

1984

Disaster and the Social Order: Organization and Emergent Units

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DISASTER AND THE SOCIAL ORDER
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ORGANIZATION AND EMERGENT UNITS

A Thesis

Presented to
The Faculty of the Department of Sociology
The College of William and Mary in Virginia

In Partial Fulfillment
of the Requirements of the Degree of
Master of Arts


by
SARAH LEE SAUNDERS

1984

APPROVAL SHEET

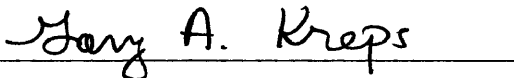
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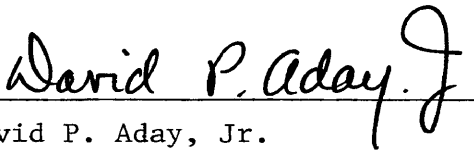


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Approved, August 1984



Gary A. Kreps, chair



David P. Aday, Jr.



Satoshi Ito

DEDICATION

To my mother and father who could never keep me
in the back yard, never wanted to, and have supported
me always in my search of self and life.

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ABSTRACT

A theory, taxonomy, and model of 52 emergent social units are developed from archival data which describe activities during the emergency phase of 12 natural disasters. The thesis builds directly on Kreps' (1983a; 1983b; 1984a; 1984b; 1984c) ongoing study of organization. Kreps' theory of organization draws on Weber's distinction between individual (historical) and general (transhistorical) ideal types and the notions of structure and collective representations developed respectively by Simmel and Durkheim. Kreps defines four individually necessary and collectively sufficient elements of organization—domain (D), tasks (T), human and material resources (R), and activities (A)—which combine to form a taxonomy of 24 logically possible forms of organization related by way of a continuum. No assumptions are made regarding element arrangement in time and space. Each empirically grounded pattern points analytically to the autonomy and unity of social action and social order as both relate to disaster. Kreps expresses the underlying unity between goal oriented rational action (D T R A) and elemental collective behavior (A R T D) by devising a metric which captures the transivities between the poles of the continuum (D T R A to A R T D). The metric allows for the modeling of 24 forms of organization represented in the taxonomy. The model of emergent units points to the critical role of origins and spatial-temporal features in the process of organization. The thesis closes by discussing key attributes of emergent units, the relationship between emergent units and more established processes of organization, and the need for a substantive merger between collective behavior and organization perspectives.

**DISASTER AND THE SOCIAL ORDER:
ORGANIZATION AND EMERGENT UNITS**

INTRODUCTION

The thesis which follows builds directly on Kreps' (1983a; 1983b; 1984a; 1984b; 1984c) ongoing study of organization in which he develops as unique strategy for advancing knowledge about disaster and the social order. Drawing from Kreps' data file of 423 cases of organization from 15 disaster events, I examine 52 cases of emergent social units. The remaining cases in his file are responses enacted by established social units of various types (e.g., military units, emergency relevant public bureaucracies). In effect, I adopt for purposes of analysis, Kreps' perspective on organization and use his taxonomy as a tool for interpreting emergent social unit responses in disaster.

The following case description is one example from my study of what is interpreted as an instance of emergent organization. The example highlights two dimensions of Kreps' definition of disaster which distinguishes them as sociological events (1). These events have impacts (2) on social units (3). The social units enact responses (4) that are related to these impacts (Kreps, 1984b). More important, the case description best communicates Kreps' framework and the way it is used in this study to interpret responses enacted by emergent social units, both key dimensions of disaster. It illustrates what we call a D-R-A-T pattern at the origins of organization. The domain of this response relates to the care of victims.

A temporary morgue is set up after a tornado. The county coroner is not a doctor but a local funeral director. He has no coroner's office, no staff, and no morgue. Normally, he simply signs autopsies after they are completed by hospital pathologists. After the tornado, spokesmen for the only local hospital say their staff cannot handle those killed by the event. They are equipped to handle only five cases per hour. A discussion by the coroner and two pathologists at the hospital leads to a decision to set up a temporary morgue. So, four hours following the tornado the coroner calls an acquaintance who works at the local YMCA and requests use of the facility for the morgue. The YMCA director accedes to the request (D). The coroner, the two pathologists, a licensed embalmer, and a marine recruiter go to the YMCA. The YMCA provides several rooms and a couple of staff. Thus, key participants and material resources are mobilized next (R). An hour later ambulances start bringing bodies to the morgue; people come to the morgue concerned about the missing; bodies start to be identified; local ministers who stop or come by with concerned residents start attending to the needs of the bereaved. It is evident that interdependent actions are taking place, but there is no discernable structure of activities (A). The need for "organization" is expressed by the key participants. Gradually a simple task structure emerges. The identified and unidentified dead are physically separated, with the two pathologists attending to them. The licensed embalmer and marine recruiter take on paper work tasks. The coroner maintains liaison with the hospital, funeral homes, and next of kin. Two ministers are asked to remain and attend to the needs of the bereaved at another location in the building (T). The morgue closes about 24-30 hours after it opens. All bodies are identified and processed.

This observed instance of organization, as well as the others in our analyses, points to a revered and important implication about human action and the social order (Alexander, 1982). Clearly, we are observing human action. But, as Simmel indicated long ago, such action is enacted in ways that reflect alternative "forms of sociation" (Kreps, 1984a). The subtleties of the forms are captured by using Kreps' strategy for comparative study of the responses of social units.

But what is organization? And, what are the component parts of a

"pattern" or "form" of organization? Organization is defined by Kreps as both process and thing (unit). As process, organization is the action of initiating, maintaining, and suspending structure—in the present case, instances of disaster relevant structure of human populations. The term "process" clearly means the passage of time in regard to organizational development and observation. In this sense, Kreps emphasizes the temporal ordering of the social properties of organization. Posited as a thing, organization is identified by the co-presence of four analytically distinct elements. The elements (domain, tasks, human and material resources, activities) are therefore individually necessary and collectively sufficient for organization to exist. They are treated as "structural" (objective) rather than "individual" (subjective) characteristics of organization (Mayhew, 1980; 1981). By structural, I am referring to them as emergent dimensions of action and order. They are, in effect, definable and interpretable as social properties sui generis (Durkheim, 1947).

Each emergent unit in this study has a distinguishable pattern of relationships among these four elements. The subtleties of the patterns are captured by using Kreps' typology which, by use of a factorial design, points to twenty four logically possible pattern arrangements (see Table 1).

Domains and tasks are interpreted as collective representations of organized social action. By collective representation Kreps means generalized information (external given to individuals) which relates in essential ways to time and energy use in the performance of

TABLE 1: Taxonomy of Organized Responses

<u>Organizational Forms</u>	<u>Kreps' Data File Frequencies</u>	<u>Emergent Unit File Frequencies</u>
D-T-R-A	165	3
D-T-A-R	6	1
D-R-A-T	28	3
D-R-T-A	53	6
D-A-R-T	2	*
D-A-T-R	1	*
T-R-A-D	22	3
T-R-D-A	4	1
T-A-D-R	*	*
T-A-R-D	*	*
T-D-R-A	1	*
T-D-A-R	*	*
R-A-D-T	16	3
R-A-T-D	11	2
R-D-T-A	66	13
R-D-A-T	12	7
R-T-D-A	6	2
R-T-A-D	12	1
A-D-T-R	2	*
A-D-R-T	*	*
A-T-D-R	2	*
A-T-R-D	4	1
A-R-D-T	6	3
A-R-T-D	<u>4</u>	<u>3</u>
TOTAL	423	52

*Indicates Forms of Organized Response not yet located.

activities—indicating what is taking place and how. Others (e.g., Smelser, 1962; Thompson, 1967) have pointed to the intra- and inter-subjective meaning of collective representations that are historically specific. But in keeping with the structural theme, I emphasize the material properties of collective representations which take the form of information about social actions (communications, organizational vocabularies, formal mandates, laws). Human and material resources and activities are the other material properties of organization. The elements are defined as follows.

Domains

Domain is a collective representation of a broader system (e.g., community) function of an organized response (Thompson, 1967; Wenger, 1978). In the disaster context, domains identify actual or threatened impacts as legitimate spheres of social action. The several types of domains (see Table 2) encompass pre-, trans-, and post-disaster time periods. They are evidenced by the communications of direct participants and others related at the boundaries of enacting social units. A processual view of domain is centrally important. Such a view suggests that in some situations the domain of organization may be evident before the event while in other situations, domain is a social construction of the emergency period. As a system property, domain has normative import, specifying both internal and external legitimations (via the content of information) of what participants in a response will and will not do. But the course of legitimation is also processual.

TABLE 2: Emergent Unit Response Domains

<u>Domain Type</u>	<u>Frequencies</u>
Hazard-vulnerability analysis	1
Disaster preparedness, planning and training	1
Issuance of predictions and warnings	1
Dissemination of predictions and warnings	1
Evacuation	4
Mobilization of emergency personnel and resources	5
Search and rescue	3
Medical care	3
Providing victim basic needs	9
Damage needs and assessment and inventory of available resources	1
Damage control	2
Public information	3
Local governance	1
Coordination and control	8
Reconstruction of physical structures	3
Reconstruction planning	4
<u>Other</u>	<u>2</u>
TOTAL	52

That is, there need not be a simultaneous internal-external occurrence of domain legitimation. For instance, response participants may define and adopt a particular domain type (care of victims as noted in the previous example). This constitutes internal legitimation. Following this, relevant others (YMCA director) may provide external legitimation in one or several ways (e.g., supplying resources, referring victims, honoring requests for needed facilities).

Tasks

Tasks are collective representations of how a domain is enacted and are communicated most pointedly by direct participants. The number of tasks for a given domain may range from few to many. It is however, the logical independence of tasks from domain that is essential to the notion that organization is a bounded system. As defined above, domain very clearly depicts open system dynamics, for its existence is predicated on both internal and external representation. Tasks, however, reveal more clearly the closed system information related to the structuring and restructuring of human and material resources and activities (Thompson, 1967). Recognizing the independence of tasks and domains is essential to a process model of organization as well. That is, tasks may be present following or prior to domain; and in either case, they may be pre-established or emerge as the event develops.

Human and Material Resources

People and their many attributes, commodities, and equipment are the "raw materials" of any instance of organization (Zurcher and Snow,

1981). Termed human and material resources, each may be controlled internally within a response—further depicting the boundedness of organization—or accessible through facilitating relationships. In either case, they ultimately combine with the remaining elements when organization is enacted. The relevance of human and material resources, which often converge in great abundance following a disaster, is socially determined. They may mobilize before or after impact, and may precede or follow the existence of domain and tasks in the process of organization.

Activities

Activities are interdependent actions which articulate the raw materials of organization (human and material resources) with collective representations (domains and tasks) of what is happening. It is important to note that while activities constitute the actions of human beings, they are "no more or less analytically important than the remaining three elements" of organization (Kreps, 1984c, p.8). In this sense, activities relate co-equally to organization as both unit and process.

Kreps also identifies three system states of organization; initiation, maintenance, and suspension. Each state exhibits a pattern of relationships among the four elements. Those initiated by domain and tasks (D T) reflect goal oriented rational action or formal rationality (D T R A interpreted as "perfect" formal rationality). Responses dominated by activities or resources (A R) reflect an elemental form of organization often referred to in disaster literature as collective

behavior (Kreps, 1984a). By definition, the system state of initiation ends when the last element falls into place making the transition from initiation to maintenance one of logical necessity. Because initiation and suspension are characterized by attribute values (i.e., presence-absence of the four elements) the degree of presence is centrally important. Indeed, it is the threshold judgements of presence that are critical. During maintenance, organization is contingent upon the four elements' presence in degree. Thus, the more important task is to account for property variances that may lead to pattern reconstruction or suspension. That is, if an element related contingency emerges (e.g., a piece of equipment is damaged, participants are lost, domain or tasks become unclear or questioned) the problem may be resolved through restructuring of the elements and the response continues until the demand is met or some new contingency appears. If the contingency is not resolved, the relevant element sets off the process of suspension. For both situations, judgements become critical in terms of absence thresholds. The following case description is one example from my study of what is interpreted as task related restructuring. That is, property variances in the task structure set off the process. The response has a D R T A initiation pattern. The element contingency relates to the loss of a clearly defined task structure.

