

DISASTER, ACTION, AND ORDER:
A SUBSTANTIVE INQUIRY OF WEBER AND DURKHEIM

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The Faculty of the Department of Sociology
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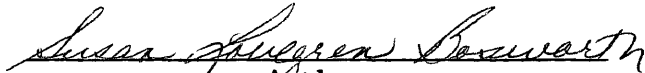
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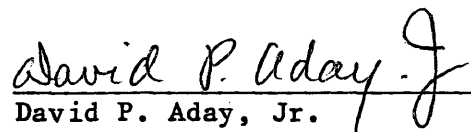
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DEDICATION

To Leonard

The sky is our limit.

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ABSTRACT

Durkheim's and Weber's perspectives on action and order are compared by adding the concept of role to Kreps' theory of organization and disaster. Kreps defines organization as the co-presence of 4 individually necessary elements--domains (D), tasks (T), resources (R), and activities (A). His resulting taxonomy of forms of association includes 24 possible combinations of all 4 elements (D-T-R-A to A-R-T-D). The taxonomy represents the paradox of social structure as either a problem of action or a problem of order. When order is referenced, the paradox is expressed well by Durkheim and the idea of role-making. When action is referenced, the paradox is stated nicely by Weber and the idea of role-playing. The dynamics of role-making and role-playing at the origins of organization, then, reveals social structure as both Weberian social creation and Durkheimian force.

Kreps depicts the unity of action and order in a normally distributed metric of the the 24 organizational forms in the taxonomy. The six midpoint forms in the metric (D-A-R-T, T-R-A-D, T-A-D-R, R-D-A-T, R-T-D-A, A-D-T-R) point to a tension or balancing of the forces of order and action. Detailed analyses of role-making and role-playing for these midpoint forms are the focus of this research (38 cases of an original sample of 423 instances of organization from 15 disaster events). Four criteria are developed to distinguish between role-making, mix role-making and role-playing, and role-playing at each stage of the origins of organization (1, 2, 3, and 4 elements present). Marginal distributions of role variables point to an expected increase in role-playing as each additional element of organization is enacted. However, the progressive character of role-playing is grounded, in no small way, by emergent improvisations. These improvisations are indicative of role-making. Role dynamics are analyzed on their own terms and also as they relate to physical, social, and temporal characteristics of the response and emergency. Correlation and regression analyses indicate that role-making and role-playing must be seen as parts of a broader structural drama. The structural drama of disaster informs even as it is anticipated by the respective theories of Durkheim and Weber.

DISASTER, ACTION, AND ORDER
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INTRODUCTION: A DIALECTICAL APPROACH TO STRUCTURE

The conceptual focus of sociology suggests a basic dualism. Sometimes primary attention is given to the human actor as prime mover of social structure. At other times the emphasis is on some notion of an external structure--one which is real, apart from the actor, and constrains his behavior. Whether seen as forever becoming or always there, social structure therefore exists for every sociological analyst as the subject matter of the discipline. To assume existence of something is not necessarily to know what it is. In the end, sociology is to social structure as physics is to physical structure. For both disciplines the subject matter is, to some extent, a mystery. As implied above, the creation and maintenance of social structure are seldom discussed within the same substantive theory. For example, Blau's (1974; 1977) theory of the division of labor presents structure as emergent force which maintains collective life. This contrasts with Cicourel's (1968; 1974) theory of juvenile justice which casts structure as an interpretive and intersubjective creation. There is a contradiction here and Kreps (1985) refers to it as the autonomy and unity of action and order. That contradiction, expressed as a problem of describing and explaining organization in the disaster context, is the focus of the following thesis.

Specifically the thesis builds on Kreps' theory of organization as unit and as process. For him structure is represented by the forms of human association. He attempts to define these forms and locate them in the empirical setting of disaster. The following example illustrates the descriptive emphasis from which Kreps develops this theory. Notice his

processual approach as he describes the origins of what he terms an instance of organization. As defined by Kreps, activities (A), human and material resources (R), tasks (T), and domains (D) represent four basic structural elements of organization. Serving as a kind of core species concept of organization (McKelvey, 1982), the four elements are seen as individually necessary and collectively sufficient for organization to exist. This means that (1) each element is a unique expression of social structure, (2) their co-presence establishes the existence of organization, and (3) no pattern in their arrangement is necessarily more frequent or important. The elements are denoted for easy reference by the parenthetical letters (A, R, T, D). Their patternings in organizing processes are the foundation of Kreps' theory and its expansion in this thesis.

An organization of search and rescue emerges following an earthquake. The event takes place without forewarning, is regional in scope, destructive in magnitude, and its prompt and secondary physical impacts are over within minutes to several hours. The central business district and a large residential area of a major city are seriously damaged. Immediately following impact many individuals who happen to be in or near these areas engage in joint actions related to search and rescue of victims (A). A few of these early responders have search and rescue training. Within an hour many search and rescue teams converge on the impacted areas. Both formal and informal, they come from city agencies, other municipalities, the military, and several voluntary search and rescue groups (R). A task structure emerges among some of these disparate groups within several hours after impact, with prominent roles played by members of a mountain rescue group and members of an emergent "damage control" group (T). The legitimacy of an integrated search and rescue operation is not officially recognized by city government officials until about 12 hours after impact (D). By then it is operating, now formally, out of the city's public safety building. Formal search and rescue actions continue for another 24-30 hours.

The example suggests an instance of organization that was initiated by activities (A), followed by the mobilization of key resources (A-R), which led to the development of a set of tasks (A-R-T), and finally to the establishment of a formal domain that was officially recognized and legitimated within the impacted community (A-R-T-D). The response exemplifies an elemental patterning of the origins of organization, defined below as an A-R-T-D form of association. Because things are happening before there are collective representations of what is going on, the origins of organization appear as action-driven. However, alternative hypothetical patterns seem equally plausible. If, for example, a domain had been declared (D) and tasks socially defined (D-T) prior to the mobilization of resources (D-T-R) and performance of activities (D-T-R-A), the search and rescue effort would appear as order-driven. In other words, collective representations would constrain social action under these circumstances. The following example of evacuation during a flood illustrates a form of origins that is considered by Kreps as order driven.

D-T-R-A

Evacuation of a potential flood plain is enacted by a fire department prior to impact. A river runs through a large metropolitan area. A state police unit wires the city fire department with information that the river is at flood level, that flood waters are causing considerable damage upstream, and that flood conditions are expected to reach the city within several hours. A fire department communications operator contacts the fire chief who then puts the fire department on standby alert. The fire department is schooled in evacuation procedures through pre-disaster preparedness activities. After being notified by the operator, the fire chief goes to the site of the initial city police command post and informs police personnel of his intention to evacuate low lying manufacturing and residential areas of the city. Following this discussion there is agreement that the fire department will handle the evacuation of selected low lying areas (D). Upon receiving additional information from the local police and water

departments, the chief decides to divide the fire department's equipment and personnel into two sections, one on each side of the river, to ensure an adequate distribution of resources for both evacuation and fire protection. Working through the normal chain of command, he orders fire personnel to mobilize and relocate people and possessions below 1000 feet from the bank on each side of the river (T). Fire department personnel and equipment are then deployed according to the chief's dictates (R). While the threatened population already has been warned of flooding via the mass media, fire department personnel move door to door in order to evacuate all residents in the selected lowland areas. There is sufficient time prior to flooding to both evacuate those threatened and recheck the areas covered. Several threatened individuals choose to remain anyway, arguing that they must protect or secure their property. Some of those who remain are stranded. The evacuation of those stranded by high water is then accomplished by using fire department boats. As conditions become more severe, larger boats are requested by the fire department and several are volunteered. The evacuation is terminated shortly after impact when all those stranded have been successfully evacuated (A). In the face of considerable property damage, there are no deaths or serious injuries resulting from the flood.

Kreps conceives the range of forms of organization implied by these two examples as a continuum: with D-T-R-A or social order at one end and A-R-T-D or social action at the other end. Domains (D) legitimate what is taking place and tasks (T) collectively represent how it is being done (Durkheim, 1938). Kreps interprets them as the structural ends of organization. Resources (R) are human attributes and material technologies and activities (A) are the joint actions of individuals and social units. Kreps interprets these latter two elements as the structural means of organization. He argues that each of the four elements is independent of the others, thus they all relate equally to organization as entity or thing. Their sequential patterning in time and space reveals organization as process. From archival data on 15 disaster events, Kreps has constructed thus far a data file of 423 instances of organization which fall at various points on a continuum of social order

(D-T-R-A) to social action (A-R-T-D). Table 1 summarizes the distribution of these 423 cases. Note that some 39 cases fall at what looks like the midpoint of the continuum. Here it appears that no simple judgment can be made as to whether the six forms so located are either action-driven or order-driven. The following example describes one of these six types.

T-R-A-D

Material resources are mobilized by residents of one community and provided to the victims of another. An entire region is impacted by a major earthquake. Although several communities suffer serious damage, some are spared. Considerable concern is expressed by residents and leaders of one unimpacted city about the adequacy of assistance being provided to a small and isolated town that was devastated by tsunami that followed the earthquake. A joint meeting involving representatives from the unimpacted city's chamber of commerce, city government, and the trucking industry takes place on the fourth day following the event. A chairman is appointed and food, communications, and transportation committees are set up (T). At least 50 people are mobilized (R) for the collection of food and other commodities in the unimpacted city. A core group consisting of the unimpacted city's public works director, engineer, and building inspector, as well as a privately employed architectural engineer then transport the supplies to the impacted town which is some distance away (A). Leaders and residents of the devastated town have no knowledge of this assistance until it arrives on site. The core group meets with some members of the impacted community's town council and offers the assistance. The following day the town council meets and asks the core group to take over the distribution of its own resources as well as perform other community functions (D).

This third example of origins involves the development of a division of labor (T), followed by the mobilization of resources (T-R) and the performance of joint actions relative to that division of labor (T-R-A), and culminated by the legitimation of the domain of action by officials of the devastated town (D). Unlike the first two cases, neither ends nor means predominate at the origins of organization. Notice how domains and

TABLE 1: Organizational Forms: Total Sample

<u>Organizational</u> <u>Forms</u>	<u>Number of Units:</u> <u>Total Sample</u>	
D-T-R-A	167	(167)
<hr/>		
D-T-A-R	5	
D-R-T-A	53	(59)
T-D-R-A	1	
<hr/>		
D-R-A-T	27	
D-A-T-R	2	
T-R-D-A	4	(100)
T-D-A-R	-	
R-D-T-A	67	
<hr/>		
D-A-R-T	1	
T-R-A-D	21	
T-A-D-R	-	(39)
R-D-A-T	12	
R-T-D-A	4	
A-D-T-R	1	
<hr/>		
T-A-R-D	-	
R-A-D-T	15	
R-T-A-D	13	(31)
A-D-R-T	1	
A-T-D-R	2	
<hr/>		
R-A-T-D	13	
A-T-R-D	4	(22)
A-R-D-T	5	
<hr/>		
A-R-T-D	5	(5)
<hr/>		
Totals	423	(423)

tasks independently express the entity quality of organization. Notice also the discontinuity between tasks and domain, yet the continuity of both with pre-disaster routines. The process described cannot readily be interpreted as either order- or action-driven.

In his work Kreps (1985) addresses taxonomic problems of description. The above case studies illustrate the importance of elemental attempts to create organization. Logically, the patterning of all combinations of 1-4 of these elements yields a taxonomy of 64 forms of association (see Table 2). Only the 4-element forms (D-T-R-A to A-R-T-D) are collectively sufficient for organization to exist (24 organizational forms of association). Thus Kreps' taxonomy distinguishes between organization (24) and other (40) forms of association.

Kreps expresses the continuum of social order and social action by the metric found on Tables 3 and 4. Critical for his analysis, even though most (all but 52) of the 423 instances of organization found were enacted by established units of various types (i.e., they existed before the disaster event) existence is not assumed for purposes of studying the process of organization. In effect, the event serves as a social catalyst for studying the origins of organization and the rationale is similar to that used in chemistry (Dubin, 1978). For Kreps, the life history of organization is circumscribed by the event and its aftermath. Within this time frame, many existing social units do not act at all or do different things. Thus, neither involvement nor its precise character can be assumed for these non-routine events. Note, however, that by invoking the event as social catalyst, Kreps does not deny the relevance of pre-event conditions for what takes place.

TABLE 2: Taxonomy of Forms of Association*

<u>Organizational Forms</u>	<u>Three Element Forms</u>	<u>Two Element Forms</u>	<u>One Element Forms</u>
D-T-R-A	D-T-R	D-T	D
D-T-A-R	D-T-A	D-R	T
D-R-A-T	D-R-A	D-A	R
D-R-T-A	D-R-T	T-R	A
D-A-T-R	D-A-T	T-A	
D-A-R-T	D-A-R	T-D	
T-R-A-D	T-R-A	R-A	
T-R-D-A	T-R-D	R-D	
T-A-D-R	T-A-D	R-T	
T-A-R-D	T-A-R	A-D	
T-D-R-A	T-D-R	A-T	
T-D-A-R	T-D-A	A-R	
R-A-D-T	R-A-D		
R-A-T-D	R-A-T		
R-D-T-A	R-D-T		
R-D-A-T	R-D-A		
R-T-D-A	R-T-D		
R-T-A-D	R-T-A		
A-D-T-R	A-D-T		
A-D-R-T	A-D-R		
A-T-D-R	A-T-D		
A-T-R-D	A-T-R		
A-R-D-T	A-R-D		
A-R-T-D	A-R-T		

*From Kreps (1984b)

TABLE 3: Organizational Forms: Total Sample
Social Order - Social Action Metric

<u>Organizational Forms</u>	<u>Logical Metric</u>	<u>Number of Forms</u>	<u>Number of Units: Total Sample</u>	
D-T-R-A	+3	(1)	167	(167)
<hr/>				
D-T-A-R			5	
D-R-T-A	+2	(3)	53	(59)
T-D-R-A			1	
<hr/>				
D-R-A-T			27	
D-A-T-R			2	
T-R-D-A	+1	(5)	4	(100)
T-D-A-R			-	
R-D-T-A			67	
<hr/>				
D-A-R-T			1	
T-R-A-D			21	
T-A-D-R	0	(6)	-	(39)
R-D-A-T			12	
R-T-D-A			4	
A-D-T-R			1	
<hr/>				
T-A-R-D			-	
R-A-D-T			15	
R-T-A-D	-1	(5)	13	(31)
A-D-R-T			1	
A-T-D-R			2	
<hr/>				
R-A-T-D			13	
A-T-R-D	-2	(3)	4	(22)
A-R-D-T			5	
<hr/>				
A-R-T-D	-3	(1)	5	(5)
<hr/>				
	Totals	(24)	423	(423)

TABLE 4: Organizational Forms: Emergent Units
Social Order - Social Action Metric

<u>Organizational Forms</u>	<u>Logical Metric</u>	<u>Number of Forms</u>	<u>Number of Units: Emergent</u>	
D-T-R-A	6 (+3)	(1)	3	(3)
<hr/>				
D-T-A-R			-	
D-R-T-A	5 (+2)	(3)	6	(6)
T-D-R-A			-	
<hr/>				
D-R-A-T			4	
D-A-T-R			-	
T-R-D-A	4 (+1)	(5)	1	(19)
T-D-A-R			-	
R-D-T-A			14	
<hr/>				
D-A-R-T			-	
T-R-A-D			3	
T-A-D-R	3 (0)	(6)	-	(11)
R-D-A-T			7	
R-T-D-A			1	
A-D-T-R			-	
<hr/>				
T-A-R-D			-	
R-A-D-T			2	
R-T-A-D	2 (-1)	(5)	1	(3)
A-D-R-T			-	
A-T-D-R			-	
<hr/>				
R-A-T-D			3	
A-T-R-D	1 (-2)	(3)	1	(7)
A-R-D-T			3	
<hr/>				
A-R-T-D	0 (-3)	<u>(1)</u>	<u>3</u>	<u>(3)</u>
<hr/>				
Totals		(24)	(52)	

The 24 organizational forms of association are arrayed on Tables 3 and 4 with values ranging from 6 or +3 to 0 or -3. The key requirement for constructing the metric is to capture all of the differences between D-T-R-A or social order and A-R-T-D or social action. This can be done in the following way: At the social order end of the continuum, D precedes T, R, and A (3); T precedes R and A (2); and R precedes A (1). Given one point for each conforming transitivity (3+2+1), D-T-R-A receives a score of six; while at the social action end of the continuum, A-R-T-D receives a score of zero. This scoring technique points to the importance of a processual view of organization in which transivities reflect the sequential ordering of elements. Beginning at the social action end would simply reverse the scores, but not change the distribution in any way. Thus D-R-T-A, for example, receives a score of five when starting from social order and one when starting from social action. With D-T-R-A, social ends predicate social means. With A-R-T-D, the obverse is the case. The 22 forms between D-T-R-A and A-R-T-D, and the remaining 1-3 element forms subsumed by them, suggest varying degrees of continuity and discontinuity between the ends and means of collective life.

