about the tornado emergency was very minimal. In
fact, in Topeka initial reports about the path of the tornado and extent of damage proved to be very accurate as further assessments of the situation were undertaken.

Summary. -- The empirical evidence for deriving this hypothesis is rather limited. In two of the four emergent situations, Anchorage and Fairbanks, some of the disaster information was inaccurate. On the other hand, there was no evidence of variations of the reports of the crisis situations in Indianapolis and Wichita. In the case of the three control disasters, the evidence is very minimal about the accuracy of emergency information.

Hypotheses Relating to Cultural Structure Conduciveness
II. Group emergence is facilitated if there is little community preparedness for disaster and stand-by mechanisms have not developed to cope with emergencies.

This major hypothesis encompasses the following subhypotheses.

Hypothesis 1. If there is no disaster subculture in the community, emergent groups are likely to develop.

This hypothesis encompasses two subhypotheses.

Hypothesis 1-a. When primary values are underscored and there is a great sense of urgency to act to mitigate the effects of the disaster, emergent groups are likely to develop.

Anchorage Earthquake. -- There is evidence which indicates that primary values were underscored and there was a great urgency to act immediately after the earthquake struck Anchorage. Search and rescue
teams were organized quickly and one of the organizers claimed that "this organization was born spontaneously out of need and began to function instantaneously and continued to function until it was no longer needed." Another respondent in explaining why the teams were organized said that "they assumed responsibility I think because... of a moral compunction here that something needed to be done. It had to be done... We just went right ahead and assumed all the authority we needed to assume to get things done... And no other agencies were assuming this responsibility, absolutely nobody." These comments reveal that certain tasks were seen as requiring immediate attention as certain basic values were being threatened.

**Fairbanks Flood.** -- In Fairbanks the crisis situation was characterized by much urgency since in a matter of only a few hours over half of the 30,000 residents of the city had to be evacuated from their homes and transported to refugee shelters. Then the large-scale task of mass shelter care for the evacuees had to be accomplished with limited resources of both trained personnel and crucial equipment and supplies.

**Cincinnati Flood.** -- The flood situation in Cincinnati varies considerably from the Fairbanks crisis. In Cincinnati primary values were not threatened and few if any tasks became urgent through neglect. Even the residents who were flooded out reacted rather routinely according to the following account.

There are many people who live along the river, and I don't know for what reason, who are used to floods and they're used to moving out. When the river comes up,
they move out. And they're used to going back and cleaning up and they take a flood really in their stride. There's not too much excitement. They help each other and maybe that's the reason why things don't get out of hand too much. I don't know why there are people like this, but they do move in and out every year or every time there's a flood.

Even though one-sixth of Cincinnati was inundated during the flood, an employee of the highway maintenance division was able to claim that "life in the city, of course, goes on pretty well as normal." Commenting upon the response of the employees of the division he stated: "They do a good job, and they react well to emergencies. They don't panic. They face the problem and thank God we've always been fortunate to have this type of men. We are able to overcome many things that might seem insurmountable."

A chief from the police department claimed that he "didn't feel that there was any urgency" about handling the flood situation. Along the same lines, a lieutenant in the police department said: "Now from the disaster standpoint, we who are in police service don't look at this at all as a disaster." Similarly, the chief from the division of traffic engineering stated: "I don't know, but I would rather expect that you might find Cincinnati somewhat accustomed to floods." The urgency of completing certain tasks was mentioned by an official of the local Red Cross chapter who said that "there wasn't too much a sense of urgency or tension."

The existence of a flood disaster subculture in Cincinnati is made explicit in the comments of a city official.
You know, a newcomer to Cincinnati concerned about such a thing as this flood would be concerned about the state of the people who are affected by it and be quite upset. Until you have lived here for some years and realize that practically every so many years the thing floods over and therefore it's a regular condition, not a new condition. And in a sense, although it's a disaster each time it happens, it's not a disaster that this town is unused to. Your sympathy disappears.

A doctor from the city public health department explained that the flood is "a disaster that we expect every so often so we have a regulation procedure." He added: "We haven't been caught as it might be vulgarly said with our pants down. . . . We are prepared for floods down here."

Indianapolis Explosion. -- After the coliseum explosion in Indianapolis, the primary value of preservation of life was underscored and there was much urgency associated with the dealing with approximately 300 injured. One of the major tasks was providing transportation for many of the injured to the various hospitals. Rescuing those individuals who were trapped under huge pieces of debris became the most urgent task. None of the responding organizations had any equipment suitable for lifting the pieces of debris, and it was about one hour after the explosion before a crane was located and brought to the scene.

Wichita Plane Crash. -- In Wichita there is some evidence that a disaster subculture has at least partially developed. The city is known as the "Air Capital of the World," and one resident commented: "In fact, airplanes are so common around here that you don't look up to watch one. I know I don't. I go about my business." Community
organizations have taken into consideration the amount of air traffic when formulating disaster plans as is revealed by the police chief's statement: "In our particular case, due to the heavy amount of air traffic we had determined the likelihood was probably more prevalent for an aircraft type of disaster than any other type of disaster."

The remarks of a new resident in the city also suggest the existence of a subculture.

I'm not from Wichita. This is my first year here. But it seems to me that some of the cooperation and some of the unhurried attitudes or unharrassed attitudes if you will, would be from the realization that quite possibly a lot of people in Wichita have anticipated such a crash. Not only the civic leaders, but everyone who hears airplanes going overhead all the time. And maybe some sort of residue of: 'We expected it all the time.'

**Jonesboro Tornado.** -- Although Jonesboro is situated in a tornado-prone area in which neighboring communities have been struck by tornadoes, a tornado disaster subculture had not developed in this community. There were no standby mechanisms which came into play once the tornado had struck. Consequently, immediately following the tornado, primary values were underscored and there was a great urgency to act. Attention was devoted to the value of human life as the following comment by the police department member reveals: "We realized that our big problem right at that time was immediate help for the dead and injured and what we needed was flashlights and plenty of them."

**Topeka Tornado.** -- Some elements of a tornado disaster subculture have developed in Topeka, particularly with respect to tornado weather watch and warning. A legend centering around a hill, Burnett's Mound,
on the southwestern edge of the city may have inhibited a fuller
development of a disaster subculture. Apparently some residents
believed that a tornado would never pass over the mound and strike
Topeka. One local resident said that "all my life I'd heard that, and
most generally the tornadoes have gone around it [Burnett's Mound]."

On the other hand, Topeka is located in "tornado alley" and there
is evidence that preparations are made each tornado season between May
and October in anticipation of an emergency. A check list of steps
to follow in the case of a tornado warning has been prepared by civil
defense and an officer of that organization made the following comment
about the use of this check list.

The list cards we send out. You saw those cards that
we sent out that you go around through this debris.
You'll see these tacked to the side of the wall. I've
seen hundreds of 'em tacked to a radio set or a tele-
vision set. . . . Hundreds of 'em I've seen around
all over this area and they learn. Well, they knew
what to do.

A local school principal also discussed preparations for a possible
tornado touchdown.

Well in my profession we're constantly alerted to
hazards of tornadoes and the extreme necessity to take
every precaution since we're responsible for quite a
large number of students. And we had just had a
meeting about four or five days prior to this tornado
stressing the importance of our role since I'm involved
in summer school also and it was the tornado season to
take every precaution under any circumstances. So I've
always been alert to the possibility of tornadoes
mainly because we're oriented along this line profes-
sionally.

Summary. -- The evidence reveals that the primary value of
preservation of life was underscored in Anchorage, Fairbanks,
Indianapolis, and Jonesboro, and in these communities emergent groups developed during the emergency period. In contrast, in Cincinnati, Wichita, and Topeka, where there was no group emergence, preparations had been made to mitigate the effects of the disaster, and consequently primary values were not generally threatened and few tasks became urgent through neglect. In Cincinnati, in particular, the appropriate responses to the flood situation were well-established in a disaster subculture, and as a result the conditions conducive to group emergence did not occur.

**Hypothesis 1-b.** If the community has had no prior experience of dealing with similar emergencies, emergent groups are likely to develop.

**Anchorage Earthquake.** -- Few American communities have had recent prior experience of dealing with earthquake emergencies since major earthquakes do not tend to occur frequently in the same area. This was the situation in Anchorage which had not recently experienced an earthquake or any similar large-scale emergency. The community in dealing with the crisis was not able to draw upon knowledge gained from prior experience.

In central Alaska there has been no serious flood since 1948 and summer rains have not produced high waters of any magnitude since 1937. Small parts of Fairbanks have been flooded almost every spring by the Chena River. Spring thaws result in May being the usual flood month. However, this limited spring flooding does not constitute a disaster for the residents of Fairbanks. It is expected and does not create
any major community disruption. In contrast, the mid-August flood caused by heavy rains created a large-scale emergency. This flood was larger and occurred at a different season of the year than most previous floods. "We have had floods here before," claimed a city civil defense official, "but never of this size, never of this magnitude."

Cincinnati Flood. — Flooding in Cincinnati is an annual occurrence. As a result, dams, levees, and flood gates have been built, and each year as the flooding commences, community organizations respond with procedures that have been used effectively in previous floods. Many organizational members have had extensive experience in dealing with prior floods as is indicated by the remarks of our respondent.

I've been a police officer in Cincinnati now 29 years and in that 29 years I suppose I've seen the Ohio River go to flood stage at least 25 of [the times], maybe more. I also worked what we term the base flood in 1937 when the crest of the Ohio reached 79.9 feet. . . . After that time, most of the utilities and the businesses along the river were cognizant of the fact that the river could go to 80 feet and prepared accordingly with building of the Barrier Dam flood wall and the pump.

Similarly, a local Red Cross member stated: "Now all of us has gone through at least three routine floods. . . . From these routine floods we have had good training."

The various community organizations in Cincinnati have available records and guidelines which have been formulated from data of prior flooding and which serve as a basis for responding to each successive flood. For example, according to a police lieutenant "if they would tell us ahead of time that the crest was going to go to 66.5 feet,
we can practically draw a line on the map and tell you just where that
66.5 feet would go because we know exactly what our elevations are and
what would flood and what wouldn't flood." The policemen redirect
traffic to predetermined detours once certain streets become inundated.

The installation of flood gates by the highway maintenance divi-
sion is one of the major tasks during the flooding in Cincinnati.
These gates are installed at certain elevations as the river level
rises to certain stages. The knowledge of when certain flood gates
will be installed is quite widespread including river-front businesses
according to the chief traffic engineer. "In almost every case those
businesses have been in the area for many years and they know for
themselves the sequence of closing [of the flood gates] and when the
water comes up they shift themselves and get their equipment out
immediately." Even the exact amount of time that is required to install
each flood gate is known and recorded. Commenting upon the efficiency
of highway maintenance employees in installing the flood gates, a
public works employee said: "They know their job. They come up from
the ranks and know thoroughly what it is necessary to do. They've
actually planned it out and know all the steps to be taken. And
whenever a situation such as the flood develops, it flows smoothly in
the what we could call emergency situation."

**Indianapolis Explosion.** -- In Indianapolis the only recent prior
emergency which was somewhat similar to the coliseum explosion was the
collapse of a section of seats at the Indianapolis Speedway on Memorial
Day, 1961 during the annual 500-mile race. As a result one hospital
now gears its disaster plan to a possible disaster at the track. The hospital furnishes the track with doctors and nurses and victims of track accidents are directed to it. A run-through of the disaster plan is held the week prior to the race. Outside of this, there was no evidence that knowledge of this prior disaster assisted the community organizations in responding to the coliseum explosion.

Wichita Plane Crash. -- The community of Wichita has not had an emergency situation of such magnitude as the plane crash in recent times, but as the following remarks by the fire chief reveal, there have been several prior plane crashes. "Well a plane crash is not nearly as unusual as you might think because we've had a few of them down. Small civilian planes we've had them crash in the tops of trees with no loss of life or buildings involved and we've had them crash into buildings." The manager of the municipal airport reported that there are approximately 20 to 30 limited emergencies a year and since 1954 two full-scale disasters had been prepared for by activating the community disaster plan. In one instance a plane with 88 passengers was expected to make a crash landing because the pilots reported losing control of the aircraft. The disaster plan was fully activated with 33 pieces of emergency equipment and 150 to 200 people standing by at the airport as the plane landed without difficulty. The other incident involved a bomb scare aboard a Boeing 707 which was to land at Wichita. Once again the disaster plan was completely activated and a search failed to produce a bomb once the plane had landed. In the 1950's there was a major disaster at the airport when one of the
hangers and a number of planes burned. The fire was largely uncontrol-
nable because large amounts of plane fuel were involved and water was
the only medium available for fighting the fire.

**Jonesboro Tornado.** -- Jonesboro in dealing with the tornado
emergency was not able to draw upon experience gained from a prior
similar disaster. Several respondents indicated that they could not
recall a previous major crisis in the community. One respondent
noted: "We're not used to disasters of this type in this particular
community. We're used to reading about them 30 miles away from here,
40 miles, but really they don't have any significance to how we react,
you know." The emergent coordinator of disaster relief services
stated: "But anything like this we never had nothing like this since
I've been here in Jonesboro."

**Topeka Tornado.** -- In Topeka organizational members have had
prior experience of coping with tornadoes and similar emergencies as is
revealed in the comments of the regional official of the power and
light company. "Yes, we had a tornado in one of our small towns at
Meriden about five years ago at which time we had a very similar
situation to this. It was not anything approaching the magnitude of
the Topeka storm, but the same basic principles apply."

A number of police officers commented about a major flood which
occurred in Topeka in 1951. One officer said: "You see we had a
flood here in '51 where we were confronted with a similar situation as
far as disaster conditions were concerned." Another officer stated:
"I think probably most of us that were here in 1951 gained the most
practical experience that we ever could. Because here's a whole section of town inundated by a flash flood . . . and we never lost a life in that." Also commenting upon the flood, an officer claimed:

It broadened my knowledge enough that so that I accepted these things as they came and worked them out. But I think it was a very, very profitable experience for me while it wasn't very profitable as far as the city was concerned. And then two of the other disasters that we've had over a period of years that I've been here each one helps a little bit to your store of knowledge. And even though you don't specifically remember any particular instance, its in the back of your mind and it works for you.

Only one year prior to the tornado the Kansas River Bridge over the Kansas River collapsed creating a community emergency. Numerous organizational members mentioned that their organizations fully mobilized and responded to this crisis situation.

**Summary.** -- The empirical evidence from which this hypothesis is derived is not consistently present in all the community crises. Two of the communities in which there was group emergence, Fairbanks and Indianapolis, have had prior experience with similar emergencies. Fairbanks has had previous flooding, but not since 1937 have they experienced a flood similar in magnitude and time of occurrence to the 1967 flood. Similarly, Indianapolis had to deal with an emergency at the Speedway on Memorial Day in 1961 which was somewhat similar to the coliseum explosion. On the other hand, Anchorage and Jonesboro had not recently experienced a similar crisis, and group emergence did occur in these communities. All three of the control disasters characterized by no group emergence had had prior experience of dealing with similar emergencies.
Hypothesis 2. When there is a lack of disaster planning or disaster plans and preparations are inadequate, inappropriate, or unrehearsed, emergent groups are likely to develop.

Anchorage Earthquake. - In Anchorage an official in the police department claimed that there was no overall disaster plan for the city. Similarly, a newscaster described the lack of disaster planning in Anchorage. "We don't have a good civil defense plan. The city doesn't know what to do, but they are responsible for their part of it. They need the assistance of the military, but the city can't tell the military what to do. The military doesn't want to tell the city what to do. The civil defense doesn't have a program and they don't know what to do. It's through nobody's fault. It's just something we never expected would happen."

The evidence reveals that the disaster plans that did exist were neither entirely adequate or appropriate to handle the community emergency in Anchorage after the earthquake. A lieutenant in the fire department said that the department had not planned for an earthquake. In fact, they were much more prepared to cope with an atomic attack having discussed such matters as evacuation, but they never really had discussed a natural disaster such as an earthquake and how they would respond to it.

Concerning the state of disaster planning, a city employee in Anchorage commented: "Our preplanning was kind of short due to the insufficiency of the CD structure and the dormancy of the program. By dormancy I don't mean that ______ the former director wasn't active
because he was, but one man just couldn't do the job that the city manager and some of the rest of us in the administration felt that should have been done to get ready for any kind of catastrophe."

A city official of Anchorage commenting upon the lack of preparation for such a disaster said that "the previous organization /city civil defense/ had not been really designed for this sort of thing at all. . . . We were just not organized for this sort of thing here at all." This official further documents the lack of appropriate disaster plans in the following comments. "But the thing is that there was no plan. I mean we had no plan developed for this type of thing at all, absolutely nothing. And this is what I felt before and I still feel this way. That is, you have to be organized. You have to have some sort of plan and it has to be broad enough so that if something happens you can take care of it. Of course, we never thought about earthquakes. I don't think it every entered anyone's mind about an earthquake, but we didn't have any plan or anything. We weren't organized to cope with any kind of a major situation. As I say, all the efforts have been headed toward the shelter program and stocking with supplies and so forth."

**Fairbanks Flood.** — The situation was quite similar in Fairbanks during the flood crisis. A police department official claimed that the department did not have a general disaster plan suitable for covering this major disaster. Commenting upon the adequacy of disaster plans, a duty officer from the Alaska Disaster Office said:

We had plans. People may think we went into that cold, but we have the Alaska State emergency plan. We had the
city of Fairbanks emergency plan. But no one can say how you're going to get hit. This is where you're hurting. Now no one thought there'd be six feet of water coming down the streets in Fairbanks. What do you do? Your plans are gone and at best you have to work with what's available.

Cincinnati Flood. -- Disaster planning especially at the organizational level is extensive in Cincinnati. Respondents from such organizations as the police and fire departments, Red Cross, civil defense, public health department and public works department all indicated that their organizations had disaster plans. In addition, our data reveals that there is a considerable amount of interorganizational disaster planning. For example, the fire department has done disaster planning with The Salvation Army and various hospitals and Red Cross has interorganizational disaster plans with civil defense and the public health department.

In Cincinnati the disaster plans were both adequate and appropriate for handling the flood situation. The adequacy and appropriateness of the plans are related to several factors including the factor of rehearsal of existing plans. For example, an employee of the division of water pollution and control reported that "all our equipment is run previously to the time of any flood season to check it out. It is all energized a day or so before a flood time." A doctor from the public health department pointed out that "each year Red Cross and we review our relationships in regard to flooding just to make sure that everything is set to go. Now this was done this year." Rather than rehearse disaster plans, the highway maintenance division makes sure
that experienced employees are always available to assist in the
installation of the flood gates. "Now between floods there are people,"
according to the superintendent of the division, "who leave for one
reason or another, retire, get promoted. So there is a change in organi-
zation and you must try to keep a nucleus of experienced men in the
work and break in new men. There are times when we may have two foremen
on a job where there's only one needed because we realize that we better
have a back up man in case one of them leaves us by next year."

The disaster plans of the various organizations in Cincinnati are
frequently subjected to review and revision. A civil defense official
reported meeting "with the Red Cross just a week prior to this flood
for the purpose of establishing closer liaison and exchanging ideas on
operational concepts." A respondent from the local Red Cross chapter
stressed the need to have current disaster plans. "There is an overall
disaster plan which has been printed up. All of which has been in the
state of review for the last year and are constantly being reviewed."
Similarly, another Red Cross official referred to the usefulness of
recently developed plans when he stated: "Some preplanning which we
have been doing in the past six eight months paid off and we had
a sufficient personnel to put on an emergency status immediately and
then augmented our forces as the hours went on."

**Indianapolis Explosion.** -- Analysis of the data from the Indiana-
polis coliseum explosion reveals that existing disaster plans were not
sufficiently comprehensive or up-to-date to be of optimum use and value
in coping with the emergency. When one of the deputy chiefs of the
police department was asked about an overall city disaster plan, he replied:

Yes, we have a disaster plan. I think we have one that was established a few years ago, but of course in my opinion, and this is my own opinion, I don't know how this was followed much. I mean as far as equipment is concerned that has to be current and I don't know exactly if the plan was current enough that the equipment would be available /or/ to call people to get a certain equipment.

A local Red Cross official in Indianapolis pointed out that the Red Cross is represented in an overall committee composed of representatives from the fire, police, and other organizations. This committee which was organized by the civil defense had not been meeting much for the last two years. The Red Cross director stated: "Well, we haven't /met/ much at all for about two years /or/ about a year and a half, but I would guess that from what happened last night, they will be meeting again."

The disaster plans were apparently not sufficiently comprehensive to encompass a disaster situation such as the explosion at the Indianapolis coliseum. The disaster plans specify that civil defense should not assume control in this particular situation because a state of emergency had not been declared while apparently neglecting to establish an alternative source of authority.

Wichita Plane Crash. -- Disaster plans in Wichita were very adequate and appropriate for coping with the emergency situation after the plane crash. A community disaster committee in which most of the community organizations are represented held regular meetings over a
period of years to develop community disaster plans. The initial planning focused upon preparations for a plane crash and the scope of the plans was gradually broadened to encompass all types of emergencies. The community disaster committee held a meeting five days prior to the plane crash and a committee member made the following comments about that meeting.

At the meeting of the 11th as I recall we had some 36 key people of all the emergency organizations in town. We now included the ambulances, the hospital staffs, medical associations, the medical council, national defense transportation and all these other units that we had previously not focused into this procedure quite intimately. We invited in, we discussed the procedures, told each one what they were supposed to do, by whom they were to be alerted, to see whether they approved of it. Changes were made and then we discussed an actual establishment of an actual disaster area. . . . We discussed what the coroner was going to do, what the police were going to do, what the air force was going to do, the county fire department, the postal authorities, the federal aviation. We went through where the morgue was going to be, the command post and all this and that. Who had what. We even discussed marking bodies, marking locations. We went through everything we could think of. . . .

The fire department of Wichita was heavily involved in this community disaster planning. "I can assure you," a fire department official stated, "that with a good workable disaster plan, solving your problems will be minimal, in comparison to trying to solve the problems that develop when you have no disaster plan." The police department had also participated in disaster planning. A respondent from the police department said: "The police department with other agencies in the area had been holding meetings and drawing up disaster plans to cover such a plan as this as well as for major fires, tornadoes, floods
and so forth. As a result of these meetings it is felt that the disaster was handled in as efficient a manner as possible. Commenting upon the efficiency of operations at the disaster scene, this respondent added: "I think that this plan and the fact that we had talked it over just made it go together so."

The local Red Cross chapter in Wichita has developed extensive organizational disaster plans as well as participating in the community-wide disaster plan. A chapter member said: "You know we opened a school. This was done through our prearranged plan... We have earmarked every location in the city, complete with what kind of facility is it, can they serve food, how many toilets they have in it, even down to how many they can sleep in it and so on." He also pointed out that their disaster plan is frequently rehearsed and constantly updated. The Salvation Army also has its own disaster plans which are regularly practised. "We are always on call," according to a Salvation Army captain. "We are always available. I can in five minutes on this CB network get enough men to handle any disaster."

Jonesboro Tornado. -- In Jonesboro disaster planning at the community level was practically nonexistent and at the organizational level it was very limited. In fact, many key community organizations did not have any disaster plans. For example, the police department did not have a disaster plan. A county civil defense official stated: "We should be more prepared... We need more planning and drills in what to do when an emergency arises." The need for more disaster planning was stressed by another county employee who claimed: "The
public, when I say the public, the whole Craighead County be more alert in these things that can happen and try to be better prepared. There is no doubt about that has to be brought in.” Similarly, another respondent stated:

I think that there needs to be more planning prior to the storm. . . . From here there is a lot of lost motion the first day, and there is. No question about it. Well, I believe that some of this could be prevented if a little more planning was done just within the local area here. If a little more planning was done, so that each man knew what his job was going to be. Because we — the problem of waiting until the storm hits you're already pressed for time, you've got people coming at you from all directions so it's pretty difficult to plan it as thoroughly as you should.

The disaster planning which had been undertaken in Jonesboro was not very adequate or appropriate for coping with the tornado crisis. According to a county civil defense official there is a state disaster plan that different communities use, but this is a "paper" plan which had not been practised in Jonesboro. The official stated: "Now our old plan which was Races (Radio Amateur Civil Emergency Services) is sort of fizzled out in the last few years. We see right now that [we] got to get this back to going like it was at one time." He also added: "Unless we have drills which we haven't then the first thing you know the Races plan has like I say just sort of fizzled out."

When asked whether the Jonesboro community has a disaster plan, one respondent replied: "Through civil defense we have a disaster plan which is obsolete. It just hasn't been kept up." Concerning the disaster plan of the local Jonesboro Red Cross chapter, a regional
official stated: "They have a disaster plan. This had not been reviewed and brought up to date." Similarly, a hospital laboratory employee noted: "The hospital supposedly has a very nice disaster plan, but an important point is that I have never seen this disaster plan. . . . In this one department I know that no one had any idea of what they really should be doing."

Topeka Tornado. -- Disaster planning at both the organizational and community levels in Topeka was extensive. The police and fire departments, hospitals, ambulance service, telephone company, gas service company, city forestry department, school system, Red Cross, National Guard, and a nearby air force base all indicated that they had developed disaster plans within their organizations. A major in the police department said that "we have insisted that all of our officers be absolutely familiar with this plan." In addition, these organizations participated in a city-wide disaster plan which had been developed by civil defense.