The domain of the response involves the provision of medical care. The community has been impacted by a major earthquake (short forewarning). Sometime prior to the event, the local Civil Defense, in conjunction with disaster preparedness planning, designates the Director of a regional research laboratory as Emergency Health Director. The current

laboratory Director, being new to the position, is unaware of the appointment and associated responsibilities. Two days following the earthquake, the C.D. contacts the Director. He is told to report to the nearest city administration building. Upon arrival, a C.D. member outlines for him the response domain. The director is in charge of coordinating key community medical care services (D). Following the briefing, approximately 30 nurses are mobilized and placed under the direction of the Director (R). Together, they begin to work on a task structure and define procedures for typhoid vaccination (T). Next, he and the nurses split into groups, go out to several area clinics, and begin vaccination activities (A). Following the enactment of activities, the Director is confronted with a water problem. The Director has not anticipated, and thus is not prepared to handle the task contingency which demands specific technical knowledge and resources. The task structure becomes unclear and temporarily problematic. The contingency is resolved when the Director seeks advice from relevant sources and is subsequently given several alternate plans from which to choose in order to deal with the water problem. The inspection of restaurants, a new response task, is not problematic for he is able to mobilize in a short period of time a group of qualified inspectors (R) and, in effect, tells them the specifics of their duties. Related activities are carried out and both task demands are met (A). Vaccination activities continue at least seven weeks. After 38,000 typhoid shots are given, the supervision of the Emergency Health Director is no longer needed.

Prior to suspension, the response pattern changes from D-R-T-A at initiation to D-T-R-A at the maintenance of organization.

The parallels between Kreps' and my own study are many. As mentioned previously, I utilize Kreps' data source which comprises archival data in the form of transcribed interviews provided by the Disaster Research Center at Ohio State University. In addition, I adopt Kreps' perspective on organization and taxonomy of responses. Our studies hold to the tradition of disaster studies in that each is concerned with how disaster and the social order are related (Prince, 1920; Turner, 1967). As researchers of disaster and organization we are studying social events, units of analysis, and struggling with

issues of concern in each field. But the perspectives we hold toward each represent significant points of departure from the traditions of disaster and organization research.

First, we believe that the field's attention to the social order makes it (disaster) a logical interest of mainstream sociology. As we aim to get a better handle on such concepts as disaster, collective behavior, and organization we realize, along with Alexander (1982), that such concepts are related one way or the other to matters of action and order.

Second, we have divorced ourselves from the indifference in mainstream sociology to the construction of taxonomies. Embracing taxonomy is, in our judgement, the best way to conceptually relate human vulnerability and social organization.

Kreps' perspective on and taxonomy of organization departs from previous and contemporary conceptions and measurements found in the literature (Etzioni, 1964; Pugh, 1978; Hall, 1982; McKelvey, 1982; and others). Kreps' views the dearth of definitional and taxonomic work on organization as problematic. In this sense, he does not view organization as a given characteristic of a social unit but that which is to be defined and explained. In addition, his perspective goes beyond the traditional static conception of organization by emphasizing both process and structure.

My study of 52 cases of emergent organization is not, however, a replication of Kreps' work. It is important, therefore, to highlight what are interpreted as complementary differences which relate

respectively to the nature of emergent and more established organization, the role of origins, and the incorporation of key spatial-temporal model variables.

The unique feature of emergent unit enactment—development within circumscribed time and space and a short lived duration—make emergent units in natural disaster both interesting examples of process and to the extent accessible, amenable to joint observation and analysis. Unlike other types of social units, emergent units in this analysis transpired within days and sometimes hours. And, as Gamson (1975) suggests, the former type often take years to develop. Because of their lengthy enactment, researchers are often unable to observe and analyze, particularly during the early stages, the internal and external dynamics of organization. In this sense, my analysis of 52 emergent social units in the disaster context further contributes to our understanding of the process of organization.

One could argue, therefore, that all instances of organization are said to emerge. However, the term "emergent" is applicable to my unit of analysis in lieu of their temporal and spatial features mentioned above. In effect, the term emergent is used as a summative concept (Dubin, 1978) which emphasizes the key feature of these instances of organization.

The thrust of my thesis is to identify other distinct features as well, namely those which are comparable to features of more established social units. To begin to address this basic question, I direct the reader to the marginals for the 52 cases presented on Table 1 (pg.5).

Here, we note taxonomy frequencies for Kreps' 423 cases and the 52 emergent units. It is evident that documented patterns in each study include more goal oriented rational action (D T R A), elemental collective behavior (A R T D) and the permutations between. From this I begin the argument against traditional assumptions which define emergent social units as "means" (activities, resources) related, "collective behavior" (Turner and Killian, 1972), or "relatively unorganized" responses (Mileti et al., 1975). In this sense, my work holds to Kreps' immediate objective which is to contribute to the merging of collective behavior and organizational perspectives on action and order in the disaster context.

Unlike Kreps, I incorporate temporal and spatial variables which highlight the dynamics of the origins of emergent social units. Since our data do not allow for hypothesis testing, my study is a process of exploratory modeling. From the model of emergent social units (see Figure 1) I portray findings as they relate to emergent units in disaster and I suspect, other forms of organization as well.

In sum, my objective is to (1) add information related to the development of a taxonomy of organization and emergent social units that stem directly from Kreps' perspective of organization, and (2) analyze the process of organization for 52 units in order to assess further the role of origins.

FIGURE 1: A Model of Disaster and Emergent Organization at Three System States

EXOGENOUS VARIABLES

Event-Impact Characteristics (EVENTTP, ACTN)

Impacted Community Unit Characteristics (COMM, C-EXP, LOCMIL)

SYSTEM STATES

Initiation

Organization: Pattern at Origins (ORG-PAT)

Organization: Participant Characteristics (SIZ, KEYRES, TDEV, SLDA, EMP, PERS, DESTAB, FOT, COMM)

Organization: Spatial-Temporal (TINT, PLPI)

Organization: Social Network (NINDEXI)

Maintenance

Organization: Complexity of Response (CR5, CR6, RTSTRF)

Organization: Social Network at Maintenance (NINDEX2)

Suspension

Reason for Suspension (POSP)

Duration of Organized Response (TTR)

RELATED THEORY ON EMERGENT SOCIAL UNITS

The notions of both structure and process emphasized in Kreps' (1983a; 1983b; 1984a; 1984b; 1984c) work have been developed from the classics as well as contemporary works. It is important to remember, however, that Kreps' perspective on organization and collective behavior represents a significant departure from the conceptual and theoretical traditions of each field. In the section which follows these differences will become clearer as I further examine respectively the notions of (1) structure, (2) collective behavior vis a vis organization (structure), and (3) space-time factors. These notions are reflected in the works of Simmel, Durkheim, and Weber and more recent scholars such as Smelser, Gamson, Skocpal, and Giddens. The ideas in this analysis which these notions inform have direct implications for our perspective on organization and the analysis of emergent social units.

In Kantian manner, Simmel (1965) intimates that the form of social action (i.e., knowledge) is notably distinct from its content.

Knowledge, for example initially appears as a means in the struggle for existence, but it comes to be cultivated for its own sake autonomously, as happens in science (Martindale, 1982, p.228).

That is, Simmel refers to the analytical distinction between the form and content of inter-human action. In his discussion of "sociability", Simmel ties a notion of structure to the identification of structural

elements as they relate to social action. But how is the content of social action to be denoted?

Abel (1970) clarifies the Simmelian distinction between form and content as something other than that which is abstract or concrete, structural or material, formal or substantive. Instead, forms-of-sociation in human interaction constitute a "mode of reciprocity between persons manifest in their actions toward each other, their attitudes, and their mutual evaluations" (Abel, 1970, p.84). Simmel intimates, therefore, that "forms-of-sociation" are patterned social actions comprised of structural elements. Are then, collective representations (domain, tasks) structural elements of human interaction?

Durkheim (1947) said that collective representations represent "the totality of beliefs and sentiments common to the average citizens of the same society" (Durkheim, 1947, p.49). Because these beliefs are interpreted holistically they are, therefore, distinguished by their exteriority and constraint (Martindale, 1981) and found in the solidarity features of society.

Collective representations constitute a reality sui generis. That is, they are more than the summation of individual attitudes and beliefs. But this critical feature of collective representations proved problematic for Durkheim. In effect, he was unable to distinguish them as either intersubjective meanings or social facts (structure). Perhaps he was simply being flexible about substantive problems of action and order:

Moreover, it does not change with each generation, but, on the contrary, it connects successive generations with one another. It is, thus, an entirely different thing from particular consciences, although it can be realized only through them (Durkheim, 1947, p.80).

Given the breadth and nature of the problem Durkheim was struggling with, many since him have questioned the efficacy of classifying collective representations as social structures. If one assumes that both "individual" and "group" are analytical rather than concrete terms, and that neither has ontological primacy, then collective representations can be seen as having external (material) and internal (subjective) dimensions (Alexander, 1982). I feel that these are reasonable assumptions.

The tradition of collective behavior studies is indicative of the debate between collective representations as social facts (structure) or essentially individual expressions. The tendency has been for collective behaviorists to analyze emergent social units in psychological terms. From earlier theorists (Lebon, 1960 reprint) to relatively contemporary exemplars (Lang and Lang, 1961; Smelser, 1962) the distinction is made between social movements, crowds, and mass behavior and, on the other hand, conventional or more formal groups and organizations. Each has been described as collective representations or associations. However, not only are the participants of each viewed as different "species" (Gamson, 1975) but their forms are interpreted as distinctive and "relatively enduring" as well.

For example, Lang and Lang (1961) compare collective behavior and more formal social action and suggest that they differ in terms of form

and content. They argue that participants in collective behavior respond without the advantage of social expectations or the guidance of social structures (Weller and Quarantelli, 1973). By implication, this means that a structural analysis of emergent units is unlikely. Lang and Lang contend that most structures associated with conventional units are "either lacking or not determining factors" when applied to emergent ones (Lang and Lang, 1961, p.13).

Smelser (1962) provides a different interpretation by pointing to a similarity between collective and more formal behavior. In doing so, he outlines a typology of generalized beliefs associated with collective representations for they reflect the normative content of collective behavior. The types are defined as follows:

- (1) hysteria, which transforms an ambiguous situation into an absolutely potent generalized threat;
- (2) wish-fulfillment, which reduces ambiguity by positing absolutely plausible generalized facilities;
- (3) hostility, which involves removing some agent or object perceived as a generalized threat;
- (4) value oriented beliefs, which envision the reconstruction of a threatened value system; and
- (5) norm-oriented beliefs, which envision the reconstruction of a threatened normative structure.

None, however, parallel Durkheim's definition of collective representations because Smelser views generalized beliefs as "peculiarities . . . that activate people for participation in episodes of collective behavior" (Smelser, 1962, P.80). The content of such beliefs are interpreted by Smelser as "problems" which are then elevated to a workable level. In addition this process of activation is

viewed as normal and rational. The difference, though, is that collective behavior produces generalized beliefs which are spontaneous and lack continuity. Gamson (1975) calls the process in which they emerge "short circuiting" because actors in collective behavior usually move from the abstract phase of problem formulation to the source of attention. In this sense, emergent social units enact a predictable jump between these two aspects of action in the absence of a clearly defined task structure.

In sum, Smelser's statements on collective behavior point to two contradicting assumptions about emergent social units. First, though he fails to cite Weber, his subjectivist interpretation of collective and more formal behavior reflects the Weberian logic of formal rationality (e.g., domain precedes activities).

Present in all collective behavior is some kind of belief that prepares the participants for action. . . . This preparing function is implicit in our view of generalized beliefs as determinants that add their value in the process that builds up to an episode of collective behavior (Smelser, 1962, p.83).

His interpretation of social behavior suggests similarities between collective behavior and more formal behavior in terms of organization pattern. That is, both emergent and more formal social units in disaster may be more "ends" (domain, tasks) as opposed to "means" (activities, resources) oriented. But as Table 1 (pg.5) suggests, emergent and established units cover the entire range of 24 logical possibilities in terms of organization pattern. On the other hand, and perhaps in keeping more with traditional views of collective behavior, Smelser implies the improbability of instances of organization in regard

to various forms of collective behavior.

But what is formal rationality and how does it relate to patterns of organization? Formal rationality is one of four types of "rationality" investigated by Weber (Kalberg, 1980). Manifest in social action, formal rationality develops in specific spheres of life (e.g., economic, science) and is associated with a bureaucratic form of domination. Formally rational procedures legitimate practical calculations and employ techniques "with little regard to persons". They operate with calculations of "the most precise and efficient means for the resolution of problems by ordering them under universal and abstract regulations" (Kalberg, 1980, p.1158).