Notice again on Tables 3 and 4 that six of the twenty-four organizational forms fall at the midpoint of the metric. As illustrated in the third example above, these forms are neither order- nor action-driven. Their scores are the same regardless of whether the referent is social order or social action. A midpoint form such as the above T-R-A-D example receives a score of 3: from the social order end of the continuum because T precedes R (1 point), T precedes A (1 point), and R precedes A (1 point); and from the social action end of the continuum because A precedes D (1 point), R precedes D (1 point), and T precedes D

(1 point). The score is 3 because no other transitivity is consistent with "perfect" social order or "perfect" social action. By subtracting a constant 3 from each derived level of social order or social action, the resulting metrics are +3 to -3 with a 0 midpoint.

Going beyond Kreps' descriptions of the six midpoint forms, the thesis addresses the problem of unraveling the tension or balance of action and order revealed by these forms. My approach is substantive and uses disaster research to exploit insights about structure from Weber and Durkheim. The central concept in the analysis is role. Before proceeding, however, let us consider current sociological approaches to action, order, and structure.

Substantive theories reveal a strain toward either social action or social order. Social action is grounded in the subjective states and behaviors of human beings. Social order is grounded in the collective representations and normative force of social units (Alexander, 1982a; Giddens, 1982). The resulting issue at the metatheoretical level has traditionally been one of trying to reconcile action and order perspectives. More specifically, under the continuing influence of the classics, some metatheorists (e.g., Parsons, 1938; 1950; Giddens, 1976; 1979; Alexander, 1982a; 1982b; 1983; 1984) make pointed attempts to synthesize action and order perspectives. While abstract as opposed to empirical, these attempts illuminate two important clues for substantive work. First, both action (and the actor) and order (and the unit) must be implicated in defining social structure as what is to be explained in sociology. Second, the conception of structure must be dialectical. From the action side, the knowledgeable and capable actor must be seen as subject of inquiry who creates structure. At the same time, the actor

must be seen as passive object of external units that are equally real. From the order side, structure must be viewed as fixed thing which maintains collective life. At the same time, it must be viewed as in a constant state of change as the result of the actions of human beings. To define structure only in terms of creating collective life is to be psychologically reductionist, while focusing only on how it is maintained results in sociological reductionism. Either path provides an incomplete definition and description of structure as basic subject matter.

Because metatheorists are oriented to defining the subject matter at an abstract level, they are less inclined to develop procedural rules for locating it. This indifference to substantive inquiry points to a critical distinction between thinking sociology and doing research. The former without the latter has resulted in a flawed exercise. Rather than exploit the dialectic to describe structure empirically, the effort has been to achieve a Hegelian synthesis. The attempted synthesis fails for two reasons. First, a dialectical definition of social structure is precluded. With the synthetic approach, you define action and derive order or vice versa. The result is the collapsing of definition and explanation of structure (Wallace, 1983). As Kreps points out, what is needed is a dialectical definition of structure that leads to description but not explanation. Second, the quest for synthesis denies the uniqueness of action and order perspectives as possible avenues of explaining social structure as it may be dialectically defined and described. Thus, substantive theorists are quite right when they choose action or order perspectives to explain social structure. But what they need, and do not have, is a dialectical description of what they are trying to explain.

The general requirement for those engaged in substantive research is to give more attention to defining and describing social structure as core subject matter of sociology. Heretofore, avoiding the trap of metatheoretical synthesis has been accidental rather than intentional. The twin difficulty can be simply stated: there is an inadequate definition of the subject matter at the metatheoretical level that is matched by an equally weak description of structure in substantive research. Perhaps this is why sociology is characterized more by dissensus than consensus with regard to paradigms, theories, and methods. The lack of consensus has fueled unproductive debates for too long.

Concerned with the current state of the discipline, I will focus initially on defining the puzzle--relying on the classical works of Durkheim and Weber to do so. Second, as outlined in the contemporary research of Kreps (1985), structure will be described dialectically within the context of disaster. Once again, the contributions of Durkheim and Weber are fundamental as I build on Kreps' earlier work. In the end, Kreps' and my studies of social response to disaster serve as the basis for a substantive comparison of Durkheim and Weber.

As outlined in the classical writings of Durkheim and Weber, attention to defining the subject matter is as important as attempting to explain it. In their classical works each implies that the subject matter of sociology--collective life--requires multidimensional expression, yet demands unidimensional explanation through substantive research (Alexander, 1982a). That is, they defined what is to be explained in terms of both the knowledgeable actor who creates and recreates structure (action), and the external unit through which structure is maintained (order), yet they tried to explain this common subject matter from

different perspectives. Weber focused on action, while Durkheim focused on order in the attempt to explain structure. Although both were self-defined substantive sociologists, each reacted metatheoretically in their observation of actors and social units. Their classical works illustrate the necessity of being unidimensional and multidimensional about structure. The result is an uncovering of structure as the dialectic of action and order.

A CLASSICAL APPROACH TO A CONTEMPORARY PROBLEM:

DEFINING THE PUZZLE

In defining the discipline sociologists must come to a consensus as to what it is we are trying to explain: Are we trying to determine how collective life is created or how it is maintained? Is the actor the subject of inquiry or the object of inquiry? Is structure a unit or a process? Durkheim and Weber answer both to all of these questions. The actor is subject and object; structure is static and dynamic; and sociologists can address action and order at the same time through dialectical reasoning.

The above issues have become a major source of division among contemporary sociologists. The subject matter is defined in terms of either social action or social order--according to Alexander (1982a)--because of one-sided presuppositions about the nature of structure. At the ontological level the distinction is expressed by the debate between nominalism and realism (Warriner, 1956; Wallace, 1983). At the epistemological level, however, the question is not what is real, rather it is how do we apprehend whatever "it" is. How are the creation and maintenance of structure related? In what manner is the dialectic of action and order revealed by structure? The empirical requirements of science seem to demand that we choose either actor or unit as the object of inquiry. But how can we do that and still retain a dialectical (or in Alexander's terms multidimensional) perspective on structure? How, in the end, is it possible to capture substantively what are obvious contradictions?

Weber and Durkheim introduced action and order, and their contradictory relationship in structure, as the unique domain of sociology. In comparing Durkheim and his order orientation with Weber and his emphasis on action, it is possible to begin to appreciate the magnitude of their sociological contributions and the importance of addressing the dialectic of structure from, respectively, order and action sides. First, a review of Durkheim's order orientation will illustrate how, through substantive studies, he defined the puzzle of structure in terms of a paradoxical relationship between order and action, expressed as a problem of order. Weber recognized the same dialectic, but approached it from the action side. A closer look at his work reveals the care he took in attempting to capture the dialectic in his description of the unit of sociological analysis.

Durkheim: An Order Orientation

Throughout his work Durkheim points to contradictions. He explicitly defines the social order as more than a collectivity of individuals. For him there is a supra-individual reality that expresses order as the maintenance of collective life. Durkheim's notion of social facts represents structure as objective, material as well as non-material, and external to the actor (Coenen, 1981). There is no doubt, however, that Durkheim struggles with the role of the individual when referring to the origins of these social facts. And, he never really resolves the dilemma that the decisions of individual actors somehow form the foundation of order.

Structure itself is revealed in society's becoming and one can only illuminate it on condition of not losing sight of this process of becoming and changing. It (social structure) is constantly becoming and changing (forming and breaking down); it is life having crystallized to a degree; and to distinguish it from the life from which it derives or the life that determines it amounts to dissociating inseparable things. (Durkheim, 1900 in Wilson, 1981, p.1060)

The above quote seems to beg attention to origins of social facts. How do individuals contribute to the development of social facts and how are collective representations legitimated? At this level Durkheim recognizes the dialectic of social structure and expresses it as a problem of order. That is to say, social structure is external thing, constraining force, and constructed process all at the same time. While recognizing this paradox, Durkheim is not about to reduce sociology to psychology and therefore chooses sociological reductionism (DiTomaso, 1982). When the choice seems explicit in his work, Durkheim might be labeled unidimensional in his thinking (Alexander, 1982a). And yet Durkheim also reveals a pattern of flexibility in his studies that points to multidimensional reasoning about order, structure, and human action.

How is it that, at the same time as the individual becomes more autonomous, he depends more closely on society? How can he be at the same time more individuated [personnel] and more solidary? For it is indisputable that these two developments, contradictory though it may appear, occur in a parallel way (Durkheim cited in Giddens, 1977, p.274).

So Durkheim focuses on developed structures and assumes that they are somehow intimately related to the individual (e.g., Durkheim 1938, 1978). Interpreters of Durkheim who attend only to his inconsistent and

contradictory analyses of the individual, ignore the centrality of an autonomous order in his work. The frequent contradictions in terms of theoretical strategies between the individualistic and social, and the normative and instrumental point to Durkheim's appreciation of the dialectic--not to a weakness in his work. He emphasizes order without denying action, and puzzles with an obvious paradox in their relationship.

In discussing the social order, Durkheim refers both to the fact of normative control and to the condition of stability (Alexander, 1982b). This exemplifies the inherent dialectic of order and is critical to understanding Durkheim's functionalist perspective. The tension or perhaps balance of Durkheim's vision is illustrated by his discussion on the variance of law and morality from one social type to the next, and the change within a particular type if conditions of life are modified (Durkheim, 1978).

Every pattern is an obstacle to new patterns, to the extent that the first pattern is inflexible. The better a structure is articulated, the more it offers a healthy resistance to all modification; and this is equally true of functional, as of anatomical, organization. . . . Nothing is good indefinitely and to an unlimited extent. The authority which the moral conscience enjoys must not be excessive; otherwise no one would dare criticize it, and it would too easily congeal into an immutable form. To make progress, individual originality must be able to express itself (p.17).

Durkheim's awareness of the dialectic of structure is clearly evidenced in the above. His explanation of the normal and pathological is functional. Still, it is rooted in the contradictions inherent to the subject matter. He struggles with the role of the individual, but in the end addresses

more pointedly the order perspective and how structure is maintained. Origins is given short shrift.

Weber: An Action Orientation

Like Durkheim, Weber sees the paradoxical character of the subject matter. For him the origins of social structure are far more important than its maintenance. This is evidenced by his attempts to capture rationality at the subjective level as logically prior condition of an external social order. However, it is important to recognize Weber's response to the dialectic of social structure as it is expressed from the action side. In his related discussions of the forms of rationality and types of social action (Kalberg, 1980; Levine, 1981), Weber shows a studied appreciation of the importance, independence, and constraining effects of an external order on the actor. This is exemplified in his discussion of the "rational conditioning" of scientific management.

The psycho-physical apparatus of man is completely adjusted to the demands of the outer world, the tools, the machines--in short, it is functionalized, and the individual is shorn of his natural rhythm as determined by his organism; in line with the demands of work procedure, he is attuned to a new rhythm through the functional specialization of muscles and through the creation of an optimal economy of physical effort. (Weber cited in Brubaker, 1984, pp.14f).

Weber's notion of rational social action is especially critical for developing a dialectical conception of what is to be explained. In Economy and Society (1968) Weber defines types of social action in terms of meaning frames of the actor. If concrete actors are the source of

"social order" for Weber (Alexander, 1983a); and if social relationships consist "entirely and exclusively in the existence of a probability that there will be a meaningful course of social action" (Weber, 1968, p.26f.); then the actor must serve as both subject and object of social structure, lest there be no social order at all. Stated another way, the actor as either subject or object cannot be a predetermined condition of social action if there is to be some logic to collective life. If such is true in the relationship between ego and alter, then the translation of individual ends as collective means is even more pronounced when action is aggregated into broader social units. Weber's pessimistic interpretation of bureaucracy is illustrative of this point.

Once it is fully established, bureaucracy is among those social structures which are the hardest to destroy. Bureaucracy is the means of carrying "community action" over into rationally ordered "societal action." Therefore, as an instrument for "societalizing" relations of power, bureaucracy has been and is a power instrument of the first order--for the one who controls the bureaucratic apparatus (Weber, 1958b, p.228).

The conclusion here is that Weber has captured the dialectic of social structure but, in contrast to Durkheim, he expresses it from an action perspective.

Alexander (1983a) credits Weber with distinguishing between types of rationality and social action. However, he criticizes him for not adhering consistently to a multidimensional tradition in his sociology. Certainly Weber's analysis is, as Alexander suggests, "unfailingly ambivalent." But perhaps this is because Weber was far more intent on

description than explanation. That is to say, he was not trying to describe action to explain order or vice versa. Rather he was trying to describe the dialectic of social structure that he observed in his historical comparative studies. As evidenced in the Protestant Ethic, even as he focuses on social action, he does not deny the existence of an equally viable social order in describing capitalism.

The capitalistic economy of the present day is an immense cosmos into which the individual is born, and which presents itself to him . . . as an unalterable order of things in which he must live. It forces the individual, in so far as he is involved in the system of market relationships, to conform to capitalistic rules of action. The manufacturer who in the long run acts counter to these norms, will just as inevitably be eliminated from the economic scene as the worker who cannot or will not adapt himself to them will be thrown into the streets without a job. (Weber, 1958a, pp.55f cited in Brubaker, 1984, p.23).

At this more substantive level, Weber examined social structure as a process wherein social action is made central.

In order to accomplish this Weber developed the methodological strategy of ideal types. His historical and transhistorical ideal types are important for examining and rendering intelligible patterns of action (Turner, 1983). Historical ideal types (e.g., bureaucracy, capitalism) express the content of social happenings. Transhistorical ideal types (the four modes of action) establish the elements from which historical ideal types are composed. The purpose of ideal types is to facilitate interpretation of the subjective meaning of structure as it is produced and reproduced by the human actor. Weber's method also makes explicit the problem of linking epistemologically the observer with the observed--a

concern not addressed by Durkheim and frequently overlooked today. The question is what are the rules that link ideal types, the observer who uses them, and the observed subject? Such rules remain to be developed (Giddens, 1976).

Weber's methodological strategy is extended by Kreps (1985, ch.4) ongoing research. Kreps employs the ideal types methodology in observing what he terms forms of human association (Simmel, 1908). Kreps' historical ideal types--the 64 forms of association--link the observer to the content of social action. Content implies the historical events themselves and their culturally specific meanings. Form expresses the sequencing of these events and the timing of communications through which these specific meanings are collectively represented. As such, the communications are devoid of meaning, reflecting simply the organization of information (Mayhew, 1980; 1981). Kreps' continuum and metric link these historical ideal types to two transhistorical ideal types: social order and social action.

Transhistorical ideal types link the observer to what is not observed. For Weber the four modes of action were termed mental constructs. In neo-Kantian fashion, Kreps defines social order and social action as transcendental knowledge (i.e., real but not observable). The importance of transhistorical ideal types is their "objective" nature, one which is enhanced by intersubjective agreement. Content and form are therefore defined through subjective (Weber) as well as objective (Kant) lenses in Kreps' framework. His four core elements are put into precise relationships, in terms of identifiable rules of transformation.