The disaster plans in Topeka proved to be very adequate and appropriate for coping with the tornado emergency. Several police officers indicated that their disaster plan was followed closely. "There were some alternations," according to one officer, "in as much as I think that the original disaster plan called for the patrol major to assume full command and deploy manpower. But the traffic major was here first and is a senior man. I mean a minor alternation." A police captain claimed that the disaster plan spelled out what he was supposed to do and it was followed in this emergency.
Perhaps prior implementation and revision of the police department's disaster plan contributed to its effectiveness in the tornado crisis. A police lieutenant stated:

We've put it into effect several times... I mentioned the bridge collapse and this plan was developed after the 1951 flood. But we've had several flash floods. We've had people completely inundated on these flash floods, and we have used emergency procedures or disaster procedures on those. The collapse of the Kansas Avenue Bridge, we used portions of it that were applicable.

The police department disaster plan and city-wide plan have undergone a number of revisions. The police chief stated:

Why when I came in as chief I began to work over this plan. Particularly since many of the people in there have the equipment operation had gone out of business and we needed to bring this all back up to date. We brought it back up to date probably in 1963. And then it's been revised and upgraded by the civil defense many times since.

In Topeka the disaster plans are frequently rehearsed. The Red Cross holds a yearly simulated disaster in May which roughly coincides with the beginning of the tornado season. The police department and numerous other organizations participate in these simulations. In these run-throughs the hospitals and ambulance service focus upon efficient and fast movement of casualties from the disaster scene to medical centers. Concerning rehearsals, one respondent pointed out:

Now these citizens' bands do a lot of drilling and you can tell it. I've listened to this operator over there at civil defense headquarters and you could tell by the way they kept their transmissions short and to the point. And when there was an order given, there was no question about it, and they just took off and went where they were needed.
Summary. -- The disaster plans in Anchorage, Fairbanks, Indianapolis, and Jonesboro tended to be inadequate, inappropriate, or un-rehearsed, and in these communities emergent groups developed during the emergent period. In the control disaster situations, where there was no group emergence, the disaster plans had been formulated for the specific type of crisis which occurred in each community, and thus they proved very appropriate. In addition, the disaster plans had been rehearsed and kept up-to-date.

Summary

The empirical evidence from which the hypotheses of this chapter have been derived is not consistently present in all the community crises. However, as Table 4 at the end of Chapter VI reveals, each hypothesis is related to empirical data from several of the disaster situations and in most cases the hypotheses have been generated on the basis of evidence which was derived from all seven community crises. In other words, through an inductive process of analyzing empirical data, we have formulated two major hypotheses and seven sub-hypotheses concerning social processes and cultural structure conditions that facilitate group emergence. We shall now summarize our findings concerning these two types of conduciveness to emergence.

Social Process Conduciveness

We have found that there is the necessity for developing an overall picture of the disaster situation. That is, for any type of coordinated community effort to occur, the nature and extent of the
damage to the community has to be ascertained. This is necessary in order to understand the dimensions of the tasks which now face the community. The number of dead and injured, the areas which were damaged, and the nature of the damage are all matters of crucial importance. The initial assessment and inventory, much of which is visual reconnaissance, is always a rather difficult task in the conditions created by the disaster impact. In addition, no single community organization is usually responsible for initially collecting and interpreting such data. Consequently, certain collections of individuals tend to develop elements of group structure and to provide the locus for the collection of information concerning the extent of damage.

Arriving at a collective definition of the crisis situation is frequently related to communication possibility. If relevant, emergency information is not pooled, the communication facilities such as phones and radios are inadequate or inoperative, and variations in disaster reports persist, the overall crisis situation may remain undefined during the emergency period until emergence occurs as a collective solution to the problem. Thus, an undefined crisis situation is conducive to group emergence.

**Cultural Structure Conduciveness**

Our findings reveal that group emergence is associated with the cultural values and norms concerning disaster preparations which prevail in a community. For example, emergence is facilitated when a
priority of values develops about the urgency of accomplishing certain tasks such as search and rescue. However, in certain communities the appropriate responses to stress situations are well established in a disaster subculture and as a result primary values, such as the preservation of life and hunting for the dead, are seldom underscored. These communities with disaster subcultures develop standby mechanisms which come into play in place of group emergence. In other words, preparations are made to mitigate the effects of disaster and when disaster agents occur, primary values are usually not threatened and few tasks become urgent through neglect.

The development of a disaster subculture is closely related to the number of disasters a community has had. Previous community disaster experience provides some residue of learning which is applied in subsequent situations. The degree of community disorganization and stress is less when the agent is more well known and perceived. If the agent is not familiar, community members are less able to engage in adaptive behavior which would lessen the potential damage and the dimensions of the tasks for organized effort. If community members can make an accurate and rapid interpretation of environmental cues to assess the potential seriousness of the agent, this allows them more time to take preventative action. Previous experience often leaves a residue of experienced people who have a knowledge of the relevant tasks, and the learnings from these previous experiences tend to be applied in the new situation. In addition, a specific disaster may give rise to the development of new community organizations.
designed to cope with situations which were handled by emergent groups in prior disasters.

Disaster plans are one of the main forms of community preparation for a disaster. When community organizations have no disaster plans which fit into an organized, overall disaster plan, their emergency response tends to be too segmental, too limited in scope, and too much dominated by the immediate present to adequately cope with all aspects of the crisis. Community preparedness for emergencies is usually a matter of degree of preparation; it is rare to find a community in which there has been a complete lack of disaster planning. The more common situation is to find evidence concerning the inadequacy and inappropriateness of preplanning. For example, predisaster arrangements for community coordination generally tend to be "paper" and not operative arrangements. In addition, most organizations seldom have emergency simulation exercises in which disaster plans are rehearsed. Consequently, group emergence is facilitated when the community lacks adequate, appropriate, and rehearsed preparations for a crisis.
FOOTNOTES: Chapter V

1. For brief overviews of the seven community crises see Appendix A.
CHAPTER VI

GENERATION OF HYPOTHESES OF SOCIAL STRUCTURE
CONDUCTIVENESS TO GROUP EMERGENCE

Introduction

In this chapter as in the preceding one we continue to develop hypotheses concerning the conditions conducive to group emergence. We further analyze data from the seven community crises that were the sources of empirical evidence in Chapter V, and we use the same procedures as were used in the preceding chapter.

In this chapter we focus upon the social structure variables of the community social system that are associated with group emergence during crisis, whereas in Chapter V we dealt with social processes and cultural structure conduciveness. At the end of this chapter we present a table that summarizes all the hypotheses that have been generated in Chapters V and VI.

The Hypotheses

Hypotheses Relating to Social Structure Conductiveness

III. Group emergence is facilitated when there is an authority lapse or ineffective authority structure at the community level during the early part of the emergency period.¹
This major hypothesis encompasses the following subhypotheses.

**Hypothesis 1.** When the legitimate encumbents of authority positions do not play their roles and command posts are not immediately established at the disaster scene, emergent groups are likely to develop.

**Anchorage Earthquake.** -- In Anchorage an authority lapse persisted for a period of time after the earthquake. The situation about forty minutes after the earthquake at the Public Safety Building which soon became the center for many emergency operations is described as follows: "There seemed to be no command, no authority, no one taking hold."

Certain people in positions of authority and leadership were not immediately present in the Public Safety Building. The mayor arrived at the Public Safety Building about fifteen minutes after impact, but he soon left to seek military assistance at a nearby military base. This tended to leave an authority vacuum since the city charter states that in an emergency the mayor shall have the power conferred by law on police officers and shall exercise such power as chief executive officer to prevent disorder, preserve the public peace and health and provide for safety of persons and property. Before leaving, the mayor did not consult with the fire or police chief. He returned in approximately one hour.

Concerning the operations of the fire and police departments during the first hours after the earthquake, one respondent stated: "They didn't get in and use their authority." Further testimony to the lack of overall control is given by the organizer of search and
rescue teams. "Now what I found when I came on the scene early Saturday morning was essentially, I guess, a leadership void, or if not a leadership void, a decision-making void." He adds: "All I know is that when I appeared at the Public Safety Building where they were setting up these command posts, that the fire captain told me that there was no one who apparently had the prime responsibility for organizing the rescue, the search and rescue operation."

**Fairbanks Flood.** -- The situation was similar in Fairbanks during the 1967 flood. The mayor of the city did not tend to assume overall community authority or establish a permanent operating base. One respondent noted: "The mayor had temporary headquarters down here at the Travelers' Inn, I believe, or someplace. And he was in and out all the time, but he didn't actually have headquarters per se there."

**Cincinnati Flood.** -- Our data for Cincinnati reveals no evidence of an authority lapse at the community level. The incumbents of authority positions performed their functions of controlling and directing disaster activities. For example, a member of the local Red Cross chapter reported that throughout the initial stages of the flood "there was an almost complete top echelon headquarters group that stayed here in the building. None of us went home as far as possible and everyone tried to man whatever phone that had to be answered and provide whatever coverage that we could provide." He further added that "trying to keep abreast of what was happening and just stay on top of the whole operation, this has been about my role so far." According to two of the Red Cross directors, "we've been on alert naturally as soon as the
rains started to come down and Monday morning we reported in here about seven o'clock." They later indicated that they had overall responsibility for directing the Red Cross disaster operation.

**Indianapolis Explosion.** -- Analysis of the data from the Indianapolis coliseum explosion reveals that for at least the first half hour no organizational member with the exception of a civil defense staff member made any attempt to assume overall control of the initial search and rescue activities. As one respondent pointed out: "... the police officers, the brass, the lieutenants that were out there -- they were all inside and they were lifting these things /pieces of concrete and other debris/ around and they never thought of setting up a command post or anything like that, or trying to supervise overall direction ..." This lack of overall control also is revealed by the fire department chief's comments: "Well, it's just one of those things where there wasn't one guy standing there. You do this or you do that and the other thing. It seemed that we all had our job to do ... /and/ as to one person directing this thing, I wouldn't say who that individual was because everybody went ahead and took care." Similarly, a Salvation Army major said: "Well, everybody seemed to allocate themselves a job and went to it."

An inoperative authority structure in Indianapolis seems to be associated with the initial lack of development of overall disaster activity control. Most of the heads of the key participating organizations did not tend to arrive at the scene until about thirty minutes after impact, and thus organizational members holding positions of
authority were not present to immediately assume control and direction of activities. It was not until the police chief arrived just before 12:00 p.m. that overall direction began to emerge as the chief more or less took overall command of the situation.

_Wichita Plane Crash._ -- There was no lapse of authority in Wichita during the early part of the emergency period following the plane crash as the incumbents of authority positions in the community met their role expectations and command posts were immediately established at the disaster site. The deputy fire chief reported arriving at the scene about eight minutes after the crash. The chief of the fire department who arrived ten minutes after the crash assigned the deputy chief to direct operations from the southwest portion of the fire and at the same time he informed the deputy chief that a command post would be established north of the crash site. In about fifteen minutes the deputy chief was ordered to the command post by the chief. The deputy chief explained that the chief "had to leave the command post for awhile so he left me there in charge of the command post until he returned."

The police chief also arrived at the scene shortly after the crash. He reported:

_Upon arrival at the disaster we set up a command post. . . . As additional police personnel, police reserves, highway patrol, sheriff's officers and other law enforcement agencies arrived, they were dispatched and assigned from the command post in the 21st block on Piatt. The air force immediately set up a command post in this area also, as well as the fire department, the Red Cross, The Salvation Army, and other associate agencies. As the Wichita Fire Department and the Air Force Fire Department fought the_
blaze, the police with the assistance of those agencies mentioned above we kept busy handling both vehicular and pedestrian traffic in the area.

A centralized command post was established later in the day in a vacant building one-half block from the crash area. The power supply company provided emergency service for this command post. It was from this command post that the Red Cross carried out emergency relief activities, and a captain from The Salvation Army who also operated from this command post commented: "But I think the setting up of a command area really centralized the thing though, where the orders emanated from one central area."

Jonesboro Tornado. -- In Jonesboro an authority lapse occurred for a couple of hours after the impact of the tornado. Certain incumbents of authority positions did not perform their functions of controlling and directing disaster activities. For example, the mayor immediately became involved in the actual search and rescue efforts rather than assuming a position of overall control and coordination. The mayor reported that he later "went over to the community center which had been set up as an emergency morgue to try to see if there was anything I could do personally over there in the way of helping to identify some of the dead." Similarly, a Salvation Army captain became involved in traffic direction and when asked what he would do differently in another disaster, he said: "The first assignment would be to stay in my office by my telephone and not be out directing traffic." The county civil defense director learned of the tornado hitting Jonesboro while watching a television program from Memphis.
This was approximately thirty minutes after impact, and consequently it was awhile before he commenced to perform disaster functions.

An emergency operations center in Jonesboro did not begin to function until about two hours after impact. Command posts were not set up in the disaster area during the emergency period.

**Topeka Tornado.** — In Topeka the legitimate incumbents of authority positions actively played their roles and command posts were immediately established after the tornado struck. Thus, there was no authority lapse during even the early part of the emergency period. Shortly after impact numerous command posts were established by the police department along the twelve mile tornado path. The first command post was set up by the police chief at the point where the tornado touched down. "So within eight to ten minutes," according to the police chief, "we had opened Maude Bishop School [as a refugee shelter] and moved to 29th and Gage and set up our first command post." A police captain who assisted in the setting up of this first command post stated:

I arrived at 29th and Gage which is the approximate location of the Huntington Apartments, one of the first buildings hit in Topeka. At first glance everything seemed to be a shambles there and I could envision at least a hundred and fifty casualties in that area alone. I couldn't see how it could be otherwise. So I immediately at that point at the intersection of 29th and Gage I set up a command post in my patrol car to direct the ambulances, first aid vehicles, and people volunteers. . . . We had a couple of volunteer nurses who stood by at the command post and more or less give them [the tornado victims] a preliminary check to see how badly they were hurt. The volunteers were arriving in great numbers at this time so we started sending the volunteers out in squads of five to check the rooms in this area. Their instructions were only to look for injured or possibly dead. Not to move any debris unless absolutely necessary
if there was someone who was perhaps caught in a basement, or a fallen wall, or something. To notify us at the command post so we could send the necessary equipment to free them.

Concerning the setting up of command posts in the impact area, a police major claimed:

Any officer that I have that is on the field whether he's a sergeant, a lieutenant, or captain or what he was, if he was in an area that I wanted a command post set up, he was perfectly capable of setting up this command post and working from there. In other words, I didn't have to man it with a lieutenant or sergeant or some high caliber officer. These officers were so familiar with this disaster plan that they could set up and go to work.

The police coverage of the impact area was very extensive. A number of command posts were set up as is revealed by the comments of a police lieutenant. "Well, we had one at 29th and Gage. We had one at Huntoon and Washington. We had one at 10th and Kansas. Had one at 6th and Lawrence. Had one over at Sardou and Forrest." The police chief said: "I knew that we had set up command posts across the city and then it became then as darkness became upon us and we organized our searching groups to go back in again. Then it was a problem of securing the property to see that to reduce any looting and to maintain our security."

As well as being widespread, police operations in the disaster area were judged to be effective. "Generally," according to a police major, "you found the command post arrangements very satisfactory, very satisfactory because this gave all the people in that specific area direct communication with us." This major was in charge of operations at police department headquarters.
Other community organizations also quickly established command posts in the impact area. The superintendent of the gas service company reported:

And I set up an operation center so to speak at 29th and Gage and as the men would report on the radio what their location was and what they accomplished etc., then I would redirect them as to what area to work in. . . . And as each truck reported in, my instructions were to such and such an area to check these houses. . . . It's my understanding that the storm struck down about 7:05 and by 7:20 we had, well I had my car and engineer's car, the manager's car, and three service trucks already starting into the area.

Similarly, the city engineering department established a command post and a city engineer gave the following account of departmental disaster activities.

We first set up a command post at the International Harvester Building on Stewart Avenue. And other personnel I think _____ from my office and others called the different contractors here in town and those that they could reach. They asked for them to send equipment that they cared to volunteer to the work in this effort to the location on Stewart. From that point we split up the area that we were assigned into sections. We assigned one radio unit to each of these sections along with a captain in the car plus one other engineer. The engineering department employees helped. And as the equipment showed up, this was directed to a location within that sector where they were instructed on which routes should be opened first. . . . We tried to give priority to main traffic routes first and secondly to the locations where utilities would be needing to reinstall their services like power and telephone and gas.

The Salvation Army was another organization which set up a command post in the impact area. They had one centrally located post in the disaster area. The local civil defense officials were fully alerted and were standing by at civil defense headquarters prior to impact.
Early in the emergency period the civil defense headquarters became the overall emergency operations center. The police chief after leaving the impact area reported to the civil defense headquarters before proceeding to the police department headquarters. The assistant fire chief also went to the civil defense headquarters and carried on operations from there. The mayor arrived at the civil defense headquarters at 7:45 p.m. being out of the city at the time of impact. The governor and adjutant general of the state of Kansas were also at civil defense headquarters during the early part of the emergency period.

The heads of some other community organizations became involved in controlling and directing disaster activities at the time of impact. The Red Cross director proceeded to the chapter house when the sirens sounded. "When I got to the chapter, people were in the basement working with the shortwave keeping the communications opened so that we knew as soon as it touched down in the Topeka area. I knew about within a minute after the touchdown." The sheriff was coming into the city as the tornado touched down, and he observed part of its progress across the city.

Summary. -- There tended to be an authority lapse at the community level during the early part of the emergency period in the four disaster situations in which there was group emergence. For example, in Anchorage, Fairbanks, and Jonesboro the mayors who were the legitimate encumbents of authority positions did not initially provide overall control and direction of disaster activities. In contrast, in the
nonemergent situations, authority procedures were apparent from the very beginning. Overall control was facilitated in Wichita and Topeka through the setting up of command posts at the disaster sites.

**Hypothesis 2.** When there is ambiguity concerning which official, agency, or organization has the authority to make crucial decisions during the emergency period, emergent groups are likely to develop.

**Anchorage Earthquake.** -- Once the initial authority lapse was taken care of in Anchorage, there does not seem to have been any ambiguity about the legitimate sources of authority during the remainder of the emergency period.

**Fairbanks Flood.** -- In Fairbanks during the flood, ambiguity over authority was prevalent and was related to lack of an overall centralized emergency operations center and having key decision makers situated in several different locations. City government was located in two places. The mayor had set up offices in the Travellers' Inn and the city manager operated out of city hall. The police and fire departments operated from their separate complex. The city civil defense director was located in another separate building. As a consequence, some requests for emergency supplies were being processed through the city purchasing agent and others were being handled by city civil defense.

Similarly, the lack of clarity about overall authority in Fairbanks is revealed by the comments of an emergent leader of a refugee shelter who was seeking official authorization to operate the shelter program. "Actually everybody felt that I was appointed as shelter
manager and in a way I was and in a way I was not. I sought civil defense. They had no authority and so I went to several other people and they had no authority and I found Dr. ____ who is Commissioner of Health and Welfare. And he of course knew me before. He was impressed with my shelter program. He knew what was going on and so I told him my problem and he says: 'Well, you have as much authority to run it as anybody else. . . . .' He further added: 'No one knew who was in charge. No one had the authority to go say these supplies are here. Give them to these people. It was all -- it was a mess.'

**Cincinnati Flood.** -- Ambiguity about authority to control disaster activities during the Cincinnati flood did not occur. In the area of relief activities "the American Red Cross . . . are definitely in command," according to a doctor from the public health department. Similarly, a chief from the police department indicated that there is a well-delineated authority structure among the various city departments during a flood emergency. "So there would be no problem here of coordination because we have a specific chain of command with specific units with specific responsibilities and over a period of years, year after year lateral coordination is always being effected."

**Indianapolis Explosion.** -- In the case of the Indianapolis coliseum explosion, there was ambiguity about who should be legally in authority at the disaster scene. Concerning overall direction of activities at the scene, the local civil defense director commented upon why civil defense did not fulfill this function: "Now there wasn't any state of emergency declared out there . . . so, consequently we didn't move. . . .
Another thing, this was state property and the state police had a part to play in it. . . ." As well, in Indiana the county coroner is responsible by state law for the scene of death until the investigation has been completed. Consequently, the entire security at the Coliseum immediately should have come under the coroner's jurisdiction. The coroner did not arrive until approximately 45 minutes after the explosion, and the area was not secured until some time after the disaster, being completely secured at approximately 2:00 a.m. when the city and state police cut off all incoming traffic except for individuals coming to identify the dead.

**Wichita Plane Crash.** -- There was no ambiguity concerning who was in authority at the disaster site following the plane crash in Wichita. The fire chief reported that "the overall operation was under my command. When we made the area secure from fire and no flashback or explosion hazard which we did have up until about four o'clock that afternoon with this ruptured gas main, then I turned it over to Chief [blank] of the police department. It's a matter of security and it's his problem from then on." The following statement made by the police chief reveals that the emergency activities were well controlled. "We didn't have anybody knocking heads about you do your part or anything of the sort."

The representatives from several organizations in Wichita reported that the disaster activities during the first part of the emergency period were being completely controlled and directed by the fire chief. A Salvation Army captain stated: "He [the fire chief] told me where
to put my canteen because he was in charge of the area at the time. He was solely in charge." Likewise, when asked about who was in charge, the Red Cross director replied: "______, the fire chief and his crew. This was natural."

Jonesboro Tornado. -- In Jonesboro there was no evidence indicating any ambiguity concerning which official, agency, or organization had the authority to make certain decisions during the emergency period. The authority vacuum ended when a coordinator of emergency activities was appointed.

Topeka Tornado. -- There was no ambiguity about the legitimate sources of authority during the emergency period following the tornado in Topeka. The city-wide disaster plan clearly specifies that the overall control and direction of disaster activities should be undertaken by the mayor and police chief. The plan further specifies that the senior officer at the disaster scene shall assume control until he is relieved by a superior officer or the police chief. A police lieutenant stated: "In the event of the emergency, well, if I'm the senior officer, I have to assume the responsibility -- take control. That's what it boils down to, if I am the person here who has the highest rank."

In this tornado emergency in Topeka the police department had overall control of disaster activities. In fact, a policeman was in charge of each search party which operated in the impact area. A police major who was in charge at the police department headquarters was described as "more or less overall in charge of the total disaster than anyone else the first night."
Within the police department the chief delegated authority and areas of responsibility to a number of police officers. The police chief said:

I came to the station. When I came in Major ____ was already in charge of the manpower. . . . I said: "You continue to run it. That's your assignment from here on is to see that we have all available manpower that we need to search."

**Summary.** -- This hypothesis is partially derived from the empirical evidence. Considering the disasters in which there was group emergence, ambiguity about the legitimate sources of authority occurred in Fairbanks and Indianapolis while there was no evidence of any ambiguity about the authority to make crucial decisions once the authority vacuum was filled in Anchorage and Jonesboro. In the nonemergent situations, the authority structure was well-delineated and effective from the very beginning of the emergencies.

IV. Group emergence is facilitated when there is organizational atomization of the community and the organizations involved in the emergency response are not adequately coordinated.

This major hypothesis encompasses the following subhypotheses.

**Hypothesis 1.** When organizations carry on their disaster operations independently of other organizations, emergent groups are likely to develop.

**Anchorage Earthquake.** -- During the early part of the emergency period in Anchorage after the earthquake, numerous community organizations carried on their operations independently of other organizations.
This was certainly the case with respect to the task of assessing and defining the emergency situation. Several organizations collected information about the extent of damage and retained this knowledge within the organization rather than sharing it with other involved organizations.

**Fairbanks Flood.** -- Interorganizational coordination was a major problem during the flooding in Fairbanks. The situation was characterized in the following manner by an Alaska Disaster Office official:

"The police were rescuing, but they were not coordinating with ______
\[city civil defense director\]. No one was coordinating. Everyone was running independently." "It's been pretty much a hopeless case," according to another Alaska Disaster Office employee. "Everybody's been acting rather independently, doing a good job, but wasting time because you don't have this coordination." It was also observed that "there was no basic city organization. Everyone in the city seemed to operate independently. If there was anyone who had any final say-so, it was the city manager."

**Cincinnati Flood.** -- In certain communities the need for coordination of disaster activities is recognized prior to the onset of the disaster agent. This occurs most readily in communities with considerable disaster experience, such as Cincinnati. Relief activities in this city are handled primarily by the Red Cross and this organization coordinates its operations with the city public health department. The Red Cross notifies the health department as each refugee shelter is
opened and the department then sends a public health nurse to supervise certain aspects of the shelter program. The interorganizational relationship is described as follows by a health department doctor:

Well, we work cooperatively with the Red Cross. As Miss _____ pointed out, in disaster, Red Cross more or less takes a special role and we work absolutely hand in glove with the Red Cross. In fact, there is preplanning for it. Before this thing ever broke there was passing of letters and telephone calls between this department and Dr. _____ and other people at the Red Cross. So there is no problem.

The Red Cross also notified the police and fire departments of the locations of refugee shelters and the Red Cross in turn relied upon these departments to transport the evacuees to the shelters. A local official of the Red Cross said: "I know that we've worked with city departments throughout the operation as their specialties were needed."