In the disaster context, the interpretation and application of this concept suggests the predominance of domain initiated responses. Given Kreps' four essential elements of organization, the pattern of development most representative of Weber's notion of formal rationality is the following;

Domain—Tasks—Human and Material Resources—Activities
(Kreps, 1983a)

This pattern (D T R A) points to Weber's broader notion of goal oriented rational action. Activities are logically predicated by resource mobilization, task development, and domain respectively. Deviations from this pattern are interpreted as increasingly less formally rational and less routine. Deviations are also considered by some as less "efficient" as a consequence of deviation (Price, 1968). Weber's conception of goal oriented rational action, or formal rationality provides an interesting interpretation of organized responses in a

disaster emergency period. For instance, one would suppose that domain or task initiated responses would occur most often—in established as well as emergent social units—and be time and energy saving. As has been shown (see Table 1, pg.5), the data do not support that presumption.

Contemporary organization literature provides several examples of researchers who make assumptions similar to Weber and Smelser regarding the rational nature of organizations. The statement by Etzioni (1961) is a classic example. He defines organization as:

a human grouping deliberately constructed to seek specific goals . . . organizations are characterized by: (1) divisions of labor, power, and communication responsibilities, divisions which are not randomly or traditionally patterned, but deliberately planned; (2) the presence of one or more power centers which control and direct them toward its goals; these power centers also continuously review the organization's performance and repattern its structure, where necessary, to increase its efficiency; (3) substitution of personnel . . ." (Etzioni, 1961, p.3).

From Etzioni's definition one might infer that emergent groups are the result of conscious planning, not the specific context from which they develop. Context, however, interpreted here as origins has a critical role in the subsequent development of organization. More important, those pointing to formal rationality (as Etzioni does) usually assume the existence of organization, while those pointing to collective behavior usually presume its absence. Although both assumptions are unwarranted in the disaster context, appearances may be deceiving in any context.

Few researchers of social movements or organization would disagree with the idea that all social units have origins. Yet, recognition of

the significance of origins in the process of organization varies greatly. From the works of writers who do recognize the critical role of origins I infer not only the relevance of organization context but spatial and temporal features as each relate to emergent social unit enactment.

For example, Kimberly et al., (1980) assert that the "life cycle" concept of organization compels the scientist to acknowledge seriously and appreciate the importance of origins. They argue that organizations, like biological entities, have an identifiable history and context from which they develop. These origins may, in turn, impact the structure or pattern of organization in one or more of its system states (Paige, 1975; Kimberly et al., 1980; Skocpol, 1981; McKelvey, 1982).

Similarly, Skocpol (1981), who adopts a structural approach in her study of social revolutions, gives particular emphasis to the origins and structural features of organizational environments. According to Skocpol, a purposive or individualistic analysis assumes the process of organization to be the direct result of individual decision making. And, the resulting interpretation tends to be highly misleading when presenting the process and outcomes of historical instances, as well as their causes.

Developing the point further, Skocpol asserts that

successful social revolutions probably emerge from different macro-structural and historical contexts than do either failed social revolutions or political transformations that are not accompanied by transformations of class relations (Skocpol, 1981, p.5).

Her treatment of and emphasis on the origins and historical context of social revolutions touch on matters which are central to the disaster context. In addition, Skocpol's perspective resonates with that of the population ecologists (Hannon and Freeman, 1977; McKelvey, 1983) in her emphasis on "ecological context". That is, social unit (emergent unit, social revolution) comparability of specific instances of emergent social units and "of the broader social network of the focal unit is a necessary condition for new (emergent) organization" (Francis and Kreps, 1984, p.32).

Weller and Quarantelli's (1973) article highlights a typology of collective behavior and suggests the significance of origins for each type. The typology points to the source of and depicts three kinds of emergent collectivities. Their concentration on systems of norms and social relationships reflects the potentially routine nature of some elements of organization. They consider the source of these elements "with respect to the social setting in which behavior takes place" (Weller and Quarantelli, 1972, p.679). Unfortunately, they do not pursue the matter further. Weller and Quarantelli leave essentially unspecified the sources of social norms and social relationships.

Skocpol's (1981) analysis also incorporates a critical theoretical component to which the disaster context commands our attention; the concept of time or what she calls "world time". Here, world time is utilized as a key contextual variable and comprises the peripheral and transitory environment of social phenomena.

On the one hand, there are the structures of the world capitalist economy and the international states system, within which individual nations are situated in different positions. And on the other hand, there are changes and transmissions in world time which affect both the overall world contexts within which revolutions occur and the particular models and options for action that can be borrowed from abroad by revolutionary leadership (Skocpol, 1981, p.23).

Skocpol implies, therefore, that emergent units may and frequently do develop within the context of other disaster relevant organization. Each organization may reflect relatively similar or dissimilar patterns of organization. Second, assuming that the patterning of organization may change over time, those observed immediately following the disaster (her referent is revolution) may significantly differ from those observed during the later phases of the emergency period. Thus the actual time a group emerges may operate as an influential variable regarding the pattern of origins and maintenance.

Giddens (1979) argues that the concept of time is involved in any model of a patterning process. In regard to organization, this opinion would necessitate a dynamic view of the process. But as Giddens suggests, most theorists don't incorporate time as a variable when referring to social structures. This is particularly characteristic of functionalist perspectives. For them, time has traditionally been associated with process and structure with stability. The association reflects one of two tendencies; either the assumption of change or presumption that social interactions may exist in "static stability" (Giddens, 1979, p.202). Any identifiable pattern of interaction must be located within a given time period because "only when examined over time

do they form patterns at all" (Giddens, 1979, p.202). In addition, a static analysis of social structures is not verifiable. "There is simply no way in which a static analysis can actually be carried out; the study of social activity invokes the lapse of time just as the activity itself does" (Giddens, 1979, p.199).

Giddens also stresses the importance of spatial factors in any analysis, though it too is frequently given short shrift in theory building efforts. The reasons for omission are not entirely clear, but Giddens highlights a few possibilities. For example, socio-theoretical exclusions of the concept may result from a fear of attributing geographical determinism. On the other hand, many researchers disregard the importance of spatial variables because they assume an image of structural or environmental space as given. By doing so, each fail to realize that spatial factors reflect more than the distance between two objects or persons, geographical locations, physical environments, settings, or any combination of these. In the disaster context, the spatial and environmental characteristics of a disaster are likely to include those elements which are "routinely drawn upon by social actors in the sustaining of communication" (Giddens, 1979, p.207).

The concepts of time and space are interpreted as central to the definition and explanation of the process of organization. Indeed, the analysis to follow incorporates two preliminary variables which are, respectively, spatial and temporal. Related findings point to their potential contributions to our knowledge of emergent organization. In sum, the notions of rationality, collective behavior, space and time are

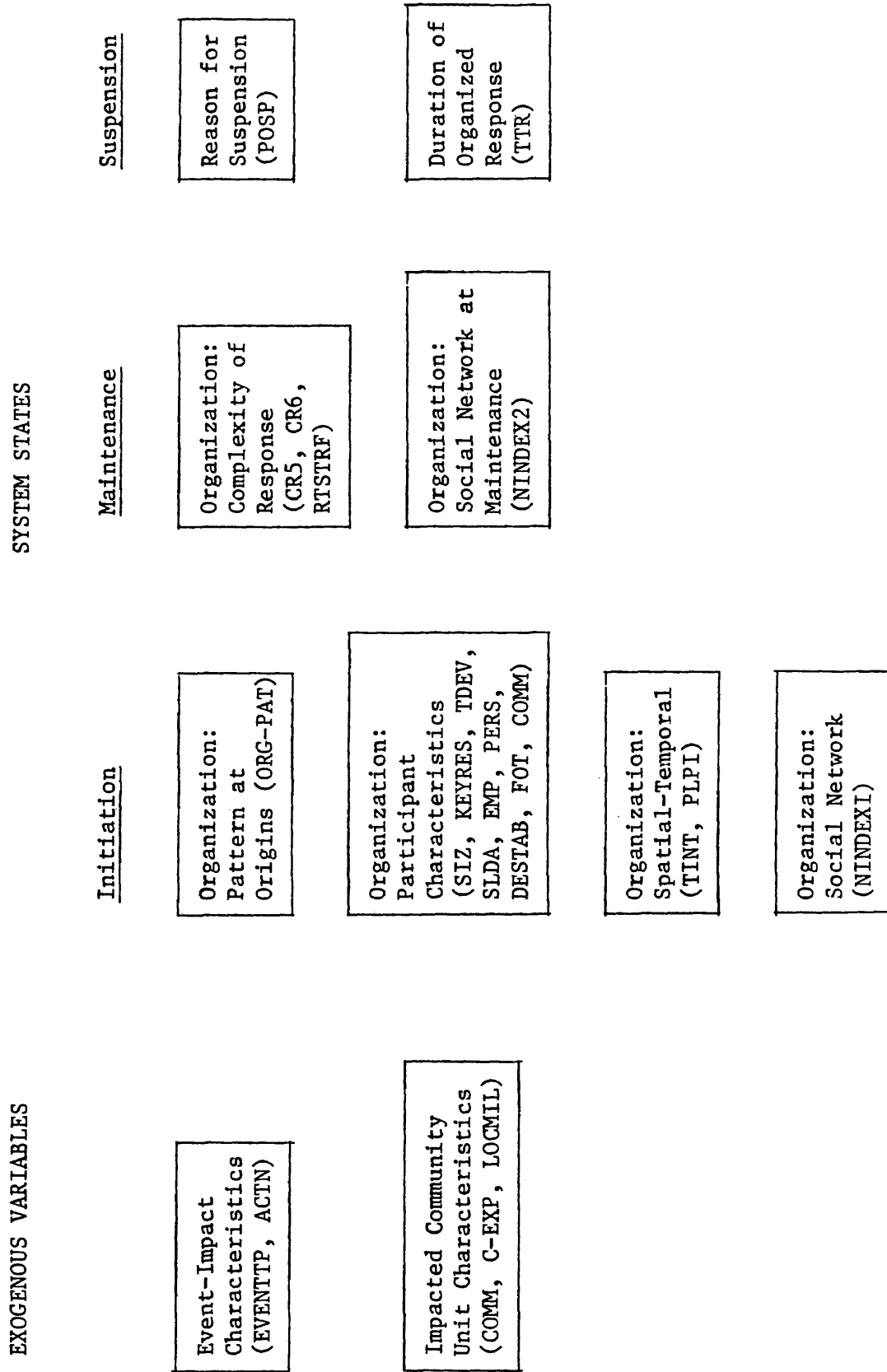
interpreted as significant for the form and content of emergent organization. The following section includes a discussion of how each of these dimensions are incorporated in exploratory modeling of the origins, maintenance, and suspension of 52 instances of emergent organization that were previously identified by Kreps.

MEASUREMENT AND MODEL OF EMERGENT SOCIAL UNITS

In the following section, details are provided on the measurement of variables which characterize the 52 emergent social units. The variables point to dimensions of organization discussed in the previous section and are incorporated in exploratory modeling of emergent organization. I begin by describing respectively Kreps' data source, event selection, and data production requirements of the model. Next, starting with exogeneous variables, I discuss blocks of model variables in the order of their arrangement (see Figure 1).

The theory and model of emergent social units relate to earlier studies by the Disaster Research Center (DRC of the Ohio State University) which focused on social action during the emergency phase of selected natural disasters. The DRC traditionally sent out research teams to disaster sites. These teams gathered any and all information possible via personal interviews with participants and various types of documents which depict the actions of social units. The data were not collected with any given theoretical framework in mind, thus, interviews were, in most cases, unstructured. Essentially, efforts were made to document action sequences of events during the emergency period of natural disasters. The original data are stored in the DRC's well-maintained archives in the form of transcribed interviews and documents.

FIGURE 1: A Model of Disaster and Emergent Organization at Three System States



As any disaster researcher knows, the environment for data collection is far from ideal (Drabek, 1970). It is clear, therefore, that the way the initial studies were conducted by the DRC (1963-1970) influence the nature or quality of compiled information. For example, researchers selected participants of disaster relevant established organizations (e.g., RED Cross, police departments) as principle interviewees because their involvement was expected, they were available, and they were cooperative. A selection process of this type prohibits the disclosure of other comparably significant disaster responses, notably emergent social units engaged in various domains. Notwithstanding this data collection bias, information on important emergent units often became available and was collected on site.

Disaster events examined by Kreps were a sample of these initial DRC studies. His selection procedure reflects both purposive and quota sampling strategies (Babbie, 1973). Data production continued until an N of 423 cases was obtained. Efforts ended with a sample of 15 events drawing from 1,062 interviews. Table 3 lists the sample of events, number of responses and interviews associated with the 52 emergent social units. I have re-analyzed all interviews (transcribed) related to the 52 emergent units for purposes of generating the model reported in Figure 1.