In the end, Kreps' extension of Weber's methodology makes it possible

to describe the contradictions of action and order in structure. Explanation is a completely different matter. At that level one can freely emphasize either individual or collective properties of structure. The admonition implied by Weber, and also Durkheim from the order side, is simply this: avoid collapsing description and explanation at the level of defining what is to be explained. That is to say, one must not describe action to explain order or vice versa. To the contrary, one must describe a dialectical relationship between them. The result for Kreps is a taxonomy of forms that is neither psychologically nor sociologically reductionist (DiTomaso, 1982).

Weber's concern with describing structure as process culminated in the development of taxonomies--most notably his four forms of social action. Durkheim also recognized the power of taxonomies as descriptive devices, as evidenced by his work with forms of social order. In sum, Weber and Durkheim define a unique subject matter for sociology. In so doing they provide parallel conceptions of social structure that are equally dialectical. Finally, they point to the essential role of classification for describing social structure: Weber in his discussions of ideal types; and Durkheim by his methodological rules for examining social facts. As further detailed below, Kreps highlights the symmetry of Weber and Durkheim with reference to the content and form of structure.

RESOLUTION OF A PARADIGM DILEMMA:
WORKING AT THE MARGINS OF
INTERPRETIVE AND POSITIVIST SOCIOLOGY

The concern with the dialectic of social structure is at the core of the contributions of Durkheim and Weber. By distinguishing between defining and explaining the subject matter of sociology, they provide a model for advancing knowledge of structure. Weber comes to the dialectic from the perspective of social action, thereby emphasizing the psychic states and behaviors of human beings. Durkheim comes to it from the perspective of social order, and focuses on the collective representations and normative force of social units. While each points to types of social structure, neither has an elaborate taxonomy. Their legacy will not be realized until this has been accomplished. The task will not be easy. To date, there is little consensus in sociology about the definition of structure, how it comes into being, how it is maintained, and how it ends.

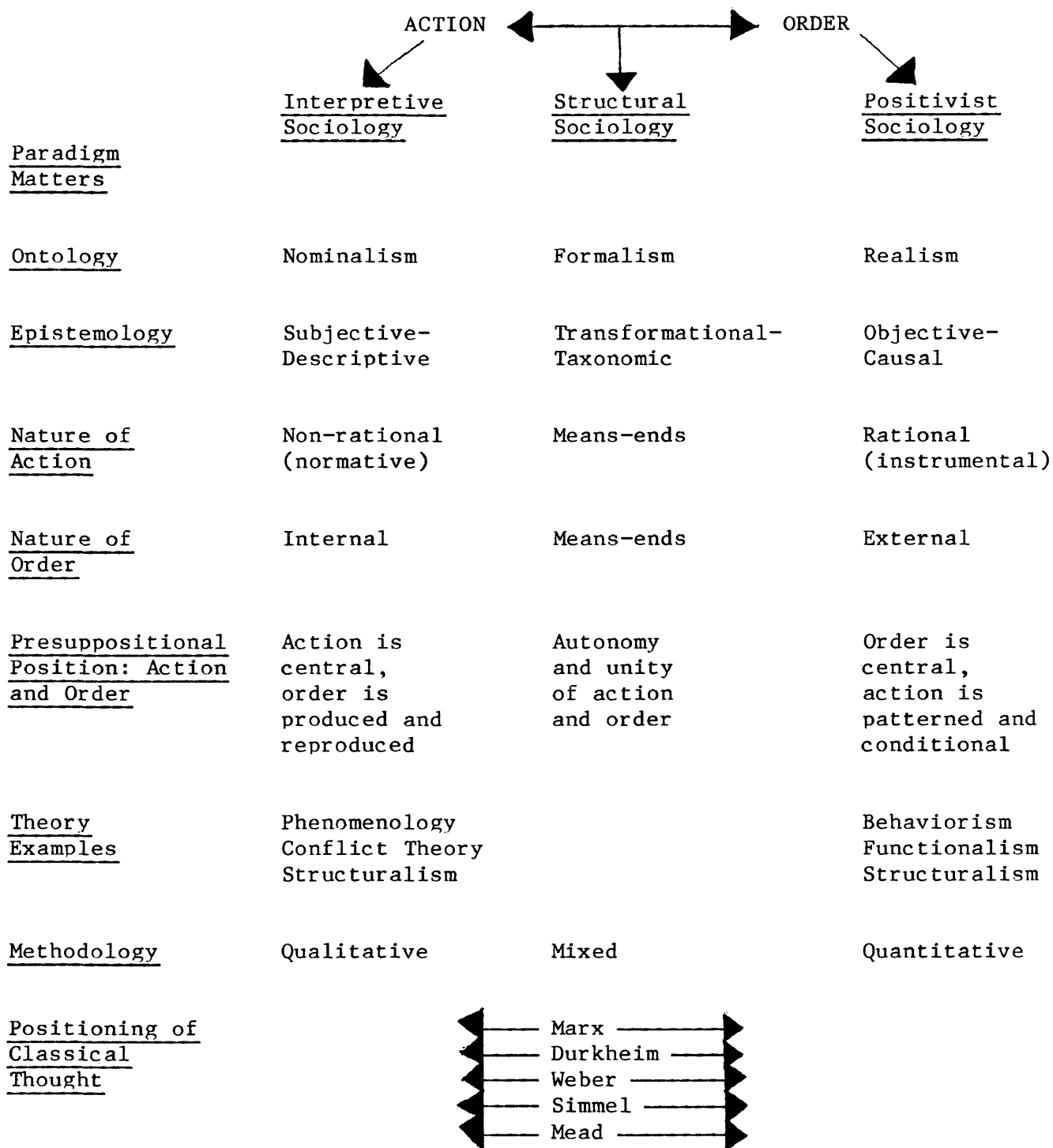
At least some of the confusion stems from the fact that sociology has two competing paradigms and the proponents do not share a vision of what social structure is. As conceptualized by Kreps (1985, ch.3) sociology has three paradigms--what he terms interpretive, positivist, and structural sociologies. Interpretive sociology is attentive to action, positivist sociology to order, and structural sociology to both action and order. Interpretive and positivist sociologies are predominant, while structural sociology is implicit and marginal to the other two. Using Alexander's (1982a) terminology, every social scientist makes presuppositional decisions about human action and how it is collectively

patterned. Unfortunately, these presuppositions are usually left implicit. It is both Alexander's and Kreps' intent to make them explicit, thereby revealing the paradigmatic character of sociology in more stark relief.

As illustrated in Figure 1, Kreps suggests that the presuppositional position of interpretive sociology makes action (and the actor) central. Order is benign abstraction that is produced and reproduced. Positivist sociology proclaims the preeminence of order (and the external unit). The actor is passive and action is patterned and conditional. Structural sociology acknowledges the autonomy and unity of action (and the actor) and order (and the unit). Because of this dialectical expression of structure, both action and order are necessarily implicated in the explanandum of structural sociology. That explanandum remains to be developed. When that time comes, and to the extent that a structural explicandum can be shared by interpretive and positivist sociologists, complementary explanations of social structure can be developed within the two dominant paradigms. It should be added that a dialectical conception of social structure precludes grand synthesis. The approach instead must be additive development of knowledge. In other words, actor and unit explanations of social structure will never be synthetic. Indeed, the quest for synthesis collapses description and explanation of collective life into a hopeless morass. But neither will these explanations be incompatible. Rather, they will be combinatorial explanations arrived at independently by positivist and interpretive sociologists.

The first and most critical step is defining the common subject matter. What is the generic meaning, the most encompassing definition of

FIGURE 1: Sociological Paradigms As They Relate to the Dialectic of Action and Order



what is to be explained? Heretofore, little sustained effort has been made to answer this question. As indicated in Figure 1, to do so within structural sociology requires taxonomies which reveal the autonomy and unity of action and order. Only when the taxonomy problem has been solved can model building usefully derive from the two dominant paradigms. At that point actor based and unit based reductionism are equally viable.

Once defined and located, it is possible to examine the origins of any phenomenon that is of interest. The relevant question here is how is social structure created? On the other hand, it is equally feasible to examine the growth, development, and survival of any phenomenon. The relevant question here is how is social structure maintained. Both questions are logical and equally important. However, answers to them possibly yield different explanations of a common subject matter. Whether it is creation or maintenance, answers from interpretive sociology will point to the dynamism of the actor while answers from positivist sociology will point to the dynamism of the unit. Does one perspective more adequately explain structure? I think not.

The conclusion here is that action and order explanations of structure are equally viable and should be developed independently. With alternative explanations provided, perhaps it will be possible to unravel the dialectic of structure. Once again, the theorist must make a choice at the level of explanation. In giving primacy to either actor or unit, the theorist must also recognize that any model developed will be partial. Such is the path toward knowledge: a dialectical conception of social structure shared by interpretive and positivist sociologists and

reductionist explanatory models developed within the boundaries of the two respective paradigms. The additive results of such models will hopefully provide a more comprehensive understanding of structure.

By cross classifying order as unit and process with the actor as object and subject, Kreps develops the four-fold table illustrated on Figure 2. Notice that positivist, interpretive, and structural sociologies are all represented. The figure serves to distinguish between the domains of description and explanation. The first and fourth cells depict structural sociology and the dialectic of action and order as a problem of describing structure as the subject matter of sociology. In Kreps' theory example of structural sociology (discussed further below), such description is captured by a taxonomy of the forms of human association. The explanation of these forms commands attention to cells 2 and 3 and the unique modes of positivist and interpretive sociologies. Positivist sociology points to the unit as given and provides order based explanations of these forms. Interpretive sociology points to the actor as given and provides action based explanations of these forms.

As further discussed in the next section, one of the few contemporary studies which intentionally works at the margins of interpretive and positivist paradigms is Kreps' research on disaster and social structure. As mentioned earlier, he relies equally on Durkheim and Weber. Using case studies Kreps bridges content and form; observer and observed; and qualitative and quantitative methods in describing forms of human association.

FIGURE 2: Unidimensional and Dialectical Perspectives on Action and Order

		<u>Structure</u> (Order)	
		<u>Process</u>	<u>Unit</u>
<u>Actor</u> (Action)	<u>Object</u>	1 Structural Sociology	2 Positivist Sociology
	<u>Subject</u>	3 Interpretive Sociology	4 Structural Sociology

Paradigms in Sociology

1. Actor as object - structure as process:
Structural Sociology (dialectical)
2. Actor as object - structure as unit:
Positivist Sociology (order biased)
3. Actor as subject - structure as process:
Interpretive Sociology (action biased)
4. Actor as subject - structure as unit:
Structural Sociology (dialectical)

A SUBSTANTIVE BASE: KREPS' TAXONOMY OF FORMS

Metatheoretically, Kreps expresses structure as a dialectical relationship between action and order. Substantively, he evidences structure as alternate forms of human association. Empirically capturing these forms is, first and foremost, a problem of taxonomy. The resulting theory of organization as unit and process is grounded in the disaster context. Employing a comparative case study approach, Kreps identifies 423 instances of organization from 15 disaster events (earthquakes, hurricanes, floods, tornadoes). His qualitative analyses are of interviews and documents from the Disaster Research Center archives (University of Delaware) of studies of local community responses to selected natural disasters. Working with these data to reconstruct what happened, Kreps devises a strategy for distinguishing organization from other forms of human association. In that regard, he defines what are termed individually necessary and collectively sufficient elements of organization as form of association. Some 24 such forms are identified as matters of logic and evidence. Kreps therefore uses this definition to develop a structural taxonomy of, in the Weberian sense, historical ideal types. In his original spadework, Kreps did not know nor did he foresee the development of a quantitative metric which would substantively connect the 24 forms to two transhistorical ideal types. The two transhistorical ideal types reflect a continuum, with social order at one end and social action at the other. What amounts to a case of serendipity (Merton, 1957) reinforces the importance of a flexible qualitative methodology. Without fully anticipating the emergent quantitative significance of his studies,

Kreps emphasized the development of taxonomy.

The actor is both subject and object, and order is both process and unit in Kreps's framework. While the model that he develops falls within positivist sociology, he encourages alternative models from interpretive sociology. In the latter mode more attention would be given to using individual perceptions, attitudes, intentions, and behaviors as explanans of the organizational forms that have been identified. Thus while the limitations of the archival data restricted Kreps's model to the positivist perspective, his taxonomy captures the dialectic of structure from either paradigm. The following brief discussion summarizes how this was done.

As noted in the introduction, in Kreps's theory existence of organization is defined as the presence of four individually necessary and collectively sufficient elements: domain (D), tasks (T), human and material resources (R), and activities (A). Each element is analytically unique and no pattern of all four can be assumed a priori. Thus, their ordering indicates when each element appears as a part of the origins of organization in the disaster context. Such sequencing in time and space of the four core elements yields 24 logically possible forms of organization and, as part of a process 40 non-organizational forms of association. The resulting 64 element patterns express, as matters of content and form, a possible explicandum for structural sociology.

Drawing from Durkheim's conception of social facts (Kreps, 1985, ch.4), two of the elements, domain (D) and tasks (T), are interpreted as collective representations of organized activities, as they might be tied to Durkheim's sociological idealism. The remaining two elements, resources (R) and activities (A), reflect more directly the sociological

materialism of Weber and to some extent Marx. Treated independently, Kreps (1985, ch.4) defines the elements as follows:

Domain (D)

Domains are bounded spheres of human activity which point to the existence of a unit and what it does. As things, domains are collectively represented in the communications of (1) those included in these spheres of activity and (2) those who interact with them at the boundaries of the unit (Levine and White, 1961; Thompson, 1967; Haas and Drabek, 1973). Domains translate actual or threatening physical and social impacts as units of social action. The many types of domains encompass the time periods before (e.g., warning), during (e.g., evacuation), and after (e.g., reconstruction) the event. A unit specification does not imply anything else about the existence (or achievement) of organization. As individually necessary condition of organization, then, domain points to a form of association that is distinct from all others. Its establishment may take place at any point in the origins of organization.

Tasks (T)

Tasks are specifications of a division of labor for the enactment of human activity. As things, tasks independently define the unit quality of social action. While domain represents social structure as open system that is legitimated internally and externally, tasks point to it as closed system that is structured from within (Thompson, 1967; Perrow, 1967). As part of a process, tasks are a unique expression of form. They may come to exist at any point in the origins of organization.

Human and Material Resources (R)

Resources are the material technologies and subjective attributes of human populations. Their presence in a process as things comes to be defined with reference to the unit quality of social structure, but they may be mobilized prior to or following the emergence of domains and tasks. Resources are both static and dynamic: static because their relevance as a part of organization is conditioned by the external reality of domains and tasks; dynamic because domains and tasks are, at the same time, social constructions of human beings.

Activities (A)

Activities are the interdependent actions of human populations which at once establish and are conditioned by social structure. As things, activities are the remaining social means of organization which although analytically distinct, relate symmetrically with its interpretation as unit and process. Activities are no more or less analytically important than the remaining three elements. Certainly all of the four elements are grounded in the actor, as reality and as creator of the social order. However, the elements are equally represented by the social unit, as reality and normative force. Thus just as organization is at once static and dynamic, so too are the activities of human beings (Warriner, 1956; 1970; Giddens, 1979; Alexander, 1982a).

To repeat, in describing alternative forms of human association, each element is logically and empirically independent. Thus, no single pattern or order of the elements can be assumed. The resulting taxonomy includes 64 forms of association (see Table 2, p.9), only 24 of which represent organization as Kreps defines the term from the perspective of structural sociology. The processual pattern of the elements implies the extent to which a given form of organization is order or action driven. Consistent with Durkheim's notion of collective representations, order-driven patterns reveal the early emergence of domains and tasks. Ends predicate means, the unit appears as dynamic, and the actor is seen as passive object of structure. Related to Weber's types of social action, order-driven patterns reflect "instrumentally rational" action. External efficiency criteria are critical and "expectations as to the behavior of (actors) . . . are used as conditions or means for the attainment of . . . rationally pursued and calculated ends" (Weber, 1968, p.24, emphasis added).