The division of water pollution and control and the division of highway maintenance coordinate many of the flood activities in Cincinnati. The latter division receives the river reports from the weather bureau and passes them on to the division of water pollution and control. This division then issues directives about flood gate installations to the division of highway maintenance. Thus, the authority for instituting of flood control measures resides in the division of water pollution and control. An employee of the division commented:

And by setting up standard operating procedures and knowing who has the authority to issue orders for a certain thing and close cooperation that all the employees of the city of Cincinnati have with each other, it's a wonderful working team. We don't have any problems. We have this thing, if you want to call it, regimented.
The division of highway maintenance performs many of the functions which result in a coordinated effort during flooding. The division informs the police and fire departments about which streets are closed to traffic as the flood gates are installed. The railroad companies are given advance notice by the division about where gates will be installed so that their rolling stock can be cleared from areas that are apt to flood.

The police and fire departments in Cincinnati closely coordinate their activities during the flooding. A chief from the police department reported: "At the start of this one I talked to the assistant fire chief who cleared things with his fire chief and called me back and we knew where we stood insofar as fire relationships were."

**Indianapolis Explosion.** -- The organizational response to the explosion at the coliseum in Indianapolis was rapid once it began to occur with at least twelve organizations operating at the scene within an hour after the explosion. Cooperation seemed to have been prevalent, but at the same time there was nearly a complete lack of overall coordination of the organizations functioning at the scene during the first hour. Concerning this situation, a civil defense official stated: "The most glaring fault in evidence was the lack of organization in the first thirty minutes after the explosion." He further adds: "In this case at the fairgrounds . . . we made no pretense of taking over. We worked with the police department, the fire department and the state police, and the funny thing about it, no one actually took over." The Red
Cross director also referred to the partially individualistic and uncoordinated nature of the initial response efforts:

... in the first hour after the explosion, individuals on the scene, whether or not they were members of organized units, took what action they, as individuals, deemed best. It may be concluded that in the first phase of a large disaster, chaos in various degrees can be expected and that the urge to help one's neighbors takes precedence over any immediate efforts to coordinate activities.

The lack of overall coordination resulted in the problem of uneven distribution of the injured to the various Indianapolis hospitals. The inequitable distribution of patients to hospitals occurred, according to a county official, because "there was a lack of communication between the ambulance drivers, and the people carrying out patients, and there was just no way of correlating the whole thing."

In discussing this matter, a state police captain commented:

"Well, I think the only thing ... that left something to be desired was the taking of the injured to the hospitals .... For example, General Hospital, here, was set up to take care of about 500 people, I think, on an emergency basis, and they got very few people in there. The majority of the injured went to St. Vincent's Hospital and Methodist Hospital .... I think if they were more evenly distributed, perhaps, it would have been better. It wouldn't be so much of a load on certain hospitals."

**Wichita Plane Crash.** -- Interorganizational coordination of disaster operations at the site of the plane crash in Wichita was excellent. This
was facilitated because key organizations had established command posts in close physical proximity. A Red Cross official stated: "The thing to note about this that the police, the fire department, the Red Cross, all of us are right there together. I mean we went to the communications unit of the fire department. This is on the scene communications where we could discuss the situation, where we could determine what our next steps were going to be." Similarly, the police chief noted: "And it was the people who were in charge of each group. We knew them and we were together. If we had an air force problem, we knew to get a hold of Colonel _____ . If we had a fire department problem, we got a hold of _____ or any one of the district chiefs that were there. There was no problem in any way that I could determine."

There were numerous instances in Wichita of organizations coordinating their activities with other organizations. For example, a Salvation Army captain said: "We cleared everything with either the police department or the fire department or the military authorities. Actually the military was in charge of protection. The police were in charge of traffic and it was very well done. I was quite surprised how it worked." The police department assigned and dispatched from their command post all police personnel, police reserves, highway patrol, and sheriff's officers as they arrived at the scene. When the military police began patrolling the crash area, one civilian policeman accompanied every three airmen. The task of removal and identification of the dead at a temporary morgue was handled jointly by the coroner's office and police and
fire departments. A member of the police department pointed out that "our police department laboratory technicians were assigned to assist the coroner in viewing and identifying the victims at the morgue."

He added: "It should be noted at this point that the cooperation among the agencies involved could not have been better."

Further evidence of the high degree of interorganizational coordination in Wichita is revealed in a statement by the manager of an ambulance service.

It was well coordinated, however, as far as each department that was there knew what their job was and knew what the other departments were doing, so that there wasn't a lot of wasted time as to who's going to do this and who's going to do that and who's in charge. Our meetings at the airport with the disaster committee had set up the ground rules very well, and as I said earlier, the first thing that I did when I saw how bad it was, was to find the command post.

Jonesboro Tornado. -- In Jonesboro according to a police department official there was little intra- or interorganizational coordination during the initial field operations. He claimed: "Actually it was 3:30 in the morning before all our uniformed people was a functioning organization under control of their own officers." Organizational participation in search and rescue efforts was not coordinated. "It might have been helpful or quicker," according to one respondent, "if it had been more organized."

The county sheriff in Jonesboro pointed out that the volunteers were not dispatched in a systematic manner from a central staging point. They simply randomly moved into the impact area. The allocation of supplies and equipment was haphazard with no central distribution
center. A county official made the following comments about coordination of disaster activities. "Well which -- what we'd like within the city of Jonesboro and with the county here is that we do not have a proper operational center. There was our biggest downfall. We could not coordinate this stuff into central office. When you get to it, 65 per cent of all our problems could have been solved right there."
He added: "But if you would take an operational center and have it workable like it is, well, we wouldn't have made half the different trips that we made."

**Topeka Tornado.** -- The disaster operations of the responding organizations were well coordinated following the tornado in Topeka. With the heads of so many organizations reporting to the civil defense headquarters, overall coordination of disaster activities was easily facilitated. The civil defense coordinator reported: "The city and county officials began arriving a few minutes after the tornado struck, and it was within a short time the governor, adjutant general to the state of Kansas, and their staffs arrived. In a short, but I would say effective joint planning session resulted in quick control and security of the devastated area and formed a basis for considerable planning." A major in the police department pointed out that it was planned in advance that the civil defense headquarters would become the coordinating center for all disaster operations.

Many of the disaster activities were coordinated through the Topeka police department. The police coordinated the operations of the highway patrol and sheriff's departments, and the sheriff in
turn looked after all ambulances coming into the city. The sheriff stated:

The ambulances . . . from other counties, other towns and cities seemed to come from all four directions. And the minute they would hit town, we would meet them and try to take them to the location where they were needed, but they didn't know the city. That took a lot of our time, was running, chasing ambulances around wherever they were needed, taking them to the hospital and such as this.

Assistance from the various military units was requested and deployed from police department headquarters in Topeka. There was excellent cooperation between the nearby air force base and the police department as is revealed by the remarks of the major in charge at the police department.

I'm referring to Forbes Air Force Base. This was the number one. These were the number one people with who I had contact. They sent their air police top sergeant in and actually I have never in my life had the cooperation that was given to me at that particular time. In fact the sergeant came in and reported down here beside my desk and said: "Now anything that you want you tell me and I'll get it for you." And this was true of anything that I would want, why he'd come up with.

The police department worked closely with a number of community organizations including the fire department and hospitals. There is a police monitor in each Topeka hospital which facilitates communication and coordination. The situation at the police department headquarters during the emergency period is described by a police captain:

The commanding officer of the National Guard was here and his staff. The Forbes Air Force personnel, officers were here. Civil defense had a liaison man here, however their main officers weren't here. . . . Salvation Army headquarters was down East 6th Street. Of course, we had close liaison with them. Red Cross was quartered in the city auditorium and we had close liaison with them.
The city engineering department attempted to coordinate their operations with other responding organizations. A city engineer said: "Our people as they reported in checked with me. We assigned one man to the headquarters of the police department, another at the gas company, another at K P and L [Kansas Power and Light]. This department also coordinated some of the disaster tasks. They contacted contractors in the city to secure equipment, and the volunteered equipment was then allocated by the engineering department to various sections of the impact area for street clearance and debris removal.

The close proximity of certain command posts in the impact area facilitated interorganizational coordination. The superintendent of the gas service company pointed out that the police "set up their headquarters more or less at 29th and Gage where we had [ours]. We didn't have constant communication, but we could walk over and ask them or vice versa. They could come over and see us at any time. We probably located within 50 feet of each other."

Summary. -- Emergent groups developed in the Anchorage, Fairbanks, Indianapolis, and Jonesboro emergencies, and in these communities the responding organizations carried on their disaster operations quite independently of other organizations during the first part of the emergency period. In contrast, the efforts of the organizations involved in the emergency response in Cincinnati, Wichita, and Topeka were adequately coordinated on an interorganizational basis. There was no group emergence in these three communities.
Hypothesis 2. When there is duplication or omission of disaster
task performance, emergent groups are likely to develop.

Anchorage Earthquake. -- In Anchorage after the earthquake problems
of task duplication and omission developed. In certain instances high
priority tasks were not being performed by the responding organizations.
The lack of delineation of task assignments at the community level per-
sisted for awhile after impact. According to the organizer of search
and rescue teams "it wasn't clear who under the mayor and the city
manager had primary responsibility for what. And there was confusion
in the early hours I think between the responsibilities that were to
evolve on the fire department, the police department, and civil defense,
and I'm not sure even in the structures of the formal structure exactly
how civil defense is supposed to mesh with these groups any how." As
an example, the man who was the alternative emergency health service
director did not realize he held this position, and he stated that he
really did not know what he was to do to handle the city emergency
health services.

On the other hand, there was some duplication of task performance.
For example, both city and state civil defense became involved in the
evaluation and salvaging of food and fuel resources.

Fairbanks Flood. -- The lack of overall community coordination in
Fairbanks was accompanied by task duplication. There were duplications
of tasks according to an Alaska Disaster Office representative "because
there wasn't this internal organization. There was not this central
communications center where all messages came in and were dispersed to the person who was actually supposed to handle it."

**Cincinnati Flood.** -- Our evidence does not reveal any duplication or omission of high priority tasks in Cincinnati during the flooding.

**Indianapolis Explosion.** -- Following the coliseum explosion in Indianapolis the lack of overall coordination resulted in the duplication of certain tasks. For example, several organizations attempted to compile casualty lists. Representatives from the city police, state police, and Red Cross were all independently sent (apparently without knowledge that other personnel were making similar efforts) to each of the hospitals to obtain lists of the injured. A Red Cross official pointed out:

... that the traditional role of Red Cross was to handle welfare inquiries. Well, someone yesterday morning thought that should be done out at the coliseum at its headquarters building and they wanted us to send all these lists that we got from the hospitals out there and they would handle welfare inquiries. The county civil defense director who talked to someone about it and insisted that we send the lists out there. Well, I got on the phone and said to him that this was our responsibility and we're the one that the public expects to handle all inquiries.

Even though certain tasks were duplicated, other tasks were not immediately accomplished because of the lack of overall coordination in Indianapolis. The locating of a crane for lifting debris was delayed for nearly an hour because the organization having a list of available equipment was not immediately informed of the need.

**Wichita Plane Crash.** -- During the emergency period following the plane crash in Wichita there was little, if any, duplication or
omission of high priority tasks. When asked about the duplication of tasks, a police department official replied: "Maybe there was some overlapping in the first period, but it was not noticeable. Maybe I had a policeman on the end of a firehose that shouldn't have been there or something of this sort. . . ."

Jonesboro Tornado. -- In Jonesboro some disaster task duplication occurred following the tornado. A commander in the National Guard reported: "Here everyone was just running here and there and nobody could get any sleep. This guy was doing this thing, you know, and somebody else was trying to do the same thing and complicating matters."

Topeka Tornado. -- There is no evidence that crucial tasks were duplicated or omitted during the emergency period in Topeka following the tornado. The delineation of authority and delegation of areas of responsibility during the crisis probably contributed to the efficient accomplishment of disaster tasks. A police captain reported that "the National Guard was given a specific area to police and they were in charge of their own officers. The Forbes men were given a specific area in the disaster area to police and they answered only to their immediate officers." A National Guard colonel made similar comments concerning areas of jurisdiction. "I thought as far as our cooperation was concerned, certainly with the police department it was real good. They gave us a section of town to -- that they asked us to seal off and control and they turned it over to us. And we moved our men in, set up block points and all in cooperation with the police department."
Summary. -- Primarily because of a lack of interorganization coordination, crucial disaster tasks were duplicated or neglected in the four emergencies characterized by group emergence. In the control disasters there was no evidence of duplication or omission of disaster task performance during the emergency period.

V. Group emergence is facilitated when the demands of performing emergency period functions exceed the response capability of community organizations.

This major hypothesis encompasses the following subhypotheses.

Hypothesis 1. When the number of demands made on organizations increases unexpectedly, emergent groups are likely to develop.

This hypothesis encompasses three subhypotheses.

Hypothesis 1-a. If the disaster is an instantaneous-diffused type and without warning, emergent groups are likely to develop.²

Anchorage Earthquake. -- In Anchorage the earthquake was an instantaneous-diffused type of disaster. It struck suddenly without any warning. The scope of impact was diffuse with extensive damage occurring in the residential, commercial, and industrial sections of the city. Parts of the downtown business area and one of the residential areas suffered extensive damage.

Fairbanks Flood. -- The flood in Fairbanks was a progressive-diffused type of disaster. There were flood warnings although these were inaccurate concerning the time and level at which the river would crest. The speed of onset was rather rapid with much of the flooding occurring within a nine hour period. The scope of impact was very
diffuse with approximately 70 per cent of Fairbanks being inundated at the peak of the flooding. This included the entire downtown business area which was one of the first areas to be flooded.

Cincinnati Flood. -- In Cincinnati the 1964 flood was a progressive-localized type of disaster. There was ample warning about the possibility of flooding. The weather bureau issued both preliminary alerts and full-scale alerts and these were widely disseminated to the community organizations by the division of highway maintenance. The health department reported having two weeks advance notice of this flood. Several respondents reported that the speed of onset was more rapid than in some previous floods, but a member of the police department reported that "the rise of the river is slow enough to give us time to think and to get ready." Even though about one-sixth of the city was inundated, the flood was defined as a localized emergency by a lieutenant in the police department. "It is a localized situation. The flood is basically let's say three areas along the river: the east side of the city and the river front of downtown. It never reaches the central business district. It didn't even in 1937 and on the west side where the Mill Creek enters the Ohio."

Indianapolis Explosion. -- The Indianapolis coliseum explosion and the Wichita plane crash were both instantaneous-localized types of disasters. There was no warning in either case except for a distress call from the plane just before it crashed. The scope of impact in both instances was quite limited in size. A police official in Wichita
claimed that "the actual area of devastation was confined to about a one and one-half block area."

Jonesboro Tornado. -- The tornado disaster in Jonesboro was an instantaneous-diffused type without any warning. The Jonesboro area was not under a tornado alert according to a police official. "We had received an alert, but it did not include our county. It did not include us." One of the assistant chiefs in the fire department said he was unaware of any tornado watch or alert for the area. A radio announcer claimed: "There was no tornado warning at all for northeast Arkansas... There was no primary warning at all."

Only thundershowers were forecast for the Jonesboro area.

The scope of impact was diffuse with the tornado cutting a 300 yard path through several miles of residential area in southeastern Jonesboro. "Of course, as far as I can remember and as far as I know," according to one respondent, "this is the biggest emergency we've ever had here in Jonesboro."

Topeka Tornado. -- The tornado in Topeka was an instantaneous-diffused type of disaster. Although there was a period of warning, the speed of onset was rapid and the scope of impact included a 12 mile path about three blocks wide from the southwest to the northeast corner of the city.

There was ample warning starting at 11:00 a.m. when the weather bureau teletype carried a tornado bulletin placing the Topeka area under a tornado watch from 2:00 p.m. to 8:00 p.m. At 6:05 p.m. weather bureau radar at the airport picked up two separate storm cells,
one to the southwest and another to the northwest. The weather bureau
teletype carried a notice at 6:50 p.m. of heavy thunderstorms moving
in from the southwest. At 6:56 p.m. the police department assigned
cars to tornado watch and all officers were put on alert and requested
to remain in their cars until further notice. At 7:00 p.m. a funnel
cloud was sighted by a policeman assigned to tornado watch in the south-
western section of the city. The police department notified the
weather station about the tornado sighting. At 7:02 p.m. a tornado
hook appeared on radar in an area seven miles southwest of the city and
moving into the city in a northeasterly direction at an estimated 30
miles per hour. The weather bureau phoned this information to the
police department and at 7:04 p.m. a police lieutenant sounded the
warning sirens. The tornado touched down in the city at 7:18 p.m. and
continued on the ground until it had crossed the city reaching the
northeast edge at 7:30 p.m.

There is evidence that the warning sirens in Topeka were very
effective in making people aware of impending danger. A Red Cross
official stated: "So that I think that as far as the warning system
is concerned the city of Topeka is very fortunate in having a good
system." An assistant fire chief claimed that the sirens sounded in
"adequate time for people to take shelter if they intended to. . . .
I would say anybody had adequate time to take proper precautions when
the sirens went off." He added: "It's unbelievable that there'd be
that small a loss of life and when such a large area is involved. So I would say the warning system -- it had to work extremely well."
Summary. — Some of the empirical evidence is a basis for deriving this hypothesis. Two of the disasters in which there was group emergence, Anchorage and Jonesboro, were instantaneous-diffused types without warning. One of the control disasters was a progressive-localized type with warning. In the other four emergencies, the evidence is not consistently compatible with the expectations of the hypothesis.

Hypothesis 1-b. If new, disaster-generated tasks occur which cannot be immediately handled by the responding organizations; emergent groups are likely to develop.

Anchorage Earthquake. -- Our analysis reveals that after the earthquake there were numerous, new, disaster-generated tasks in Anchorage. In particular, search and rescue was needed and in a more general sense, an inventory of damage and casualties was necessary in order to determine priorities. No established organization had the pre-assigned responsibility of making a general check of buildings, streets, and services on a block-to-block basis. In effect, the search and rescue operations were not viewed as being the responsibility of any particular organization. It was about 24 hours before an accurate assessment could be made as to the extent and nature of the casualties and missing persons. Similarly, no official information center was established immediately, and thus the news media had no central source at which they could secure information.

At first there was no record or inventory of available food and fuel supplies in Anchorage. No one in city government is normally
responsible for the evaluation of fuel and food resources. A city
civil defense official pointed out that "we didn't know how much of
our food stockpile had been lost. . . . So we had to . . . organize
a group of people who were in the flood and resource field to begin
evaluating our situation in this respect. And it became apparent
immediately that our food stocks in the city were in great jeopardy
because these warehouses had collapsed and the food was out in the
open and it was subject to freezing and the frozen foods were subject
to thawing because all of the freezers had lost power."

There was also a new task of sheltering and feeding refugees
to be performed. One respondent stated: "Oh yes, there were some
people who were homeless of course and others who were not homeless,
but they thought they were. They didn't know what the condition of
their building might be and they were afraid to re-enter them. So we
needed places for them. And a great many of them congregated in the
Public Safety Building."

Another new task which developed in Anchorage was created by the
convergence of people. Many were volunteers who were personally
motivated to help and found the only avenue to do so was through organi-
zational participation. This places stress on the various community
organizations to use the volunteers. The effective utilization of
these volunteers is an important element in the overall community
response, but having to incorporate the volunteers into the organiza-
tion may produce increased demands upon the organization.
In Anchorage there was considerable convergence of people. By 7:00 p.m. the Public Safety Building became crowded with people -- volunteers offering their services or equipment, persons seeking information, soldiers, city employees, and many others. The police counter had become the focal point of activity and information. Nearby the fire dispatcher also had information, but he was not so accessible. Decision makers had great difficulty assimilating reports amid the pressures for action and the general hubbub in the building. The situation in the Public Safety Building at approximately 7:00 p.m. is described by a city official. "All I could say is that there was a great number of people in the Public Safety Building going in and out and standing in the corridors and in the lobbies opposite the police information desk, just standing waiting for someone to put them to work or standing there because they didn't know what else to do." The problem created by this convergence is pointed out by a respondent who said: "It was hard to deal with the individuals who came in. What we really needed in the disaster was organized blocks of people with someone already in command and some type of working relationship."

Fairbanks Flood. -- The major new task in Fairbanks during the flood emergency was the sheltering and feeding of refugees. Approximately 15,000 residents were evacuated from their homes and in excess of 10,000 evacuees lived in various refugee shelters in the Fairbanks area from four to ten days. These shelters had to be initially staffed and supplied by community organizations whose resources were severely curtailed by the flood.
**Cincinnati Flood.** -- In Cincinnati the flooding does not create new tasks. The Red Cross, for example, is accustomed to opening and operating shelters for flood evacuees on an annual basis. Thus, this is not perceived as a new task by this organization. Similarly, the police department simply assigns more personnel to the traffic detail to handle the rerouting of traffic around the flooded areas.

**Indianapolis Explosion.** -- In Indianapolis the convergence of persons and supplies at the coliseum created new tasks for the responding organizations. Many of the arriving persons were volunteers whom the emergency organizations had to incorporate in their disaster activities or inform them that they could not be effectively useful. Commenting upon this situation, a civil defense staff member said: "As time progressed during the early part of the morning, there was a tremendous build-up of first aid workers, medical students, medical corps men from the various services and tremendous numbers of registered and non-registered nurses." There were few tasks at the scene for most of these people to perform since practically all of the injured had been removed within the first hour after the explosion.

The arrival of copious quantities of supplies at the coliseum meant that certain organizations had to spend time receiving and temporarily storing the arriving material. The convergence of materials consisted of dressings and supplies of the fire department rescue squads, disaster boxes from a hospital, and large amounts of previously stockpiled supplies of the Red Cross and civil defense organizations. As well, a pharmaceutical firm sent large amounts of supplies to the
coliseum. This convergence of materials is described by a civil defense official: "They had so damn much stuff that we didn't know what to do with it all. It was just amazing. . . . You find that your first 20 or 25 minutes are the most critical. This is when you have the least, and this is when you need the most. And at the end of thirty minutes this stuff begins to pour in to the point of where you don't know what to do with it all."

Wichita Plane Crash. — There was no evidence of the plane crash in Wichita generating any new tasks which were not handled by the responding organizations.

Jonesboro Tornado. — In Jonesboro following the tornado the convergence of people and vehicles into the disaster area created some new tasks. These tasks encompassed establishing security in the impact area and effectively using volunteers in the disaster operations. An engineer from the highway department stated:

I do feel someone needs to assume the responsibility for closing off an area to only that traffic which is absolutely necessary at that time. And this could even be moving back 30 miles from the area and stopping through traffic and telling them that they'll have to wait for a few hours. This is not an impossibility. And try to seal off the area as closely as possible so that the people that are working in the area can function. This seems to be a problem in these things. The other thing is that you get so much volunteer help that's not actually helpful but is a hindrance to the work and to the movement of ambulances in and out.

Topeka Tornado. — In Topeka the disaster-generated tasks were handled by the community organizations. The search and rescue teams were organized and led by members of the police department. The Red
Cross had many volunteers who were specially trained in shelter operations and these volunteers worked as teams to open and operate all the refugee shelters. Another new task involved the issuing of passes for access to the disaster area and this was handled efficiently by the police department. There was a slight convergence of volunteers at the police department headquarters and a civil defense official was assigned a position out in front of the station from where he dealt with all volunteers.

**Summary.** -- New, disaster-generated tasks which were not immediately assumed by the responding organizations occurred in Anchorage, Fairbanks, Indianapolis, and Jonesboro, the four communities in which emergent groups developed and functioned. In contrast, in the non-emergent situations any new tasks which arose were handled by the community organizations.

**Hypothesis 1-c.** If certain emergency tasks are of exceptionally large magnitude, emergent groups are likely to develop.

**Anchorage Earthquake.** -- Besides numerous new tasks developing during the earthquake emergency in Anchorage, there were some regular tasks of organizations which increased significantly in size. Although the fire department did not have to cope with any major fires during the emergency period, they became heavily involved in rescue operations. The security function of the police department became very crucial and tended to exceed the response capability of the department. There was extensive damage to the essential services and the tasks of restoring the services were of exceptionally large magnitude.
Fairbanks Flood. -- The situation was similar in Fairbanks during
the flood. Many of the regular tasks of the community organizations
were not relevant or could not be performed during the flood. For
example, the flood waters immobilized the fire department's equipment
and consequently fires occurring in flooded sections were left to
burn out. Since over half of the residents were evacuated, the
restoration of essential services to the homes was not possible or
necessary until the flood waters receded.

Cincinnati Flood. -- Flood activities were handled rather
routinely in Cincinnati and none of the tasks were of such magnitude
as to unexpectedly increase the number of demands made on the respond-
ing organizations. "We'd have to have a tremendous flood here,
especially to stop us here from our operations," according to a
sergeant in the police department. The district director of the
Cincinnati area Red Cross indicated that the organization had suffi-
cient resources to handle disaster tasks.

Well, it was just a matter of putting more men within
the operating service here at headquarters and more
people getting on the phone and recruiting the trucks
more quickly than we usually do. In other words, more
people participated in the program. In fact, a lot of
people who have other assignments jumped in there
because they saw the need for it to augment that until
the emergency was somewhat over or at least under
control.

Indianapolis Explosion. -- In Indianapolis two tasks were of such
magnitude that the number of demands upon certain organizations in-
creased unexpectedly. The task of identification of the dead clearly
exceeded the capabilities of any of the organizations with available
relevant resources and needed skills. The explosion left the county coroner's office with 55 bodies to be identified.