Figure 1 points to the data production requirements of the exploratory model that has been developed. First, empirical patterns of origins, maintenance, and suspension had to be documented. Second, other factors which relate to these patterns were recorded

TABLE 3: Event Name, Number of Interviews and Responses

<u>Events</u>	<u>#-Interviews</u>	<u>#-Responses</u>
1. Alaska Earthquake 1964	18	15
2. Hurricane Betsy (New Orleans), 1965	6	5
3. Hurricane Camille (Gulf Coast), 1969	7	5
4. Belmond, Iowa Tornado, 1966	3	1
5. Oak Lawn Chicago, Ill. Tornado, 1967	1	1
6. Jonesboro, Ark. Tornado, 1968	7	3
7. Topeka, Kansas Tornado, 1966	5	6
8. Central South Colorado Floods, 1965	3	2
9. Mankato, Minn. Flood, 1965	4	1
10. Fairbanks, Alaska Flood, 1967	14	9
11. Minot, North Dakota Flood, 1969	3	3
12. Fargo, North Dakota Flood, Flood, 1969	<u>2</u>	<u>1</u>
Totals	73	52

(e.g., participant characteristics) as were exogeneous variables.

I have only scratched the surface of what ultimately will be needed, but obviously I must work within the constraints of what is available. In sum, the model explicitly points to the process and structure of organization. It gives particular emphasis to the origins of organization and how other factors relate to them.

My core measurement problem involved, specifically, identifying and recording patterns of origins in terms of the 24 logical possibilities highlighted by Kreps' taxonomy (see Table 1, pg.5); then relating these patterns to characteristics of events (event type, type of domain), impacted community unit characteristics (size, disaster experience, relevance of military units), spatial and temporal features of organization (time of initiation, closeness to primary impact area), participant characteristics (number involved, key resources at initiation, social links to activity area, orientations in communication), complexity of social network at initiation and maintenance, complexity of response (means/ends problems, task structure focus), reason for suspension, and length of response.

Modeling of Emergent Organization

A. Exogeneous Variables

Five exogeneous variables are included in the model. Two are event-impact related and three are community unit related. Recalling Kreps' (1984a) definition of disaster (see page 2 of text) it is important to keep analytically distinct the four dimensions of disaster

and the broader system (community) in which responses are enacted. In this way we are better able to separate the effects of each and describe and explain the dynamics of social unit responses.

Each of the 52 responses emerged within the context of one of four types of disaster events (EVENTTP); tornado, hurricane, earthquake, or flood. These events have what Kreps calls "property spaces" which are related to the magnitude and scope of their impact. In addition, each property space has physical, temporal, and spatial dimensions. Treating events as independent variables, I emphasize the temporal dimensions of impact. That is, events were coded according to ordinal distinctions in their length of forewarning. Earthquakes (1), tornadoes (2), and floods and hurricanes (3) were coded such that higher scores on this variable indicate greater forewarning time.

Using Kreps' typology of disaster domains (see Table 2; ACTN) I identified at least seventeen distinct domains. The typology was collapsed in an effort to isolate those domains which were (1) immediately post-impact and therefore urgent and (2) whose enactment was less likely before the event (e.g., medical care, search and rescue). These domains were coded "1" (N=32) and the remaining types "0" for the 52 cases. The decision to collapse disaster domains was based on the idea that emergent groups may take on more time urgent demands until established organizations are able to recoup and take over. Moderate differences were evidenced between my own and the larger study of 423 responses. Kreps hypothesized that the timing of collective representation in the enactment of organization may be related to domain

ambiguity. The correlation between organization pattern (ORG-PAT) and domain type (ACTN) does not, however, support this hypothesis ($r=-.01$; see Appendix 1).

C-EXP is used to measure ordinal distinctions of increasing community disaster experience. Variable values range from "1" no disasters, few threats (N=8), "2" no disasters several threats (N=30), "3" one or more disasters (N=12), to "4" one disaster several threats (N=2). The measure of community size (COMM) was collapsed to highlight responses which emerged in a "1" metropolitan (50,000+) as opposed to a "0" non-metropolitan area (N=26). LOCMIL is used to measure spatial proximity and social relevance of military units to emergent organization. Higher scores indicate ordinal distinctions of increasing relevance; "1" at some distance (N=4), "2" close proximity, no relevance (N=22), and "3" close proximity, relevance (N=26).

B. Organization: Initiation

The distributions in Table 1 (pg.5) provide information on the documented patterns of organization at initiation (ORG-PAT). The 24 logical patterns of organization are related by way of a continuum. Each illustrates Weber's notion of individual (historical) ideal types. The typology of which they are a part emphasizes Simmel's distinction between form and content discussed in the previous section. In order to express the underlying unity between collective behavior (A R T D) and more goal oriented rational action (formal rationality, D T R A) Kreps (1983b) provides a metric of organization.

Kreps gave each of the 24 organization forms a score ranging from

"0" to "6". Capturing the transitivities from D T R A to A R T D was a key requirement for metric construction. For, as a taxonomy of social responses, each type points analytically to the autonomy and unity of action and order as both relate to disaster (Alexander, 1982). Kreps accomplished this objective in the following way. At one end of the continuum is "perfect" formal rationality; where D precedes T, R, and A; T precedes R, A; and R precedes A. Given one point for each conforming transitivity D T R A receives a score of "6" while A R T D receives a score of "0". The midpoint of the metric, "3", highlights "how the process of formal rationality and collective behavior are balanced in the 6 types represented" (Kreps, 1984a). In effect, Kreps' metric, based on the continuum, allows modeling of 24 forms of organization represented in the taxonomy. I use this seven level ordinal scale for the purposes of model building.

The spread of 52 cases presented in Table 4 is very important in regard to the distribution of metric values. Frequencies for ORG-PAT indicate that the 52 emergent units do not predominately reflect either more elemental collective behavior or formal rationality. Indeed, emergent unit patterns fill the entire range of metric values. This tells us that assumptions about the pattern and process of organization are unwarranted in the disaster context for emergent social units.

Nine measures of participant characteristics are included in the model. Perhaps more than any other block this group of variables provides insight on the social psychological aspect of organization. First, three dummy variables were created to emphasize the salient

TABLE 4: Organizational Forms for Emergent Units,
Formal Rationality - Collective Behavior Metric

<u>Organizational Forms</u>	<u>Logical Metric</u>	<u>Number of Forms</u>	<u>Empirical Instances</u>
D-T-R-A	6	1	3
D-T-A-R	5	3	7
D-R-T-A			
T-D-R-A			
D-R-A-T	4	5	17
D-A-T-R			
T-R-D-A			
T-D-A-R			
R-D-T-A			
D-A-R-T	3	6	12
T-R-A-D			
T-A-D-R			
R-D-A-T			
R-T-D-A			
A-D-T-R			
T-A-R-D	2	5	4
R-A-D-T			
R-T-A-D			
A-D-R-T			
A-T-D-R			
R-A-T-D	1	3	6
A-T-R-D			
A-R-D-T			
A-R-T-D	0	<u>1</u>	<u>3</u>
Totals		24	52

topics in the communication network of response participants. EMP points to responses in which participants expressed a high degree of empathy for others (N=30). PERS isolates responses whose participants were concerned with victims' emotional and material loss (N=21) and COMC those concerned with community damage and participant control of response (N=26). The N of such responses exceeds 52 and thereby reflects emergent units with several different focuses in communication network.

All responses are called emergent (no pre-event existence). Some however were carried out by "0" emergent groups of individuals (N=24) or "1" emergent groups of other groups and organizations (FOT). The number of participants (SIZ) was the referent for the size of the responding units. Measurement was as follows; "1" 9 or fewer (N=11), "2" 10 to 20 (N=10), "3" 21 to 50 (N=10), and "4" over 50 members (N=21).

DESTAB and TDEV are two dummy variables created to measure respectively the time order development of domain legitimation and task development. DESTAB isolates responses in which "1" internal domain legitimation clearly precedes external legitimation (N=36). The case description on page two (see Introduction) points to one example where internal legitimation precedes external legitimation. Similarly, TDEV isolates responses whose participants develop their own task structure (N=44) as opposed to adopting one developed by a relevant other. Case description #118 (Appendix 2) points to a situation where participants develop their own task structure. Here, the civilian and city

secretaries, without the aid or advise of the local Civil Defense, devise a simple task structure whereby they receive calls on a hotline and use the radio to broadcast names of missing persons. Case description #266 (Appendix 2) points to a response where participants adopt a task structure developed, initially, by a relevant other. In this example, the student body president goes to the university president for assistance in developing a task structure. For this instance of organization, assistance from a relevant other was critical for the enactment of organization.

Some response participants were aware of ongoing disaster relevant activity in varying degrees. Such awareness was interpreted as an indication of social links to dominant activity areas (SIDA) and analytically distinct from the measured patterns of social network at initiation and maintenance of organization. Most responses were judged as socially isolated at initiation (N=29).

TINT and PLPI are only a start on the important direction of data production on the process of organization. That is, I believe that subsequent analyzes of organization should incorporate other relevant spatial and temporal variables. PLPI is a dummy variable created to measure a response's closeness to the primary impact area. Most (N=37) responses were spatially integrated. TINT measures the time of initiation or the ordinal distinction of when the first element of organization emerges. Values range from "0" more than 72 hours pre-impact (N=3), "1" less than 72 hours pre-impact (N=5), "2" one to two hours post-impact (N=11), "3" three to twenty four hours post-impact

(N=8), "4" twenty five to seventy two hours post-impact (N=15), to "5" beyond seventy two hours post-impact (N=10). Both TINT and PLPI are structural variables and represent ordinal distinctions of spatial and temporal location.

Instances of organization may be linked to a broader network of responding units in ways other than by awareness of disaster relevant activity (SLDA). As in Kreps' (1983b) study, evidenced links at initiation (PINT) were measured in the following way: measurement began by identifying responses that were "1" self-contained (no relationships represented) or "2" linked to other focal organizations at initiation (at local, state, or national level, N=44). The number of links (INLINKS) at initiation was also measured: "0" no links (N=32), "1" one or more links (N=20). PINT and INLINKS were moderately correlated ($r=.43$) and each contributes unique information about social network at initiation of organization. PINT and INLINKS were then combined (additively) to form an index of social network density at initiation (NINDEX1). Almost half (N=23) of the responses have a simple social network at initiation.

C. Organization: Maintenance

Measurement of complexity of response at the maintenance state of organization began by recording the number of tasks noted by participants (RTSTR) throughout the course of the response. Since most of these tasks were evidenced at the height of organized activity they are referenced at the maintenance state. RTSTR measures responses having "1" simple task structures (less than four) and "2" more complex

task structures (four or more). Where the actual number was uncertain, responses were coded as simple on this dimension. The frequencies on this dimension evidence a larger number of complex task structures (N=39, 59.6%) compared to Kreps' larger study where responses were split about evenly (52.9% coded as simple).

Next, I recorded any response related contingency expressed by participants or relevant others in the disaster context. I did not question the exactitude of these expressions but merely recorded descriptions of them as they related to domain (DDPR), tasks (TDPR), human and material resources (RMPR), and activities (APPR). Pinpointing the timing of these contingencies was difficult, therefore, they too were referenced at the maintenance state for purposes of model building. DDPR, TDPR, RMPR, and APPR were created such that one or more contingency could be coded. For example, case #266 is a response where relevant others expressed activities performance problems. Here, university students acting as a key resource at initiation, were described as creating activity related problems. That is, during the height of activity, enough students were drinking beer while on work location that city police were expecting problems that never materialized.

As in Kreps' study two interaction terms (CR5 and CR6) were created. The logic for their creation is based on the analytical distinction between "ends" (D T related) and "means" (A R related) during the maintenance state of organization (Thompson, 1967; Starbuck, 1983). CR5 combines (multiplicatively) RTSTR (response task structure)

with domain (DDPR) and tasks (TDPR) contingency variables. CR6 combines in like manner RTSTR with activities (APPR) and resource (RMPPR) contingency variables. Each index (CR5 and CR6) simultaneously capture the distinction between "means" and "ends" and the complexity of the response. Higher scores reflect increasing response complexity.