On the other hand, the early emergence of activities and resources point to action-driven patterns. Attention shifts to Durkheim's notion of structure in a state of becoming or Weber's notion of substantive

rationality. Here means predicate ends, the actor appears as dynamic subject rather than passive object, and the unit as conceptual abstraction (Giddens, 1979). As noted in the introduction, the midpoint of the metric Kreps has constructed highlights the tension or balance of the forces of social action and social order. There is tension because order implies a unit referent while action implies an actor referent. There is balance because the dialectic of structure captures both order and action. That is to say, the unit is both external thing and constructed object of action; and the actor is both prime mover and passive object of this thing. Such is the paradox that captured the respective imaginations of Durkheim and Weber. Such is the paradox that they observed in their respective studies. As long as it is recognized that both actor and structure are analytical rather than concrete entities, and that each is transitive as well as intransitive (Bhaskar, 1979), then there is no need for a so-called building block of structure. Freed of that ontological requirement, the dialectic of structure is completely symmetrical. Simply put, structure is unit and process; and actor is subject and object (Giddens, 1979; Alexander, 1982a; Kreps, 1985).

For purposes of the present research, the organizational elements capture the dialectic. As defined above, organization exists when all four elements (D, T, R. and A) are present. A processual conceptualization of organization captures the contradictory relationship of action and order as separate and integrated dimensions of human association. In other words, each element and combination of elements is at once a form in and of itself and part of another form as it develops. Each element is intransitive (exists as a fixed reality) and, at the same time, transitive (changing, becoming). So with the earlier T-R-A-D

example of origins, T is in and of itself an important phenomenon. It is also relevant as the initial step in the organizing process. It is possible then, to look at the accumulation of elements as stages in the development or emergence of organization. Each stage in this development (e.g., T, TR, TRA, TRAD) can be seen as independently and sequentially significant. Each, therefore, is an important focus of analysis.

In the disaster context a processual perspective on organization reveals that people are making choices under conditions where normal routines have been disrupted (Kreps, 1985, ch.3). Their improvisations are empirically grounded by the historical circumstances in which they occur--circumstances which point to the dialectic of structure. Specifically, both role-making and role-playing (Turner, 1978) are being evidenced and the distinction between them implies Kreps' discussion of interpretive and positivist sociologies. In sociology role is generally defined as (1) social expectations of (2) behavior, both of which relate to (3) identifiable positions in (4) observable social units (Stryker, 1980). The argument here is that to even speak of role is to beg a choice between interpretive and positivist sociologies in any effort to unravel the forms of association which Kreps has identified. That is to say, while the forms may be described dialectically, any effort to explain them must draw uniquely from the two dominant paradigms in the field. That is to say, the human being must be treated as either autonomous creator or constrained object of social structure; and the social unit must be treated as either real entity or constructed abstraction.

The above definition encompasses both stable and fluid forms of social organization. Turner's concern with role-taking illustrates the usefulness of role in distinguishing between action and order in the

present research (Stryker, 1980). Structured social expectations shape the course of interaction when an actor puts himself in the place of another and adjusts his behavior accordingly. But if roles are not well defined, role-taking yields newly defined roles and expectations or what can be termed role-making. In the disaster setting there is often sufficient ambiguity in role-taking to allow for role-making. When the latter occurs the actor is, in effect, creating structure through decisions and behaviors. A resulting interpretation of the actor as dynamic subject of structure is central for explaining forms of association within interpretive sociology. By contrast, the concept of role-playing emphasizes action as patterned and conditional. The actor is deciding and behaving within socially defined expectations of what to do. Accordingly, the unit is thought of as apart from the actor when forms of association are explained within positivist sociology. Thus, the venerable concept of role provides one way of building from multidimensional description to unidimensional understandings of organizational forms. It is hoped that the attempt to make this transition will implicate the unique explanatory importance of the two dominant paradigms in sociology.

Specifically, using role-making and role-playing to distinguish between the creation and maintenance of structure, this thesis examines thirty-eight of the thirty-nine midpoint cases identified in Kreps' work. (Interviews and documents are not presently available for one case, a T-R-A-D form.) As noted earlier, these midpoint cases reflect the balance or tension between action and order. For purposes of this thesis these cases are ideal because circumstances aren't biased toward either action or order explanations. Rather, they provide a beautiful context for a

consideration of role as it is employed uniquely within interpretive and positivist sociologies. Each enactment (1, 2, 3 and 4 elements present) will be analyzed as a four-stage organizing process. For each stage of origins, the relative importance of role-making and role-playing will be assessed independently as each contributes to understanding what is happening. That completed, role-making and role-playing will be examined further with reference to other characteristics of responses and disaster events.

ACTION, ORDER, AND STRUCTURE: METHODOLOGICAL APPROACH

Kreps' taxonomy and metric present the dialectic of action and order as a problem of description. Albeit tentatively, I try to go beyond description in the current work via an assessment of role-playing versus role-making at the origins of organization. Using the same archival data and case study approach that Kreps used, the present study focuses on thirty-eight midpoint forms previously located by him. Because the six midpoint forms highlight equally the dynamics of action and order, it was felt that both role-playing and role-making would be evidenced and, perhaps, at each stage of origins (1, 2, 3, and 4 elements present). By going beyond Kreps' methodological framework we can, in effect, address more pointedly the problems of explaining the contradictory subject matter defined in the classical works of both Weber and Durkheim.

The interviews and documents from the Disaster Research Center are the same data Kreps analyzed in his work (see Table 5). Of the thirty-nine empirically documented midpoint cases I have reexamined thirty-eight. The research strategy involved (1) describing what was happening at each stage of the origins of organization, (2) evaluating each stage as to whether it was dominated by either role-making or role-playing, (3) identifying problems at the origins of organization, and (4) examining other variables as possibly influencing the dynamics of role-making and role-playing.

First and foremost the methodology is the comparative case study. Each instance of organization was previously described by Kreps. My judgments about form of origins replicate his earlier ones. The methodology employed by Kreps and myself prompts questions about

TABLE 5: Samples of Events, Interviews,
and Organized Responses

<u>Events</u>	<u>Total Sample</u>		<u>Midpoint Cases</u>	
	<u>Interviews</u>	<u>Responses</u>	<u>Interviews</u>	<u>Responses</u>
1. Alaska Earthquake 1964	250	92	13	7
2. Hurricane Betsy (New Orleans), 1965	128	36	7	4
3. St. Paul, Minn. Floods 1965	50	6	2	1
4. Minneapolis, Minn. Tornadoes, 1965	30	7		
5. Central South Colorado Floods, 1965	58	33	3	3
6. Mankato, Minn. Flood, 1965	22	4	3	1
7. Topeka, Kansas Tornado 1966	143	64	12	6
8. Belmond, Iowa Tornado, 1966	13	7	1	1
9. Jackson, Miss. Tornado 1966	50	8	-	
10. Fairbanks, Alaska Flood, 1967	98	56	13	5
11. Oak Lawn Chicago, Ill. Tornado, 1967	59	18	4	3
12. Jonesboro, Ark. Tornado, 1968	35	22	5	1
13. Hurricane Camille (Gulf Coast), 1969	70	36	9	4
14. Minot, North Dakota Flood, 1969	37	16	2	1
15. Fargo, North Dakota Flood, 1969	19	18	1	1
	<hr/>	<hr/>	<hr/>	<hr/>
Totals	1062	423	75	38

1 earthquake - 250 interviews, 92 organized responses
2 hurricanes - 198 interviews, 72 organized responses
6 tornadoes - 330 interviews, 126 organized responses
6 floods - 284 interviews, 133 organized responses

thresholds--when does an element begin or cease to exist with reference to a form of association? When is a stream of events collectively represented as a legitimate sphere of action? What constitutes interdependent or joint actions--in terms of number of actors involved and their relationships? While the identification of the elements is replicable, precise thresholds for their existence have not been developed by Kreps or me. Rather, we communicate qualitative sequences of events to communicate threshold judgments that are, in the Weberian sense, plausible.

Measurement of Role-Making and Role-Playing

Kreps' methodology makes no distinction between role-making and role-playing. Referring again to Figure 2, role-making points to the actor and Interpretive Sociology (cell 3). Role-playing points to the unit and Positivist Sociology (cell 2). While Kreps' earlier description of the forms highlights cells 1 and 4 (Structural Sociology), their explanation requires attention to Interpretive and Positivist sociologies. I do not seek synthetic explanations of these forms. Rather, I search for unique contributions from each of the two paradigms for understanding the process of organization. As noted in some detail earlier, I think this strategy is in keeping with Durkheim, Weber, and more contemporary discussions of role. Is, for instance, a key resource (R) socially recognized prior to the event or is it an improvisation specific to the emergency period? Are tasks (T) structured by pre-disaster roles, or do they emerge willy-nilly as needs dictate? Do activities (A) reflect expected behavior or are actors creating responses unassociated with pre-disaster experiences? Is domain declared and legitimated by those

FIGURE 2: Unidimensional and Dialectical Perspectives on Action and Order

		<u>Structure</u> (Order)	
		<u>Process</u>	<u>Unit</u>
<u>Object</u>	<u>Actor</u> (Action)	1 Structural Sociology	2 Positivist Sociology
<u>Subject</u>		3 Interpretive Sociology	4 Structural Sociology

Paradigms in Sociology

1. Actor as object - structure as process:
Structural Sociology (dialectical)
2. Actor as object - structure as unit:
Positivist Sociology (order biased)
3. Actor as subject - structure as process:
Interpretive Sociology (action biased)
4. Actor as subject - structure as unit:
Structural Sociology (dialectical)

expected to do so, or do others not generally identified with a particular response collectively represent the ends? As described in the previous section, role-making and role-playing distinctions beg questions of whether structure is being created or maintained. For purposes of this thesis, such distinctions are relevant at each stage in the origins of organization. For instance, in the T-R-A-D form described earlier, the task structure was noted as the first element present at the origins of organization (T). The methodological problem is to determine whether its enactment evidences role-playing (and order), role-making (and action), or some combination of both. At each subsequent stage the same problem must be addressed for every new combination of elements (T-R, T-R-A, and T-R-A-D). At each stage, then, the effort is not to describe the form (Kreps' strategy) but to represent what is happening with reference to two unique expressions of role. Role-playing points to positivist sociology. Role-making points to interpretive sociology. The requirement is to use both paradigms, additively, in accounting for a process already described.

A set of criteria has been developed for purposes of making more explicit judgments about role-playing versus role-making at the four stages of origins. Developing insights from Turner's (1978) and Stryker's (1980) work on the role concept, the four criteria include: (1) role boundary expansion versus unique roles; (2) continuity versus discontinuity of pre- and post-impact role relationships; (3) homogeneity versus heterogeneity of roles of key participants; and (4) consistency versus inconsistency of pre- and post-disaster status/role. As a group, the criteria shed light on whether, at a given stage of a particular case, role-making dominates, role-playing dominates, or both are necessary to

describe what is happening. Each criterion in the set is scored in the following way:

Role boundary expansion versus unique role performance:

- 1=unique role performance, role-making dominates
- 2=mix of unique role performance and role boundary expansion
- 3=role boundary expansion, role-playing dominates
- 9=uncertain

Continuity versus discontinuity of pre- and post-impact role relationships:

- 1=discontinuity of pre- and post-impact role relationships, role-making dominates
- 2=mix of discontinuity and continuity of pre- and post-impact role relationships
- 3=continuity of pre- and post-impact role relationships, role-playing dominates
- 9=uncertain

Homogeneity versus heterogeneity of roles of key participants

- 1=roles homogeneous, role-making dominates
- 2=roles heterogeneous with undefined task structure
- 3=roles heterogeneous with defined task structure, role-playing dominates
- 9=uncertain

Consistency versus inconsistency of pre- and post-disaster status/role:

- 1=pre- and post-disaster status/role inconsistent, role-making dominates
- 2=mix of inconsistent and consistent pre- and post-disaster status/role
- 3=pre- and post-disaster status/role consistent, role-playing dominates
- 9=uncertain

With regard to the first criterion, role-making dominates where no collective representation of roles exists at a given stage. Role-playing dominates when such representation does exist. An example of the former would be spontaneous search and rescue by people who happen to be in or near an impacted area. An example of the latter would be search and rescue in this same impacted area by anyone having relevant training. Evidence of both unique roles and boundary expansion indicates that

neither role-making nor role-playing dominates at this stage. The attempt with this and the remaining criteria is to make clean analytical distinctions of role dynamics. When the data do not allow that, the stage is coded uncertain for that criterion (N=16 across all criterion and stages).

With regard to the second criterion, when multiple roles of a post-impact response are not generally connected prior to the disaster, role relationships are not socially defined and must be created by the participants. In this circumstance role-making is being evidenced. On the other hand, role-playing dominates in instances where pre-impact relationships among roles are mirrored in role relationships of a disaster response. For example, inconsistency of role relationships is exemplified when, at an emergency first aid station volunteer station wagon owners provide ambulance service as directed by trained medical personnel. Experienced ambulance drivers providing the same service is indicative of consistent role relationships before and after impact. Neither role-making nor role-playing dominates when there is a mixture of consistency and inconsistency among pre- and post-impact role relationships. Once again, when there is insufficient evidence available to cleanly isolate role-making from role-playing, the cases are scored uncertain.

The third criterion points to whether or not the roles of a response are homogeneous, heterogeneous with a defined task structure, or heterogeneous with an undefined task structure. The first possibility suggests that roles are undifferentiated and still in the process of being defined. For instance, volunteers offer to provide sandwiches for victims. Each participant is involved in the entire process of preparing

the food, each develops his own technique for doing so, thus role-making dominates. With increased specialization and a defined task structure, roles are more likely to be established, and behavior dictated by socially controlled expectations. Thus, as a production line for preparing sandwiches is developed there is a shared understanding of appropriate role enactment at each step of the process. As others volunteer to assist there is continuity in role performance so role-playing dominates. When roles are heterogenous, but a task structure is not well defined, there is a mixture of role-making and role-playing. Such is the case when sandwich makers are developing a rudimentary production line. Finally, no conclusive judgment is possible where available data does not adequately describe the roles involved in the response. These cases are coded uncertain.

The fourth criterion focuses on status/role consistency versus inconsistency. Status is defined here in terms of socially recognized categories of actors (Stryker, 1980). As such, they serve as "predictors" of behavior of those classified in a particular status, or position. Socially defined expectations shape the behavior of and towards positionally labeled individuals. These expectations are termed roles. This criterion addresses the level of consistency between position and role. Inconsistency requires greater attention to defining appropriate behavior (role-making dominates), while consistency suggests accepted and understood positions and behavior (role-playing dominates). A college student organizing faculty members in an evacuation effort is an example of the former. A faculty member organizing students is more consistent with expected status/role and therefore exemplifies the latter. A mixture of both necessitates some redefining of status/role but also suggests a

degree of stability in them based on previously shared collective representations. In such cases neither role-making nor role-playing dominates. When archival data prohibit interpretation of pre- or post-impact status/role the case is coded as uncertain.