The direction and control of traffic in the explosion area was another task of very large magnitude. The number of vehicles and the manner in which they were parked created considerable traffic congestion shortly after the emergence response began. One respondent noted "that the incoming equipment was beginning to block all of the streets and entrances around the buildings. Men driving trucks and cars would scream into the area, screech to a halt, then jump out and run inside leaving each unit in the street, making no effort to pull it to one side out of the way." In the cattle barn where the injured were being picked up by ambulances there was at one point a bottleneck of traffic since vehicles were coming into the building through all the entrances. At first there was no control and direction of traffic around the explosion scene.

*Wichita Plane Crash.* -- None of the tasks during the emergency period following the plane crash in Wichita were too large to be handled by the responding organizations. The fire was treated as a regular three alarm fire with a captain in the department claiming: "I can say that I actually do believe that there was nothing that burn't at this fire that wasn't on fire at the time of the first emergency equipment reached the scene." Other fires did not occur anywhere in the city while this one was being fought. The police department was assisted in securing and patrolling the area by personnel from the nearby air force base.
Jonesboro Tornado. -- In Jonesboro the tornado killed 34 people and injured 350 others. The existing medical facilities could not render emergency medical care to all the tornado victims. The magnitude of this task exceeded the capabilities of the existing community organizations. In addition, the search and rescue activities considerably increased the demands on the responding organizations. There was an urgent need for heavy equipment for debris removal as is revealed by a police official's comments. "The thing that I needed most and needed it right away was lighting equipment, chain saws, and other equipment that would remove rubble to where you could get to the victims and clear a path so that ambulances and other emergency vehicles could get through."

Topeka Tornado. -- In Topeka the responding organizations were able to adequately cope with all emergency tasks. None of the tasks were of such magnitude that they unexpectedly increased the demands beyond the response capacities of the involved organizations.

Summary. -- Most of the empirical evidence serves as a basis for deriving this hypothesis. In all the emergent situations except one, emergency tasks of such magnitude occurred to unexpectedly increase the demands upon certain community organizations. In the disasters where there was no group emergence, all the disaster tasks were of manageable size to be handled by the capability of the responding organizations.
Hypothesis 2. If there is organizational poverty in the community, emergent groups are likely to develop.

Anchorage Earthquake. -- Analysis of the data reveals that the immediate response of city civil defense in Anchorage after the earthquake was limited because it was largely a "paper" organization with a small staff. There was no civil defense director at the time of the earthquake. The director had resigned on March 15 and at the time of the disaster he resumed his position on an acting basis. Prior to his resignation, the organization consisted of one employee and a secretary whom the director had not been able to locate since the earthquake.

Fairbanks Flood. -- In Fairbanks, during the 1967 flood, it is not clear whether there was any organizational poverty in the community since the local organizational capacity to function was nearly completely impaired by the crisis.

Cincinnati Flood. -- Rather than organizational poverty in Cincinnati, we find that there exist several organizations with high potential for coping with community emergencies. The civil defense organization had a paid staff of nine men and it could draw upon a pool of approximately 300 trained volunteers. Likewise, the local Red Cross chapter has a staff of over 1,000 volunteers. An official of the eastern area Red Cross commented: "Cincinnati happens to be very fortunate that they've got a well trained disaster staff. They got plenty of volunteers. . . . They've got a good volunteer organization."

Indianapolis Explosion and Wichita Plane Crash. -- Organizational poverty in the community was not a problem during the emergency period
of the Indianapolis coliseum explosion and the Wichita plane crash.
In Indianapolis twelve organizations were functioning at the explosion
site within one hour's time. In Wichita the manager of an ambulance
service indicated that forty vehicles were available in the community
for emergency ambulance service. In addition, there is an active
rescue and fire reserve force of some 120 volunteers which responds to
all multiple alarm fires and other emergencies when called. These
volunteers attend weekly training sessions conducted by the chief
training officer of the fire department. They are fully equipped with
protective clothing, insurance, fire rescue units, and one pumper truck.
The police department also has about ninety active reserves.

Jonesboro Tornado. -- Organizational poverty was a problem in
Jonesboro during the emergency period following the tornado. For
example, the fire department did not have any rescue equipment suitable
for handling collapsed walls, fallen trees, and other debris. A county
civil defense official pointed out: "We don't have an office as such.
It's small. It's a small office in the Court House, but we decided to
use the police station and the city hall as the operations control
center." Similarly, a regional official of Red Cross disaster services
indicated that the local chapter was not prepared to handle the emer-
gency. "This chapter of the Jonesboro Red Cross does not have any
disaster equipment and unfortunately the disaster chairman of the
chapter who was a volunteer was transferred to another city just about
three weeks ago. So this was one of those points where there was a
lack of continuity." He further stated that because the disaster chairman had been transferred recently "there was sort of a void at the time."

The community of Jonesboro did not have adequate resources for caring for the tornado victims. The hospital in the community was not large enough and did not have the necessary personnel and equipment for administering treatment to all the injured. Many seriously injured victims had to be immediately transported to hospitals in Memphis, Tennessee. A county civil defense official pointed out that "the biggest problem of course they didn't have enough ambulances and they finally resorted to station wagons and camper-type trucks to haul the injured."

**Topeka Tornado.** -- In Topeka rather than organizational poverty there are a number of disaster-ready organizations with large memberships. The local Red Cross chapter has five permanent employees and over 300 trained volunteers. The city forestry department has a staff of 26 men who are specially trained to deal with street clearance and debris removal after a tornado. There is a ham radio club of 90 members and a citizens' band club of 25 members. Members of both clubs participated in the tornado watch and then assisted with emergency period communications.

The police reserves was an organization which became heavily involved in disaster activities. There are approximately 50 members who have had extensive police training. The reserve program started operations in 1953, and since then members have been performing
volunteer police duties and have been on standby for emergencies. A police captain noted: "But they are a real asset to us and it certainly helps our manpower in a situation such as this."

Summary. -- This hypothesis is partially derived from the empirical evidence. In the case of the four emergent situations, there was no organizational poverty in Indianapolis, there was no evidence relating to the hypothesis from the Fairbanks flood, and there was organizational poverty in the communities of Anchorage and Jonesboro. The communities in which there was no group emergence had a rich array of organizations to cope with emergency functions.

Hypothesis 3. If the disaster occurs when most community organizations are not functioning, emergent groups are likely to develop.

Anchorage Earthquake. -- The earthquake occurred in Anchorage at 5:36 p.m. on Good Friday. In order to respond to the crisis most community organizations had to undergo at least partial mobilization, as many of them had ceased operations for the Easter weekend. Search and rescue and damage assessment efforts were continued through the darkness of the evening and the early part of the night and were resumed at daybreak.

Fairbanks Flood. -- In Fairbanks the flooding was spread over several days and nights although the most severe flooding occurred within a nine hour period commencing at about midnight. Thus, it was during darkness that a large number of residents had to be unexpectedly evacuated.
Cincinnati Flood. -- The flood in Cincinnati also occurred over several days and nights and the time of occurrence does not seem to have affected the response capacity of community organizations.

Indianapolis Explosion. -- The explosion at the coliseum in Indianapolis occurred at 11:06 p.m. on Halloween night. Even though the disaster occurred very late in the evening, certain key organizations were fully mobilized and functioning since it was Halloween night. In fact, extra city police, sheriff's deputies, and civil defense police were on duty at the time of the explosion.

Wichita Plane Crash. -- In Wichita the plane crash occurred at 9:30 a.m. at which time the community organization would have commenced normal Saturday operations. A disaster official of the Red Cross pointed out that "the crash occurred at a time, 9:30 a.m. Saturday, when most members could be easily located and had the time to work."

Jonesboro Tornado. -- The tornado struck Jonesboro at 9:45 p.m. on a Friday evening. Most community organizations did not have any personnel on duty at the time of impact. In addition, search and rescue efforts were hampered by heavy rain and darkness. One respondent noted: "I guess lighting was a big problem down there. Seemed like you just couldn't get enough light. That water was dark and it seemed like it would just eat the lights up and they couldn't see. What I understand is that most of the bodies were found by just stumbling over them."

Topeka Tornado. -- The tornado started to move through Topeka at 7:18 p.m. As the following quotation reveals, all but the initial
emergency period activities had to be carried out after dark.

Another drawback at this time was the fact that the tornado did hit shortly before dark. We had approximately 30 to 40 minutes of daylight left after the tornado hit which gave us some time to make arrangements for portable lights. And also gave the utility company time to cut off the hot wires and shut off the open gas mains and so forth.

Darkness and its accompanying problems were anticipated by a police official who said: "We could certainly see the problem we were in. We knew that darkness would be on us... We called for lights." Darkness created problems for the parks department which had only one piece of heavy equipment with lights on it.

**Summary.** -- This hypothesis is derived in a limited manner from the empirical evidence. Three of the disasters in which there was group emergence occurred when most of the community organizations were not functioning, but the other one, Indianapolis coliseum explosion, occurred when key emergency organizations were fully functioning with extra members on duty. In the case of the control disasters, there was no relevant evidence from the Cincinnati flood and the Topeka tornado struck when most community organizations were not fully mobilized, and yet there was no group emergence in this latter emergency.

**Hypothesis 4.** If there is a decline in organizational response capability, emergent groups are likely to develop.

This hypothesis encompasses two subhypotheses.

**Hypothesis 4-a.** If there is incomplete mobilization of organizational membership, emergent groups are likely to develop.
Anchorage Earthquake. -- The number of earthquake deaths and injuries in Anchorage was very limited. There were four people killed and 37 critically injured. Consequently, organizational mobilization was generally rapid and quite complete in the emergency period. However, there were several instances of key organizational members taking crucial time during the early part of the emergency to check about the safety and welfare of their families and close relatives.

Fairbanks Flood. -- A very different situation prevailed in Fairbanks during the flood. A federal civil defense representative made the following comments about the impaired response capacity of community organizations. "Here in Fairbanks, as an example, the basic plan which I have, was not activated. No criticism to the local people as they were too -- it hit too quickly. Their emergency operating center was inundated with water. The city manager was in one end of town. The mayor was in the other end of town. The councilmen were spread out on rooftops all over town. Your local decision-makers, your local authority by law, were in no position to start making decisions." This critical situation persisted as there was mass evacuation to refugee shelters and the host communities of College and Anchorage leaving behind only a skeleton of the former social system.

Cincinnati Flood. -- There is no evidence indicating that any of the disaster ready organizations in Cincinnati had any problems with mobilization of membership during the flooding. The police department responded by lengthening the regular shifts of duty by three or four hours and this resulted in having sufficient personnel to double the
beat patrols in the flooded areas. An official of the local Red Cross chapter reported: "Our volunteer organization mobilized so well that there was little need for me to get involved in recruiting people or anything along those lines." He added: "We've had key manpower here to be able to handle anything that might come up on the disaster." At the beginning of the flooding, the Red Cross held several conferences at which the directors of the various services made final preparations for the flood. At the first conference it was decided "to start implementing right then and there anything that they might have to do in terms of servicing their volunteer committees."

**Indianapolis Explosion.** -- Organizational impairment was limited in the stress situation following the Indianapolis coliseum explosion. The capacity for organizations to respond was not affected by the disaster agent except in the case of the Red Cross. The chief disaster coordinator for the Red Cross did not function in his usual role because his two sons and two of his three grandchildren were hospitalized victims of the explosion.

**Wichita Plane Crash.** -- Mobilization of organizational membership in Wichita was sufficient to handle the emergency situation. A fire department official gave the following account of the department's available manpower.

Well this particular fire we had 42 on-duty personnel at the fire and we had 90 of our off-shift personnel at the fire scene. That gives us a total of 132 city firemen. We had 136 off-shift firemen come back... We used the remaining 46 of our original call-back group to put them in service at the other stations. So we didn't want any station without a fire apparatus in there and fully manned. And, of course, we also
beefed up our other companies with some of this personnel.

The police department in Wichita mobilized both off-duty personnel and reserves. The mobilization occurred rapidly. The police chief remarked: "Well I had sixty some odd reserves within the first reporting, and we think that we probably had somewhere around one hundred and forty officers."

Jonesboro Tornado. -- Following the tornado in Jonesboro, mobilization of personnel occurred rather slowly for some organizations. The police department which had eight of 24 officers on duty at the time of impact was not fully mobilized several hours after the tornado struck. Likewise, it took the National Guard several hours to mobilize. As the following quotation reveals, the gas company had difficulty mobilizing their personnel. "Normally it seemed like communications were -- weren't extremely good because we couldn't get a hold of some of them. And of course some of them woke up the next morning and turned on the radio and found out about it. We just couldn't get them."

Organizational mobilization in Jonesboro should have occurred more rapidly according to a regional Red Cross official. "I think we were a little bit delayed in not knowing exactly what we had out here. Those of us who got here should have been here eight to ten hours earlier." An engineer from the state highway department pointed out that "you normally lose effectiveness of your local crews wherever it hits because some of them are involved and in this case the foreman here was involved. That reduced his effectiveness tremendously for
that night. So this is the thing. Wherever it hits you lose effectiveness of your crews at that particular point."

**Topeka Tornado.** -- The mobilization of organizational members did not create problems during the emergency period of the tornado disaster in Topeka. Several community organizations had undergone at least partial mobilization prior to impact because a tornado watch had been in effect for several hours. For example, the citizens' band club had 15 members involved in the tornado watch and the key members of the civil defense staff were on duty in the emergency operations center before the tornado struck. An employee of the power company pointed out: "Well the storm hit I'd say after seven and we had already tried to contact all of our own local crews to get them to return to our dispatch headquarters or warehouse which is our nerve center of our operation and anything of this kind and these men were all being called in by the time the tornado reached the community."

The mobilization of one division of the police department is described as follows:

"Our officers then started to dribbling into the station. You see, we had an immediate call back on all the officers. In fact, I think everyone in the traffic division, in fact, I'm sure everyone of my traffic officers came back in. Even two or three men that was on vacation and happened to be closer in town came back in so I had a full company as far as traffic officers go."

There was also complete and immediate mobilization of the sheriff's department with the sheriff claiming that "we had all our cars on the street in all of the town for about a week there." Similarly the
mobilization of Red Cross was rapid and extensive. An official stated: "Fortunately by 7:30 we had many people in the chapter house ready to go to work. And we were in the field by eight o'clock which was, I think, exceptional when you figure so much delocation in cutting off the traffic and communications." He added:

Well, as closely as we could figure that by nine o'clock there was in the neighborhood of 1200 people that came in from other chapters to participate in this program. They were coming in so fast that we were just pushing them out into different areas as fast as we could to be of assistance. And, of course, you know when you start thinking in terms of 30 or 40 cars being loaded up to go out with food it takes quite a few people just from that factor alone. And, of course, all of our teams went out as first aid teams, all of our shelter area groups, we have 20 teams of shelter groups that actually are set up so that they have enough men to go around the clock. That's three men on an eight hour shift and each of those shifts are set up with three secretaries. So that gives you some idea and we opened four, five shelters so that gives you some idea of the number of people involved.

The gas service company was another organization in Topeka which mobilized very fully. An employee reported:

We have 110 men working from the service center, from this location, and from the 110 nearly 100 showed up for work. . . . Now we had a few men out of town on vacation that and a few people in town that were on vacation. All the vacationing personnel came in also that were available. I think probably we had less than 10 men that weren't here sometime Wednesday night, the night of the storm. Of course, most of us started working shortly after the storm hit on Wednesday night and then we worked through till about midnight Thursday night.

Summary. -- This hypothesis is quite strongly derived from the empirical evidence. In the four disasters characterized by group emergence, some of the community organizations had difficulty fully
mobilizing their membership. This was a particularly acute problem in Fairbanks during the flood emergency. In contrast, in the nonemergent situations, mobilization of organizational membership was not a problem.

Hypothesis 4-b. -- If the material resources of community organizations are damaged or destroyed, emergent groups are likely to develop.

Anchorage Earthquake. -- In Anchorage the response capacity of the local Red Cross chapter was severely limited since the local chapter house was extensively damaged by the earthquake. The city civil defense organization's response capacity was impaired as its office space in the Public Safety Building was damaged to such a degree that it could not be used immediately. Civil defense had to operate out of one of the fire department offices. Other organizations, such as the public works department which had all its garbage trucks damaged, also experienced a decline in capability to respond and operate.

Fairbanks Flood. -- During the flood in Fairbanks, impairment of community organizations was extremely severe. A Red Cross official said that it was "a little laughable to speak of resources at this time because there weren't any. Again I will repeat that Fairbanks was a lake." Most local community organizations in Fairbanks evidenced almost complete disintegration during the early part of the emergency period.

Cincinnati Flood. -- None of the key disaster organizations in Cincinnati had their capacity to respond impaired because of damage to or destruction of their material resources. In fact, the fire department possessed special equipment which could be used for fighting fires in flooded areas.
Indianapolis Explosion and Wichita Plane Crash. -- In Indianapolis and Wichita there was no damage or destruction of organizational resources, and thus no resulting decline in organizational response capability.

Jonesboro Tornado. -- The response capacity of several organizations in Jonesboro was impaired because of storm damage to material resources. There was a power failure at the time of impact and the radio station designated as the civil defense station went off the air. In sections of the city telephone service was disrupted. The equipment at the fire station closest to the impact area could not respond immediately because of damage to the station caused by the high winds accompanying the tornado.

Topeka Tornado. -- In Topeka there was no organizational impairment as a result of tornado damage or destruction to the material resources of the key community organizations.

Summary. -- In three of the four emergent situations there was a decline in organizational response capability because material resources were damaged or destroyed. In the case of the control disasters, none of the disaster-ready organizations had their response capacity impaired.

Summary

As was the case in Chapter V, we have in this chapter derived a number of hypotheses by analyzing the empirical evidence from seven community crises. As Table 4 shows, we have formulated three major hypotheses and eleven subhypotheses concerning the social structure
conditions that facilitate group emergence. We shall now summarize the findings concerning this type of conduciveness to emergence.

Social Structure Conduciveness

We have found that group emergence and the authority structure which prevails especially at the beginning of the crisis are related. When actors of high rank and authority in the predisaster stage, such as the city mayor, fail to exercise authority and leadership in the disaster system, emergence is facilitated. Abdication of authority positions frequently leaves an inoperative authority structure and authority lapse during the early part of the emergency period. A situation characterized by a lack of social control and chain of command is conducive to emergence.

Similarly, the probability of group emergence increases if ambiguity concerning the legitimate sources of authority persists during the crisis. In some community crises, there is a lack of understanding and awareness of which individual or organization should assume overall control and command. For example, when inconsistent codes specify that each of several different governmental agencies have the legal responsibility to assume overall control in an emergency, ineffective and ambiguous authority procedures will result and create conditions conducive to emergence during the initial response to the crisis.

Group emergence is related to the need for integration and coordination among the groups and organizations, each of which is
viewing and attempting to meet the needs of the disaster in terms of its own perspective and capabilities. One of the immediate problems in a crisis situation is neither uncontrolled behavior nor intense emotional reaction, but deficiencies of coordination of organizational response.

It is often the case in emergencies that allocation of resources is decentralized to a large number of organizations, each under pressure to act quickly and directly, and little or no attention is given to the linking of these resources by spanning the boundaries of the organizations. Under these circumstances, urgent tasks are sometimes needlessly duplicated or frequently they are neglected.

It is difficult to find a case of an available organization which does not try to play a part in the disaster effort and the problem is a lack of overall coordination of the response of diverse organizations. Organizations are frequently uncertain of what their relations should be to each other. Except in the case of established organizations, most organizations involved in large-scale disasters lack predisaster understanding as to the scope of their activities and the necessity of coordinating their activities with one another. Specific organizations show some hesitancy in assuming coordination since it is seldom seen as being an inherent or traditional function of any one community organization. Under these conditions the probability of group emergence is high.

We have found that group emergence is associated with an unexpected and sizeable increase in the demands upon community organizations during
a crisis. The number of demands made on community organizations is apt to increase unexpectedly if there is little or no warning, the onset of the disaster agent is rapid, and the scope of impact is widespread. When there is a period of forewarning and onset is gradual, community organizations are able to mobilize their emergency resources and take measures to ameliorate the disruptive effects of the disaster agent. In addition, the probability of impairment of organizational response capacity increases as the scope of impact increases.

The increase in organizational demands may occur when a number of new, disaster-generated tasks appear. Disaster frequently creates new tasks of undeniable immediacy which must be accomplished if the community is to continue to exist and function as a viable entity. For example, search and rescue activity is seldom considered the major responsibility of any existing community organization. The task of information clearance is one which is usually not previously institutionalized within a community and often several organizations assume this task and as a result conflict and confusion ensue.

The increase in demands for certain organizations occurs because they must cope with tasks of greater magnitude than they usually handle, and they lack the capabilities to adequately deal with them. Thus, the magnitude of the task is related to the change in demands made on emergency organizations.

Our findings reveal that organizational poverty in a community is a condition conducive to group emergence. Some communities have a rich array of organizations serving a variety of functions necessary in a
disaster. Other communities might be characterized by organizational poverty. Certain organizations are essential if disaster services are to be provided and losses minimized. A rich array of organizations increases the possibilities that the range of tasks created by a disaster can be handled and that new demands on existing organizations minimized. For example, the existence of an organization which handles emergency medical cases would prevent time and effort being expended to create an emergent group to serve this function.

Group emergence is facilitated if disaster impact occurs during the evening or night when most community organizations are not functioning. During the evening and night most organizations have to undergo complete mobilization in order to respond to the emergency since most of them would not be functioning at the time of impact. If the search and rescue and relief efforts have to be conducted at night, darkness creates problems as the electrical supply is often disrupted at the time of impact.

A decline in the organizational response capability because of incomplete mobilization of membership or organizational impairment may also contribute to group emergence. Several factors influence the incomplete mobilization of organizational membership. For example, some organizational members become side-tracked in general rescue work and do not report for duty. Expanding organizations such as the Red Cross which depend largely upon volunteer members in times of crises may not be able to recruit or mobilize sufficient personnel. In some instances, members of organizations may be killed or injured by the disaster agent.
or organizational personnel may be absent because relatives or close friends were directly affected by the impact.

It is not unusual for the capability of some organizations to decline sharply as a result of the disaster itself. The disaster agent may damage or destroy organizational resources such as equipment, buildings, supplies, and records. Because of such losses some organizations which could perform essential tasks may be almost completely deactivated. In such circumstances, emergent groups often develop to perform the functions that would be ordinarily handled by the impaired organizations.
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<td>1-b. If the community has had no prior experience of dealing</td>
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<td>with similar emergencies, emergent groups are likely to develop.</td>
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<td>2. When there is a lack of disaster planning or disaster plans</td>
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<td>III. Group emergence is facilitated when there is an authority lapse</td>
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<td>or ineffective authority structure at the community level during the</td>
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<td>1. When the legitimate encumbents of authority positions do not</td>
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<td>lished at the disaster scene, emergent groups are likely to develop.</td>
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II. Group emergence is facilitated when there is little community preparedness for disaster and stand-by mechanisms have not developed to cope with emergencies.

1. If there is no disaster subculture in the community, emergent groups are likely to develop.

1-a. When primary values are underscored and there is a great sense of urgency to act to mitigate the effects of the disaster, emergent groups are likely to develop.

1-b. If the community has had no prior experience of dealing with similar emergencies, emergent groups are likely to develop.

2. When there is a lack of disaster planning or disaster plans and preparations are inadequate, inappropriate, or unrehearsed, emergent groups are likely to develop.

III. Group emergence is facilitated when there is an authority lapse or ineffective authority structure at the community level during the early part of the emergency period.

1. When the legitimate encumbers of authority positions do not play their roles and command posts are not immediately established at the disaster scene, emergent groups are likely to develop.
TABLE 4--Continued

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<tr>
<th>Hypotheses</th>
<th>Empirical Evidence From Community Crises</th>
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<td>Emergent Situations</td>
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<td>2. When there is ambiguity concerning which official, agency, or organization has the authority to make crucial decisions during the emergency period, emergent groups are likely to develop.</td>
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IV. Group emergence is facilitated when there is organizational atomization of the community and the organizations involved in the emergency response are not adequately coordinated.

1. When organizations carry on their disaster operations independently of other organizations, emergent groups are likely to develop. | e e e e e e e |

2. When there is duplication or omission of disaster task performance, emergent groups are likely to develop. | e e e e e e e |

V. Group emergence is facilitated when the demands of performing emergency period functions exceed the response capability of community organizations.