RTSTRF measures the degree to which task structures are focused. Certainly, all task structures are focused to some degree, regardless if they are simple or complex. Some, however, are more explicitly focused than others. Therefore, RTSTRF, was used to measure ordinal distinctions in reference to physical, social, and temporal dimensions. Measurement was as follows: "0" no specific task structure focus (N=12), "1" focus on one of three dimensions (N=19), "2" focus on two of three dimensions (N=18), and "3" focus on all three dimensions (N=3). A response task structure which was physically focused was carried out in a particular location (e.g., highschool gymnasium). Social dimensions include participant attention directed toward particular victim groups (e.g., children). Temporally focused task structures were formulated and enacted by participants with certain time limitations collectively understood (e.g., before sundown).

A second measure of social network density (NINDEX2) is referenced at the maintenance state of organization. Here, the same measurement procedure was used as for NINDEX1. PMNT and IMNLINKS were combined (additively) to form NINDEX2. Differences evidenced between NINDEX1 (44% coded as simple) and NINDEX2 (11.5% coded as simple) point to rapid

changes that are likely to occur in the "fluidity" of disaster situations (Kreps, 1984a).

D. Organization: Suspension

A response may be suspended for a variety of reasons (POSP). For instance, the response may persist until the demand is met, be absorbed by another entity (e.g., Salvation Army), or lose a critical human or material resource. The measurement of these reasons provided some insight regarding the survivorship of organization as a key element of process. Measurement was, however, weak on this response dimension. POSP was collapsed in an effort to isolate responses which "1" continued until the demand was met, or though in process, outcome was probable (N=26). All other reasons for suspension were coded "0".

Treated as a dependent variable, TTR measures ordinal distinctions in response duration. Measurement was as follows: "1" lasted one to two days (N=7), "2" lasted two to five days (N=16), "3" lasted six to fourteen days (N=19), and "4" over two weeks (N=10). Here, I examine how all model variables influence the total time organization lasts. The following section provides a more detailed discussion of the model findings.

MODEL FINDINGS

Step-wise multiple regression techniques were used for examination of model relationships at three system states of organization: initiation, maintenance, and suspension. Tables 5 through 9 provide information obtained from ten separate regressions which relate to these system states and will be discussed respectively. At each stage of organization, variables are regressed against all others at that stage, those at preceding stages, and the two sets of exogeneous variables. For instance, at Stage 2 (Maintenance of Organization) NINDEX2 is regressed against organization complexity, NINDEX1, organization pattern at origins, organization participant characteristics, spatial-temporal characteristics, event characteristics, and community unit characteristics (see Figure 1). Thus, step-wise procedures are sequential in that each regression equation has as candidate predictors everything to the left of it on the diagram.

A .10 inclusion criterion is used for adding variables in the equation. The lesser criterion is consistent with the exploratory nature of the modeling. Also, means, standard deviations, and correlations for each model variable are provided in Appendix 1.

The assumptions associated with the principles of least squares (OLS) may be relaxed to some degree when employing dichotomous and ordinal variables (Kreps, 1983b). However, specific methodological qualifications are in order regarding standard regression techniques.

First, recall that step-wise procedures were used. This means that variable entry into any regression was determined by partial correlation techniques. As a consequence, important variables may be artificially omitted from the equation at a loss of substantial insight. A lesser inclusion criterion is responsive to this concern, but creates other problems with small samples such as this one. For instance, if the number of x variables exceeded or equalled the number of observations the normal equation could not be given a unique solution (Hays, 1981). Here, the ration of x variables to number of observations is high (10:52) though not problematic given my concern with exploratory modeling as opposed to hypothesis testing. In addition, the frequent use of reciprocal causation yields relatively distinct sets of statistically significant independent variables. One potential effect is to bias the coefficients of variables in the equation, thereby creating estimation problems (Lewis-Beck, 1980) in regard to population parameters. Second, using dichotomous variables (0,1) as dependent variables results in biased significance tests because of heteroscedastic disturbances (Anderson, 1983). Walsh and Warland (1983) echo this point by suggesting that dichotomous dependent variables are occasioned by estimation problems. I have, however, replicated regressions by use of discriminant techniques and detected no significant problems. Third, four equations have ordinal indexes as dependent variables. Although multiple regression techniques assume normally distributed and interval level dependent variables and measurement, I am relying, as others do, on the robustness of these

techniques when assumptions have been violated. Finally, a comment on the model variables left in the equation by using step-wise techniques. Simply because a variable is not in the final equation does not necessarily mean that it has no influence (Anderson, 1983). For example, it may have been omitted because of multicollinearity. Findings in Appendix 1 suggest, however, that significant independent variables are only moderately correlated.

The following section includes a brief outline and summary of the findings presented in Tables 5 through 9. Each finding represents an empirically grounded relationship among properties of organization and disaster.

Findings Statements: Origins (Table 5 and Table 6

1. The more complex the social network at origins (NINDEX1), the later in the emergency period is organization enacted (TINT).
2. Where participants in the enacting unit express high degrees of concern for victim losses (PERS), the later in the emergency period is organization enacted (TINT).
3. Where participants in the enacting unit adopt a task structure developed by others (TDEV), the later in the emergency period is organization enacted (TINT).
4. Where social links to dominant activity areas are great (SLDA), the more likely is organization enacted in close proximity to the primary impact area (PLPI).
5. The larger the enacting unit (SIZ), the more complex its social network at the origins of organization (NINDEX1).
6. When enacted by an emergent group of individuals as opposed to an emergent group of other groups and organizations (FOT), the more complex is the social network at the origins of organization (NINDEX1).

7. Where the impacted community is metropolitan as opposed to non-metropolitan (COMM), the less complex is the social network at the origins of organization (NINDEX1).
8. Where social links to dominant activity area are few (SLDA), the more complex is the social network at the origins of organization (NINDEX1).
9. Where there is greater event forewarning (EVENTTP), the greater the evidence of formal rationality at the origins of organization (ORG-PAT).
10. The greater the disaster experience in the impacted community (C-EXP), the greater the evidence of collective behavior at the origins of organization (ORG-PAT).

The four regressions at the initiation state of organization have as dependent variables time of initiation (TINT), proximity to primary impact area (PLPI), social network complexity (NINDEX1), and organization pattern (ORG-PAT) and will be discussed respectively.

First, findings indicate that the spatial and temporal location of organization at initiation is related to NINDEX1, PERS, TDEV, and SLDA. Given these predictors, the overall tendency for emergent organization is later initiation time relative to the occurrence of event and proximity to the primary impact area.

The relation of PERS and TINT (Statement 2) is interpreted as an indication of participants' awareness of victims' needs and experiences relative to the event. Though in another context, Kanter (1977) provides an account for the significance of PERS for emergent organization at origins. Kanter argues that early stages of organization are characterized by high degrees of uncertainty and pressures for similarity of participants. Invariably, during the origins of organization, key participants make choices about the

TABLE 5: Origins of Organization, Stage 1

Significant Independent Variables Dependent Variables: Time of Initiation (TINT), Physical Location to Primary Impact (PLPI)

	<u>TINT</u> <u>BETA</u>	<u>F</u>	<u>PLPI</u> <u>BETA</u>	<u>F</u>
<u>Event Related</u>				
<u>Organization Related</u>				
Social Network at Origins (NINDEX1)	.368	8.614***		
Personal Orientation (PERS)	.339	7.203***		
Task Development (TDEV)	-.249	3.921*		
Social Links to Dominant Activity Area (SLDA)			.241	3.100*
<u>Constant</u>	2.37		.150	
<u>R2</u>	.25		.058	

*p is less than .10
 **p is less than .05
 ***p is less than .01
 ****p is less than .001

TABLE 6: Origins of Organization, Stage 1

Significant Independent Variables	Dependent Variables: Social Network (NINDEX1), Origins Pattern (ORG-PAT)			
	<u>NINDEX1</u> BETA	F	<u>ORG-PAT</u> BETA	F
<u>Event Related</u>				
Event Type (EVENTTP)			.234	3.142*
<u>Organization Related</u>				
Unit Siz (SIZ)	.248	4.199**		
Time of Initiation (TINT)	.328	8.302***		
Social Links to Dominant Activity Area (SIDA)	-.350	9.397***		
Unit Type (FOT)	-.206	2.862*		
<u>Community Unit Related</u>				
Size (COMM)	-.292	6.344*		
Disaster Experience (C-EXP)			-.296	5.013**
<u>Constant</u>	1.557		3.262	
<u>R2</u>	.40		.16	

*p is less than .10
**p is less than .05
***p is less than .01
****p is less than .001

inclusion of others. Such choices reflect a selection process during which homogeneous rather than diversified persons/groups become unit members. For new (emergent) organization, homogeneity is evidenced in participants' communication wherein participants' personal background and concern unfold. On the other hand, participants of more established units make selections about the inclusion of others based on homogeneity of organization related experiences. For each unit type "similarity of outlook guarantees at least some basis of trust and mutual understanding" (Kanter, 1977, p.49). Expressions of concern for victims' personal losses may therefore, provide this key discretionary feature at the origins of emergent organization. As the response unfolds, I suspect participants translate the above kind of awareness into a pattern of organization at initiation on the collective behavior end of the continuum. The zero order correlations for PERS and ORG-PAT ($r = -.23$) moderately support this hypothesis.

Francis and Kreps (1984) argue that emergent organization depends on social unit comparability of emergent units and the broader social network of the focal unit. Where comparability, in terms of type of unit, domain, and activities is evident so is the systemic (interdependent) character of ecological organization. Emergent units are, however, more dissimilar vis-a-vis origins for reasons noted above and because of their unique spatial and temporal features. In addition, the disaster event disrupts characteristics of ecological organization.

What happens then, as new (emergent) units overcome these

differences and evolve toward organization as Kreps defines it? First, it is important to note that Kreps' referent is the individual social unit. On the other hand, population ecologists who are also concerned with new organization study populations of social units which reflect "species" similarity and survivorship in the disaster context (Kreps' referent). Since emergent units evolve and operate in a dissimilar environment, niche maintenance is critical for population membership. But the niche or sphere of social action of emergent units is likely to become less secure given their dissimilarity, thereby increasing the need for boundary maintenance.

McKelvey (1982) defines a niche as "that set of external forces that impose constraints on an individual organization or population of organizations that are subject to its influence" (McKelvey, 1982, p.458). Niches are the immediate portion of a response environment which can be utilized and changed by emergent units. In addition, a niche is related to the spatial and temporal location of the emergent unit, associated activities, and the allocation of scarce resources by other units necessary for the enactment of organization. Each of these define the systemic space (niche width) for emergent units as members of a population of social units. In effect, McKelvey (1982) argues that "autogenic" and "allogenic" forces interact relative to organization and are central to the development of a niche. But not all researchers of organization hold to this opinion. For instance, some writers (Hannon and Freeman, 1977; and other population ecologists) contend that the environment is a causal factor in relation to organization (allogenic

factors as predictors). Indeed, they argue (in different terms) that environment related features "select out" types of social units that evolve toward organization as defined by Kreps. Others argue just the opposite: that organizations shape their environment (autogenic factors), not vice versa.

Francis and Kreps (1984) found that both autogenic (closed system strain at the maintenance of organization of existing units) and allogenic forces (dissimilar routine activity types) constrain new organization. Similarly, findings on 52 emergent units show the significance of autogenic and allogenic forces to the initiation of organization. Statements 7,9, and 10 point to autogenic forces at work. Remaining statements highlight allogenic forces which characterize the model of emergent organization. In sum, by using Kreps' referent to individual social units, we are better able to interpret what he calls the hierarchical character of the ecological context as it relates to emergent organization in the disaster setting. By hierarchical Kreps, drawing from the tradition of human ecology (Hawley, 1950), means that populations are comprised of successive aggregations of units ordered to facilitate economy in the acquisition and distribution of scarce resources and other activities. The hierarchical character points to the systemic (interdependent) aspect of ecological context. When disrupted by disaster, the niche width expands making available systemic space for new (emergent) organization. Emergent units may, therefore, enhance efficiencies critical for community survival by supplanting hierarchical arrangements unable to meet disaster demands.

Findings in the larger study (N=423) point to four predictor variables in relation to ORG-PAT. However, in this analysis only one event and one community unit related variable predict ORG-PAT. Statements 9 and 10 summarize the significant variable relationships in the equation for ORG-PAT. This would suggest that organization patterns are difficult to predict with data on allogenic characteristics. Yet, the seemingly "spatial and temporal randomness of disaster impacts" (Kreps, 1984b) and the evidenced "milling" (Turner and Killian, 1972) which takes place in the emergency period (Statements 1, 2, and 6) point to the dynamics of emergent units. Still, some argue that organization patterns at origins are at most random occurrences for emergent units. A representative statement may be drawn from Weller (1969) who suggests that "things just happen". Rather than accept this view on the randomness of origins, I believe that we simply need to collect better data on what is happening. Available data on emergent units is simply not rich enough to support Weller's (and others) contention.