These four criteria provide a way of distinguishing between role-making and role-playing during the origins of organization. Each of the four stages of origins was scored for each of the criteria. As outlined above, a score of 1 for any particular criterion at a given stage indicates domination of role-making. A score of 3 suggests dominance of role-playing. A mix of role-making and role-playing is given a score of 2 as the midpoint between the two extremes. When the data do not provide sufficient information to code a criterion as role-making, role-playing, or a combination of the two, it is scored 9 (uncertain). With 4 criteria at each of 4 stages of origins for 38 cases, a total of 608 judgments about role dynamics must be made. The aggregate percent of judgments coded uncertain was 2.6. This low percentage suggests that the archives can yield clean demarcations of role dynamics. For purposes of statistical analysis, all criteria judged uncertain are recoded as the midpoint score (2). By then adding the scores across all four criteria, the scores range from 4 (1 point on each of the four criteria: role-making dominates) to 8 (2 points on each of the four criteria: mix of role-making and role-playing) to 12 (3 points on each of the four criteria: role-playing dominates) for each stage of origins. For purposes of subsequent statistical analyses, role-making versus role-playing will be treated in two ways: first as a continuous variable, with higher scores referencing greater degrees of role-playing; and second, as a polytomous variable (role-making, mixed role-making and

role-playing, and role-playing).

Because of the centrality of role-making versus role-playing to the statistical analyses reported in the findings section, marginal distributions will be reported there as the lead to the presentation of data. Discussion of the remaining variables examined in the study, and their marginal distributions, concludes the current section. These variables will later serve as independent variables in the examination of role-making and role-playing. The effort involves a search for laws of interaction that relate to the role concept rather than tests of specific hypotheses (Dubin, 1978).

Measurement of Remaining Variables

The remaining variables of the study are broken down into the following five sets: (a) contingencies related to the four elements of organization; (b) structural characteristics of the enacting unit; (c) social network characteristics of the enacting unit; (d) spatial and temporal characteristics of the enacting unit; and (e) characteristics of the event and broader community.

a. Element Contingencies (DCON, TCON, RCON, ACON)

Element related contingencies or problems were recorded for each of the 38 instances of organization examined. For example, any questioning of the appropriateness of an enacting unit's involvement in the event was defined as a domain related contingency. Confusion or disagreement about how things were to be done was recorded as a task related problem. Depletion of resources related to the response (e.g., damaged equipment or losses of personnel) was defined as a resources related contingency. Finally, disruption of activities (e.g., blocked access, overloaded communications, secondary impacts) was considered an activities related

problem. Initial coding for element related contingency(ies) was as follows: (absent=1, present=2, uncertain=9). The frequencies of contingencies for the four elements were well distributed: domain related (N=18); task related (N=18); resources related (N=13); and activities related (N=26). Because contingencies can arise at any time during the process of organization, attempts were then made to distinguish between those occurring at the origins of organization and those taking place later (maintenance). The data did not always provide sufficient information to pinpoint the precise timing of the contingency. The result is reflected in the following coding system: no contingency present=1; contingency present, onset at maintenance or uncertain=2; contingency present, onset at origins=3. Thus, the higher the score the more likely the occurrence of a contingency at the origins of organization. Some 9 of 18 domain related contingencies (DCON), 11 of 18 task related contingencies (TCON), 4 of 13 resource related contingencies, and 19 of 26 activities related contingencies could be cleanly pinpointed at the origins of organization. The effort in all cases was to see if response related problems were implicated with the dynamics of role-making and role-playing.

b. Characteristics of the Enacting Unit

(ELSTAGE1, FOT, SIZ, PLANN, RTSTR, VLOSS, CDMGE)

A dummy variable (ELSTAGE1) was created to differentiate between organizations initiated by domain or tasks (N=21) and those whose first element was resources or activities (N=17). It was thought that when the first element reflected a collective representation of what was being done and how (domain and tasks), then role-playing would be more evident in the organizing process. It should be added that by the logic of Kreps

metric, either domains or tasks are represented by stage two of the six midpoint forms.

Three additional variables were designed to capture global characteristics of each enacting social unit (FOT, SIZ, PLANN). The first variable identifies the type of focal organization engaged in the response (FOT). Responses of emergency relevant public bureaucracies (N=15) and voluntary agencies (N=3) were dummied out. Examples include police and fire departments, hospitals, Salvation Army, and Red Cross. It was thought that these types of units might exhibit greater evidence of role-playing at the origins of organization because their general involvement and many of their domains are collectively represented prior to disaster events.

Size (SIZ) was used as a general indicator of the structural complexity of the responding unit. Pre-disaster membership was measured for organizations established prior to impact (e.g., police department, Civil Defense). For organizations with no pre-impact existence (e.g., an emergent group of volunteers) size was recorded as the number of participants. Because of concern about measurement error with emergent units in particular, an ordinal scale was used to measure size: 1=9 or fewer (N=6), 2=10-20 (N=11), 3=21-50 (N=6), 4=over 50 (N=11), 9=uncertain (N=4). Uncertain cases were recoded to fall at the midpoint of the distribution.

Third, a dummy variable (PLANN) was created for those units (by necessity established) which had written disaster plans or formal training (N=14). The formal preparedness did not have to be specifically tied to the event in question or even natural disasters. For example, if the Civil Defense had a formal strategy for responding to a nuclear attack but no natural disaster plans, it was still recorded as having formal disaster

preparedness. It was felt that regardless of how vague preparedness was (and in most cases it appeared to be so), the exercise of doing it would result in increased evidence of role-playing.

The response task structure (RTSTR) of the enacting unit was also measured. It was felt that a more complex division of labor might be associated with role-making in the circumstance of disaster. Measurement involved a recording of tasks that were collectively represented by informant participants for each instance of organization. The resulting number of tasks provided a crude indicator of the complexity of the division of labor during the response. A case involving 4 or fewer tasks was coded simple (N=17) and one with more than 4 was coded complex (N=19). An example of a simple task structure would be compiling a list of casualties and injured for a public information domain. An example of a complex task structure would be establishing a shelter for food, beds, clothing, and medical attention as parts of a care of victims domain. There were 2 cases where the complexity of the task structure could not be determined with the available data. These were recoded as simple for purposes of statistical analysis. As can be seen from the earlier case illustrations, more general yet unique tasks were the ones represented in the interviews. This is in keeping with Durkheim's notion of social facts as external (and therefore identifiable) collective representations of what is taking place.

The remaining two variables in this block point to participant interaction in the responding unit. Each reflects a factor used to sustain communication among participants. Participant empathy and concern with victims' emotional and material loss (VLOSS) was collectively represented in 23 of the 38 cases. Participant empathy and concern for

overall community loss (CDMGE) was collectively represented in 24 of the 38 cases. It was felt that such empathy and concern might also be reflected in role-making to meet the demands of the event.

c. Social Network Characteristics

(PINT, INLINKS, ITLINKS)

Any instance of organization may be linked in various ways to a broader network of social units. Three possibilities were examined in this study. First, a determination was made (PINT) of whether the response was largely self contained at initiation (N=13) or linked at local, state, or national levels to a network of responding social units (N=25). The number of links (INLINKS) was also measured (0=none, N=13; 1=1-3, N=18; 2=more than 3, N=6; 9=uncertain, N=1). The uncertain case was recoded to fall at the midpoint of the distribution. Finally, those cases where the social networks were emergent (i.e., not established prior to the event: N=17) were distinguished from all others as a dummy variable (ITLINKS). It was felt that emergent, larger, and less self-contained responses might increase the possibility of role-making.

d. Spatial and Temporal Characteristics of Enacting Unit

LOC, INTIME

LOC was created to measure the physical location of the response relative to the geographic area of primary impact. Those responses taking place within the impacted area were coded 1 (N=22) and those outside were coded 0 (N=16). It was thought that the former would reflect the often rapid changes of demands during the emergency period by evidencing greater degrees of role-making.

INTIME is a temporal variable measuring the time of enactment of the first element of organization relative to impact. Using an ordinal scale,

time of enactment ranged from more than 72 hours before impact to more than 72 hours following impact. Either before or after impact, the higher the score the greater the gap in hours between time of impact and establishment of the first element of organization. Those responses beginning within 1 or 2 hours of impact were coded 1 (N=12), those between 3 and 24 hours were coded 2 (N=10), those between 25 and 72 were coded 3 (N=11), and those more than 72 hours were coded 4 (N=5). Disasters are nonroutine events. Thus, responses to them will necessarily be nonroutine to some extent, regardless of whether they are initiated prior to or following impact. It was thought that those responses beginning immediately pre- or post-impact (within 2 hours) would might reveal interesting role dynamics as a simple function of the constraints of time.

e. Characteristics of the Event and Broader Community

(EVENTTP, EVENT-MS, DOM-TP, COMM, C-EXP)

The variables labeled EVENTTP, EVENT-MS, and DOM-TP measure characteristics of the events in which the responses took place. The first variable (EVENTTP) distinguishes the events in terms of their length of forewarning. A pattern of increasing time to get ready for impact reflects differences between earthquakes (N=7), tornadoes (N=11), floods (N=12), and hurricanes (N=8). It was thought that with less time to mobilize in anticipation of an emergency there might be greater evidence of role-making to meet urgent and unanticipated demands.

Some five of the events Kreps studied were more massive in terms of their physical magnitude (deaths, injuries, damages) and/or geographic scope of impact. These events included the following: Alaskan earthquake, Hurricane Betsy, Topeka tornado, Fairbanks flood, and Hurricane Camille. Instances associated with these events (N=26) were

separated from the rest and a dummy variable (EVENT-MS) was used for purposes of statistical analysis. The suspicion here was that the greater social disruption associated with these events might increase role-making to meet the needs of the emergency.

The third variable points to the domains of action of the 38 cases. Kreps' earlier classification of disaster domains (1985, ch.4) was collapsed to isolate those which were immediate post-impact and therefore urgent; and for which an accountable unit was less likely to have been identified (collectively represented as such) prior to impact. These domains include search and rescue, post-impact evacuation, providing basic victim needs other than medical care, and damage assessment. A dummy variable was used (DOM-TP) to distinguish the above types of domains (N=31) from the others (N=7).

The final two variables point to community characteristics relevant to disaster response. First, a dummy variable (COMM) was created for responses from communities where the population base was above 50,000 and therefore metropolitan (N=24). Second, a four level ordinal scale of community disaster experience (C-EXP) in the previous 10 years was as follows: 1=no disasters and few if any threats (N=6); 2=no disasters but several threats (N=21); 3=one or more disasters (N=11); and 4=one or more disasters and several threats (N=0). Community size is a global measure of the human and material resources of the impacted community. Disaster experience represents the historical heritage of the community as that relates generally to the circumstances of the event. Both measures point to advantages for dealing with the unusual circumstances of disaster. If so, they should be relevant to the dynamics of role.

The next section examines the results of statistical analyses in

attempting to better understand the dynamics of role in disaster responses. Marginal distributions for the dependent variable are presented first. Then using correlation, regression, and discriminant analysis, possible relationships between role-making--role-playing and the above independent variables are explored.

FINDINGS

Role-making versus role-playing at the origins of organization serves as the dependent variable in the analyses to follow. Marginal distributions for the dependent variable are presented initially and discussed. This is followed by presentation of correlation and regression analyses, broken down by stage of origins. Although not presented, discriminant analysis has been used to replicate successfully the findings from ordinary least squares (OLS).

Marginal Distributions of Role-Making--Role-Playing

Role-making versus role-playing is considered in two related ways for purposes of statistical analysis. First, it is treated as an ordinal variable, with lower scores indicating greater degrees of role-making and higher scores referencing greater degrees of role-playing. Second, it is treated as a polytomous variable which subsumes three dimensions: role-making, mix role-making and role-playing, and role-playing. While I anticipated similar findings across the two modes of measurement, I thought that the exploratory yield of substantively important relationships might be higher with multiple measures of role. Recalling the original criteria for scoring role-making and role-playing (p.45), Table 6 illustrates composite marginals, by element stage, for the 38 cases examined in this research. (Marginals for the individual criteria at each stage of organization can be found in Appendix 1).

The treatment of the dependent variable as a continuum of role-making (scored 4) to role-playing (scored 12) indicates rather clearly an increasing movement towards role-playing as organization is enacted. Notice the wide distribution of scores at the first stage of origins (one

TABLE 6: Role-Making to Role-Playing
 Distribution by Stage of Origins
 Total Sample

<u>Role-Making and Role-Playing Scores</u>	<u>Element Stages</u>			
	1	2	3	4
4	-	2	-	-
5	5	-	-	-
6	2	-	1	-
	4	-	-	-
8	4	2	2	1
9	2	5	6	-
10	5	8	10	3
11	4	9	9	12
12	12	12	10	22
Totals	38	38	38	38

element present). In spite of the bias of the original Disaster Research Center studies--with attention focused on the responses of disaster relevant public bureaucracies and voluntary agencies (60.3 percent of Kreps' 423 cases and 47.4 percent of the present subsample)--11 of the 38 cases (28.9 percent) evidenced a strain toward role-making (scores of 5, 6, and 7 on the composite score) and 11 others (28.9 percent) evidenced a mix of role-making and role-playing (scores of 8, 9, and 10 on the composite score). It is very important to note that all role-playing at stage 1 of origins involves an extension of the response from pre-disaster routines. However, subsequent role-playing (stages 2, 3, and 4) may have little to do with pre-disaster routines for criteria 1 (role boundary expansion versus unique role performance) and 3 (homogeneity-heterogeneity of roles of key participants). Here it is possible for role-playing to be circumscribed by the response and the event. Keeping this in mind, notice the increase in role-playing as organization emerges. By the second stage (2 elements present) there are dramatically fewer cases in which role-making dominates (7.3 percent with a score of 4 on the composite). Yet interestingly enough, it is at this second stage that what might be termed "perfect role-making" (a score of 4) is recorded. This is possible because each stage is examined independently, and scores judged relative to the number of elements present. For example, perhaps at stage 1 a defined task structure (T) sets off origins and is accompanied by greater evidence of role-playing. Then at stage 2 the mobilization of resources (T-R) calls for a restructuring of the division of labor, and role-making. Similarly, element related contingencies can arise at any time during the life of an organization. Such problems may render pre-disaster or

response specific role expectations of little use for directing decisions and behaviors. It is therefore possible for role-playing to dominate early in the process, while role-making comes into play later on. Here the marked movement towards role-playing from the first to second stages, and at each subsequent stage of origins, evidences the increasing reality of organization as external and constraining force on the actions of participants. As evidenced by stage 1 in particular, however, this Durkheimian force is at the same time a Weberian social construction. Moreover, Table 6 indicates that many organizations evidence a mix of role-making and role-playing at both the second and third stages of origins. Thus even as collective representations of what is to be done become more clearly defined with reference to participant communications, circumstances continue to call for flexibility and improvisation. By the final stage of origins, when all of the four elements of organization are in place, role-playing has become predominant. Quite simply, one would fully expect that to be the case.

For purposes of correlation and regression analyses, ROLEM-P1, ROLEM-P2, and ROLEM-P3 scores are recoded in various ways as tri- or bi-level measures. The effort in all cases is to create statistically manipulable marginal splits that, at the same time, maintain important substantive distinctions. At the first stage of organization, ROLEM-P1 scores are initially collapsed into three ordinal categories and an assumed continuum of role-making to role-playing. Scores below the midpoint score 8 reflect a strain toward role-making and are recoded 1 (N=11); scores of 8, 9, and 10 point to mix role-making and role-playing and are recoded 2 (N=11); and scores of 11 and 12 represent a strain toward role-playing and are recoded 3 (N=16). This three level ordinal

variable is augmented by a dummied out of role-making (ROLEM1, scores of 1 on ROLEM-P1), mix role-making and role-playing (ROLEMIX1, scores of 2 on ROLEM-P1), and role-playing (ROLEP1, scores of 3 on ROLEM-P1). The same procedure is followed for ROLEM-P2 recoding: role-making=1 (N=2); mixed role-making and role-playing=2 (N=15); role-playing=3 (N=21). Once again, this ordinal measure is augmented by a dummied out of, in this case mixed role-making and role-playing (ROLEMIX2, scores of 2 on ROLEM-P2) and role-playing (ROLEP2, scores of 3 on ROLEM-P2). The marginal frequency is too small to dummy out role-making as a dependent variable. Because just one score of 6 is below the midpoint for ROLEM-P3, a single dummy variable which separates role-playing (scores of 11 and 12, N=19) from everything else has been created for stage 3. Note that the marginal splits for ROLE4 point to the predominance of role-playing (34 cases with scores of 11 and 12). Given the absence of variance in ROLE4, no statistical analysis of this final stage has been undertaken.