1. When the number of demands made on organizations increases unexpectedly, emergent groups are likely to develop.

1-a. If the disaster is an instantaneous-diffused type and without warning, emergent groups are likely to develop. | e pe pe e e e pe pe |
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<td>1-b. If new disaster-generated tasks occur which cannot be handled immediately by the responding organizations, emergent groups are likely to develop.</td>
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<td>1-c. If certain emergency tasks are of exceptionally large magnitude, emergent groups are likely to develop.</td>
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<td>2. If there is organizational poverty in the community, emergent groups are likely to develop.</td>
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<td>3. If the disaster occurs when most community organizations are not functioning, emergent groups are likely to develop.</td>
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<td>4. If there is a decline in organizational response capability, emergent groups are likely to develop.</td>
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<td>4-a. If there is incomplete mobilization of organizational membership, emergent groups are likely to develop.</td>
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<td>4-b. If the material resources of community organizations are damaged or destroyed, emergent groups are likely to develop.</td>
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<td>1964 Anchorage Earthquake</td>
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<td>1965 Wichita Plane Crash</td>
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<td>7.</td>
<td>1966 Topeka Tornado</td>
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bₑ = the hypothesis is derived from evidence from this crisis  
pe = the hypothesis is derived from partial evidence from this crisis  
ne = evidence from this crisis does not provide a basis for deriving the hypothesis  
le = there is a lack of evidence from this crisis relating to this hypothesis
1. Authority is defined as a social relationship in which the orders of one person actually determine the behavior of others. See Peter M. Blau, The Dynamics of Bureaucracy: A Study of Interpersonal Relations in Two Government Agencies (Chicago: The University of Chicago Press, 1955), p. 161. Along the same lines Weber used power to refer to the ability to induce acceptance of orders; legitimation to refer to the acceptance of the exercise of power because it is in line with values held by the subjects; and authority to refer to power that is viewed as legitimate. See Max Weber, The Theory of Social and Economic Organization, trans. by A. M. Henderson and Talcott Parsons (New York: Oxford University Press, 1947), pp. 324-330.

2. On the basis of the character of the precipitating event and the scope of the resulting cultural collapse, Carr has formulated a fourfold classification of disasters: (1) instantaneous diffused type, (2) instantaneous-focalized type, (3) progressive-diffused type, and (4) progressive-focalized type. See Lowell J. Carr, "Disaster and Sequence-Pattern Concept of Social Change," American Journal of Sociology, XXXVIII (September, 1932), 207-218.
CHAPTER VII

TESTING OF HYPOTHESES

Introduction

The two foregoing chapters have been devoted to the formulation of hypotheses about the development of emergent groups in community crises. The next stage of analysis after hypothesis generation -- the testing of hypotheses -- is undertaken in this chapter.

The purpose of this chapter is to bring empirical evidence systematically to bear on specific propositions about group emergence in disasters. In the two previous chapters we have been deriving hypotheses from empirical evidence through an inductive process. Now we switch to testing the hypotheses by determining the degree of empirical support for each proposition generated in Chapters V and VI.

For hypothesis testing, we draw upon empirical data from four community crises: (1) January, 1969 flood and mudslides in Glendora, California; (2) April, 1969 flood in Minot, North Dakota; (3) April, 1969 flood in Sioux Falls, South Dakota; and June, 1969 tornadoes in Salina, Kansas.¹ Emergence occurred in two of the community crises, the Glendora flood and mudslides and the Minot flood. There was no emergence in the Sioux Falls flood and the Salina tornadoes crises.

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Hypothesis Testing

In testing the hypotheses that were developed in the two preceding chapters, we have drawn up a summary table showing the degree of empirical support for each hypothesis. Rather than restate each hypothesis as the empirical evidence is considered in this chapter, we refer the reader to Table 5 near the end of the chapter for a listing of the hypotheses. We shall now move on to a consideration of the empirical data relating to each hypothesis.

Social Process Conduciveness

Definition of the Situation and Communication Possibility

Limited Initial Information. -- In the two crisis situations in which there was group emergence, initial information was limited and the nature of the situation remained inadequately assessed and defined during the first part of the emergency period. For example, severe flooding and mudslides started to occur at approximately 4:00 a.m. Wednesday, January 22 in Glendora, and an overall assessment of the situation had not developed prior to a meeting which was held at 11:00 a.m. The severity of the crisis remained unknown for the first two or three hours, and consequently upon inquiry a key city official was told that it would not be necessary for him to come to work any earlier than his usual 8:00 a.m. time.

During the morning before the 11:00 a.m. meeting of key Glendora city, Los Angeles county, and state officials was convened, there were
several "informal, drop-in type meetings discussing the situation and coming up to the status of what's going on," according to a police department official. In addition, during the first six or seven hours of the emergency period, several city officials made separate trips into the impacted areas to assess the damage and generally evaluate the situation. However, it was not until aerial reconnaissance of the disaster area was carried out from the county fire department helicopter just prior to the 11:00 a.m. meeting and the meeting was held that a comprehensive and accurate assessment of the crisis emerged. Thus, for approximately seven hours the community crisis remained inadequately defined.

Similarly, in Minot there was a severe lack of crucial information during the early part of the flood emergency. Concerning insufficient information about conditions on the Des Lacs River, a high-ranking city employee said:

We had no liaison up-stream. We had no government people in here telling us what to expect. So we were going by what old timers up the valley had to say and we were trying to use theirs and it was just not true. We had estimates all the way as I had mentioned from a 12 foot crest on down to practically nothing. We had to fight it as it got here.

The following comments by a Minot city official reveal that initial information was very limited. "If we had known from the first time the Des Lacs started to run off that we were going to be faced with the problem that we were, we would have had altogether different planning as far as isolating big areas against this flood
and where we would have dyked and what we would have done. And we
did not have that information."

Because of the limited information about the possible scope of
the flood at the beginning of the crisis, there was some needless
evacuation according to one respondent. "There were cases where
people were taken out of their homes and then moved back in. They
discovered that they were wrong. The river wasn't going to come up
their way at least for two or three days if it kept rising. So there
was a certain amount of wheel spinning there, I think."

In contrast, in Sioux Falls where there was no group emergence
the crisis situation was adequately defined at the beginning and
throughout the emergency period. Concerning sufficient and relevant
information, a city employee stated: "We have something like eleven
gauge points above Sioux Falls and in the Sioux Falls area that we
used for monitoring what's happening. And this information was vital.
We were able to tell what was going on at all times. We had a record
of information of what the changes were, how does this change corre-
pond to what we predicted, how can be handle it, what should we do."

Along the same lines an area engineer from the Corps of Engineers
pointed out: "Yes, I think the people in the office had a real, real
find picture of what was going on in the field. This is what this
board is for over here. See we have gauges on the river at different
bridges in the city of Sioux Falls, above Sioux Falls, and below Sioux
Falls. And they were taking a reading about every hour on these gauges
and posting them on this board. Well as they have a flood stage there,
you could walk in here and instantly you would see how fast the river was rising, and how near flood stage it was. Or you could see how much it had risen since the morning before."

In the Salina tornado crisis, the other nonemergent situation, an overall assessment of the disaster developed soon after impact. The emergency operations center received immediate reports from police officers in the field concerning the areas of impact and amounts of damage. Other reports were soon received from fire, sheriff, highway patrol, and amateur radio personnel in the field. When asked how long it was before an overall picture of the crisis developed, a civil defense official said: "Oh, I would say about an hour and a half and we had everybody lined up."

The following comments by a police department official reveal that emphasis was initially placed on obtaining a fairly comprehensive overview of the disaster situation.

Where it was very apparent that we could have ran all over the damn town all night and helter-skelter and we needed, at least we felt that we needed, to start formulating a pattern of damage, an area, length, depth, to determine what kind of area we're talking about. Not so much on how much damage we had, but what's the perimeter of this thing look like so we can begin to evaluate personnel needs and if we left nothing more to secure and search which I think were the first two things -- secure and search.

He added:

We set up a sort of a tally sheet board outside on a table with two officers assigned that done nothing more than took the incoming calls and plotted them for us so we could in addition to our people out in the field, those that could move about and get some idea of perimeter damage. We were getting the reporting points
spotted to assist us in perimeter damage, in what areas we might be experiencing the heaviest damage. . . . So we kind of approached this thing cautiously. Instead of just totally going forth and jumping into the woodpile and we sit back and took about 30 minutes. . . . We held our breath a little bit for about 30 minutes or 45 minutes until we could get a picture of what we were looking at.

In formulating an evaluation of the crisis situation, in Salina, maps were used for plotting the extent of damage. A police department official stated:

Of course, then we got our mapping program started. The city manager arrived and joined with us plotting on the map from information our people had taken from the communications center and roughed in on smaller maps, we plotted on a larger map about an area we could say contained the devastation.

Further assessment of the Salina tornado disaster was made when the city manager and fire and police chiefs made a tour of much of the damaged areas about one hour after impact. One of the officials stated: "We attempted to evaluate some of the damage that had occurred. We did obtain an overview of the area."

When asked about availability of initial information about the crisis, a state civil defense official who arrived at 3:00 a.m. replied:

Yes, it was sometime not too long after we were here we had a list of the people who had been -- and fairly accurate list amazingly -- of the people who had been admitted to the hospital or had been gone to the hospital, treated, and released. The first estimates on the number of houses completely damaged and this was rather exaggerated, but by the first day light, about an hour after say at seven o'clock they had very accurate figures on the houses completely demolished, those partially demolished, and those just needing minor repairs.
In summary, in community crises where initial information about the severity and scope of impact was limited, group emergence occurred. The nonemergent situations, on the other hand, were characterized by the presence of sufficient and accurate information at all times during the emergency period.

**Insufficient Sharing and Pooling of Disaster Information.** -- Besides a lack of crucial information in the Glendora and Minot crises, there was also insufficient sharing and pooling of disaster information on an interorganizational or community-wide basis. In Glendora, for example, several organizations and individuals made appraisals of the situation during the first six or seven hours, but reports of damage and disruption were not funneled to one central location. A police department official made the following comments about the lack of a centralized information source during the early part of the emergency period. "There should be an organized communications center where all information flows in, all intelligence, and somebody keeps us up to date. It was not of that nature. There was no such thing."

Similarly, a public works department employee in Glendora recommended: "The only other area I want to set up . . . is a fully established disaster control center where we have the public works, police, fire, road department, flood control base radios all in one room and personnel maintaining each one so that there will not be a delay in bringing their emergency trailers in."

The crisis situations in Glendora and Minot were similar. At first there was no centralized information source in Minot as the
comments a local newspaper employee reveal: "People would call here. They would call the Red Cross. They would call city hall. They would call the court house depending upon who they would happen to know, I think. They certainly would call the radio stations and things of that kind."

From the very beginning of the flood crisis in Sioux Falls, disaster information was shared on an interorganization and community-wide basis. This was accomplished by holding briefing sessions every morning at the emergency operations center in city hall. A city-county civil defense official stated:

We would have all department heads, all department heads that were involved in the flood situation. In many cases general public came in. They were all invited. And the news media. The purpose of this was to have each and every department head advised of what the situation was at that minute. In some cases the fire chief or police chief normally would go home to rest. He would come back in the morning at that briefing. He would know as much after that briefing as the civil defense director, coordinator. They were brought up to date on every detailed thing that happened during the night or from the 24 hour period. What we did, what was happening, what the predictions were if they changed, what we were going to do so that no one was left in the dark as to what was going on. And these proved very important. . . . They got the story right from the horse's mouth so to speak. . . . Everybody had it that was concerned.

A police captain pointed out how functional the daily briefings were in providing necessary information about the crisis. He said:

We found out what the predictions were at weather. We found out what predictions were for areas that could be flooded. Where we might have problem areas. We had a map. Civil defense, the Corps of Engineers had a map of the river complex, dyke complex around the city and the areas that were thought to be flooded were shaded in. And of course, we were interested in this thing because in some of these areas there were houses and
we knew that if it did flood we were going to have problems. But basically these meetings at nine o'clock in the morning were just to let you know what to expect, what they were expecting and what probably could happen and so on and so forth. They gave dyke readings and past readings, how much it rose during the night so on and so forth. We knew just about what was going to take place.

Similarly, the following comment was made about the daily briefings by a Red Cross official. "The nature of the meeting was . . . telling us how high water was back at Brookings that's what 60 miles north of us. How high the water was at Dell Rapids. What we could expect here at Sioux Falls, at what time, and at what date."

In Salina, disaster information was shared and pooled on an interorganizational and community-wide basis, especially at the very beginning of the emergency period. The first thing that the assistant civil defense director did was to call the police department for verification that a tornado had struck. The police department notified the city manager, two hospitals, and Red Cross of the disaster. In addition, civil defense has a group alerting line. This is a direct telephone line to four radio stations, fire department, highway patrol, sheriff's department, and police department. Civil defense in Salina also notified the weather bureau office in Concordia and state civil defense in Topeka shortly after impact that a tornado had touched down in the community.

The sharing of information in Salina was further facilitated when the manager of the power and light company reported to the emergency operations center during the early part of the emergency periods.
Later, several hours after impact, briefings were held at the center for key organizational personnel, and throughout the emergency period the power and light company kept the emergency operations center informed about their activities and progress in restoring power.

In summary, group emergence occurred in the Glendora and Minot crises where disaster information was not shared and pooled on an interorganizational and community-wide basis during the first part of the emergency period. In contrast, a centralized emergency operations center in Sioux Falls and Salina facilitated the dissemination of crucial information on a community-wide basis, and in these crises there was no emergence.

**Inadequate and Inoperative Communication Facilities.** -- In the two emergent situations, Glendora and Minot, some of the community's regular communication facilities were inadequate and inoperative during parts of the emergency period. Several factors affected the communication possibility in the Glendora crisis. One problem centered around the number of different frequencies that were being used. The Glendora public works and police departments and the county fire, road, flood control, and sheriff's departments were all operating on separate frequencies. In addition, the two police departments from neighboring communities plus the citizens' band club were also on separate frequencies. A city official stated: "So you've got a total of about ten frequencies and it made it difficult sometimes to coordinate efforts. And so an emergency frequency would be most helpful."
Another communication problem was associated with the overloading of radio frequencies. Because the public works departments in several neighboring communities in the Glendora area are all on the same radio frequency, the Glendora department had some trouble with their radio communications during the emergency. An employee of the department explained: "Public works band radios in the automobiles are a high range radio where we're actually covering an area of 10 or 15 square miles. In fact, we even go over to some of the beach cities that are on our same wave length. So in several instances we were trying to get emergency messages across, we were being cut off by rubbish problems in El Segundo or a tree problem in Pico Rivera or something like this."

There was an overloading and malfunctioning of the phones in Glendora city hall for a period of time. Because of technical difficulties for awhile, outgoing calls could not be made through the switchboard. A limited number of trunk lines had to be used for such calls.

The Glendora police department experienced several communication problems. In the case of the phones, the number of calls was so large that the phones became inoperative for approximately half an hour and repair service was required. In addition, the existing phones at the police department were inadequate to handle the volume of emergency calls. Five incoming lines and three outgoing lines had to be installed. The department also had to borrow walkie-talkies to keep communications open to the agencies participating in the disaster response and for the use of patrol officers walking beats.
Communication problems also occurred in Minot because of inadequate and inoperative facilities. A fire department official said: "I think if you want to know the weak point of that flood would be communication by telephone. We just didn't have enough telephones."
The phone problem was further complicated when flood damage to a main cable caused the phones in the northeastern section of the city to become inoperative during the emergency period.

Both the Minot police department and county sheriff's department had insufficient portable radio equipment. A police department official stated: "The most important lesson we've learned is to have standby radio equipment and primarily the portable stuff." This lack of equipment meant that boat crews could not be contacted while on rescue missions.

In the Sioux Falls flood crisis there were no reports of communication problems. The police department console can handle all radio frequencies, and it was used extensively throughout the crisis. The facilities contain three equivalent communication boards and one board is for emergency communications only. Since they are identical position boards, a call can be handled on any board. Concerning the functioning of this communication console, a police reserve officer said: "We have a very good control center here as far as radio is concerned. It's very effective as far as communications are concerned."

The evidence reveals that radio communications were very adequate throughout the Sioux Falls flood crisis. The water treatment department, utility department, civil defense, and National Guard all had
radio communications established at the water treatment plant. A city employee stated: "So we had sometimes through a step or two steps we had communication links all the way through to all the people involved. And you could keep track of what was going on and where people were. It worked out real well." Concerning the functioning of the police department radio communications, a police captain said: "The first night we didn't have any real problems, but I clued everybody that I wanted absolutely no conversation on that radio unless they had something important to say. And it done wonders. There was hardly any traffic on there unless it was absolutely necessary." The adequacy of radio communications was pointed out by a city light department official: "By radio I was kept informed on my part. I am very well satisfied that I was informed at all times on what was going on."

In the Salina tornado crisis, major communication problems did not arise even though one-fourth of the community's phones became inoperative and only limited portable radio communication facilities were available. The failure of approximately 4,000 phones affected service to only one key emergency organization, the highway patrol. The phones in the downtown area where the emergency operations center was located were not affected and phone service to other emergency organizations was not disrupted. Long distance calls could be made in and out of Saline during the emergency period. Concerning the functioning of the phone system, a company official said: "We were getting calls through. We had some delays, but they weren't anything like 30 minutes. I'd say 5 minutes maybe."
Since March 1, the Salina police department has been located in a new building and has been using a new communication console. Concerning the adequacy of these communication facilities, a police department official said: "I think without this we would have compounded our problems many times fold." As well, the police department can monitor the radio communications of the fire and other city departments, the power and light company, phone company, sheriff's department, and the highway patrol. An official from the police department claimed: "Never at any time were we severely damaged as far as communications."

In summary, the regular communication facilities became both inadequate and inoperative at times during the crises in Glendora and Minot which were characterized by group emergence. In Sioux Falls and Salina the regular facilities handled emergency communications very adequately, and group emergence did not occur.

Inaccurate Communication Content. -- In both Glendora and Minot inaccurate reports of the crisis situations arose and persisted during the early part of the emergency period. Inaccurate information about dam breaks and four and five foot walls of water flowing through Glendora resulted in the crisis situation remaining inadequately defined for a period of time. An employee of the public works department commented:

Unfortunately in some instances they /the mass media/ overlaid the problem and had brought out mass evacuation, dam breaking, major looting problems. Things like this which citizens were listening to and getting disturbed and rumors then started developing
from these. . . . Unfortunately they continued with the 50 people being evacuated there, everything from the mountains to the ocean was a potential wipe-out and it did disturb a lot of people and we were constantly plagued by citizens calling to see just how serious it was.

A similar state of affairs existed in Minot during the first part of the emergency period. One respondent noted: "While in the first few hours there was a lot of different conflicting stories, and you just didn't know what to believe any more." Similarly the manager of a refugee shelter said: "I would say the first few days the information sometimes didn't jibe with the various opinions from the media. Apparently had information that others didn't have and some of them would probably make the news a little bit more interesting by adding some adjectives and figures that perhaps it would have been best not put in the newscast."

Much of the inaccurate information was reported to result from the type of response the mass media made to the crisis in Minot. A news official from a local radio station stated:

Well, last week during the flood what we experienced in Minot was rumor, speculation and basically distrust with the news media as a whole. It was an unfortunate situation. Information from various organizations was being given to different radio, TV, newspapers here in Minot. We got into a situation that people were actually more so than I have ever seen in a populated area become themselves to such a point that they were so dead against the news media. They didn't know who to believe and it was really hysteria at some points.

A local newspaper employee claimed that "a great deal of misinformation was given out. For example, one radio station at least was on the air and they would let people call in and they'd put them on the
air with their observations and suggestions and that sort of thing. People who didn't know what they were talking about were getting on the air, in some instances they didn't know what they were talking about, were getting on the air. Then that gave a problem of getting corrections out to straighten out situations of one kind or another."

One respondent in Minot associated the prevalence of much inaccurate information about the crisis with the development of an emergent group. A high-ranking city employee stated: "We had people up-stream calling down saying we were going to have a 12 foot wall of water coming down. This dam had gone out and that dam had gone out. And it got to be a rather frustrating thing so I took time out then to begin the organization of a control headquarters."

Inaccurate reports about the flood crisis in Sioux Falls did not become a problem during the emergency period. The assistant coordinator of flood operations stated: "Incidentally all news releases all during the flood would be released by either ______ [civil defense official] or myself, and they [news media] were not to release anything from any other person. . . . It worked out real well in keeping people informed and at the same time keeping things straight."

Similarly, in Salina inaccuracy of communication content did not become a problem during the tornado crisis. The radio stations that were on the air during the first five or six hours of the emergency period broadcast directly from the emergency operations center, and thus they had access to reports from key organizational officials and there were no reports of inaccurate information being disseminated.
In summary, group emergence occurred in the community crises in Glendora and Minot where varying and conflicting reports of the disaster situations arose and persisted during the early part of the emergency period. In contrast, the content of the communication about the crisis in Sioux Falls remained consistent as all news releases were made through the centralized emergency operations center. The situation was quite similar in Salina and there was no group emergence in Sioux Falls or Salina.

Cultural Structure Conduciveness

Community Preparedness and Development of Stand-by Mechanisms for Disaster

Underscoring of Primary Values. -- The primary value of preservation of life was underscored and there was a great urgency to act to accomplish the task of evacuation in the Glendora and Minot crises. A Glendora city official commented: "Really evacuation wasn't too well thought out. You know, it was kind of hit and miss, and that was my main concern. Property you can replace, but lives you can't." In Minot large-scale evacuation of city residents in low-lying areas had to be undertaken in a relatively short period of time.

In contrast, there is little evidence from the Sioux Falls flood crisis indicating that primary values were underscored or that there was a great urgency to act to save lives. At one point, there was precautionary evacuation of a residential area when it appeared that a dyke would wash out.
Similarly in Salina, there were no deaths as a result of the tornadoes and a rapid preliminary search of the devastated areas by fire and police department personnel soon revealed that large numbers of persons were not trapped under debris and in need of immediate rescue. This disaster, then, did not create a great urgency to act in order to preserve human life.

Prior Disaster Experience. -- The last major flooding occurred in Glendora in 1938. A major fire the previous summer was confined to the unpopulated, mountainous area east of the city and for Glendora it merely created somewhat of a traffic problem with a large number of emergency and private vehicles seeking access through the city to the fire zone. Fire emergencies in the foothills are very different from the floods and mudslides since the period of threat is shorter and the whole emergency can be handled in a matter of hours in the case of a fire according to an official from the police department.

The last major flood in Minot was in 1904. A Red Cross official stated: "Our experience with disaster has been negligible." Along the same lines, a city official said:

To begin with the Des Lacs run-off in the spring has never been considered what we call a flood threat. We would have high waters well-contained in our Sauris channel... That was never a threat that we could not handle. Matter of fact this is the first time in 20 some years I believe that the Des Lacs has a fast enough run-off with enough snow to make a flood threat.

Flooding has occurred in Sioux Falls as a result of high water stages on the Big Sioux River and Skunk Creek in 1951, 1952, 1957, 1960, and 1962. Thus, plans for a flood control project were
developed in the mid-1950's with the principal features being the construction of a diversion channel to bypass excess flood flows from the Big Sioux River around the north and east side of the city, construction of a diversion dam across the Big Sioux River with gate openings designed to pass a limited flow around the city and to shunt excess flood flows into the diversion channel, a general realignment and straightening of the Big Sioux River channel with levee building on both banks along the west side of Sioux Falls, channel straightening and levee building along Skunk Creek, and repair of existing floodwalls. The construction was undertaken in the late 1950's and early 1960's.

The prior flooding in Sioux Falls has resulted in a residue of experienced personnel being available to cope with a flood crisis. An official from the city light department said: "Most of the men that were in charge on this have been through this. They're older employees. The only new one on the deal was the superintendent of the sewer department and he had men under him that had been through this before. So that helps an awful lot. We've all had experience on this back in '62." He added: "The organization has been getting better. I think I've been through about five of these floods or threatened floods."

A local Red Cross official in Sioux Falls had had extensive experience of coping with natural disasters in several locations throughout the United States during his military career.

The reserve police force in Sioux Falls reorganized after a severe windstorm the previous summer so that mobilization could be
more quickly carried out. Prior to the reorganization the chief of the force had to call each member and that took too long. Now there are one captain, two lieutenants, and two sergeants, and the force is divided into two shifts with a separate lieutenant and sergeant for each shift. During any mobilization now, each officer has only a couple of members to contact.

Although these were the first tornadoes to strike Salina, this community has developed elements of a disaster subculture. One respondent noted: "Well, of course, Salina was always a flood town. We always had floods up until we built a dyke here back in '58, '57 or '58."

More recently this community experienced a disaster very similar in nature to a tornado. Two years ago a severe windstorm struck Salina. Referring to this storm an official from the fire department said: "What experience we gained from this and certainly it was some was invaluable to us." Even more recently, extensive interorganizational coordination involving some Salina organizations was required at the time of President Eisenhower's funeral in a nearby county.

Several community organizational officials in Salina had had prior experience with other tornadoes. For example, a high-ranking official in the power and light company was involved in disaster operations during the 1966 Topeka tornado. He indicated that this prior experience led him to encourage disaster planning in Salina. "I had spent a great amount of time there in Topeka and was very aware of the identification problems on our company trucks, the security problems."
A high-ranking city official also had prior tornado experience. He said:

I went through one of these in 1957. . . . Having gone through that experience I put some of that to work here in Salina as far as the organization in these areas /the impacted areas/.

When discussing how command posts were set up in the field after the Salina tornadoes, this same official said: "And this is one that I mention to you, a little tid bit that I had picked up in this previous tornado experience that I had." A telephone company official in Salina made the following comments about prior experience.

We try to be organized and I think the telephone company is, if I might say, was probably as organized or more organized than in most instances because we had this occur in various areas. Of course, the Topeka tornado was one experience. We had one in Manhattan last year. We had several tornadoes throughout Southwestern Bell Telephone Company. Almost every year something like this happens.