Findings Statements: Maintenance (Table 7 and Table 8)

1. Domain-task complexity (CR5) and activities-resource complexity (CR6) are mutually related at the maintenance state of organization.
2. Collective behavior at the origins of organization (ORG-PAT) is related to domain-task complexity at the maintenance state of organization (CR5).
3. Where usable human attributes are less critical for the enactment of organization (KEYRES), there is greater evidence of complexity in terms of activities-resources (CR6).

4. Where military resources are relevant to the enactment of organization (LOCMIL), there is greater evidence of complexity in terms of activities-resources (CR6).
5. The later in the emergency period that organization is enacted (TINT), the greater evidence of focused task structures (RTSTRF).
6. Where usable human attributes are less critical for the enactment of organization (KEYRES), there is greater evidence of focused task structures (RTSTRF).
7. Where participants in the enacting unit express a high degree of concern for community damage and participant control of the response (COMC), the more complex the social network at maintenance (NINDEX2).
8. The greater the complexity of resources—activities restructuring (CR6), the more complex the social network at maintenance (NINDEX2).
9. The more complex the social network at origins (NINDEX1), the more complex the social network at maintenance (NINDEX2).

The findings at the maintenance state of organization point to similarities between emergent units and the total sample of responses in the larger study. The main one is included in Statement 1. Findings also highlight key continuities and discontinuities of the four elements of organization, evidencing the duality of action and order.

It is important to remember that CR5 and CR6 are related measures of response complexity in terms of "ends" (D T related) and "means" (A R related). In addition, they are interpreted as two distinct indicators of response restructuring. As in the larger study, my data point to the continuity of the four elements of organization (Statement 1) and highlight their independence as noted in the moderate zero order correlation ($r=.33$). The observation that they are less than perfectly correlated suggests that each index contributes unique information and

TABLE 7: Maintenance of Organization, Stage 2

Significant Independent Variables	Dependent Variables: Complexity of Response (CR5), Complexity of Response (CR6)			
	<u>CR5 (ends)</u>		<u>CR6 (means)</u>	
	<u>BETA</u>	<u>F</u>	<u>BETA</u>	<u>F</u>
<u>Event Related</u>				
<u>Organization Related</u>				
Response Complexity (CR5)			.298	6.349**
Response Complexity (CR6)	.281	4.518**		
Organization Pattern (ORG-PAT)	-.254	3.703*		
Key Resource at Initiation (KEYRES)			-.309	6.904**
<u>Community Unit Related</u>				
Involvement of Military (LOCMIL)			.390	10.838***
<u>Constant</u>	3.861		2.275	
<u>R2</u>	.17		.33	

*p is less than .10

**p is less than .05

***p is less than .01

****p is less than .001

TABLE 8: Maintenance of Organization, Stage 2

Significant Independent Variables	Dependent Variables:		Response Task Structure Focus (RTSTRF), Social Network at Maintenance (NINDEX2)	
	<u>RTSTRF</u> <u>BETA</u>	<u>F</u>	<u>NINDEX2</u> <u>BETA</u>	<u>F</u>
<u>Event Related</u>				
<u>Organization Related</u>				
Time of Initiation (TINT)	.251	3.462*		
Community Orientation (COMC)			.209	3.248*
Key Resource at Initiation (KEYRES)	-.281	4.347**		
Response Complexity (CR6)			.268	5.525**
Social Network at Origins (NINDEX1)			.429	13.498****
<u>Constant</u>	1.213		1.376	
<u>R²</u>	.18		.39	

*p is less than .10
 **p is less than .05
 ***p is less than .01
 ****p is less than .001

reflects measurement error probability.

Referenced at the maintenance state, Kreps (1983b) calls domain-tasks dominated responses the predecessor of administrative rationality and activity-resource dominated responses the predecessor of forms of substantive rationality. Domain-tasks dominated responses highlight the continuity of action and order by means of routine restructuring of the four elements of organization. Starbuck (1983) emphasizes this same point, though in different terms, in his discussion of organization domains. He argues that domains shape or orient key participants' perceptions of ongoing activity. In general, domains provide a frame of reference for participants. While domains facilitate the understanding of action, participants' understanding tends to be biased in the short run and out-dated in the long run. By implication, collective representations (domain, tasks) become increasingly insulated from ongoing activity as the response unfolds. That is, as formal rationality at origins translates into administrative rationality at maintenance, organization action may become unreflective and nonadaptive as Starbuck implies. The pattern continues until a crisis state develops.

Kreps (1983b) found that the translation process (from D T initiated responses to administrative rationality) evidenced in more established groups was most apparent in patterns of response restructuring. Though not significant at the .10 inclusion level, restructuring in terms of means (CR6) was lower ($r=-.18$) and

restructuring in terms of ends (CR5) lower ($r = -.30$) where administrative rationality dominated. However, one of two case descriptions of pattern restructuring at maintenance provides qualitative support in relation to routine restructuring. Note the following empirical example of a T R A D pattern of organization at initiation. Here, domain and tasks become increasingly insulated as the response unfolds. But also, we evidence activity-resource restructuring:

The domain of a group of local laundry associations is the organization of providing victim basic needs. The response is initiated about 30 hours following a severe hurricane (long forewarning). Virtually thousands of victims are without clothing, shelter, and electricity. One laundry association that we know of recognizes the extensive loss of clothing, apparent by plane loads of clothing arriving shortly after impact. Contacts to other laundry establishments are made, and a simple task structure is set up; one involving pick-up and delivery of clothes from the airport to each laundry establishment, and subsequent cleaning and sorting into sizes (T). For purposes of safety and efficiency the clothing is cleaned and sorted prior to distribution. Each laundry establishment pools resources and recruits vehicles and volunteer drivers (R). Task related activities begin shortly after resource mobilization (A). Once initiated and activities are underway, Red Cross participation provides external legitimation by joining the response (D). Key participants do not anticipate the amount of resources and type of coordinated activities necessary to complete disaster demand. This is evident by the participants' mere suggestion that the Red Cross transport the clothing to area shelters as opposed to actively planning for the logical transition in domain related activities and resources. Domain and tasks become increasingly insulated from inadequate means at the height of activity. The Red Cross, in response to the pending contingency, contacts the Volunteers of America (V.O.A.) because clothes cannot be transported without new resources and activities. The V.O.A., in turn, brings to the response a new set of resources (R); trucks and drivers as the primary ones. Once mobilized the V.O.A. formulates new domain related activities (A) and proceeds to disperse clothes to shelter areas. The response ends when area shelters have an adequate supply of clothing.

The insulation of domain and tasks and restructuring of activities is what Kreps (1983b) calls a "closed system strain toward administrative rationality".

Preceded by response complexity in terms of means (CR6) and participant concern for community damage and control of the response (COMC), and a more complex social network at origins of organization (NINDEX1), the social network at maintenance becomes increasingly complex (Statements 7, 8, and 9). In addition, zero order correlations show positive relationships between NINDEX1, NINDEX2, and response complexity/contingency indicators (NINDEX1 and CR5, $r=.20$; NINDEX1 and CR6, $r=.16$; NINDEX1 and NINDEX2, $r=.52$; NINDEX2 and CR5, $r=.28$; NINDEX2 and CR6, $r=.36$). Given these predictors of network complexity it seems as though emergent units show network based contingencies at origins and as the response unfolds. Some of these problems have a negative effect on the viability of emergent organization as the following findings suggest.

Findings Statements : Suspension (Table 9)

1. When enacted by emergent groups of individuals as opposed to emergent groups of other groups and organizations (FOT), the more likely is organization to persist until the demand is met (POSP).
2. The longer the duration of organization (TTR), the less likely will organization persist until the demand is met (POSP).
3. The more complex the response in terms of means (CR6), the less likely will organization persist until the demand is met (POSP).

4. The greater the size of the enacting unit (SIZ), the longer the duration of organization (TTR).
5. The greater the importance of usable human attributes at the origins of organization (KEYRES), the longer the duration of organization (TTR).
6. The more complex the social network at origins (NINDEX1), the shorter the duration of organization (TTR).
7. The more complex the social network at the maintenance of organization (NINDEX2), the longer the duration of organization (TTR).
8. Where participants in the enacting unit develop their own task structure (TDEV), the shorter the duration of organization (TTR).
9. The later in the emergency period that organization is enacted (TINT), the longer the duration of organization (TTR).

The most important finding in relation to suspension of organization is that pattern of organization at origins (ORG-PAT) has no significant relationship to reason for suspension or duration of organization. On the other hand, data from the larger study (N=423) show a strong link between formal rationality at origins and persistence of organization. This latter finding as well as related ones (Gamson, 1975; Goldstone, 1980) support the hypothesis that more formally patterned instances are likely to last longer and generally persist until demand is met. My data, however, simply do not support this point.

Even though organization pattern at origins is not a predictor of the persistence of organization, other findings point to the dynamics of viable emergent units. These are highlighted in Statements 1 through 3. The chances for persistence are greater for shorter responses because

TABLE 9: Suspension of Organization, Stage 3

Significant Independent Variables	Dependent Variables:		Pattern of Suspension (POSP), Total Time of Response (TTR)	
	<u>POSP</u> <u>BETA</u>	<u>F</u>	<u>TTR</u> <u>BETA</u>	<u>F</u>
<u>Organization Related</u>				
Unit Type (FOT)	-.296	6.496**		
Unit Siz (SIZ)			.457	23.389****
Key Resource at Initiation (KEYRES)			.367	15.384****
Social Network at Origins (NINDEX1)			-.326	8.915***
Social Network at Maintenance (NINDEX2)			.364	13.479****
Task Development (TDEV)			-.263	9.168***
Response Complexity (CR6)	-.249	4.534**		
Time of Initiation (TINT)			.688	50.232****
Total Time of Response (TTR)	-.439	14.005****		
<u>Constant</u>	1.378		.006	
<u>R²</u>	.35		.68	

*p is less than .10
 **p is less than .05
 ***p is less than .01
 ****p is less than .001

longer responses are likely to be absorbed by another entity once it (absorbing entity) has had time to recoup relative to event.

More than any other equation, the regression for the duration of organization (TTR) points to the internal dynamics of emergent organization. Table 9 lists six organization unit variables which relate to or facilitate response duration. The number of significant independent variables could be one general consequence of researchers' increased time and opportunity to gather related data on longer emergent responses. Marx (1982) argues, however, that findings on organization related variables are more prevalent because they are more tangible (e.g., leaders, written statements, activities) than community or environment related variables which, he believes, are simply more difficult to decipher because of their indirect influence.

The observation that no community unit or event related variables significantly relate to TTR does not mean, however, that emergent units are autonomous entities whose persistence is determined by participants alone. Indeed, the regressions at origins and maintenance of organization point to both autogenic and allogenic forces at work. Furthermore, Francis and Kreps' (1984) study of 465 dyadic social network relationships compliments our understanding of how the ecological context of social units facilitates, prevents, or influences the duration of organization. I suspect, though, that examples of organization and environment or community related variables which influence emergent organization are less apparent and less frequently

observed by researchers whose sole referent is organization sets or populations, whose perspective on organization is static as opposed to processual, and whose studies are in non-disaster settings.

Statement 4 points to the importance of accounting for property variances at maintenance which may lead to pattern suspension or reconstruction. Here, larger enacting units are related to the longer duration of organization. But a decrease in SIZ to an undetermined threshold level could set off a resource related response suspension, thereby decreasing TTR. Statements 6 and 7 nicely illustrate Aveni's (1978) contention that organization linkages are "of great consequence to organizations". According to Aveni, a linkage is any "recurrent pattern of behavior which exists between two systems and is supported by both" (Aveni, 1978, p.185). Thus, as Marx (1982) suggests, it is not only the complexity of the social network at origins and maintenance that influences organization duration and effectiveness but the content and style of communication patterns within the social network. While social units have direct links to a range of relevant persons and organizations, the content and style of communication between units may have various consequences for the focal unit (e.g., positive or negative). An example of a negative consequence resulting from participation in a dyadic relationship may occur when the relevant other uses tactics to create a negative image of the focal emergent unit (e.g., disaster related bureaucracies which advise victims to reject emergent units' offers of assistance) thereby decreasing external domain legitimation.