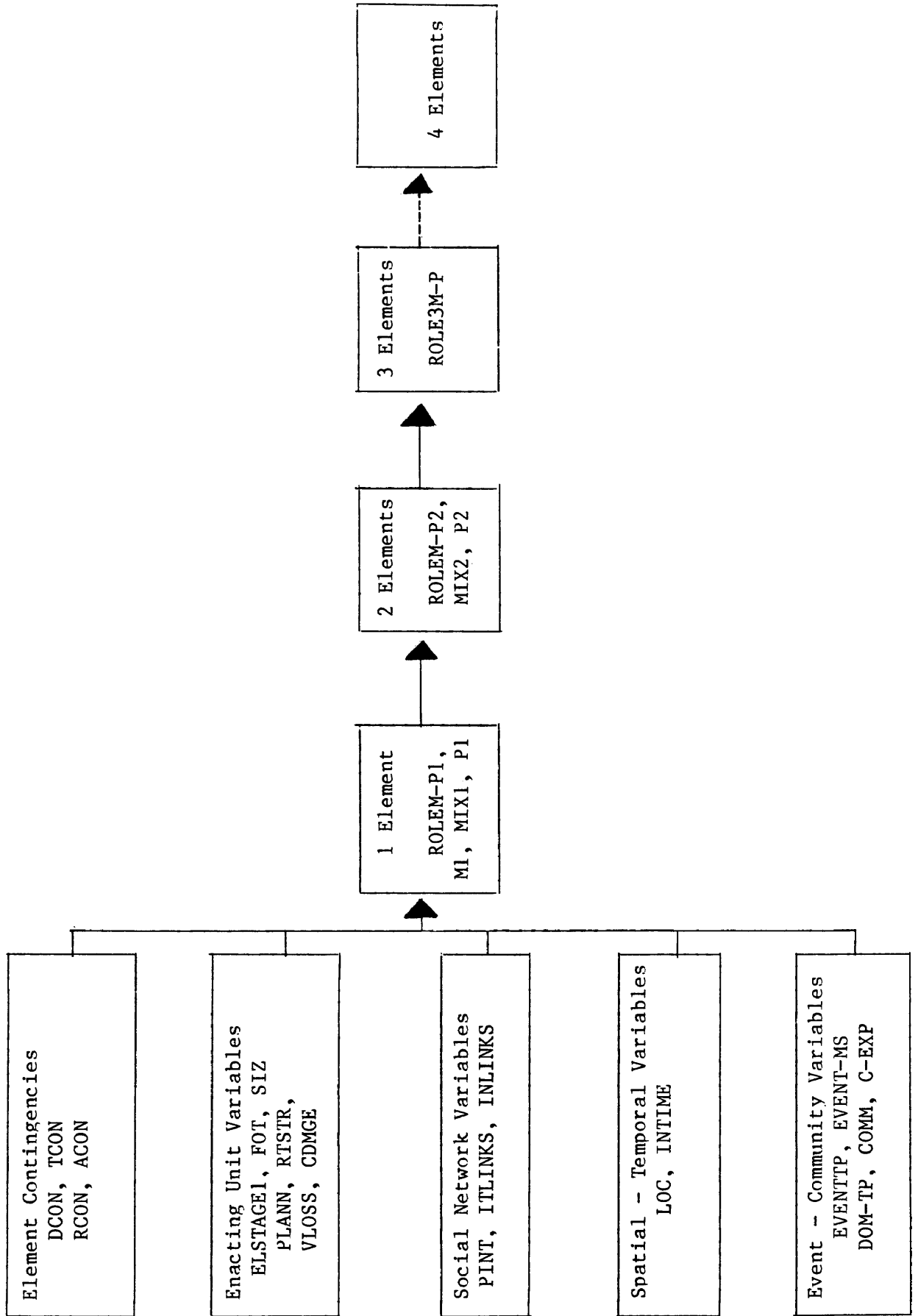
Correlations and Regressions by Stages of Organization

Figure 3 is a graphic representation of an exploratory model of the dynamics of role-making and role-playing at the origins of organization. The four stages of origins are arrayed left to right with the acronyms relevant to each stage listed in the appropriate boxes. The several blocks of independent variables are also listed, by acronym, on the left hand side of the figure. The lines with arrows indicate that the flow of the model is left to right. So at the first stage of origins, ROLEM-P1, ROLEM1, ROLEMIX1, and ROLEP1 serve as dependent variables with respect to the exogenous variables. Then moving to the next stage, these measures serve as potential independent variables. And so on. The dashed line between ROLEP3 and ROLE4 indicates that while this final stage is

FIGURE 3: Exploratory Model of Role Dynamics
at the Origins of Organization

Exogenous Variables

Stages of Origins



analytically important, it is not analyzed in the present study because ROLE4 lacks sufficient variance to allow for further statistical manipulation.

For each stage bivariate correlations are initially presented in order to highlight those which are statistically significant at the .10 level or beyond. (Appendix 2 records correlations, means, and standard deviations for all dependent and independent variables.) Then multiple regression analyses are run to determine which of the isolated independent variables have the most powerful unique effects. Multiple stepwise techniques have been employed in that regard, using a .10 significance inclusion criterion for adding variables to equations. While this somewhat loose criterion increases the chance of Type I error, most of the identified coefficients are at the .05 level of significance or better. Although not reported here, all regression findings have been replicated by discriminant analysis. Successful replication with the latter technique increases confidence that, for dichotomous or polytomous dependent variables, unique effects identified by regression equations are genuine.

a. Stage 1 of Origins: One Element of Organization Present

Table 7 summarizes the significant correlations at the initial stage of the origins of organization. Recall that the disaster event is seen as a social catalyst. Thus even though most of the instances of organization in this subsample were enacted by established units (27 of 38), existence is not assumed for purposes of studying the process of organization. An element of organization exists only when it is documented as part of the disaster-relevant response. As Kreps points out (1985, ch.5), not only is emergent organization characteristic of disaster, but the actions of many

TABLE 7: Correlation Analysis:
 Role-Making--Role-Playing Dynamics at Stage 1
 Origins of Organization

<u>Independent Variables</u>	<u>Dependent Variables</u>							
	ROLEM-P1 (Continuum)	SIG.	ROLEM1 (Role-Making)	SIG.	ROLEMIX1 (Mix)	SIG.	ROLEP1 (Role-Playing)	SIG.
EVENTTP			.22	.089				
ELSTAGE1	.65	.000	-.71	.000	.22	.088	.45	.003
TCON	-.28	.042	.37	.011	-.23	.086		
RTSTR	-.28	.042	.29	.039			-.21	.099
PINT	.35	.015	-.34	.019			.28	.042
ITLINKS	-.40	.007	.36	.013			-.34	.019
INLINKS	-.37	.010	.26	.059			-.39	.007
PLANN	.27	.049			-.25	.068	.34	.017
C-EXP	-.22	.088					-.25	.063
COMM	.25	.064	-.23	.078				
INTIME					-.26	.059		

established units are often suspended during the emergency period. Thus, nothing can be assumed about the nature of roles when organization is created, or at any subsequent stage in its life history.

Table 7 indicates that if the first element of organization established is D or T (the latter for all but one case in this subsample), on the whole there is a much greater degree of role-playing at the first stage of origins (ELSTAGE1: $r=.65$ with ROLEM-P1 or role-playing; $r=-.71$ with ROLEM1 or role-making; $r=.22$ with ROLEMIX1 or mixed role-making and role-playing; and $r=.45$ with ROLEP1 or role-playing). The findings suggest that the early presence of a collectively represented division of labor--or what might also be termed shared understandings of how a response is to be enacted--provides a strong indication of the extent to which pre-disaster routines do, in fact, guide behavior in the disaster setting. At the same time, the positive correlation of ELSTAGE1 with mixed role-making and role-playing ($r=.22$) suggests that social expectations and improvised action mutually sustain one another in ways that are difficult to unravel.

Additional evidence of role-playing is found where the enacting unit has earlier engaged in some form of disaster preparedness (PLANN: $r=.27$ with ROLEM-P1 and $r=.34$ with ROLEP1); when the response is largely self-contained as opposed to linked with a broader social network at origins (PINT: $r=.35$ with ROLEM-P1 and $r=-.34$ with ROLEM1, and $r=.28$ with ROLEP1); and when the response is enacted in metropolitan as opposed to nonmetropolitan communities (COMM: $r=.25$ with ROLEM-P1 and $r=-.23$ with ROLEM1).

Disaster preparedness (PLANN) points to pre-defined role obligations

which are called forth by the occurrence of the unlikely event. It appears that at this earliest stage of origins, then, the increased clarity of role demands engendered by preparedness decreases the opportunity for what might be a facilitating mix of role-playing and role-making (ROLEMIX1: $r=-.25$). But if Dynes, Quarantelli, and Kreps (1972) are right, at some point in the process of organizing, preparedness should enhance flexibility for dealing with unanticipated circumstances. Participants in self-contained responses (PINT) have fewer opportunities to redefine the basis of appropriate behavior as a result of influences from the broader social environment. Thus, they are more likely to respond on the basis of established practices. Finally, the ratio of disaster impacts to remaining resources tends to be lower in larger communities (COMM). Thus, routines are less severely disrupted and responses are more likely to take place with reference to them.

The correlation findings also point clearly to the dynamics of role-making at stage 1 of origins. For example, there is an interesting relationship between the dynamics of role and the presence and timing of task related contingencies. As noted on Table 7, the greater the evidence of task contingencies at the origins of organization, the less the evidence of role-playing (TCON: $r=-.28$ with ROLEM-P1), the greater the evidence of role-making (TCON: $r=.37$ with ROLEM1), and the less the evidence of mixed role-making and role-playing (TCON: $r=-.23$ with ROLEMIX1). These correlations point to elemental attempts to improvise a division of labor in the face of unusual demands and social disruptions. A similar strain toward improvisation is evidenced when the task structure specific to the response is more complex (RTSTR: $r=-.28$ with ROLEM-P1, $r=.29$ with ROLEM1, and $r=-.21$ with ROLEP1); where the social networks of

the enacting unit are emergent rather than established prior to the event (ITLINKS: $r=-.40$ with ROLEM-P1, $r=.36$ with ROLEM1, and $r=-.34$ with ROLEP1); and where the social networks of the enacting unit are larger (INLINKS: $r=-.37$ with ROLEM-P1, $r=.26$ with ROLEM1, and $r=-.39$ with ROLEP1). All of these findings again point to the creation of social structure in response to (1) severe demands of a nonroutine event and (2) more complex circumstances of collective action.

The remaining three findings on Table 7 are perhaps more subtle but equally interesting. Note that there is less role-playing in communities with greater degrees of disaster experience (C-EXP: $r=-.22$ with ROLEM-P1 and $r=-.25$ with ROLEP1). Although not reported on Table 7, greater experience is also positively related with role-making (C-EXP: $r=.14$ with ROLEM1). Moreover, communities with more experience tend to have more severe events, as measured by magnitude and scope of impact (C-EXP with EVENT-MS: $r=.31$). It appears that while disaster preparedness increases clarity about what is to be done, disaster experience serves as a tacit cultural resource which enhances flexibility. There is no question that both clarity and flexibility are needed during disaster.

Note also that there is more role-making when the period of forewarning is longer (EVENTTP: $r=.22$ with ROLEM1). This suggests that, with the luxury of time, there is greater opportunity for restructuring to meet unusual demands. Perhaps when time is scarce the threatened communities respond, at least initially, in terms of routine practices. This same pattern may account for the intriguing relationship between role and the remaining temporal variable, INTIME. Specifically, the greater the gap (in hours) between the establishment of the first element of organization and the time of impact of the disaster, the less the mix of

role-making and role-playing (INTIME: $r = -.26$ with ROLEMIX1); and although not reported on Table 7 (below the .10 inclusion criterion), INTIME is positively correlated with role-making ($r = .19$ with ROLEM1). I conclude that time serves as an opportunity structure for redefining appropriate behavior to deal with unusual and difficult circumstances.

There is no question that much has been made above about largely low to moderate bivariate correlations. I think this is justified within an exploratory attempt to unravel often subtle processes of organizing. To further reduce the data to a few key findings, multiple stepwise regressions have been computed for each of the four stages of origins. As noted above, discriminant analysis has also been completed and, in all cases, replicates regression findings. At this first stage of origins, then, ROLEM-P1, ROLEM1, ROLEMIX1, and ROLEP1 have been regressed separately with the set of exogenous variables listed on Table 7. Using a .10 inclusion criterion for adding variables to equations, ELSTAGE1 is the only variable which makes the equation for ROLEM-P1 ($BETA = .65$, $R^2 = .42$) and ROLEM1 ($BETA = -.71$, $R^2 = .50$). No variable is statistically significant at the .10 level for ROLEMIX1. The equation for ROLEP1 is reported on Table 8. There ELSTAGE1 is again the key variable ($BETA = .40$) with PLANN ($BETA = .29$) also showing a positive relationship with role-playing. A key implication can be strongly stated. Where the first element at origins is a collectively represented end of organization (T or D), there is a substantial degree of role-playing associated with its enactment. In such instances pre-disaster routines are, in effect, guiding disaster related actions. Formal disaster preparedness sometimes becomes a part of these routines. At least at this first stage of origins, one consequence is enhanced clarity about what is happening.

TABLE 8: Regression Findings:
First Element Stage

<u>Independent Variables</u>	<u>Dependent Variables</u>		
	<u>Beta</u>	<u>b</u>	<u>Sig.</u>
ELSTAGE1	.406	.403	.008
PLANN	.287	.294	.056
<u>CONSTANT</u>		-.203	
R^2		.279	
<u>R^2 BREAKDOWN</u>			
ELSTAGE1	.199		
PLANN	.081		

b. Stage 2 of Origins: Two Elements of Organization Present

As indicated on Table 9, stage 1 role measures become independent variables with respect to all later stages of origins (2, 3, and 4 elements enacted). The dependent variables at stage 2 are ROLEM-P2 (continuum measure), ROLEMIX2 (mix role-making and role-playing dummied out), and ROLEP2 (role-playing dummied out). You will note that each of these dependent variables shows substantial associations with all stage 1 role measures except ROLEMIX1 (mix role-making and role-playing). The latter variable does not make the .10 significance criterion and its bivariate correlations are therefore not included on Table 9. The findings involving ROLEM-P1 and ROLEP1 with ROLEM-P2 and ROLEP2 (ROLEM-P1: $r=.72$ with ROLEM-P2 and $.71$ with ROLEP2 and ROLEP1: $r=.63$ with ROLEM-P2 and $.66$ with ROLEP2) suggests that role-playing at stage 1 continues and, as noted in the marginals, expands at stage 2. While there is substantially less role-making by stage 2, the findings involving ROLEM1 with ROLEM-P2 and ROLEP2 (ROLEM1: $r=-.63$ with ROLEM-P2 and $-.59$ with ROLEP2) suggest also that role-making at stage 1 contributes to its counterpart at stage 2. Interestingly enough, while role-playing at stage 1 is negatively related to mix role-making and role-playing at stage 2 (ROLEM-P1: $r=-.58$ with ROLEMIX2, ROLEP1: $r=-.58$ with ROLEMIX2), role-making shows a positive association (ROLEM1: $r=.43$ with ROLEMIX2). Perhaps three processes are being revealed by these findings: (1) the autonomy of order through role-playing, (2) the autonomy of action through role-making, and (3) the unity of both through mix role-making and role-playing. At stage 2 the forces of order appear to constrain the latter process while the forces of action seem to augment it.