In summary, the two emergent situations, Glendora and Minot, have not had any recent major flooding and the communities have not been directly impacted by any recent, large-scale crisis. In Sioux Falls and Salina where there was no group emergence, elements of a disaster subculture have developed.

Disaster Planning. -- Commencing in September, 1969, the city of Glendora undertook preplanning for the potential flood danger during the anticipated winter rains. However, much of the disaster planning and preparations focused upon the physical aspects of disasters and the social-organizational contingencies were relatively neglected. For example, wire and plywood protective barriers were erected in
advance, and thousands of sandbags were ordered and stockpiled in county fire stations in the threatened areas. High priority was given to protecting the city's water and sewage system in the plans. The plans and preparations did not specifically deal with arrangements for interorganizational coordination or a centralized emergency operations center.

Much of the disaster planning in Glendora focused upon the functioning of the public works department's crews and a community-wide disaster plan was not fully developed. At the time of the crisis the civil defense state disaster plan was considered for use, but it was judged to be inappropriate. A city official stated: "It's not updated either as far as that's concerned. . . . We looked at it that morning and it just wasn't possible to use it. It was for a large disaster of people designed for people hurt and maimed."

Disaster planning for the flood from the Des Lacs River was practically nonexistent or very limited in Minot. The city fire and public works departments, a telephone and power utility company, local newspaper and local television station did not have any disaster plans. An official from the telephone and power company claimed: "We were not prepared for this whatsoever."

A little planning was under way in Minot when the flood occurred. Approximately 48 hours prior to the start of the flooding, a Red Cross volunteer reported making a survey of the vehicles available in the community for emergency use, especially for evacuation purposes. About one month prior to the flooding the churches in the community were
considered for use as refugee shelters. This involved merely contacting each church to determine the feasibility of such a plan. A Salvation Army captain who was involved in these efforts said: "As far as flooding I don't think anybody was prepared for what did take place."

In Minot there were some disaster plans that were not appropriate or adequate for a flood crisis. The police department had developed disaster plans, but not specifically to cope with floods. Neither did the National Guard disaster plan encompass flood situations. It dealt primarily with mobilization and functioning of the Guard during a civil disturbance.

Disaster planning and preparations in Sioux Falls for a flood crisis were very extensive. In February, 1969, a flood fighting plan for the city of Sioux Falls was drawn up. This plan sets forth the alert and warning procedures, the functions of each emergency organization, and the procedures of control and coordination of disaster activities including the activation of a centrally located emergency operations center. A high-ranking city official stated: "It The flood fighting planning was rejected quite heavily about three or four times when it first came in and so was civil defense. Then they got together and then they really fixed it up to where I thought it was acceptable."

The preparations for a flood crisis involved the holding of several meetings of key community officials. At these meetings the role of various community organizations in flood fighting activities
had been considered and arranged. A citizens' band club member stated: "I had met with the civil defense director a few times and we worked out a program where we would be involved in watching key locations where water problems might develop."

Similarly, a colonel in the National Guard stated:

We've been to at least half a dozen different meetings in planning this thing in advance. Knowing what we should do or what we should expect in the event the worst came. And those that I've talked to and instructed in our organization were very much impressed with the way the state handled it and the Corps of Engineers.

He also added:

Most any agency you can think of, Red Cross. All these people attended the meetings and discussed the things that might come up, the procedures to be used, who would have authority, what's to be done, and so it's very thorough. . . . From our standpoint . . . it operated very smoothly.

At these flood planning meetings in Sioux Falls, the reserve police were assigned the responsibility for public security and supervision during flood fighting. An officer in the police reserve explained: "We had a special meeting with civil defense director . . . . Everything was outlined, what we were requested to do, what part our rescue unit would be playing in this. . . . It if the flood came so everybody was organized."

A number of preparations had also been made in Sioux Falls for the physical aspects of a flood crisis. Some temporary dyking and reinforcement of weak points in the levee system were undertaken prior to the flooding as forecasts indicated that the spring runoff would be very high. Sandbag filling was started a couple of weeks
prior to the flooding. A city official stated: "Our crews had previously been trained and told what to watch for. Here are the techniques we use. Even before Skunk Creek had come down we had filled about 30,000 sandbags and placed them, done some dyking. We had plugged culverts and roadways. Any low spot we could think of, find, or were unsure of was plugged, sealed, or stopped up in some way. And the precautions proved to be the answer."

Having received the spring, 1969 flood watch plan for the midwestern area from the national headquarters in St. Louis, Missouri, the local chapter of the American Red Cross completed extensive preparations for a flood emergency in the Sioux Falls area. Arrangements were made for the opening, operating, supplying, and staffing of three refugee shelters. Volunteers were contacted and asked to sign up for participation in flood activities. A sheet listing the names and phone numbers of these individuals was prepared. In addition, the organizations that would be able to provide transportation, medical services, radio facilities, and shelter supplies were contacted and a list of the names and phone numbers of those able to offer assistance was prepared.

The local Red Cross chapter in Sioux Falls also had drawn up a chapter disaster plan over the last year. It was ready to be typed in final form at the time of the flood emergency. Thus, a very up-to-date plan was available for flood fighting. A local official said: "We followed this plan very close."
The evidence reveals that the disaster plans and preparations in Sioux Falls were appropriate and adequate to handle the flood crisis. A city employee said:

We had couple of meetings with the commission before hand on our plans. The commission did approve. The flood plan was approved by commission action. . . . It worked out real well. We found our problems were relatively minor. Anticipation and preparation was again as always seemed to be the key answer.

Along the same lines a high-ranking city official commented: "So I would say that this was beautifully preplanned and it went according to plan. . . ." A light department official claimed that "everything went according to plan."

Disaster planning in Salina, both at the organizational and community levels was very extensive. Over the past two years, 22 community organizations have met every three months to develop disaster plans. Each of these organizations had a disaster plan and civil defense has copies of most of them. "This I think paid off," according to a civil defense official.

Several organizational officials in Salina commented about the importance and effectiveness of the preparations, especially the community-wide disaster plans. A fire department official said: "The overall planning that we had done, certainly I was satisfied with it and I hope everyone else was. . . . This is what you have to have. I don't care how large or how small a city or municipality is. If the municipal divisions will work together and have planned to any extent their operations, it'll be so much better."
Similarly, a police department official stated:

You lay out the plan and like I say I think the greatest advantage of the plan is the exposure and planning and knowing what the other guy's thinking is and then making the minute-to-minute or hour-to-hour adjustment to apply. . . . I would have hated to have been into this situation without any previous planning.

The disaster plans in Salina were constantly under revision as the remarks of a power and light company official reveal:

Well actually our plan has been developed for many years, but our plan is modified as our equipment changes and our people changes. And because for the last two years we've been meeting on some occasions every month with law enforcement, utility, and government, city government people, I feel that our plan was completely up-to-date with the city's plan, mainly because we are coordinated so closely.

In summary, group emergence occurred in the Glendora and Minot crises where the disaster plans and preparations were generally limited, inappropriate, and inadequate. In contrast, the disaster plans and preparations were very extensive and adequate in Sioux Falls and Salina for the crises. In these communities there was no group emergence.

Social Structure Conduciveness

Community Authority Structure

Authority Lapse. -- During the Glendora flood and mudslide crisis, the legitimate encumbent of an important authority position did not fully play his role during the first part of the emergency period. A full-scale crisis began to develop at about 4:00 a.m. and
this key official who was responsible for the overall control and coordination of all disaster activities did not arrive on the scene until about 7:00 a.m. The situation was further complicated because this official had assumed his position only three days earlier, and thus he was not familiar with the prior disaster preparations and not fully aware of the problems facing the city. In addition, he was not familiar with the available staff and city resources and the general organization of the city. This official commented: "Actually you know I didn't do the first full day what I should have done. I was almost in a state of shock really. . . . Fortunately the council and the mayor . . . were more disaster-oriented than was I."

Another city official said: "It's unfortunate that our city manager had only been here a week. It was difficult for him to direct activities about which he hadn't learned."

In Glendora command posts were not immediately established at the disaster scene. For example, it was not until after the 11:00 a.m. meeting that the county sheriff's department, road department, and flood control district set up command posts in the Glendora area. All three of these organizations were heavily involved in the emergency response prior to the establishment of the command posts.

A similar situation existed in Minot during the flood crisis. The following comments of a local newspaper employee reveal that the legitimate incumbents of authority positions tended to abdicate their roles and become involved in the operational level of flood activities rather than provide overall control and coordination. He stated: "So
what happened initially, I think, Sunday, was that the people who would be most concerned with this flood were on the firing line you might say fighting it or out securing information. Those people were hard to get in touch with."

In Sioux Falls an authority lapse did not develop at any time during the flood crisis. An emergency operations center was set up in city hall under the direction of civil defense on Tuesday, April 1, nearly one week before Skunk Creek was expected to crest. A phone number for this center was released to the public. The next morning a briefing was held at the center for state, county, and city officials. A high-ranking city official stated:

> The mayor was in charge. Under him was the civil defense director. Under him was the flood control director. . . . To me this was the key to the way this thing worked. We had somebody responsible. We had somebody in charge. They weren't going off one direction and one the other. We had complete coordination down at civil defense center. There was only one person authorized to issue orders, and he did. We had complete rapport between our civil defense director and state civil defense director.

The emergency operations center in Sioux Falls operated in such a manner so that someone with authority was always present. A city-county civil defense official stated: "We tried to keep it this way. Either the assistant coordinator of disaster operations or myself was in that control center at all times. And when he went out on an assignment, I stayed. When he came back, I'd go. . . . But at no time was that control center unmanned by he or I. So we didn't lose control. It wasn't a matter of someone calling up and say well they're not here. . . . But you had to do it otherwise
once you, you know, you go crawl in the corner some place, you've lost control. Some one else is going to start making decisions because you're not around and this is bad."

In Salina there was no evidence of an authority lapse at any time during the tornado crisis. The civil defense director was absent from the city at the time of impact. However, the assistant director was able to respond immediately after impact, and there was thus no authority lapse in this organization during the first part of the emergency period.

The police chief reported to public headquarters and the emergency operations center very shortly after impact. The fire chief monitors the fire department's communications while off duty, and thus he became immediately aware of the severe storm damage and responded to the scene of a reported explosion. He then went to the emergency operations center.

The city manager also reported to the emergency operations center and his comments reveal that the presence of key organizational personnel at this one location facilitated overall control of disaster activities.

This program / the dispatching of search and rescue teams/ was going on very, what we assumed to be and I'm sure it was, very efficiently because the fire chief and police chief were both on top of this when we elected to leave the station and survey the damage in the Marc, Quincy, Roach area from the EOC. We were in the EOC at this time. . . . As I was notified almost immediately I reported to the EOC instead of going out into the field because I wanted to be where the reports were coming in.
In addition to the immediate activation of the emergency operations center, the setting up of command posts in the field also facilitated overall control of disaster operations in Salina. Right after impact the fire department established a command post in the field at the chief's car. "We immediately set this up," according to a fire department official, "because the engine companies were already in and the people were already doing their duties -- their seek and search and shutting gas off. It was just very, very well planned."

Later three command posts were set up. The impacted sections of the city were divided into three areas and a police department member was given overall charge of each area. A city official stated:

This police officer . . . was able to maintain continuous surveillance of the area. He talked with the people in charge of the clean-up operation for that particular area and they moved in an orderly direction instead of going off into say seven or eight different directions at the same time. We felt this was a very satisfactory working arrangement.

Concerning the three command posts in the field, a police department official said:

We had a pretty good liaison work program in the field with a central point in each of our three disaster areas we felt and in constant communication with us at staff level to make decisions to pass back and forth. So we never at any time had a communications problem with field people.

In summary, in both the Glendora and Minot crises there was an authority lapse during the first part of the emergency period primarily because legitimate encumbrants of authority positions did not
adequately play their roles. There was group emergence in these two community crises. In Sioux Falls and Salina where there was no group emergence, overall authority and control of disaster activities existed from the beginning of the emergency period.

Ambiguity about Authority. -- In Glendora there was a little ambiguity over which city official had the authority to make certain decisions during the flood and mudslide crisis. One departmental head was simply ignoring the directives of a higher-echelon official and diverting the manpower and resources of his department to different tasks than those being given priority by his superior.

There was also some ambiguity concerning jurisdiction in one residential area contiguous to Glendora but outside city limits with a private road access to the city. It was finally resolved that the city could function in this area during a disaster, and after the 11:00 a.m. meeting the county organizations assumed responsibility for this area.

There was a great deal of ambiguity about authority in the Minot flood crisis during the first part of the emergency period. When asked who should assume overall control during a community crisis, four respondents mentioned the civil defense coordinator, three mentioned the mayor, two mentioned the city manager, one mentioned the mayor and civil defense coordinator, and another mentioned the mayor and city manager. There was no explicit statement in any city ordinance or document specifying a source of overall authority during an emergency according to a local newspaper employee. When asked
about this, he replied: "I don't think so. I'm quite sure that's not the case." He added: "We have a civil defense director and he was active, but I would say he was on a sort of an equal status with a number of other people. . . . No, I don't think we have anybody, any chain of command if that's what you're kind of getting at."

The following comment by a local Red Cross official in Minot also reveals ambiguity about who should have overall authority during a crisis in the community. "I think it unofficially ended up after the disaster developed of ______ being the official disaster representative which is civil defense."

There was no evidence of ambiguity about authority during the flood crisis in Sioux Falls. The disaster plan specified four alternative sources of authority: the mayor, the city-county civil defense coordinator, the superintendent of the flood control project, and a long-time employee of the city water department. This chain of command was followed except in one instance. A city employee explained that the Corps of Engineers was given complete authority during a period when a levee required immediate reinforcement. "Well the Corps of Engineers because of their vast experience and resources took that project over. . . . We put every available piece of equipment that the corps needed at their disposal and let the corps have a free hand in that area. If they wanted something, we got it for them."

In Salina there was no ambiguity about the authority structure during the tornado crisis. Salina has a commissioner-manager form of government with the city manager having responsibility for all
administrative functions. Except for the mayor making the formal request for National Guard assistance, the city manager was in overall charge of disaster activities. A National Guard captain indicated that the city manager was in a position of overall control. "At least he seemed to be the one that everybody turned to. Every meeting I was to he did the handling of the meetings." He added: "He seemed to be the one that I would say was directing pretty much the whole thing."

Crucial decisions were often made jointly by three or four organizational officials including the city manager, assistant civil defense director, and the fire and police chiefs. A civil defense official stated: "We coordinate this thing and, of course, we allow the officials, the town officials is the ones who really say yes or no. . . . Of course, the police chief is always sitting right here and the fire chief and these people are the life blood of the organization."

In summary, there was ambiguity about the community authority structure in the Glendora and Minot crises during the early part of the emergency period, and group emergence occurred in these situations. In contrast, in the Sioux Falls and Salina crises there was no group emergence and there was no ambiguity concerning which community official had the authority to make crucial decisions.

**Interorganizational Coordination**

**Independent Organizational Response.** During the first part of the emergency period in the Glendora crisis, organizations generally carried on their disaster operations independently of other organizations.
When asked if there was overall coordination of disaster activities, a police department official replied: "I would say in a very loose way. . . . But it was a very loose working relationship. Each individual department went about their own job and took care of their own job. . . . And it was more of a cooperative organization rather than someone being in overall command per se."

Prior to the 11:00 a.m. meeting in Glendora "what happened was that we kept at a lower level and each one . . . committed their own areas of responsibility. We did not have any direct coordination at the higher levels between our chief engineers in our respective departments," according to a county fire chief.

The following comments by a Glendora police department official reveal a lack of interorganizational coordination during response to the crisis. "I don't honestly know when the Red Cross got into it. I know they were in it during the situation, but I don't know how quickly they responded or exactly when. I know that after it was going I became aware that they did have a position set up in a church at Bennett and Glendora Avenue."

There was a considerable lack of interorganizational coordination in Minot during the flood crisis. An official from the sheriff's department when asked about overall coordination during the first part of the emergency period claimed: "No, I would rather believe that it wasn't too well coordinated, no. And I believe that one of the biggest problems was . . . coordination." He added: "I don't think there has probably been proper coordination between city
government and the county civil defense director. . . . I would say that everybody has to be united and coordinated either within a complex or by telephone. But everybody must know what the other person is doing and what he's geared to do."

Along the same lines a city official stated: "One organization would be thinking they were doing the right thing by doing their things presupposing that that was their authority and their area and consequently we recognized right away that we were getting under the Des Lacs deal as this developed we knew what had happened we were getting some cross areas of and conflicts of authorization and control. This was one of the big reasons why this central control was set up." He added: "The city handled it through the city manager's office. The county to more or less agree maybe with the civil defense office. And the county probably worked by itself to a degree. And we had everybody working in different places by themselves so to speak."

Concerning the initial dyking efforts in Minot a respondent claimed: "I don't think that was really coordinated as such. I think everybody just started on their own, you know, with what facilities they had and with what manpower they had and etc."

A Salvation Army captain described the initial disaster activities in Minot as follows: "Well, we weren't called by anyone as such. We haven't been called in on any flood commissions or civil defense commissions or anything. They evidently went on their own, and like I say, we went on our own." He added: "Then I think everybody was on their own. . . . There was no coordination meeting that I know of anyway."
In Sioux Falls the daily briefings at the emergency operations center facilitated interorganizational coordination since representatives from nearly every responding organization attended these sessions. At these briefings each organizational representative found out what other organizations were accomplishing and what was generally going on. Overall coordination was further brought about because most of the decision-making occurred at the centralized emergency operations center. For example, The Salvation Army received all requests for emergency feeding from the emergency operations center. In addition, the reserve police force had a man on duty in this center at all times during the emergency period.

In Salina the activation and functioning of the emergency operations center resulted in a high degree of interorganizational coordination from the very beginning of the emergency period. Approximately 45 minutes after impact, the assistant civil defense director, city manager, and police and fire chiefs were meeting at the emergency operations center as specified in the disaster plan to coordinate disaster operations. Other organizational officials were also at the center at various times. For example, once the National Guard became involved, they always had an officer at the emergency operations center. "Everything was directed [from] here," according to an official operating out of the center.

The setting up of command posts in the damaged areas facilitated overall coordination of disaster activities in Salina. A city official said:
We had our area captains who kept in constant contact with the EOC and with the crews as they were working. . . . And volunteer labor was asked to report to three areas within each of these three areas, a location, rather, within each of these three areas. And there we had the area captain able to assign the volunteer equipment to the areas that needed it most because he was the guy that really knew what was going on within his geographic area. If you needed chain saws in a given location, if you needed trucks in a given location, or if you needed loaders in a given location, they could be dispatched from that one central point.

In summary, in the two emergent situations, Glendora and Minot, the responding organizations carried on their disaster operations quite independently of other organizations during the first part of the emergency period. In Sioux Falls and Salina where there was no group emergence during the crises, there was coordination of organizational activities throughout the emergency period.

**Duplication or Omission of Disaster Tasks.** -- In the Glendora flood and mudslide crisis during the very early part of the emergency period some disaster tasks were needlessly duplicated. For example, both the city police department and county sheriff's department were patrolling and securing the same areas. A police department official explained:

One place perhaps in the area of the sheriff's department in the area of Live Oak and Palm had people up there and we had people up there. And we didn't know what they were doing and they didn't know what we were doing just especially, you know, at that point. Glencoe Height is a road that is county and right next to it is all city and they were up there. I talked to _____, the commander of that particular unit and we agreed while I was up there we would coordinate and you know make sure each knew what the other was doing. But prior to that I didn't know what they were doing up there. Didn't even know they were up there.
There was a considerable amount of task duplication during the Minot flood crisis. Prior to the emergency of the central flood control headquarters, "it was a duplication sort of thing," according to a YMCA employee. "I mean, you know, like they'd call us and some people would get terribly excited and the first thing you know then we'd go out to a place. Civil defense would maybe come to a place and it's just the material was tied up, our trucks were tied up. So that we felt that if they took it through one headquarters it would be much easier."

When asked if there was some duplication of response, a Salvation Army captain in Minot replied: "Yes, I think there was. For example, people would call the Red Cross or they'd call civil defense, or us, or the YMCA for manpower. They were just trying to get it. Whoever could get there first, you see. And if some organization got there first and the other organization got there well either they did still use additional manpower or they didn't need them. It was just a waste of time and a waste of money running back and forth throughout town. The only way we thought to alleviate this was we took all telephone numbers and we would call before we sent a truck out or a man out. And this did help us considerably after we experienced a few times you know that this wasn't working as efficiently as we hoped."

Similarly, a city official in Minot pointed out:

The overlapping of the authority or area in which they were going to work was a problem. And it was a problem also from direction that the public went to. They didn't know where to go. Some thought well we'll call civil defense. Some thought well we'll call the county.
Some thought they'd call the city. They they'd call the civil defense and they'd take some action and the city would feel that this was our action where the decision had to be made. So this was the complications there were existing at that time.

The evidence does not reveal any task duplication or omission during the emergency period of the Sioux Falls flood crisis. When a city employee was asked about needless duplication of disaster tasks, he responded: "Very little if any. . . . If there was a duplication I think we were happy to have the duplication because then we were sure it was done. We had very little wastage of time and energy."

Similarly, in Salina the disaster activities were coordinated so well that there were no reports of task duplication or omission. Even the early search and rescue efforts were coordinated as the following comments of a city official reveal.

This effort was coordinated to the effect that as teams were dispatched and we called back our off-duty people both in fire and police, that these were coordinated through the fire and police chain of command so that the streets and houses as best we could would not be duplicated by another two-man team. And they did a wonderful job in covering the area under these conditions because these had to be made up as you went along almost in the field.

The task of patrolling the impacted areas in Salina was handled by two organizations and duplication was avoided through interorganizational coordination. A highway patrol official stated:

What we did was we took everything south of roughly Crawford Street which is an east-west main artery bisecting the community. And we just worked it as if we were the city police and we were checking block by block to see for power lines and injuries and so on and so forth -- gas lines blown, where the telephone lines were, what intersections were blocked. And they handled everything pretty much to the north.
For purposes of debris clearance, the National Guard was assigned a certain section of the city and this resulted in a lack of task duplication. A National Guard captain said:

We were given the area west of Broadway for the National Guard. . . . Rather than trying to overlap we had a certain area and that way no other people from another organization were coming into our area, and consequently I think it works better this way really. That way you’ve got your own people and your own control and we set up our own CP/command post.

In summary, a lack of overall coordination during the early part of the emergency period in the Glendora and Minot crises resulted in considerable duplication of disaster tasks. Group emergence occurred in these two community crises. In contrast, in the Sioux Falls and Salina crises where there was no emergence, there was no widespread and needless duplication of disaster activities.

Emergency Demands and Organizational Capability

Unexpected Increase in Demands. -- The flood and mudslide crisis in Glendora was a progressive-localized type of disaster with long-range, but little immediate pre-impact warning. The floods and mudslides occurred intermittently over a period of eight days and only certain streets in several sections of the city were impacted. After an extensive fire the previous summer in the foothills east of the city, predictions of floods during the winter rainy season had been made. Thus, there was long-range warning, but there was no immediate warning period of an hour or one-half hour prior to impact.

In Glendora evacuation of impact areas, the issuing of passes for access to impact areas, and the releasing of information to the public
and mass media were new, unassigned tasks that developed during the crisis. According to a city official, initially evacuation "was done on hit and miss by police, by fire. There was no one with the specific responsibility for evacuation.'"

Certain emergency tasks in Glendora such as debris removal were of exceptionally large magnitude. "We were all taken back by the magnitude of the problem we had," claimed a city public works employee. "We weren't geared up to anything of this magnitude." The county fire department which provides service to Glendora experienced an increase of over 425 per cent in reports of emergencies per day within the January 19 to 27 period.

The flood in Minot was a progressive-diffused type of disaster. Approximately 35 per cent of the city was inundated. There was only very limited warning, and some organizational representatives reported having no warning at all. An employee from the city newspaper stated: "Well, this Des Lacs run-off did come very quickly and the people who were concerned with it were pretty well uninformed on what to expect." He also explained: "There had been inadequate snow readings. There was a general awareness that there was a flood danger. . . . So we weren't totally unprepared. . . . So there was a degree of complacency I think, thinking that maybe this was going to take care of itself gradually."

A Minot civil defense official commented: "This thing started on the day before Easter Sunday. As I was working and I was called out at 10 o'clock in the morning. They had a flood. A guy wanted sandbags."
I was flabbergasted. I didn't think the water was even up." Similarly, an official in the public works department said: "Well, I'd have to say we didn't have any warning as far as the Des Lacs is concerned."

Among the new, disaster-generated tasks that developed in Minot were evacuation and providing a centralized source of reliable emergency information. The major new task was the evacuation of approximately 12,000 residents from low-lying sections of the city.

Many of the emergency tasks were of exceptionally large magnitude during the Minot flood crisis. "We didn't have enough manpower within the city or county to take care of it," according to an official from the sheriff's department. Similarly, a National Guard sergeant stated: "Actually the mission we were supposed to accomplish was greater than the manpower and equipment that we had. Not so much the equipment, but the manpower and we got one commitment for personnel and they wanted another commitment for over there and we didn't have enough manpower to actually relieve these people at the end of an eight hour shift or twelve hour shift. Some of these people had to go 18, 30, 40 hours before they were even relieved."