The main finding is summarized in Statement 9: The later in the emergency period that organization is enacted (TINT), the longer the duration of organization (TTR). Smelser (1962) argues, in relation to this finding, that emergent units have first, "vague inclusive goals" and second, a rapid "growth rate" relative to an event which creates a comparably rapid rate of decline (Wood, 1982). Yet, the emergent units in this analysis have clearly defined domains at initiation. Furthermore, as marginals for TINT suggest emergent units develop at various times relative to the event. The regression of TTR and marginals for TINT suggest to me that not all emergent units fit Smelser's model in terms of process initiation and duration. More important, the significance of the timing of enactment on TTR stresses the need for more variables on this dimension of organization.

The following section provides a more comprehensive summary of model findings. Here I discuss key points of emphasis mentioned throughout the analysis of 52 emergent units, related attributes of emergent units, and directions for subsequent analyses on organization and emergent units.

DISCUSSION

The data obtained from the DRC interviews have provided useful and interesting information about emergent units and the process of organization. The model of organization considers directly the origins, maintenance, and suspension of emergent organization.

I have restricted the analysis to direct relationships captured by multiple regression techniques. I consider this approach appropriate for two reasons. First, in consideration of the methodological qualifications associated with step-wise procedures, I would not feel comfortable making anything other than conservative statements on model findings. Second, and more important, the model is devised only as a tool for data organization and filtering. The findings provided, therefore, are intended to facilitate hypothesis generation. In effect, my objective has not been to test hypotheses, rather to "communicate the general thrust of the theory while avoiding statistical artifact in modeling" emergent organization (Kreps, 1983b).

Building on Kreps (1983a; 1983b; 1984a; 1984b; 1984c) theory and taxonomy of organization, I am not trying to "explain" a certain type of social unit, but rather to consider directly the uniqueness of emergent units.

Much has been indicated in my own and Kreps' analyses about the forms of organization. We have emphasized both structure and process. I have, however, also included social and psychological variables in the model. Some of these variables were significantly related to

initiation, maintenance, and suspension of organization. I am not sure, however, about the degree to which social psychological variables, in general, either enhance or confuse the description and understanding of Kreps' definition of organization. Regardless, some are influential factors in the process of organization. From a sociological perspective, I would argue that a structural definition of organization is appropriate. But, in view of the findings and my work with the case interviews, I believe that any attempts to explain the origins and process of organization without at minimum, addressing social psychological variables is unrealistic and misleading (Walsh and Warland, 1983). Though, like others, I have speculated the desirable "theoretical mix of form and content" (Kreps, 1983a) which would best engulf the "guts of the phenomena called organization". Mine is at best a reflection, a beginner's guess.

Model findings clearly point to the critical role of the spatial and temporal dimensions of organization. Central to the notion of process, these variables encourage a new direction regarding data collection and theory construction. As Giddens (1979) states, spatial and temporal elements are integral to social theory. However, the communication or demonstration of their theoretical relevance is contingent upon empirical findings described in a way which is informative. This is why I have provided the reader with case descriptions from my analysis.

In addition to the model findings, marginals from the data suggest some positive attributes in relation to emergent units. Certainly,

marginals do not "tell" us what emergent units are like. Rather, they have left this researcher with a few revised connotations in relation to emergent units. I would like to share some of these perceptions. First, many responses (N=32) were engaged in time urgent disaster demands. That is, they were performing functions which had to be confronted immediately. Second, twenty-six of the responses persisted until the demand was met. Of those which did not, eleven were absorbed by another entity (e.g., Red Cross). Finally, all of the responses in this analysis are "organized". By definition, all received some form of domain legitimation. That is, relevant others were doing one of several things; referring victims, providing response resources, giving verbal approval, or recognizing responses as responsible for a given disaster demand and making the recognition public. In this sense, "emergent" units are not unlike "established" forms of organization. In addition, findings at the maintenance state of organization point to other key similarities. In sum, findings suggest, to me, that emergent units, ephemeral responses, are not necessarily "unstructured" (Lang and Lang, 1961), "problematic" (Parr, 1969), or "relatively unorganized" (Perry and Pugh, 1978).

But can we classify emergent units in a more definitive fashion? Gamson (1975) and Goldstone (1980) evaluate emergent units in terms of their consequences which are called either "success" or "failure". Their comments highlight the multidimensional quality of "success" and "failure", and unfortunately, compel one to question the efficacy of the concepts in relation to organization. For example, Gamson says that one

qualification for "more successful" challenges of protest groups is their ability to gain acceptance from relevant others. However, what he deems as indicative of a degree of success, Kreps would classify as part of organization development (e.g., domain external legitimation). Starbuck (1983), on the other hand, implies in different terms that forms of collective behavior "fail" in the long run. Failure is not, however, related to rejection on the part of relevant others. Rather, where collective representations are questionable, the viability of the enacting unit is at stake. My data do not support Starbuck's suggestion for two reasons. First, the regression of pattern of suspension (POSP) shows no significant relationship to pattern of organization at origins (ORG-PAT). Second, the distributions of organization patterns listed on Table 1 and the metric of organization forms listed on Table 4 reveal that emergent units encompass the entire range of forms of organization. Still, more needs to be said about the origins of organization in general for they are theoretically informative and critical for our understanding of the process of organization.

I suspect that the failure to consider directly the origins of organization and other things social has played a part in keeping sociology from an important, still neglected objective. The objective concerns the need to merge collective behavior and organization perspectives. The result of such a merger would provide gains for the discipline as a whole, not so much for each perspective as a specialty. Judging from my exposure to both, they seem to be generating ideas about and working with phenomena which are part and parcel to the same

underlying process of organization (Kreps, 1983a). Each specialty and related ideas have, in varying degree pointed to an awareness of emergent structural and processual features of organization. The ability to grasp the observed elements and different patterns of organization as defined by Kreps is not, however, beyond the reach of either specialty provided some theoretical and research collaboration is initiated and maintained.

Clearly, some (Weller, 1973; and others) have anticipated the sociological gains resulting from a theoretical merger. Still, the failure to integrate persists. Drawing from and elaborating upon Kreps' (1984a) insights, the following are a few reasons why the segregation between collective behavior and organization perspectives may have persisted thus far.

The study of disasters has been consistently defined as an interdisciplinary specialty. It has, however, only recently been adopted as a central topic in collective behavior (Perry and Pugh, 1978). Second, and related, the study of disaster has failed to emerge from what Gamson (1975) calls the "straitjacket" of collective behavior. By this Gamson is referring to the theoretical restrictions of collective behavior studies. Though some would disagree, I believe that collective behavior theories have traditionally considered the origins and consequences of emergent social action. They have, though, ignored the social properties of emergent collectivities (Kreps, 1984a). In addition, collective behavior phenomena are frequently analyzed by means of ad hoc theorizing (Weller and Quarantelli, 1973).

The third reason for perspective segregation involves the content of much past and contemporary organization studies. In the haste to analyze the content of organization, too many researchers have assumed the existence of organization. And, in doing so, researchers avoid the "numerous difficulties associated with the study of the emergent organization and organization set" (Ross, 1980, p.36). This procedure for research has led to inadequate attempts to provide a clear definition of emergent units. For when one assumes organization rather than viewing it as problematic, the result is a parochial understanding of process (Kreps, 1983a). It gives short shrift to one of two critical features of organization; the element of process.

While the gap between the two perspectives is theoretical in nature, I suspect that this is highly related to their often segregated research situations. Collective behaviorists have traditionally studied crowd behavior, civil disturbances, and more recently disaster events. Organization researchers have usually studied variations of more institutionalized behavior.

Researchers from each specialty area who have studied disaster events are, however, presented with a unique opportunity to observe both collective behavior and more formally rational instances of organization. Many people somehow "expect" more established units to be engaged in disaster related activities. Because natural disasters often (1) create time limits on emergent organization (e.g., total time available before emergent unit disaster demand is met) and (2) sometimes alter the conditions of the impacted area emergent units develop to fill

new demands (Parr, 1970). "The occurrence of a disaster can, therefore, be used as an indicator or notification of the possible formation" of emergent units (Ross, 1980, p.35). For researchers from each specialty, no such "convenient notification" exists in more routine settings.

My point is not to simply advocate disaster studies though I stress their sociological relevance. Rather, my objective is and has been to present an argument for (1) the critical role of origins on regard to organization, (2) the relationship between emergent and more established processes of organization, and (3) the rejection of the superficial distinction between collective behavior and organization perspectives. I believe that a continuation of the theoretical and research segregation is not only unnecessary but detrimental for the overall advancement of a sociological theory of "organization".

Integration is possible. But, as Kreps says, at least two requirements must be met for this to happen. First, sociologists must shed the notion that disaster and emergency studies are an encapsuled realm of inquiry. To the contrary, they serve as fertile grounds for gaining insights concerning organization, other things social, and human vulnerability. Equally important, organization and collective behavior specialists need to develop a sociological and processual perspective of these phenomena. Since I believe that actions speak louder than words, it is my hope that the preceding account of my research process contributes to meeting these requirements.

APPENDIX 1: Means, Standard Deviations,
and Correlations of Model Variables

	1	2	3	4	5	6	7	8
1. EVENTTP	1.00	.10	-.38	-.18	.28	-.20	.04	.25
2. ACTN		1.00	-.08	-.16	-.01	-.16	.15	-.07
3. COMM			1.00	.10	-.12	-.04	.13	-.02
4. C-EXP				1.00	.00	.28	.09	.13
5. LOCMIL					1.00	-.08	.03	.19
6. TINT						1.00	.16	-.03
7. FLPI							1.00	.07
8. SIZ								1.00
9. KEYRES								
10. FOT								
11. DESTAB								
12. TDEV								
13. SLDA								
14. EMP								
15. PERS								
16. COMC								
17. NINDEX1								
18. ORG-PAT								
19. CR5								
20. CR6								
21. RISTRF								
22. NINDEX2								
23. TTR								
24. POSP								
Mean	2.21	.62	.50	2.31	.44	3.10	.29	2.79
Std. Dev.	.87	.49	.50	1.18	.50	1.49	.46	1.19

APPENDIX 1: Means, Standard Deviations, and
Correlations of Model Variables, Continued

	9	10	11	12	13	14	15	16
1. EVENTTP	-.10	-.09	.16	.35	.24	.26	-.02	-.29
2. ACTN	.05	.14	-.10	.21	-.06	.04	.01	.00
3. COMM	-.04	-.15	-.17	-.21	-.08	-.16	.12	-.08
4. C-EXP	-.19	.05	-.11	-.12	-.10	.13	.29	.13
5. LOCMIL	.07	-.03	-.33	.06	-.25	.14	.06	.04
6. TINT	-.30	.01	-.04	-.19	.02	-.13	.27	.20
7. PLPI	-.19	-.18	-.13	-.08	.24	.12	-.01	-.21
8. SIZ	-.28	-.33	.09	.10	.06	.08	.08	.08
9. KEYRES	1.00	.27	.06	.09	-.19	-.03	-.24	.19
10. FOT		1.00	-.12	-.07	-.02	.07	-.02	.15
11. DESTAB			1.00	.18	-.01	.02	-.05	.00
12. TDEV				1.00	-.12	.07	.13	.00
13. SLDA					1.00	.04	.09	-.40
14. EMP						1.00	-.09	-.31
15. PERS							1.00	-.12
16. COMC								1.00
17. NINDEX1								
18. ORG-PAT								
19. CR5								
20. CR6								
21. RTSTRF								
22. NINDEX2								
23. TTR								
24. POSP								
Mean	.48	.54	.69	.85	.62	.58	.40	.50
Std. Dev.	.50	.50	.47	.36	.49	.50	.50	.50

APPENDIX 1: Means, Standard Deviations, and
Correlations of Model Variables, Continued