TABLE 9: Correlation Analysis:
 Role-Making--Role-Playing Dynamics at Stage 2
 Origins of Organization

<u>Independent Variables</u>	<u>Dependent Variables</u>					
	ROLEM-P2 (Continuum)	SIG.	ROLEMIX2 (Mix)	SIG.	ROLEP2 (Role-Playing)	SIG.
ELSTAGE1	.40	.006	-.25	.067	.36	.013
ROLEM-P1	.72	.000	-.58	.000	.71	.000
ROLEM1	-.63	.000	.43	.003	-.59	.000
ROLEP1	.63	.000	-.58	.000	.66	.000
DCON			-.30	.032	.26	.056
TCON	-.28	.045			-.24	.070
RTSTR	-.22	.091	.27	.051	-.26	.054
PINT	.23	.080				
ITLINKS	-.49	.001	.36	.014	-.47	.002
VLOSS	-.32	.027			-.29	.037

Notice that ELSTAGE1 (presence of T or D as first element established at origins) continues to show positive but less powerful correlations with role-playing (ELSTAGE1: $r=.40$ with ROLEM-P2 and $r=.36$ with ROLEP2). Thus, the impact of predisaster routines remain important but attenuates as the organizing process unfolds. It could be these routines become less relevant as the unique demands of the situation call for new forms of social action. The now negative correlation with mix role-making and role-playing (ELSTAGE1: $r=-.25$), however, implies a tension between such attempts to innovate and routine practices. While the presence of formal disaster preparedness (PLANN) and occurrence of the response in a metropolitan community no longer show positive correlations with role-playing, this pattern continues for responses that are largely self-contained at origins (PINT: $r=.23$ with ROLEM-P2). My interpretation of the latter finding remains unchanged. That is, participants in self-contained responses have fewer opportunities to redefine appropriate behavior as a result of influences from the broader social environment. This enhances predictability but perhaps at a cost in flexibility.

There is substantial consistency of role-making findings from stage 1 to stage 2. Specifically, task contingencies at origins continue to be inversely related with role-playing at stage 2 (TCON: $r=-.28$ with ROLEM-P2 and $r=-.24$ with ROLEP2). Moreover, the same inverse relationship continues to hold for more complex task structures (RTSTR, $r=-.22$ with ROLEM-P2 and $r=-.26$ with ROLEP2) and when the social network of the response is emergent rather than established prior to the event (ITLINKS: $r=-.49$ with ROLEM-P2 and $r=-.47$ with ROLEP2). While the number of links (INLINKS) is no longer related to role measures, the direction of its

relationships are consistent with stage 1 findings (e.g. $r = -.16$ with ROLEM-P2). Once again, these findings point to elemental attempts to improvise a division of labor under complex and demanding circumstances. Of considerable interest as well, responses with more complex task structures and emergent social networks now show positive relationships with mix role-making and role-playing (RTSTR: $r = .27$ with ROLEMIX2 and ITLINKS: $r = .36$ with ROLEMIX2). These combined findings imply the beginnings of a more facilitating mix of the old and the new as the response unfolds. What Kreps earlier referred to, from Weber, as the useful blending of administrative and substantive rationality seems to be operating at stage 2 of origins.

Finally, two new variables come into play at stage 2: VLOSS or evidence of empathy toward victims in the communications of direct participants and DCON or the presence of a domain contingency at origins. The former is inversely related with role-playing (VLOSS: $r = -.32$ with ROLEM-P2 $r = -.29$ with ROLEP2). The latter is inversely related with a mix of role-making and role-playing (DCON: $r = -.30$ with ROLEMIX2) and positively related with role-playing (DCON: $r = .26$). The measure of empathy (VLOSS) recalls Durkheim's discussion of the moral order. The disaster disrupts the rational (instrumental) character of social routines (organic solidarity) and reveals their elemental grounding in the nonrational (normative) social bond (mechanical solidarity). The results are innovative attempts at organized altruism that is consistent with, in the Weberian sense, ultimate values. The presence of domain contingencies at origins (DCON) suggests that internal or external expectations of appropriate spheres of action are being questioned by direct participants or those outside the response. In either case, it is likely that internal

and external expectations of what is to be done do not parallel one another. With respect to the enacting unit, what may be in evidence here is the tension between organization as closed versus open system. The inverse correlation between DCON and mix role-making and role-playing implies, perhaps, that by stage 2 the enacting unit is accommodating this tension on its own terms.

Just as with stage 1, stepwise regression equations were computed to isolate the most powerful independent variables. Separate equations were run for ROLEM-P1, ROLEM1, and ROLEP1 because of the substantial multicollinearity among them. And to repeat, regressions were not run with ROLEMIX1 as an independent variable because it dropped out at the bivariate level. Tables 10, 11, and 12 show a consistent pattern of unique effects for the separate measures of role (ROLEM-P1, ROLEM1, ROLEP1), emergent social networks (ITLINKS), empathy for victims (VLOSS), and task (TCON) or domain (DCON) contingencies at origins. As highlighted in the discussion of bivariate correlations, role-playing and role-making dynamics show considerable continuity from stage 1 to stage 2; emergent networks, task contingencies at origins, and empathy for victims are implicated by the dynamics of role-making; and domain contingencies at origins (albeit less specifically than the correlations) suggest a closed system strain operating with respect to the enacting unit.

c. Stage 3 of Origins: Three Elements of Organization Present

As noted in the discussion of the marginals, role-playing predominates by stage 3 of origins. To repeat, however, such role-playing is specific to the response and not necessarily tied to pre-disaster routines (in the case of role criteria 1 and 3). Because of the predominance of role-playing, only it (ROLEP3) is dummied out against

TABLE 10: Regression Findings:
Second Element Stage

<u>Independent Variables</u>	<u>Dependent Variables</u>								
	<u>ROLEM-P2</u>			<u>ROLEMIX2</u>			<u>ROLEP2</u>		
	<u>Beta</u>	<u>b</u>	<u>Sig.</u>	<u>Beta</u>	<u>b</u>	<u>Sig.</u>	<u>Beta</u>	<u>b</u>	<u>Sig.</u>
ROLEM-P1	.593	.425	.000	-.550	-.323	.000	.604	.361	.000
VLOSS	-.220	-.269	.050				-.198	-.201	.083
ITLINKS	-.236	-.283	.051				-.213	-.213	.084
DCON				-.232	-.137	.091			
<u>CONSTANT</u>		1.884			1.317				.001
R ²		.610			.389				.589
<u>R² BREAKDOWN</u>									
ROLEM-P1		.513			.337				.510
VLOSS		.050							.041
ITLINKS		.047							.038
DCON					.053				

TABLE 11: Regression Findings:
Second Element Stage

<u>Independent Variables</u>	<u>Dependent Variables</u>								
	<u>ROLEM-P2</u>			<u>ROLEMIX2</u>			<u>ROLEP2</u>		
	<u>Beta</u>	<u>b</u>	<u>Sig.</u>	<u>Beta</u>	<u>b</u>	<u>Sig.</u>	<u>Beta</u>	<u>b</u>	<u>Sig.</u>
ROLEM1	-.493	-.647	.001	.402	.433	.010	-.488	-.535	.001
ITLINKS	-.295	-.353	.026				-.293	-.293	.040
VLOSS	-.215	-.262	.082						
DCON				-.253	-.150	.095			
<u>CONSTANT</u>		3.004			.526			.838	
R ²		.524			.252			.426	
<u>R² BREAKDOWN</u>									
ROLEM1		.400			.189			.351	
ITLINKS		.078						.075	
VLOSS		.045							
DCON					.063				

TABLE 12: Regression Findings:
Second Element Stage

<u>Independent Variables</u>	<u>Dependent Variables</u>								
	<u>ROLEM-P2</u>			<u>ROLEMIX2</u>			<u>ROLEP2</u>		
	<u>Beta</u>	<u>b</u>	<u>Sig.</u>	<u>Beta</u>	<u>b</u>	<u>Sig.</u>	<u>Beta</u>	<u>b</u>	<u>Sig.</u>
ROLEP1	.483	.583	.000	-.554	-.548	.000	.554	.558	.000
ITLINKS	-.278	-.333	.027				-.262	-.262	.038
VLOSS	-.278	-.340	.020				-.232	-.236	.051
TCON	-.206	-.141	.081						
DCON				-.246	-.146	.071			
<u>CONSTANT</u>		2.857			.875			.578	
R ²		.584			.396			.556	
<u>R² BREAKDOWN</u>									
ROLEP1		.392			.336			.436	
ITLINKS		.086						.068	
VLOSS		.065						.053	
TCON		.041							
DCON					.060				

everything else (mostly mix role-making and role-playing) to serve as the single measure of role at stage 3 (ROLEP3). As in stage 2, role measures at the immediately preceding stage (ROLEM-P2, ROLEMIX2, and ROLEP2) now become independent variables. While this simplifies the presentation of findings, it should be noted that role measures at stage 1 and stage 2 show largely consistent patterns with ROLEP3 (see Appendix 2).

As indicated in Table 13, the continuity of role-playing from stage 1 to 2 continues, albeit less powerfully from stage 2 to 3 (ROLEM-P2: $r=.49$ with ROLEP3 and ROLEP2: $r=.48$ with ROLEP3). The inverse relationship between mix role-making and role-playing at stage 2 and role-playing at stage 3 (ROLEMIX2: $r=-.38$) points again to autonomous action and the continuing need for innovative behavior in the circumstance of disaster. Certainly role-making is no longer independent of role-playing. But perhaps there remains a necessary coexistence of clarity on the one hand and improvisation on the other. ELSTAGE1 is again positively correlated with role-playing ($r=.26$), but note that the relationship has become increasingly less pronounced with each additional element. The finding lends further support for the conclusion drawn at stage 2: namely that predisaster routines become enmeshed with new forms of social action as the impacted community responds to the unique demands of the emergency.

Several variables, some of which earlier suggested the dynamics of role-making, point to the same at stage 3. Task contingencies at origins (TCON: $r=-.27$ with ROLEP3), activities contingencies at origins (ACON: $r=-.33$), more forewarning (EVENTTP: $r=-.23$ with ROLEP3), and greater time between impact and establishment of the first element (INTIME: $r=-.38$) are inversely related with role-playing. These findings suggest that there is

TABLE 13: Correlation Analysis:
 Role-Making--Role-Playing Dynamics at Stage 3
 Origins of Organization

<u>Independent Variables</u>	<u>Dependent Variable</u>	
	ROLEM-P3 (Continuum)	SIG.
EVENTTP	-.23	.080
ELSTAGE1	.26	.054
ROLEM-P2	.49	.001
ROLEMIX2	-.38	.010
ROLEP2	.48	.001
TCON	-.27	.049
ACON	-.33	.022
PLANN	-.22	.094
SIZ	.39	.007
COMM	.22	.094
INTIME	-.38	.009

a continuing need to improvise a division of labor as organization is enacted (TCON and ACON). Time (EVENTTP and INTIME) should be seen as a scarce resource for so doing. Notice also the negative correlation between formal preparedness and role-playing (PLANN: $r=-.22$). Recall that at stage 1 preparedness had been positively related with role-playing. Now the relationship has been reversed. This finding supports the idea that preparedness has dual value. First, it increases clarity about what to do early in the response. Second, it is a resource for flexibility and improvisation as the response unfolds. Although not grounded in the nomenclature of role, this is precisely the argument made in an earlier planning monograph by Dynes, Quarantelli, and Kreps (1972). In Weberian terms, the planning effort may support the requirements of both administrative and substantive rationality.

The two remaining variables--responses enacted in metropolitan communities (COMM) and size of the enacting unit (SIZ) show positive relationships with role-playing (COMM: $r=.22$ with ROLEP3 and SIZ: $r=.39$ with ROLEP3). Recall that COMM showed a similar pattern at stage 1. My interpretation there was that disasters are less disruptive of ongoing routines in metropolitan communities (lower impact ratios) and, therefore, responses were more likely to take place with reference to these routines. My interpretation remains unchanged for stage 3. The more focused size variable (SIZ) suggests that the greater the number of participants, the greater the need for predictability about what they are doing as the enactment of organization comes closer to fruition. Such is the dictate of Weber's notion of formal rationality.

Tables 14, 15, and 16 summarize stepwise multiple regression equations, with ROLEM-P2, ROLEMIX2, and ROLEP2 run in separate equations to reduce problems of multicollinearity. The various role measures along with SIZ, INTIME, and PLANN fall out in quite consistent fashion as important variables in the equations. While role measures remain powerful--and indeed they should--notice the increased relative power of remaining variables as organization comes closer to enactment. This suggests that any analysis of role dynamics of organization must reference other variables of the enacting unit as well as broader physical, temporal, and social variables of the disaster setting.

TABLE 14: Regression Findings:
Third Element Stage

<u>Independent Variables</u>	<u>Dependent Variables</u>		
	<u>Beta</u>	<u>b</u>	<u>Sig.</u>
ROLEM-P2	.548	.460	.000
SIZ	.316	.148	.007
INTIME	-.398	-.192	.001
PLANN	-.228	-.236	.062
ACON	-.220	-.124	.083
<u>CONSTANT</u>		1.992	
R^2		.664	
<u>R^2 BREAKDOWN</u>			
ROLEM-P2	.236		
SIZ	.172		
INTIME	.122		
PLANN	.100		
ACON	.034		

TABLE 15: Regression Findings:
Third Element Stage

<u>Independent Variables</u>	<u>Dependent Variables</u>		
		<u>ROLEM-P3</u>	
	<u>Beta</u>	<u>b</u>	<u>Sig.</u>
SIZ	.389	.182	.003
ROLEMIX2	-.428	-.438	.001
INTIME	-.390	-.188	.003
PLANN	-.248	-.257	.049
<u>CONSTANT</u>		2.976	
R^2		.517	
<u>R^2 BREAKDOWN</u>			
SIZ	.156		
ROLEMIX2	.163		
INTIME	.137		
PLANN	.061		

TABLE 16: Regression Findings:
Third Element Stage

<u>Independent Variables</u>	<u>Dependent Variables</u>		
	<u>Beta</u>	<u>b</u>	<u>Sig.</u>
ROLEP2	.540	.543	.000
SIZ	.389	.182	.001
INTIME	-.382	-.184	.001
PLANN	-.298	-.308	.010
<u>CONSTANT</u>		2.563	
R^2		.621	
<u>R^2 BREAKDOWN</u>			
ROLEP2	.227		
SIZ	.179		
INTIME	.129		
PLANN	.086		

CONCLUSION

Kreps' substantive theory of organization provides a useful basis for comparing Durkheim and Weber with reference to action, order and the concept of role. In the taxonomy of forms of association Kreps (1985) captures the paradox of structure from either order or action sides. When order is referenced, the paradox is nicely expressed by Durkheim. When action is referenced, the paradox is revealed most pointedly by Weber. In either case, I suggest that Kreps' notion of organization as process implicates still another venerable concept of sociology--that of role--in a very direct way. Specifically, the dynamics of role-playing and role-making distinguish between structure as Durkheimian force and Weberian social construction.

I argue that the tension or balancing of the forces of action and order can be uncovered through an analysis of role for the six midpoint forms in Kreps' action-order metric. Four criteria are used to distinguish between role-making, mix role-making and role-playing, and role-playing at the four stages of origins (1, 2, 3, and 4 elements present) of these midpoint forms. Marginal distributions of role variables point to an increase in role-playing as each additional element of organization is enacted. However, the progressive character of role-playing is grounded, in no small way, by emergent improvisations. Such improvisations are the stuff of role-making.

Role is analyzed, first, on its own terms and, second, as it relates to physical, social, and temporal characteristics of the response and emergency. Whether it be domain, task, and activities contingencies at

origins of organization, the timing of origins relative to impact, participant empathy for victims, the size and preparedness of the enacting unit, the complexity of the unit's social network or the material and cultural resources of the impacted community, the correlation and regression analyses show that role must be unraveled as but one part of a broader structural drama. I conclude that the structural drama of disaster informs even as it is anticipated by the respective theories of Durkheim and Weber.