In Minot pedestrian and vehicle traffic control and direction was a task that increased a great deal in size as a result of convergence in the flooded area. Regarding this situation, a city official stated:

From the fact that we had no experience with this we had to practically work that out from hour to hour the first few days. And this was our big, big problem. . . . Everybody from the farms and small towns wanted to see what was going to happen because we don't have them that often.
In Sioux Falls the flood was a progressive-localized type of disaster. There was both long-range and immediate warning prior to the flood. On the basis of long-range weather forecasts the Corps of Engineers alerted civil defense in Sioux Falls early in 1969 about the possibility of a spring flood threat. Further warning involved the declaring of a flood alert by civil defense on Wednesday, April 2, as the water level on Skunk Creek began to rise.

New, disaster-generated tasks arose in Sioux Falls and these were assigned priorities and handled as the resources became available according to a city employee. "You had to assign priorities . . . because if something was not a priority item, we let it go until it moved up the line in priority. Providing sandbags to an individual householder had secondary priority to providing sandbagging for the levee system."

The issuing of passes which is usually a new, unassigned task in crisis was handled efficiently in Sioux Falls. A respondent stated: "We had a pass system, a little yellow pass that was issued by the control center or pre-issued. We issued them only to people that were providing essential services in the area, not to residents in the area." Similarly, the Red Cross opened an evacuee shelter in a local church and thus the new task of refugee sheltering and feeding was adequately taken care of in Sioux Falls. The local Red Cross manager said: "We had that [the evacuee shelter] all set up. We was all prepared to feed and everything." In addition there were 28 miles of dyke to patrol 24 hours a day with one person patrolling every 1,500
feet. This new, disaster-generated task was handled mainly by the Army National Guard and members of the citizens' band club.

Traffic control and security of the flood area in Sioux Falls became a major task and the police department secured assistance from the Air National Guard in accomplishing this task. Regarding convergence which increased the size of the task, a city employee said: "That's why we sealed the area off. We had a little trouble with them piling up on north 77 bridge initially so we moved our roadblocks back and kept them out of the area. Then they would have to walk in. It cut it down a little bit. You didn't have to fight the cars and the police and police reserves were able to keep them out of the way. . . . The security system worked real well."

In Salina the tornado crisis was an instantaneous-diffused type of disaster without warning. One-sixth of the city was impacted. The tornadoes touched down several places in the city and did not form distinct paths of damage as many tornadoes do. They touched down and lifted several times. The United States Weather Bureau offices had not issued a tornado watch for the Salina area. The tornadoes were accompanied by a severe thunder storm and the radar at the nearest weather bureau office did not distinguish a tornado hook among all the other storm activity. Thus, the tornadoes struck without warning in Salina.

New tasks that arose during the tornado crisis in Salina were handled by community organizations. Fire and police department members in two-man teams made a rapid preliminary search of the impacted areas
very soon after impact. The police chief estimated that this operation started approximately fifteen minutes after impact. The utilization of volunteers and volunteer equipment was coordinated through the command posts that had been established in each of three areas of heavy damage. All volunteers reported to these command posts and were then dispatched by a police officer. Emergency sheltering of refugees was done at the police-civil defense complex where there were ample facilities. Feeding of disaster workers was done by the Red Cross and The Salvation Army. The Salvation Army operated three canteens. The task of releasing information to the public is often an unassigned task. This was not the case in the Salina tornado. A telephone company official performed this function as he was designated to do in the disaster plan.

Early in the emergency period in Salina attention was given to the tasks of traffic control and security of the impacted areas. At approximately 4:00 a.m. the city mayor requested assistance from the National Guard. A fortuitous set of circumstances resulted in the National Guard commanders being located in Salina at that time and National Guardsmen being readily available for rapid mobilization having just completed a drill on Saturday and remaining in the Salina area for a drill at 8:00 a.m. Sunday morning. Thus, the Guard was fully mobilized by 8:00 a.m. National Guardsmen secured the impacted areas and directed traffic. Security and perimeters were established before heavy convergence into the devastated areas occurred. Concerning the activities of the National Guard, a city official commented:
"A terrific job they did do. Of course, they had the equipment and the manpower."

The restoration of power in the community of Salina was another task of very large magnitude. This was accomplished by drawing heavily upon company personnel in neighboring communities.

In summary, in Glendora and Minot the lack of immediate warning, the existence of new, disaster-generated tasks that could not be immediately handled by the responding organizations, and the occurrence of tasks of very large magnitude resulted in an unexpected and rapid increase in the number of demands made upon emergency organizations. Group emergence occurred in these two disasters. The evidence reveals that the increase in demands upon the organizations in Sioux Falls and Salina was not extensive, and there was no group emergence in these crisis situations.

**Community Organizational Poverty.** -- A number of organizations which usually become heavily involved in disaster activities did not exist in the community of Glendora. These included civil defense, Red Cross, The Salvation Army, and an auxiliary police force. Thus, there was some organizational poverty at the time of the flood and mudslide crisis. A city official stated: "I know that we, under our civil defense program when we had it, formally used to have Red Cross first aid classes regularly. We haven't had any for about two years now."

There was also some organizational poverty in Minot at the time of the flood crisis. Civil defense was largely a "paper" organization with a paid staff of two, a director and secretary. The local Red Cross
chapter staff consisted of two full-time and one half-time employees plus a few trained volunteers. The community did not have an auxiliary police force.

Rather than having organizational poverty, Sioux Falls had several community organizations that played important roles in the flood response. The local Red Cross chapter has a staff of three full-time employees and 235 trained volunteers. There are 22 uniformed, trained civil defense reserve policemen, and attached to the reserve police force is a civil defense rescue unit consisting of a rescue truck and trained rescue personnel. A city employee said: "This is where the police reserve came in handy. They were the right-hand man. Tell them what you wanted and they'd line it up for you."

The citizens' band club in Sioux Falls has 63 members and each member has a mobile and a base radio communication unit. The members have had first aid training and they have been active in tornado watch in the past two years. About 35 members participated in the flood watch at nine locations in the community. Working in shifts, these members phoned in hourly reports of the river levels to the emergency operations center. Members also assisted in evacuation, levee patrolling, and traffic direction during the flood threat.

There was no evidence of organizational poverty in the community of Salina. On the contrary, several organizations exist in this community that were able to perform crucial disaster functions. For example, an amateur radio group responded with 19 mobile units within 20 minutes after impact. This group maintained a tornado watch for
the remainder of the night. The local Red Cross chapter has a staff of two full-time employees and a large number of trained volunteers. Another important organization, civil defense, consists of three full-time staff members. A state civil defense official commented: "This is one of my better, I consider one of our better civil defense minded counties and they require very little help from me."

In summary, group emergence occurred in Glendora and Minot where there was some organizational poverty at the time of the crises. In contrast, there were several community organizations in Sioux Falls and Salina that were able to perform crucial disaster tasks, and there was no group emergence in these community crises.

**Organizational Functioning at the Time of Impact.** -- Although the flooding and mudslides occurred for several days in Glendora, the most severe impact began to occur at approximately 4:00 a.m. when most community organizations were operating with skeleton shifts or not functioning. A county civil defense official stated: "You have to realize that the first part of this water started coming down about four or five o'clock in the morning when everything's dark. And at that time you're manning of personnel within the emergency services is at quite a low rate also."

The Minot crisis was not caused by a flash flood, and thus there is no evidence indicating that the most severe flooding occurred when most community organizations were not functioning. In fact, the river rose rather slowly and organizations were fully mobilized on an emergency basis when the river crested.
In Sioux Falls the flood crisis was similar to the situation in Minot inasmuch as it was not a flash flood. However, it was at night that some of the most severe problems arose and this is when many community organizations would not be fully mobilized. For example, the evacuation of 50 homes took place early in the morning at approximately 3:00 a.m. An officer in the reserve police stated: "It seems that during this emergency most of the problems were at night. So there again quite a few of our men were able to work and participate at night. Why this happened, I don't know, but every crest that came and every problem seemed to come during the night-time hours."

The tornadoes touched down in Salina between 11:40 p.m. and 11:50 p.m. on a Saturday evening. Most of the community organizations were not functioning or operating with skeleton staffs at this time, except for the police department. A police department official stated:

The other thing in our favor, of course, was that at the time the storm call was in the city caught us at the time that we were changing our what we call our swing shift and our late shift personnel and we had approximately two-thirds of all of our uniformed and detective bureau in or about the facility. As well as all of our rolling stock was in operation. Again, work of fate I suppose, gave us a distinct advantage.

In summary, in one emergent situation, Glendora, and the two non-emergent situations, Sioux Falls and Salina, some of the most severe disaster situations developed at night when many of the community organizations were not functioning on a full-scale basis. However, there is no evidence from the other emergent situation, Minot, revealing that severe impact occurred when most organizations were only partially mobilized.
Decline in Organizational Response Capability. -- In Glendora there were no instances of incomplete mobilization of organizational membership or damage and destruction of material resources of community organizations. Thus, these factors did not result in a decline in the response capability of community organizations.

In the case of the Minot crisis, one fire station had to be closed in the flooded area, and it was moved to a temporary location in a garage. In addition, the telephone and power utility company were required to evacuate from their service center located in a low-lying area. All vehicles from the center were moved to a new location at a church, and later all other equipment was moved from the center to this temporary location.

In Sioux Falls there was no evidence of incomplete mobilization of organizational membership or damage destruction of the material resources of the key community organizations during the flood crisis. According to a city employee: "We didn't suffer any flood damage. I don't think any of the organizations did."

In the case of the tornado crisis in Salina, there were no instances of incomplete mobilization of organizational membership. The police department extended the shift of those on duty at the time of the disaster and at midnight a new shift reported to work thus placing a large proportion of the staff on active duty. The fire department used a call-back system and nearly all of the firemen were mobilized very shortly after impact. It was also possible for the National Guard to mobilize very rapidly. A captain in the National Guard said:
It's kind of coincidental in that respect. We had drilled Saturday and were supposed to drill Sunday. So from that standpoint we probably did have more people here on Sunday than we would have normally had because everyone that we weren't able to reach by phone between 5:30 and 7:00 just normally showed up at 8:00 o'clock because our drill started at 8:00. . . . By 8:00 o'clock we had 151 in.

In Salina, damage to organizational material resources was very limited because the downtown business section was largely untouched by the tornadoes. The loss of power throughout the city caused some problems. However, all the key organizations had a source of auxiliary power, including the police-civil defense complex in which the emergency operations center was located.

In summary, there was only a very limited decline in the response capability of two community organizations in one of the crisis situations characterized by group emergence. In the other emergent situation and the two non-emergent situations, the community organizations had nearly the same capability to respond during the emergency period as they did prior to impact.

Summary

We have tested five major hypotheses and eighteen subhypotheses about conditions conducive to group emergence by systematically bringing empirical evidence from four community crises to bear on each proposition. In so doing, we have determined the degree of empirical support for each hypothesis. Table 5 presents a summary of the hypotheses and their degree of support from empirical evidence.
TABLE 5

SUMMARY OF THE HYPOTHESES AND THEIR DEGREE OF SUPPORT
FROM EMPIRICAL EVIDENCE

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Empirical Evidence From Community Crises</th>
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<tbody>
<tr>
<td>I. Group emergence is facilitated when the community crisis situation remains inadequately defined and disaster information remains unvalidated.</td>
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<tr>
<td>1. When initial information about the emergency crisis is limited, emergent groups are likely to develop.</td>
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<tr>
<td>2. When disaster information is not shared or pooled on an inter-organizational or community-wide basis, emergent groups are likely to develop.</td>
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<td>3. When regular communication facilities are inadequate or inoperative during the emergency, emergent groups are likely to develop.</td>
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<td>4. When the content of communication about the emergency remains inaccurate, emergent groups are likely to develop.</td>
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<tr>
<td>II. Group emergence is facilitated when there is little community preparedness for disaster and stand-by mechanisms have not developed to cope with emergencies.</td>
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<tr>
<td>1. If there is no disaster subculture in the community, emergent groups are likely to develop.</td>
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TABLE 5--Continued

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<tr>
<th>Hypotheses</th>
<th>Empirical Evidence From Community Crises</th>
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<tr>
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<td>1</td>
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<tr>
<td>1-a. When primary values are underscored and there is a great sense of urgency to act to mitigate the effects of the disaster, emergent groups are likely to develop.</td>
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<tr>
<td>1-b. If the community has had no prior experience of dealing with similar emergencies, emergent groups are likely to develop.</td>
<td>+</td>
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<tr>
<td>2. When there is a lack of disaster planning or disaster plans and preparations are inadequate, inappropriate, or unprepared, emergent groups are likely to develop.</td>
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III. Group emergence is facilitated when there is an authority lapse or unaffected authority structure at the community level during the early part of the emergency period.

1. When the legitimate incumbents of authority positions do not play their roles and command posts are not immediately established at the disaster scene, emergent groups are likely to develop. | + | + | + | +                         |
| 2. When there is ambiguity concerning which official, agency, or organization has the authority to make crucial decisions during the emergency period, emergent groups are likely to develop. | + | + | + | +                         |
### TABLE 5—Continued

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<th>Hypotheses</th>
<th>Empirical Evidence From Community Crises</th>
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<td>IV. Group emergence is facilitated when there is organizational atomization of the community and the organizations involved in the emergency response are not adequately coordinated.</td>
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<tr>
<td>1. When organizations carry on their disaster operations independently of other organizations, emergent groups are likely to develop.</td>
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<tr>
<td>2. When there is duplication or omission of disaster task performance, emergent groups are likely to develop.</td>
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<tr>
<td>V. Group emergence is facilitated when the demands of performing emergency-period functions exceed the response capability of community organizations.</td>
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<tr>
<td>1. When the number of demands made on organizations increases unexpectedly, emergent groups are likely to develop.</td>
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<tr>
<td>1-a. If the disaster is an instantaneous-diffused type and without warning, emergent groups are likely to develop.</td>
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<tr>
<td>1-b. If new, disaster-generated tasks occur which cannot be immediately handled by the responding organizations, emergent groups are likely to develop.</td>
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<tr>
<td>Hypotheses</td>
<td>Empirical Evidence From Community Crises</td>
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<td>1-c. If certain emergency tasks are of exceptionally large magnitude, emergent groups are likely to develop.</td>
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Our findings reveal that the hypotheses (I, 1-4) relating emergence to social process conduciveness of a community social system in crisis are all strongly supported. Similarly, as Table 5 shows, all of the hypotheses (II, 1-2) relating emergence to cultural structure conduciveness are also strongly supported. Most of the hypotheses (III, 1-2; IV, 1-2; V, 1-4) relating emergence to social structure conduciveness are supported.

On the basis of the evidence from these four community crises we have not found a strong relationship between the character of the precipitating event and scope of impact and group emergence. In other words, the development of emergent groups does not seem to be at least directly related to whether the scope of impact is localized or diffused. Consequently, as is shown in Table 5, hypothesis V, 1-a, has very limited empirical support. However, we did find that emergence is usually associated with the amount of warning, especially the length of short-range warning which precedes disaster impact.

We have found that the time at which the disaster impact occurs is not consistently related to group emergence. The hypothesis that emergent groups are apt to develop if the disaster occurs when most community organizations are not functioning was not supported by the empirical evidence from three of the community crises. It appears that progressive types of disasters accompanied by a warning period do not create conditions conducive to emergence even when major crises such as the breaching of a levee during a flood occur at night.
We have also found that decline in organizational response capability as a result of incomplete mobilization of membership or damage and destruction to organization material resources is not consistently related to group emergence. In the two community crises characterized by group emergence, key organizations were able to fully mobilize their personnel, and in only one of the crisis situations two organizations had their capacity to respond slightly impaired. Thus, on the basis of empirical evidence from these four community crises, there is little support for hypothesis V, 4, in Table 5.

In conclusion, the failure of our data to support a specific hypothesis does not mean that it does not warrant further consideration. In the four crisis situations analyzed in this chapter, we have discovered a lack of support for certain hypotheses. However, further research may reveal that in other types of crisis situations, evidence may occur bearing on the currently unsupported hypotheses.
1. For brief overviews of the three crisis situations, see Appendix B.
CHAPTER VIII

SUMMARY AND CONCLUSIONS

Summary of Findings

In this study we have been interested in the emergence of new social groups under stress conditions. The major focus has been on the specific conditions associated with emergence. We have found that emergent groups do not simply spontaneously appear. There are specific conditions which facilitate the emergence of new groups. In general, the conditions leading to emergence can be related to social processes and cultural and social structure variables characterizing the community social system in which the emergent groups develop. In other words, group emergence is the product of a contextual development. We shall now summarize what we have found about the social processes and cultural and social structure context of community crises that facilitate emergence.

Social Process Conduciveness

The development and existence of a community crisis situation that is inadequately defined is a condition conducive to group emergence. For an appropriate collective response to a critical situation to occur, there must be a collective definition of the situation. In
a community crisis, several variables are related to defining and assessing the situation.

It is often the case that the crisis situation remains inadequately defined because initial information about scope of impact, amount of damage, number of deaths and injuries and other matters is very limited. That is, there is a general lack of knowledge of what is happening and what has happened in the community. In other words, an overall appraisal of the crisis situation has not developed and individuals in the community, particularly key personnel of emergency organizations, do not possess sufficient information on which to base crucial response decisions.

The defining of a crisis situation is also related to the possibilities for communication which exist in a community social system. There is frequently very little sharing or pooling of disaster information on an interorganizational or community-wide basis during the early part of the emergency period of a community crisis. Usually no individual or organization has the preassigned responsibility of assessing the crisis situation to find out just what the dimensions of it are and what it means. Furthermore, once assessments of the crisis are made by various organizations, there are seldom any arrangements available in the community whereby other organizations might become aware of the appraisals. Individuals and organizations tend to limit their attention to knowledge relevant to their particular needs and tasks rather than be concerned about an overall picture of the crisis, and consequently the development of a collective definition of the situation is impeded.
The possibility for communication is also closely related to the adequacy and operation of regular communication facilities during a community crisis. Many of these facilities, such as the phones, often become inoperative because of physical damage or overloading of the equipment. In other cases, the existing communication facilities are frequently inadequate to handle the necessary emergency communications. For example, radio channels have a tendency to become overloaded and noisy during the early part of the emergency period. Thus, just when the necessity for communication is greatly increased so that the crisis situation might be adequately defined, the normal methods of communication are often disrupted.

A collective definition of a community crisis is sometimes slow to develop since there initially tend to be many variations of the reports of the situation. In other words, some of the communication content about the crisis remains inaccurate for a period of time, and individuals and organizations respond in an inappropriate manner because disaster information remains unvalidated.

In summary, group emergence is facilitated when the community crisis remains inadequately defined. The lack of development of a collective definition of the crisis is related to limited initial information about the situation, insufficient sharing or pooling of disaster information, inadequate and inoperative regular communication facilities, and inaccurate communication content about the situation. In this social process context, emergent groups are likely to develop in a community social system in crisis.
Cultural Structure Conduciveness

The values and norms of a community social system have an impact on group emergence in a crisis. Emergent behavior is normative as is all other human behavior, and the values and norms which govern the community social system prior to disaster impact are significantly and closely related to behavior during the emergency period of a crisis. That is, some communities have developed a disaster subculture which is characterized by special values and norms that are not conducive to group emergence.

In communities with no disaster subculture, frequently primary values are underscored and there is a great sense of urgency to act to mitigate the effects of the disaster. We find that the value of human life is elevated and given top priority and the primacy of private property is lowered. With this change in priority of values, group emergence often occurs so that the high priority values of finding the dead, rescuing the injured, and treating the casualties can be realized. Thus, a change in the priority of values may facilitate group emergence.

A disaster subculture serves as a basis for individual and organized behavior during the emergency period of a community crisis. It includes much knowledge gained from repetitive disasters that the community has experienced. If the community has had limited or no prior experience of dealing with crises, emergent groups are likely to develop. On the other hand, communities that are regularly subjected to disasters have a residue of key organizational officials who can
draw upon extensive past disaster experience in decision making during the emergency period. In addition, many of the communities with a disaster subculture have developed standby mechanisms which are activated during a crisis and frequently perform the functions that emergent groups carry out.

Certain community social systems have norms concerning disaster plans and preparations that are conducive to group emergence in a crisis. It is rare to find a community with a complete lack of disaster planning. However, it is not uncommon to find that disaster plans are inadequate, inappropriate, or unrehearsed, especially at the community level and frequently at the organizational level too. For example, many communities have "paper" plans pertaining to a nuclear crisis, but these are generally very inappropriate for use in a natural disaster situation. Thus, group emergence is likely to occur in community crises where extensive and up-to-date disaster plans and preparations have not been undertaken.

In summary, group emergence is facilitated when there is little community preparedness for disaster. The absence of a disaster subculture and inadequate, inappropriate, and unrehearsed disaster plans and preparations contribute to a community's inability to cope with a crisis. Primary values are often severely threatened, and disaster response becomes urgent and crucial. In this cultural structure context, emergent groups are likely to develop in a community social system in crisis.
Social Structure Conduciveness

There are social structure features of a community social system that are closely associated with group emergence in a crisis. Different community crises vary in structural conduciveness for group emergence, and there is thus differential distribution of emergence from disaster to disaster. We have found several social structure variables to be associated with group emergence including community authority structure, interorganizational coordination, and organizational demands and response capability.

Authority Structure

The nature of the authority structure in the community social system when the crisis occurs affects the probability of emergent groups developing. When the legitimate encumbents of authority positions do not play their roles and command posts are not immediately established at the disaster scene, group emergence is likely to occur. Frequently, the mayor or whoever should assume overall control of disaster activities in the community does not function in this capacity at the beginning of the emergency period. In addition, the members of the responding organizations often do not have anyone or any place in the field to turn to for direction unless command posts are set up. Consequently, abdication of authority positions and the lack of command posts contribute to a community authority lapse during the first part of the emergency period.

The authority structure in the community social system may be ineffective during a crisis if there is ambiguity concerning which
official, agency, or organization has the authority to make crucial decisions. A chain of command with community consensus on the legitimate sources of authority during a crisis results in community-wide control and direction of the diverse disaster operations. When this is not present and ambiguity prevails, an authority lapse in the community ensues thus facilitating group emergence.

**Interorganizational Coordination**

During a crisis, organizational atomization of the community social system frequently occurs as a result of inadequate interorganizational coordination. Rather than having an integrated community social system during the emergency period, the community often becomes a collection of independent islands of disaster activities. This fragmentation of the community's allocation and integration processes creates conditions conducive to group emergence. Consequently, when organizations carry on their disaster operations independently of other organizations, emergent groups are likely to develop.

The lack of interorganizational coordination is usually accompanied by needless task duplication during a community crisis. When the diverse activities of the responding organizations are not being integrated, each separate organization tends to remain unaware of what other organizations are doing, which tasks are being performed, and which ones, if any, are being neglected. Thus, the duplication or omission of crucial disaster activities facilitates group emergence in a crisis.
Organizational Demands and Response Capability

The relationship between the number of demands made on community organizations and their response capability affects the probability of emergent groups developing. When the number of demands made on organizations increases unexpectedly, emergent groups are likely to arise. This situation frequently develops if the disaster occurs without much or any warning. Demands may also increase unexpectedly if the disaster creates a number of new tasks or if certain emergency tasks are of very large magnitude.

In some communities there is organizational poverty and the demands of performing the emergency period functions thus become greater for the existing organizations. For example, viable Red Cross or civil defense organizations frequently do not exist in a community struck by disaster. Both of these organizations are normally expected to perform a number of important disaster functions, and when they are missing or have a limited response capability, emergency demands tend to exceed the community's organizational response capability. Then the conditions are conducive to group emergence in the community social system.

Unsupported and Partially Supported Hypotheses. -- Several of our hypotheses relating organizational demands and response capability to group emergence were not supported or only partially supported by the empirical evidence. For example, the rather common sense notion that the larger the disaster, the greater the probability of group emergence is unsupported by the data. There appears to be no direct relationship
between the speed of onset and scope of disaster impact and the development of emergent groups. In other words, emergence occurs in both instantaneous and progressive disasters and localized and diffused disasters. A possible explanation for the apparent lack of relationship between disaster onset and scope with emergence is that intervening variables may come into play. That is, perhaps the community authority structure becomes most ineffective when an instantaneous, diffused type of disaster occurs. Since we have already found a strong association between an ineffective authority structure and group emergence, this would lead us to conclude that there is an indirect relationship between speed of onset and scope of impact and emergence with community authority structure being the crucial intervening variable.

We have found tentative or partially supported relationships between two other social structure variables and group emergence in crisis situations. The relationships remain tentative because the empirical evidence from the crises situations does not consistently support the hypothesized relationships. There is, for example, a tendency for emergence to develop if the disaster occurs when most community organizations are not functioning as in the case of an explosion which occurs late in the evening or on the weekend. At the time of impact, the immediate response capability of the community organizations would be very limited since many would not be mobilized and others would be operating with skeleton staffs. Another tentative finding is that emergent groups are likely to develop if there
is a decline in organizational response capability due to incomplete mobilization of membership or damage and destruction to the organization's material resources.

Since we have found only tentative relationships between the time of disaster impact and decline of organizational response capability with emergence, we might conclude that these are sufficient although not necessary conditions for the development of emergent groups in crisis. That is, the presence of these conditions may lead to emergence, but emergent groups may also occur in their absence as was the case in several of the crises examined in this study.