	17	18	19	20	21	22	23	24
1. EVENTTP	.02	.29	.00	.18	-.15	-.03	-.25	.01
2. ACTN	-.02	-.01	-.08	-.11	-.25	-.17	-.20	-.01
3. COMM	-.25	-.14	.18	-.05	-.15	-.10	.12	.12
4. C-EXP	.11	-.34	-.02	.11	.27	.09	.33	-.33
5. LOCMIL	.23	.06	.12	.40	-.23	.28	.03	-.17
6. TINT	.32	.03	-.07	.00	.34	.16	.57	-.30
7. PLPI	.08	.10	-.08	-.08	-.06	-.11	.12	-.05
8. SIZ	.29	-.07	.18	.28	.12	.12	.25	-.04
9. KEYRES	-.08	.09	.06	-.26	-.36	-.02	.03	.00
10. FOT	-.23	-.05	-.07	-.05	-.05	-.10	-.05	-.26
11. DESTAB	-.04	.15	-.05	-.14	.15	.08	-.01	.01
12. TDEV	.04	.01	-.05	.11	.05	-.05	-.34	.17
13. SLDA	-.30	.05	-.08	-.07	.01	-.22	.01	-.01
14. EMP	.10	-.14	.02	.14	.11	-.06	-.14	-.10
15. PERS	-.11	-.23	-.03	.24	.14	-.07	.21	-.26
16. COMC	.25	-.09	.03	.12	-.02	.35	.24	-.27
17. NINDEX1	1.00	-.04	.20	.16	.19	.52	.18	-.23
18. ORG-PAT		1.00	-.31	-.19	-.02	-.10	-.10	.16
19. CR5			1.00	.33	-.03	.28	.18	-.24
20. CR6				1.00	.11	.36	.13	-.29
21. RTSTRF					1.00	.09	.20	-.13
22. NINDEX2						1.00	.36	-.32
23. TTR							1.00	-.46
24. POSP								1.00
Mean	1.83	3.29	3.50	3.54	1.52	2.54	2.62	.44
Std. Dev.	.86	1.55	2.36	2.57	1.20	.78	.95	.50

APPENDIX 2: Case Descriptions

Response #118: A R T D

Public Information

The domain of the response is dispersal of public information. The business district of a metropolis receives heavy damages following an earthquake. A neighboring suburb suffers from extensive damages. Two days post-impact, a civilian walks into the search and rescue office located in a downtown administration building, and offers his assistance. He doesn't request a particular activity, just the opportunity to help. At the time of his offer, the rescue group is about to start compiling a list of homes located in the impacted suburb area. From this area, about 100 persons are assumed dead or missing and need to be accounted for. The civilian, with the aid of three city secretaries begins response activities by making calls to local persons (A). The small group subsequently acquires a key resource; a hotline originally set up for Civil Defense use (R). Once activities are initiated and resources mobilized the unit develops a simple task structure whereby they receive calls on the hotline and use the radio to broadcast names of missing persons (T). Requests are made to local residents to call in and report seeing persons thought missing or dead. Verified names are systematically crossed off the list using this procedure. The operation is recognized and identified as a clearing house for missing persons (D). Three days after the first radio broadcast the emergency period and urgency of the response subsides.

Every name on the original list is cleared and the responsibility for other missing person cases is handed over to the Salvation Army.

Response participants disband. The first civilian goes home and the secretaries return to their regular office duties in another city building.

Response #266: R D A T

Mobilization of Personnel

The domain of the response involves mobilization of emergency personnel. Two months prior to extensive flooding from snow runoff (long forewarning) the student body president (s.b.p.) of a local university anticipates the need for student assistance. Aware of community unit experience with flooding and associated event demands (e.g., sand-bagging) the s.b.p. contacts the City Council and offers student services for such demands. Acting as the on-campus coordinator, the s.b.p. contacts various student organizations (e.g., Greek, resident hall assistants), and thereby mobilizes hundreds of students for the upcoming demands (R). Two days before flooding begins, a city commissioner contacts the s.b.p. and requests the services of students (D). Immediately students go to locations and begin response activities (A). Response problems develop early when requests get doubled up. For instance, calls are made for 300 students when only 50 are needed. In general, students are fed up with the current pattern of operation. In response, the s.b.p. seeks assistance from the university president. Together they develop a task structure which includes the acquisition of city maps, establishment of a manpower office in the student government office, and a downtown office staffed by students (T). In addition, the

president cancels scheduled school classes for two days. This decision is critical for the continuation of student participation. One day before the flood water crests and begins to recede, students are forced to terminate response activities. The president refuses to extend the time of class cancelation and sets of response suspension.

Response #293: T R D A

Public Information

The domain of the response, enacted by local media groups, is public information. Hours following a flood, an executive town meeting is held to discuss pending issues. Persons present include the mayor, city officials, the director of a local radio station, and representatives from various city organizations. One issue of debate centers on local media coverage of the flood and related instructions to the public. In general, the media is charged with releasing incorrect information to the public. In response to the criticisms, the director of a local radio station suggests the implementation of a task structure for local media. For instance, he recommends developing a local media pool, and setting up simultaneous radio-TV hook-ups in an effort to centralize and filter the information flow. Members present approve the recommendation (T). The mayor amends the approval and asks the director to assume responsibility for mobilizing the media pool. The director accepts. Forty minutes following the town meeting resources are mobilized. The director contacts the manager or owner of every local radio and TV station (R). Each proceed to the Civic Center which is also serving as the Central Flood Control Center. Here, the media pool is established (D). The director presents station representatives with

the need for consistent publicized information regarding evacuation procedures. They discuss types of activities which could best accomplish this objective. Within an hour of their arrival at the Control Center, response activities begin. Newspersons are broadcasting public information over radio and TV from the centralized location (A). Broadcasts are hourly during the first few days of operation. The frequency of broadcasts are gradually decreased and end when the evacuation process is over.

APPENDIX 3: Coding System

<u>Item: Variable label</u>	<u>Columns</u>
<u>Organized disaster response number: RESPN</u>	4 (1-4)
<u>Event number: EVENIN</u>	2 (5-6)
<u>Event type: EVENTTP</u>	2 (7-8)
1 = earthquake	
2 = tornado	
3 = flood	
4 = hurricane	
 <u>Activity type: ACTN</u>	 2 (9-10)
1 = hazard-vulnerability analysis	
2 = maintenance of standby human and material resources	
3 = disaster preparedness, planning, and training	
4 = public education	
5 = hazard mitigation-structural	
6 = hazard mitigation-nonstructural	
7 = insurance	
8 = issuance of predictions and warnings	
9 = dissemination of predictions and warnings	
10 = evacuation	
11 = mobilization of emergency personnel and resources	
12 = protective action	
13 = search and rescue	
14 = medical care	
15 = providing victim basic needs (food, clothing, shelter)	
16 = damage and needs assessments and inventory of available resources	
17 = damage control	
18 = restoration of essential public services	
19 = public information	
20 = traffic control	
21 = law enforcement	
22 = local governance	
23 = coordination and control (organization of emergency personnel and resources)	
24 = reconstruction of physical structures	
25 = re-establishment of production, distribution, and consumption activities (economic functioning)	

- 26 = resumption of other social institutions
 27 = determination of responsibility and legal liability for the event
 28 = other

Activity pattern type: ORG-PAT

2 (11-12)

- 1 = D T R A
 2 = D T A R
 3 = D R A T
 4 = D R T A
 5 = D A T R
 6 = D A R T
 7 = T R A D
 8 = T R D A
 9 = T A D R
 10 = T A R D
 11 = T D R A
 12 = T D A R
 13 = R A D T
 14 = R A T D
 15 = R D T A
 16 = R D A T
 17 = R T D A
 18 = R T A D
 19 = A D T R
 20 = A D R T
 21 = A T D R
 22 = A T R D
 23 = A R D T
 24 = A R T D

Total time of response: TTR

4 (18-21)

- days
 9999 = missing value

Social linkages to dominant activity areas: SLDA

1 (22)

- 1 = few if any, socially isolated
 2 = several, strongly interrelated with dominant activity area

Initiation of organized disaster response: PINT 1 (23)

- 1 = self-contained
- 2 = boundary spanning, local
- 3 = boundary spanning, state
- 4 = boundary spanning, national
- 5 = boundary spanning-mixed local and state
- 6 = boundary spanning-mixed local and national
- 7 = boundary spanning-mixed state and national
- 8 = boundary spanning-mixed local, state, and national
- 9 = uncertain

Number of organizational links at initiation: INLINKS 1 (25)

- 0 = none
- 1 = 1 - 3
- 2 = more than 3
- 3 = uncertain

Physical location relative to primary impact: PLPI 1 (26)

- 1 = close
- 2 = peripheral

Factors drawn upon by participants to sustain communication among participants and relevant others . . .

Victim losses, emotional: LOSS1 1 (28)

- 1 = no
- 2 = yes

Victim losses, structural or material: LOSS2 1 (29)

- 1 = no
- 2 = yes

Overall community damage: CDMGE 1 (30)

- 1 = no
- 2 = yes

Participant control of response: COMCON 1 (31)

- 1 = no
- 2 = yes

Empathy for others: EMP 1 (32)

- 1 = no
- 2 = yes

Domain establishment at initiation: DESTAB 1 (33)

- 1 = established by participants then legitimated by relevant others
- 2 = established by relevant others then legitimated by participants
- 9 = uncertain

Domain definition problems: D DPR 1 (37)

- 1 = no
- 2 = yes
- 9 = uncertain

Response task structure: RTSTR 1 (38)

- 1 = simple
- 2 = complex
- 9 = uncertain

Task Structure focus at initiation: RTSTRE 1 (39)

- 1 = no
- 2 = yes, physically
- 3 = yes, socially
- 4 = yes, temporally
- 5 = yes, mixed-physically and socially
- 6 = yes, mixed-physically and temporally
- 7 = yes, mixed-socially and temporally
- 8 = yes, mixed-physically, socially, temporally
- 9 = uncertain

Task definition problems: TDPR 1 (49)

- 1 = no
- 2 = yes
- 9 = uncertain

Task structure development: TDEV 1 (50)

- 1 = tasks developed by participants
- 2 = tasks developed by relevant other(s)
then incorporated by participants
- 9 = uncertain

Resource mobilization problems: RMPR 1 (54)

- 1 = no
- 2 = yes
- 9 = uncertain

Key resource at initiation: KEYRES 1 (59)

- 1 = usable human attributes
- 2 = money
- 3 = equipment, tools
- 4 = information from other responding units
- 9 = uncertain

Activities performance problems: APPR 1 (60)

- 1 = no
- 2 = yes
- 9 = uncertain

Reason for suspension: POSP 1 (66)

- 1 = no
- 2 = yes

Response suspended due to loss or depletion
of human or material resources: RSUSP-L 1 (67)

- 1 = no
- 2 = yes

Response absorbed by another entity, designated
and legitimated by participants: RSUSP-DL 1 (68)

- 1 = no
- 2 = yes

Response absorbed by another entity after resistance by participants: RSUSP-A1 1 (69)

1 = no
2 = yes

Response absorbed by another entity after resistance by absorbing entity: RSUSP-A2 1 (70)

1 = no
2 = yes

Response absorbed by another entity as designated by a third party: RSUSP-A3 1 (71)

1 = no
2 = yes

Response not suspended at interview: NRSUSP 1 (72)

1 = no
2 = yes

Reason for suspension uncertain: RSUSPU 1 (73)

1 = no
2 = yes

Indication of reconstruction at maintenance: RECON 1 (74)

1 = no
2 = yes
9 = uncertain

Size of focal organization: SIZ 1 (75)

1 = 9 or fewer
2 = 10 to 20
3 = 21 to 50
4 = over 50 members
9 = uncertain

Community disaster experience in past 10 years: C-EXP 1 (76)

1 = no disasters, few if any threats
2 = no disasters, several threats
3 = one or more disasters
4 = one or more disasters and several threats
9 = uncertain

Community (rural-urban): COMM 1 (77)

- 1 = rural area
- 2 = urban 10,000 or less
- 3 = urban 10,000 to 25,000
- 4 = urban 25,000 to 50,000
- 5 = urban metropolitan, 50,000+

Response location relative to military resources: LOCMIL 1 (78)

- 1 = at some distance from military bases and supplies
- 2 = military bases and supplies in close proximity but not relevant to response
- 3 = military bases and supplies in close proximity and relevant to response
- 9 = relevance to response uncertain

Type of focal organization: FOT 1 (79)

- 0 = emergent groups of other groups and organizations
- 1 = emergent groups of individuals

Maintenance of organized response: PMNT 1 (1)

- 1 = self-contained
- 2 = boundary spanning local
- 3 = boundary spanning state
- 4 = boundary spanning national
- 5 = boundary spanning-mixed local and state
- 6 = boundary spanning-mixed local and national
- 7 = boundary spanning-mixed state and national
- 8 = boundary spanning-mixed local, state, national
- 9 = uncertain

Number of organizational links at maintenance: MNLINKS 1 (3)

- 0 = none
- 1 = 1 - 3
- 3 = more than 3
- 9 = uncertain

Time of initiation: TINT 1 (4)

- 0 = pre-impact 72+
- 1 = pre-impact -72
- 2 = 1 to 2 hours post-impact
- 3 = 3 to 24 hours post-impact
- 4 = 25 to 72 hours post-impact
- 5 = beyond 72 hours post-impact

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