**Summary**

Group emergence is facilitated when there is a community authority lapse or ineffective authority structure, there is inadequate interorganizational coordination, and the demands of performing emergency period functions exceed the response capability of community organizations. In this social structure context, emergent groups are likely to develop in a community social system in crisis.

**Reconsideration of the Contextual Model**

The emergent norm approach, our fundamental theoretical orientation in this study, views collective behavior as emerging under certain conditions, primarily when formal social control mechanisms are ineffective. Our research findings permit us to more concretely specify the nature of the conditions facilitating the development of collective
behavior. We can go beyond the rather limited approach of Turner and Killian and Turner's later publication and point to specific aspects of societal social processes and cultural and social structure that are associated with the origins of collective behavior.¹

In the past there has been stress on spontaneity and discontinuity of collective behavior from conventional norms and social structure. Our study of the origins of a type of collective behavior reveals, on the contrary, continuity with tradition. In fact, there is a complex relationship between collective behavior and established norms and social structure.

It is important in the study of the emergence of collective behavior to set aside the term spontaneous, as it is not possible to study or even identify spontaneous phenomena. We must recognize that change is both continuous and ubiquitous, but that there are repeatable patterns leading to emergence. In other words, we should assume change and devote our attention to explaining stability, i.e. the repeatable patterns that constitute the context of collective behavior.

We conclude that we have used both a social psychological and sociological approach in our analysis of the emergence of a type of collective behavior. In dealing with the social processes of definition of the situation and communication possibility, we were social psychologically oriented, and our emphasis upon cultural and social structure was sociological in nature. We have found that both process and structure influence the emergence of collective behavior.
At the present time we must stress that there is an indeterminacy among the contextual variables associated with collective behavior emergence. That is, any one or more of the variables that we have identified as being conducive to emergence may be present in a community crisis and not lead to group emergence. In addition, depending upon each particular crisis situation, one variable may be more important than others, and in most instances several variables in conjunction probably facilitate group emergence. Thus, we cannot presently specify necessary or sufficient conditions for emergence, but we can conclude that group emergence is dependent upon the social processes and cultural and social structure context of the community social system in crisis. To explain emergence requires systematic analysis of the underlying social processes and structure of the situational context out of which collective behavior develops.

On the basis of the findings of this study, we have reformulated the contextual model developed in Chapter II by revising, refining, and extending it. The model is summarized diagrammatically in Figures 2 and 3. As is shown in Figures 2 and 3, group emergence is related to three major types of conduciveness: (1) social process, (2) cultural structure, and (3) social structure. There are particular conditions in a community crisis which contribute to the development of each type of conduciveness, and our analysis has identified variables associated with conduciveness. These variables are also shown in Figures 2 and 3.
FIGURE 2
CONTEXTUAL MODEL SHOWING SOCIAL PROCESS AND CULTURAL STRUCTURE VARIABLES RELATED TO GROUP EMERGENCE IN COMMUNITY SOCIAL SYSTEMS IN CRISIS

- Inaccurate Communication Content About the Crisis Situation
- Inadequate and Inoperative Regular Communication Facilities
- Limited Initial Information About the Crisis Situation
- Lack of Sharing or Pooling of Disaster Information
- Impaired Communication Possibility
- Absence of Collective Definition of the Crisis Situation
- Social Process Conduciveness
- Absence of a Disaster Subculture
- Cultural Structure Conduciveness
- Inadequate, Inappropriate and Unrehearsed Disaster Plans and Preparations
- Underscoring of Primary Values
- Lack of Prior Disaster Experience
- Inadequate Initial Information About the Crisis Situation

COMMUNITY CRISIS
GROUP EMERGENCE
In complete Membership Mobilization
Damage or Destruction of Organizational Material Resources
Decline in Organizational Response Capacity
Impact When Community Organizations Not Functioning

Contextual Model Showing Social Structure Variables Related to Group Emergence in Community Social Systems in Crisis

Incomplete Membership Mobilization

Damage or Destruction of Organizational Material Resources
Decline in Organizational Response Capacity
Impact When Community Organizations Not Functioning

Social Structure Conductiveness

Crisis Demands Exceed Response Capability of Community Organizations
Community Organizational Poverty

Community Crisis

Crisis Demands Exceed Response Capability of Community Organizations
Community Organizational Poverty

Group Emergence

Crisis Demands Exceed Response Capability of Community Organizations
Community Organizational Poverty

The relationship among these variables remains tentative.
The contextual model developed here is not a linear model; it is more of a convergence model. That is, the order of the conditions is not important, merely their presence. It is also a probabilistic rather than a deterministic model since there is an indeterminacy about the context and particular conditions do not always have to be present for emergence of collective behavior. We conclude that if the conditions specified in Figure 2 are present, then the likelihood of collective behavior emergence is very high. If there is an alteration in any of these conditions, the likelihood is less; and it is even less if several of these conditions are absent.

Implications of the Findings

This study of group emergence in a disaster context has revealed that such research efforts are methodologically feasible and significant results are attainable. However, our findings are tentative and in the future extensive research efforts focused on group emergence are warranted. The current research makes available for the guidance of future projects specific research hypotheses which have been supported by empirical evidence. By using the present findings, the researchers will not be starting from scratch.

While this study was oriented more toward basic rather than applied research, the findings do have numerous practical implications. In fact, most of our findings seem to have particular pertinence for disaster preparedness, control, and amelioration.

Broadly stated, it is hoped that the findings of this study will be the basis for formulating various strategies and tactics for
effectively dealing with community crises. Our findings reveal some disfunctional aspects of disaster behavior which can be predicted and modified. Primarily the current findings bear testimony to the need for large-scale disaster planning and preparations and should contribute to a more satisfactory basis for such planning.

Our research has provided knowledge of what actually happens during disaster response and such knowledge is requisite for effective planning for community disasters. For example, realistic plans should encompass the organizing, training, integrating, and coordinating of the actions of both the general populace and the formal disaster agencies. In other words, disaster plans must take into account the social-organizational aspects as well as the physical contingencies of disaster preparations.

It is further hoped that the results of this study will reveal to those planning to facilitate emergency activities a basis for prediction of the types of basic relationships which may be expected to emerge during disaster response out of the previously existing social structure. That is, plans for large-scale disasters will be more complete when research such as ours has provided useful information for controlling conditions conducive to group emergence. The control of such conditions may bring about the development of stand-by mechanisms which can be activated and become functional during disaster. Perhaps these findings along with further research will ultimately insure the attainment of a fair measure of prediction and control over disaster behavior.
In addition, it is hoped that the current results will contribute information and offer guidance to increase the efficiency of efforts to minimize destruction and to restore necessary facilities in disaster areas, and thus make a contribution to national survival in the event of a nuclear war. One of the community emergencies analyzed bears close similarity to a nuclear attack situation since so much of the existing social structure was incapacitated. However, we have not endeavored to extrapolate the findings of this study to thermonuclear disaster situations. Perhaps after further study of natural disaster situations, attempts can be undertaken to extrapolate findings from completed disaster studies to a kind of disaster that is difficult to envisage.

Suggestions for Further Research

Perhaps the present study has prepared the way for more extensive studies of the phenomena analyzed. We have found that many different kinds of conditions bear on the occurrence of collective behavior. Further research is required to sort out and arrange these conditions, if we are to advance beyond eclectic identification of variables from one individual situation to another. The approach we have chosen in this study is to classify the conditions as social processes, cultural structure variables, or social structure variables. However, we do not contend that all types of variables must be taken into consideration simultaneously when analyzing the origins of collective behavior. In fact, we recommend that social psychologists focus upon the social
processes in their research and sociologists devote their attention to further analysis of the structural variables associated with emergence.

The current findings indicate that there is a greater probability of emergence occurring in certain crises, as communities vary in structural conduciveness for collective behavior. This means that there is variation in the predisaster social structures in different communities. We propose that sociologists single out the social structure variables for further research. As a starting point, those social structure variables identified in this study as being associated with emergence could be further analyzed to determine which ones, if any, are necessary conditions for emergence. In other words, is an authority lapse or ineffective authority structure in a community crisis only a sufficient condition for emergence or must this condition prevail in order for emergent groups to develop?

We further suggest that future research look at the interaction of the social structure variables in facilitating emergence. That is, must an authority lapse be simultaneously accompanied by a lack of interorganizational coordination and a rapid increase in organizational demands for group emergence to occur? Which social structure variables in conjunction facilitate emergence? When dealing with the interaction of variables, we must turn to the question of appropriate methodology. Since we view collective behavior as an integral part of sociology and not generically separate, we propose that the usual methods of sociological analysis are equally applicable to collective behavior.
Thus, multi-variate analysis of the data would seem like an appropriate step to take in the further study of group emergence.

There is a wide range of directions in which further research might move. One possibility is the study of aspects of group emergence other than those investigated in the current research. Some pertinent questions which might be considered are: (1) How do emergent groups crystallize? What are the characteristics of emergent group membership? i.e. Who becomes involved in these collectivities? (3) When do emergent groups become involved in disaster activities? (4) What intragroup processes occur once an emergent group has crystallized? (5) What functions do emergent groups perform? (6) What types of emergent groups become legitimimized and established?

We have focused upon emergence in situations which were characterized by a fairly high degree of consensus about overall community goals and values during the emergency period and upon accommodation rather than conflict emergent groups. In order to maintain a balanced perspective, research should also be pursued in situational contexts of a dissensus nature, such as the widespread civil disturbances in the American cities, and conflict emergent groups warrant further analysis.

Analysis of group emergence during the rehabilitation phase of an emergency would be another fruitful area of research. New groups also arise when such activities as relocation of families and restoration of homes and businesses are taking place. The major focus might be how emergence during the rehabilitation period is similar and how it varies from emergence during the emergency period.
The emergent norm approach from collective behavior has been the theoretical perspective used in this study. Within collective behavior another approach is Smelser's value-added formulation which could also be used as the theoretical basis for further studies of group emergence.² Using another theoretical perspective in future research could possibly lead to the refining and reformulating of the perspective, and at the same time it could point to new directions and new modes of analysis of the empirical data.

This study has been limited to crisis situations in American society. However, emergent groups appear in other societies also, and thus cross-cultural studies of emergence would be another area in which worthwhile further research might be undertaken.

Finally, Sjoberg points out that we can "expect continued expansion of the organizational apparatus designed to prevent and control natural and social disasters."³ With this in mind, any future research is certain to have applied and practical as well as basic value and consequences.
FOOTOTES: Chapter VIII


APPENDIX A

Interview Schedules
INTERVIEW SCHEDULE FOR EMERGENT GROUP MEMBERS

1. Some questions in this schedule are more appropriate for coordinating groups and others for operations groups. The interviewer must make his judgment about whether to ask certain probing questions by considering the nature of the interview situation. In most situations it should soon become evident whether a member of an operations or coordinating group is being interviewed.

2. Emergent groups are usually assigned a name early in their existence. When using the interview schedule, the interviewer should refer to the group by its name rather than simply saying "the group." The particular interview situation may also dictate other improvisations in choice of terms, phrases, etc.

3. In some interview situations because of a time factor it will not be possible to ask all the questions in this schedule. High priority questions are marked with an asterisk (*) and only these questions should be used when there is a shortage of time.

   **Time of Emergence**

   *1. When did the group first develop?*

   2. How long was this after impact?

   3. When did the group first act together as a unit?

   4. Were any meetings held? When was the first one?

   5. When were the first efforts made to get the group started?

   6. How long was it after these efforts were started before the group developed?

   **Location of Emergence**

   1. Where did the group develop?

   **Nature of Emergence**

   1. How was the group started?
Reason for Emergence

Note: All questions in this section pertain to conditions prior to emergence.

*1. Why did the group develop?

*2. What was the nature of the disaster response prior to the development of the group?

*3. When the group developed, what kinds of disaster tasks had been performed or were being carried on?

4. Were some crucial tasks not being accomplished by the involved organizations? What were they?

5. Did the disaster create any new tasks which were not the pre-assigned responsibility of any organization? What were they?

6. Were any tasks so large that they could not be handled by the organizations which usually cope with such tasks? What were they?


*8. What working relationships existed among the involved organizations? Was there overall control and coordination of activities? Was an organization or individual in charge from the very beginning?

9. Were the organizations aware of what different organizations were doing?

*10. Were the heads of the involved organizations immediately present and functioning as heads? When did they arrive and assume authority?

11. Was there duplication of response? Were different organizations performing the same tasks?
12. Were any of the community organizations directly affected by the impact? Were any of their offices, equipment, and supplies damaged? Were there organizational members who could not respond during the emergency? Did any organizations lose any key personnel because of the disaster? Did the organization have the capacity or potential to function as well during the disaster as before?

13. Did the community organizations have adequate knowledge about the scope and severity of impact in order to make an appropriate response during the first hours of the emergency? Was there sufficient information about the amount of damage and number of casualties?

14. Were any arrangements made to share and pool information on a community-wide or interorganizational basis? Was an emergency operations center or centralized information center set up during the first few hours?

15. How well was the community prepared to deal with the disaster?

16. Was there a community-wide disaster plan? Was this plan activated? Did it suitably cover this disaster? Was the plan up to date? Was the plan adequate?

17. Is there a designated organization or individual in the community to handle the task of overall control and coordination of disaster response? Did this organization or individual fulfill this function? Was the organization or individual adequately able to cope with the situation?

18. Was there any warning before the impact? How much? How long?

19. What proportion of the community was affected by the impact? How much territory? How much of the population?

20. Did communication become a problem during the emergency? What was the nature of the problem? How did it affect the disaster response?

21. Did the heavy concentration (i.e., convergence) of people, supplies, and equipment create a problem during the emergency? How did this convergence affect the disaster response?
Group Membership

1. How large was the group?

2. Who were the group members?

Group Development and Activities

1. How was the group organized after it developed?

2. How long did the group function (if it is no longer functioning)?

3. How was the group phased out?

4. What were the tasks the group carried out?

Interorganizational Relationships

*1. What is the entire range of organizations with which the group had contact?

2. Did the group ask other organizations to perform certain tasks? Which organizations were asked? What were the tasks?

3. Did any organizations ask the group to perform certain tasks? Which organizations asked? What were the tasks?

4. Did the group ask and receive instructions, advice, or information from any organizations? Which organizations were asked? What was the information?

5. Did any organizations ask and receive instructions, advice, or information from the group? Which organizations asked? What was the information?

6. Did the group ask and receive any kind of help or assistance in the form of services, personnel, and equipment from other organizations? Which organizations gave the help? What kind of help was given?
7. Did any organizations ask and receive any kind of help or assistance in the form of services, personnel, and equipment from the group? Which organizations received help? What kind of help was given?

*8. Were there particular persons in the group who carried on relations with the other organizations?

9. Did members of the group contact friends or acquaintances in other organizations?

*10. What was the nature of relationships with other organizations? Did the group have difficulty dealing with any organizations? Which ones? What kinds of problems?

11. What was the form of most of the relationships? Face-to-face communication? Exchange of goods and services?

*12. What kind of relationships did the group have with other emergent groups?

13. How did the development of the group change things? Did things run more smoothly? Did the group bring about overall control and coordination of disaster activities?
INTERVIEW SCHEDULE FOR MEMBERS OF ORGANIZATIONS HEAVILY INVOLVED IN THE EMERGENCY RESPONSE

1. These questions are to be asked of the members of organizations involved in the disaster. From each organization one or two members who actively participated in initial disaster activities are to be interviewed. If the organizational member has already been interviewed because of his involvement in an emergent group, he should not be interviewed again since he already will have been asked most of these questions.

2. Sometimes more than one emergent group develops in a disaster. The interviewer should make sure that the respondent deals with each emergent group when answering a question.

3. Emergent groups are usually assigned a name early in their existence. When using the interview schedule, the interviewer should refer to the group by its name rather than simply saying "the group." The particular interview situation may also dictate other improvisations in choice of terms, phrases, etc.

4. In some interview situations because of a time factor it will not be possible to ask all the questions in this schedule. High priority questions are marked with an asterisk (*1.) and only these questions should be asked when there is a shortage of time.

REASON FOR EMERGENCE

*1. When did your organization respond to the disaster? How long after impact?

*2. What other organizations were already involved in the disaster? Did others soon become involved?

*3. What working relationships existed among these organizations? With what other organizations did your organizations have ties?

*4. Was your organization or any other community organization directly affected by the impact? Were any of your offices, equipment, and supplies damaged? Were there any organizational members who could not report to work after the disaster? Did your organization lose any key personnel because of the disaster? Did your organization
have the capacity or potential to function as well during the
disaster as before the disaster?

*5. Was the head of your organization immediately present and
functioning as head? If not, when did he arrive and assume
authority? Was the situation similar for other involved organi-
zations?

*6. Was your organization aware of what other organizations were doing?

*7. Did your organization have adequate knowledge about the scope and
severity of impact in order to make an appropriate response during
the first hours of the emergency? Was there sufficient information
about the amount of damage and number of casualties? Were any
arrangements made to share and pool information on a community-
wide basis?

*8. Does your organization have a disaster plan? Was this plan acti-
vated? Did it suitably cover this disaster? Was the plan up to
date? Was the plan adequate?

*9. Was there a community-wide disaster plan? Was this plan activated?
Did it suitably cover this disaster? Was the plan up to date?
Was the plan adequate?

10. Is there a designated organization or individual in the community
to handle the task of overall control and coordination of the
disaster response? Did this organization or individual fulfill
this function? Was the organization or individual adequately
able to cope with the situation?

*11. Were some crucial tasks not being performed by your organization
or other organizations? What were the tasks?

*12. Did the disaster create new tasks which were not the assigned
responsibility of any organization? What were the tasks?

13. Were any tasks so large that they could not be handled by the
resources and skills of the organizations which usually cope with
such tasks? What were the tasks?
14. Was there duplication of response? Were different organizations performing the same tasks?

15. Was there overall control and coordination of activities? Was an organization or person in charge from the very beginning?

16. Did your organization have warning before the impact? How much? For how long?

17. Did communication become a problem for your organization during the disaster response? What was the nature of the problem? How did it affect the functioning of your organization?

18. Did the heavy concentration (i.e., convergence) of people, material, and equipment create a problem during the emergency period for your organization? How did this convergence affect the functioning of your organization?

TIME, LOCATION, AND NATURE OF EMERGENCE

*1. Did a new group or groups develop after impact which did not exist before the disaster?

2. When did the emergent group first develop?

3. When were the first efforts made to get this group started?

*4. Was your organization performing disaster tasks before these efforts were started?

5. Were other organizations performing disaster tasks before these efforts were started? Which organizations?

INTERORGANIZATIONAL RELATIONSHIPS

*1. Did your organization have contact with the emergent group?

2. Did the group ask your organization to perform certain tasks? Which tasks?
3. Did your organization take over any of the tasks being performed by the group?

4. Did your organization ask the group to perform certain tasks? Which tasks?

5. Did your group ask and receive instructions, advice, or information from your organization? What information?

6. Did your organization ask and receive instructions, advice, or information from the group? What information?

7. Did the group ask and receive any kind of help or assistance in the form of services, personnel, and equipment from your organization? What kind of help was given?

8. Did your organization ask and receive any kind of help or assistance in the form of services, personnel, and equipment from the group? What kind of help was received?

9. Were there particular persons in your organization who carried on relationships with the group?

*10. What was the nature of the relationships? Cooperative?

11. What was the form of most of the relationships? Face-to-face communication? Exchange of goods and services?
APPENDIX B

Overviews of Community Crises Used for Hypothesis Generation
Emergent Situations

Anchorage, Alaska Earthquake

The earthquake which struck Anchorage at 5:36 p.m., Good Friday, March 27, 1964, had a Richter magnitude of between 8.4 and 8.7 and left widespread damage and disruption. On this day and during the following week, temperatures ranged from 20° F to 30° F. Both commercial and residential structures as well as essential services were damaged or destroyed mainly by landslides. The earthquake killed four and critically injured 37 people in Anchorage. Anchorage, located in the south central region, is the largest city in Alaska and the center of much of its economic life. Of the state’s 226,000 population in the 1960 census, 100,000 lived in the Anchorage area, 25,000 were military personnel. Approximately 50,000 persons resided within the Anchorage corporate limit.

Fairbanks, Alaska Flood

In mid-August, 1967, the Tanana Valley was the scene of the worst flood ever to occur in central Alaska. At the peak of the flood on August 15 and 16, flood waters from the Chena River inundated about 70 per cent of the inland city of Fairbanks. Virtually every downtown business had six feet of water through the first floor areas. Preliminary estimates of damage reached $200 million. However, there were only six deaths as a result of the flood, three of them in Fairbanks. Over 15,000 of the city’s residents were forced to leave their homes. Around 13,000 were evacuated to refugee shelters in the
Fairbanks area and several thousand were evacuated by air to Anchorage. Fairbanks, Alaska's second largest city, had a population of 30,000 residents at the time of the flood.

**Indianapolis Coliseum Explosion**

On Friday, October 31, 1963, at 11:06 p.m. a violent explosion occurred in the Indianapolis coliseum at the Indiana State Fairgrounds just before the end of the "Holiday on Ice" show. Seventy-five spectators were killed and nearly 400 were injured from the blast which lifted a large section of the box seats and the concrete support stands into the air and threw bodies and huge pieces of rubble onto the ice. A fire burned briefly in the huge pit created by the explosion. Indianapolis, having a total metropolitan area population of 636,000 people, 476,288 of them in the central city itself, is the capital of Indiana and is situated in the center of the state. The Indiana State Fairgrounds is located about four miles north of the downtown area. The coliseum has a seating capacity of 7,839 and 4,327 were in attendance the night of the explosion.

**Jonesboro, Arkansas Tornado**

Between 9:45 and 9:55 p.m. Wednesday, May 15, 1968, a tornado cut a swath across the southeastern residential sections of Jonesboro and adjacent areas in Craighead County. Thirty-four persons were killed and between 250 and 300 were injured. City officials estimated the damage to be $8 million. Essential services were disrupted and 164 homes were destroyed. Jonesboro, with a population
of 26,500, is the eighth largest city in the state of Arkansas. The city is relatively isolated with the closest major city, Memphis, being 68 miles away.

Non-Emergent Situations

Cincinnati, Ohio Flood

Early in March, 1964, severe flooding occurred in the Ohio River Valley and Cincinnati had its worst flood in 19 years. On March 11 the river crested at 66.2 feet in that city. Approximately 5,000 persons were affected by the flood, and 2,000 structures were inundated by flood waters. Cincinnati, located in the south-western corner of Ohio, had a population of approximately 503,000 residents at the time of the flood.

Wichita, Kansas Plane Crash

On January 16, 1965, at 9:30 a.m. an Air Force KC-135 tanker crashed into a residential section of Wichita, Kansas. The crash killed 29 persons and injured many others. About a one and a half block residential area was devasted by the crash and ensuing explosion. Wichita had a population of approximately 260,000 at the time of the plane crash. It is located in southeastern Kansas.

Topeka, Kansas Tornado

On Wednesday, June 8, 1966, between 7:18 p.m. and 7:30 p.m. a tornado ground a diagonal path approximately 12 miles long and four to eight blocks wide across Topeka. The tornado killed 17 persons
and injured 550 more. Property damage was estimated at $80 - $100 million with 800 buildings destroyed and 1,210 damaged. Topeka, located in the northeastern section of the state, had a population of 128,000 people at the time of the disaster.
APPENDIX C

Overviews of Community Crises
Used for Hypothesis Testing
"New" Community Stress Situations

Glendora, California Floods and Mudslides

From January 19 to 27, torrential rains, floods, and mudslides occurred in Glendora, California, causing extensive damage to property. Over 130 homes were damaged, 25 of them severely. Damage estimates exceeded $3 million. Glendora, located in the County of Los Angeles in the foothills of the San Gabriel Mountains, has a population of 32,000. It is primarily a residential suburb which is about 28 miles east of downtown Los Angeles.

Minot, North Dakota Flood

Extensive flooding occurred in Minot, North Dakota, from April 6 to May 15, as a result of spring run-off from the Des Lacs and Mouse Rivers. Over 30 per cent of the city was inundated and approximately 12,000 residents were evacuated from their homes. Estimates of damage exceeded $10 million. Minot, located in northwestern North Dakota, is the county seat of Ward County. With a population of 34,000 it is the fourth largest city in the state.

Sioux Falls, South Dakota Flood

During April 1 to April 19, Skunk Creek and the Big Sioux River, which flow through Sioux Falls, South Dakota, reached flood stage causing flooding in low-lying sections of the city and evacuation of a residential area of approximately 50 homes. The amount of water entering the Sioux Falls flood control system was three and one-half times the 1952 flood and two and one-half times the 1962
flood. This was a 100-year flood since the heavy flow of water might be rare enough to occur once in a century. Sioux Falls with a population of 70,000 residents is located in southeastern South Dakota.

Salina, Kansas Tornadoes

On Saturday, June 21, 1969, between 11:40 p.m. and 11:50 p.m. two tornadoes nearly simultaneously touched down in sections of Salina causing extensive damage. The tornadoes injured 60 persons, 11 of them seriously, and destroyed or extensively damaged 104 homes and 28 businesses. Property damage was estimated at $10 million. Salina, located near the center of Kansas, had a population of slightly over 38,000 people at the time of the disaster.
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