The statistical analyses summarily show both the uniqueness of role-playing and role-making and how they mutually reinforce one another as organization unfolds. When the first element of organization is enacted, their uniqueness is perhaps most sharply demarcated. The unusual and severe circumstances of a disaster disrupts social routines and requires new definitions of appropriate behavior. Such attempts to improvise are associated with task contingencies, a more complex division of labor, greater disaster experience in the impacted community, larger or emergent social networks, and greater length of forewarning. However, such improvisations do not preclude early reliance of community routines. Even as structure is being created to meet the unique demands of disaster, much role-playing is being evidenced as external force which molds the actions of participants. This is especially apparent when the first element of organization is domain or tasks, when the response is self-contained rather than boundary spanning, when there has been formal disaster preparedness, and when the broader community has ample resources with which to respond.

Role-playing expectedly increases just as role-making continues with

the unfolding of organization at stages 2, 3, and 4. The viable mixing of Weberian social construction and Durkheimian normative force is, therefore, part and parcel to the creation of organization in the disaster setting. Stated another way, the paradox of action and order is revealed by the unity of action and order as organization. Most of the key independent variables at stage 1 continue to operate at subsequent stages and new variables come into play. Most notable of the latter are empathy for victims and the timing of the response as each relates to role-making; and the size of the enacting unit as it relates to role-playing.

The dynamics of action, order, and role have thus far been considered only as a matter of theory. I also think the findings have important implications for disaster preparedness. Each the 38 cases examined in the study was successful in the sense that, in the face of unusual demands, organization was achieved. In recognition of that, Kreps (1985, ch.6) earlier offered several principles of emergency management based on findings from the total sample of 423 cases and an earlier monograph on disaster planning by Dynes, Quarantelli, and Kreps (1972). The results of the present role analysis supports and extends much of Kreps' reasoning. Blending further theoretical efforts in this thesis with practical problems of responding to disaster, my final remarks extend Kreps' discussion of management principles.

As reported in Kreps (1985), Table 17 juxtaposes popular images of disaster with more realistic implications derived from historical research. In what follows I will first relate the present findings to the principles listed on the right hand column of Table 17. Then I will discuss several of the remaining principles that Kreps develops from his

TABLE 17: Popular Image Versus More
Realistic Implications for Planning

<u>Popular Image</u>	<u>Realistic Implication</u>
1. People when faced with a great danger will panic. Accordingly, warnings should be withheld until the last minute.	1. Information about dangers should be disseminated and not withheld because of a fear that people will panic.
2. Those who do not act irrationally are often unmobilized by major emergencies. They will need help to perform basic social functions.	2. It should be assumed that persons in disaster-impacted areas actively respond to the emergency and will not wait for communitiy officials to tell them what to do.
3. Partly because of widespread individual pathological reactions and partly because of the overwhelming damage to the resources of disaster-affected communities, the ability of local social units to perform effectively in handling emergency tasks is severely limited. Outside help will be essential.	3. The ratio of disaster damages to remaining community and regional resources most often is low to modest. Local social units generally have enough people and are not rendered ineffective by loss of personnel. Outside aid should be consistent with local requirements and not sent indiscriminantly.
4. The social disorganziation of the communitiy, which is a product of disaster impact, provides the conditions for the surfacing of anti-social behavior. Since social control is weak or absent, deviant behavior emerges and the dazed victims in the disaster area become easy victims for looting and other forms of criminal activity.	4. While symbolic security measures have to be taken, massive deployment of security forces is unnecessary. Looting and other anti-social behaviors are rare in disaster situations.
5. Community morale is very low in disaster stricken areas. Steps must be taken to overcome demoralization of the impacted population.	5. Community morale is generally high immediately after a disaster. Quick restoration of essential community services will tend to sustain it.
6. A descent into total personal and social chaos is possible in communities impacted by major disasters. Immediate, firm, and unequivocal leadership is required. Often this leadership must come from the outside.	6. Communities mobilize rapidly to meet disaster demands even under circumstances that are quite severe. Timely coordination is more important than leadership. While often difficult to achieve, coordination is essential and should be maintained under local control.

own study and show how they can be enhanced by use of the role concept.

With respect to statement 1 on Table 17, panic is not the problem. Instead, the need is to increase the possibility of informed evacuation decisions. The argument made is that information about threats should be issued early, general warnings relayed in terms of personal probabilities, and specific suggestions offered about what to do. Of course time is always of the essence, but findings from the present research support the argument for early dissemination of warnings. Recall that restructuring to meet unique demands is enhanced with greater length of forewarning. In the case of warning and evacuation, given timely information people will adapt routines to meet the requirements of the impending threat.

The second statement on Table 17 is supported by findings for role-making, mix role-making and role-playing, and role-playing. The general thrust of organizing to meet disaster demands is the meshing of established and emergent structure. Thus, existent practices are not torn asunder and victims rendered helpless by the event. Even with more severe disasters there is considerable continuity between pre-disaster routines and post-disaster actions. People are guided by extant role obligations and, at the same time, highly adaptive to altered circumstances. The dynamics of role is evidence of both. Interestingly, the findings about domain contingencies suggests that there may be disagreements between community officials and direct participants about appropriate action. As Kreps suggests, the process may not always be rigidly controlled, but things get done.

The emphasis with the third statement is the importance of the relationship between disaster impacts and remaining local resources.

Often there is considerable wherewithal with which to respond. The positive relationship between role-playing and community size is apropos of this point. Thus, the resources of, in particular, larger metropolitan areas should be borne in mind in considering the kinds and timing of outside assistance.

With respect to statement 4, the importance of pre-disaster routines and the considerable role-playing which takes place point to the continuing importance of social control when disaster strikes. And while the present research does not examine criminality in any way, it does show that empathy for victims contributes to organized altruism. In sum, there is little evidence of disorganization and normative breakdown, considerable evidence of prosocial action, and as suggested by statement 5, community morale remains high. There are, of course, limits to the adaptiveness of any social system. While little is known about them, it is clear that most disasters do not overwhelm the capacities of impacted communities.

As indicated by statement 6, communities mobilize rapidly to meet disaster demands even under circumstances that are quite severe. The present study suggests that emergencies call for role-making as part and parcel to maintaining the viability of the community. Perhaps the most interesting example of this point are the findings for formal preparedness. Preparedness increases role-playing early in the enactment of organization, serving as a source of continuity by defining expected actions. But as the enactment unfolds preparedness becomes a resource for improvisation through role-making. This is the goal Dynes, Quarantelli, and Kreps had in mind when they argued that planning should be flexible

and continuous rather formal and episodic.

The remaining management principles discussed by Kreps are based on the total sample of 423 cases, but absent of direct evidence on role-making and role-playing. Each relevant principle is listed and this is followed by a discussion of how the present study informs it.

Organization can be distinguished from other types of social structure by the co-presence of domains (D), tasks (T), human and material resources (R), and activities (A). Knowing the difference between organization and other things social is the theoretical foundation of emergency management.

While organization is something which can be sought and achieved by those involved in emergency management, hazards managers must distinguish between it and other forms of human association. The findings suggest that what might appear as confusion, or worse, is really a quite natural and necessary process of adjustment. Role-making exists to some degree, at every stage of origins. Not to be feared as disorder, it is better seen as order blending with action. Stated theoretically, the data suggest that improvisation reveals the autonomy and unity that is social structure. In Durkheim's words, structure is always there yet constantly becoming and changing. If "attainment of organization is a relevant management objective" (Kreps, 1985, p.217), it is critical for hazards managers to have a conception of organization that is appropriate to the emergency setting. The argument here is that the subtleties of organization are best revealed by treating it as developing process.

There are alternative but not an unlimited number of paths to the attainment of organization following disasters. Hazards managers should assume that all 24 patterns of origins represented in the theory are possible and, depending on the characteristics of impacts, each may be appropriate and effective.

Only 6 of the 24 possible organizational forms (as defined by Kreps) are examined in this thesis. These 6 forms represent a balancing of the forces of action and order. Thus all of the 38 cases are instances of organization, yet none is biased toward action or order as Kreps defines his metric. This does not mean that they are any more or less effective than the remaining 18 four element forms. But they make clear Kreps' point that organizing in disaster is not a chaotic process that needs to be or, indeed, can be rigidly controlled. What is evidenced as role-making is not necessarily counterproductive and more likely reflects a necessary adaptiveness. The findings of the present work support Kreps' earlier conclusion: things do not just happen. What evolves during a disaster is patterned responses. No one pattern is universally more appropriate and each is a viable form of organization. The patterns are different in important ways and, in some sense, each instance of a pattern is unique. Yet all instances share a distinctiveness as organization.

While the enactment of organization should not (and probably cannot) be forced into any particular pattern, disaster preparedness increases the chance that (1) domains and tasks will be more clearly defined and (2) immediate demands of the emergency period will be addressed in more timely fashion. The

proper role of preparedness is to augment natural processes of organizing without unnecessarily distorting what takes place.

As indicated in the present work, disaster preparedness initially enhances role-playing. Social expectations guide behavior early in the organizing process. This supports Kreps' argument that "the necessarily modest but important contribution of disaster preparedness is clarity in the organizing process" (1985, p.223). However, planning and training need not be equated with rigid control. Rather, the findings show that as a response evolves formal preparedness becomes associated with improvisation in the form of role-making. Not isolated role-making but in tandem with ongoing role-playing. The implication I draw is that flexible preparedness serves to tailor responses to the unique demands of the situation. The contribution of planning then, extends beyond Kreps' notion of clarity by augmenting the processes of organizing. The rise and fall of particular instances of organization is not the key concern of emergency management at community, regional, or national levels of response. The more important objective at these levels is coordination of networks of responding social units. An appropriate emergency management role is to facilitate coordination by being a source or conduit of information about hazards, what is needed, and what is available.

The relevance of social networks is clearly evidenced by the findings from the present study. Self-contained responses enhance clarity through role-playing. Those enacting units operating in more complex networks show greater evidence of some strain toward role-making. Improvisation in

the absence of a facilitating communications network smacks of confusion. The information conduit role that Kreps argues for hazards management is in accord with the historical concept of coordination in that field. Emergent networks themselves are a particularly important indication of role-making and, as Kreps shows, are a part of the organizing process. Hazards managers must be cognizant of and sensitive to these usually short-lived but critically important instances of structure, most of which are non-organizational forms of association. Emergency management can facilitate these networks by providing information about what is needed and what is available.

Efficient and effective emergency management requires equal attention to organizational and non-organizational forms of association in disaster. The achievement of organization must be seen as part of a broader strategy of facilitating coordination among and between networks of social units.

The present research concentrates only on selected types of organizational forms of association in disaster. Each form is interpreted as a process of origins. The results indicate that each progressive stage of origins is influenced by earlier stages, but also unique with respect to each new element added. Regardless of whether organization is ultimately achieved or not, the findings suggest that nonorganizational forms of 1, 2, or 3 elements present are relevant and important to the community's overall emergency response. Recall also the significant impact of social networks on the process of organization. The networks can be described on their own terms as forms of association and each two unit relationship within them can be as well (Francis and Kreps, 1984).

In either case, links among discrete instances of organization implicate Kreps' elements of organization in various ways which can be described and which imply varying degrees of coordination. Coordination is an important concept in emergency management circles but it lacks specificity. Kreps' and my findings suggest that it is best thought of as part of an organizing process, not organization itself.

To conclude, my research offers the concept of role as a key dimension of social structure and disaster. Specifically, role analysis has provided a fruitful way of examining action, order, and their unity in organization. The paradox of social structure--i.e., the autonomy and unity of action and order--is uniquely represented in classical sociology by the works of Durkheim and Weber. Durkheim expresses the paradox as a problem of order. Weber express it as a problem of action. Their respective insights on order and action remain central for contemporary sociology. Here they guide our understanding of role-making and role-playing as two sides of the same coin. Kreps' interpretation of action and order was built on the foundations of the classics. The present study suggests that his resulting theory of organization becomes more analytically powerful by exploiting the concept of role. The result, I hope, is a clearer picture of what goes on in disaster.

APPENDIX 1: Marginal Distributions of
Role-Making and Role-Playing Criteria

<u>Criterion Scores</u>	<u>Element Stages</u>				<u>Totals</u>	
	1	2	3	4		
Criterion 1	1	11	3	2	-	16
	2	6	6	11	2	25
	3	20	28	25	36	109
	9	1	1	-	-	2
Criterion 2	1	6	2	1	1	10
	2	13	17	19	9	58
	3	18	18	17	27	80
	9	1	1	1	1	4
Criterion 3	1	14	4	-	-	18
	2	5	9	14	-	28
	3	19	24	24	38	105
	9	-	1	-	-	1
Criterion 4	1	-	2	-	-	2
	2	11	4	8	8	31
	3	23	29	28	30	110
	9	4	3	2	-	9
Totals	152	152	152	152		

APPENDIX 2: Means, Standard Deviations
and Correlations of Model Variables

	1	2	3	4	5	6	7	8	9	10
1. ROLE1	1.00	-.87	-.10	.89	.72	-.58	.71	.41	.11	.13
2. ROLE1A		1.00	-.41	-.54	-.63	.43	-.59	-.52	-.18	-.13
3. ROLE1B			1.00	-.54	-.05	.20	-.13	.29	.16	.01
4. ROLE1C				1.00	.63	-.58	.66	.21	.02	.11
5. ROLE2					1.00	-.68	.93	.49	.21	.19
6. ROLE2A						1.00	-.90	-.38	.11	-.30
7. ROLE2B							1.00	.48	.72	.26
8. ROLE3								1.00	.25	.03
9. ROLE4									1.00	-.01
10. DCON										1.00
11. TCON										
12. RCON										
13. ACON										
14. ELSTAGE1										
15. FOT										
16. SIZ										
17. PLANN										
18. RTSTR										
19. VLOSS										
20. CDMGE										
MEAN	2.13	.29	.29	.42	2.50	.39	.55	2.50	11.42	1.71
STD. DEV.	.84	.46	.46	.50	.60	.50	.50	.50	.86	.84

APPENDIX 2: Means, Standard Deviations
and Correlations of Model Variables Continued

	11	12	13	14	15	16	17	18	19	20
1. ROLE1	-.29	-.01	.11	.65	.10	-.03	.27	-.28	-.13	.06
2. ROLE1A	.37	.01	-.13	-.71	-.14	-.02	-.13	.29	.16	-.11
3. ROLE1B	-.23	.01	.06	.22	.09	.09	-.25	-.06	-.08	.13
4. ROLE1C	-.14	-.01	.06	.45	.04	-.06	.34	-.21	-.07	-.01
5. ROLE2	-.28	.03	.07	.40	.18	-.04	.18	-.22	-.32	.09
6. ROLE2A	.16	.10	.08	-.25	-.01	.07	-.06	.27	.21	-.05
7. ROLE2B	-.24	-.03	.01	.36	.11	-.06	.14	-.26	-.29	.08
8. ROLE3	-.27	.04	-.33	.26	.11	.39	-.22	-.16	-.05	.00
9. ROLE4	-.26	-.01	-.03	-.05	-.03	.20	.01	.00	-.04	-.20
10. DCON	.12	-.05	.11	.20	-.05	-.08	.27	.03	.04	-.07
11. TCON	1.00	.27	.02	-.31	.02	-.28	.14	.27	-.10	.11
12. RCON		1.00	.35	.13	.31	-.25	.22	.04	.06	-.06
13. ACUN			1.00	.19	.22	-.31	.46	-.03	0.01	.16
14. ELSTAGE1				1.00	.22	-.11	.14	-.26	.03	-.03
15. FOT					1.00	.08	.37	.00	.12	-.15
16. SIZ						1.00	-.06	.10	.24	-.20
17. PLANN							1.00	.11	.06	-.10
18. RTSTR								1.00	.05	.00
19. VLOSS									1.00	-.51
20. CDMGE										1.00
MEAN	1.76	1.45	2.18	.55	.47	2.58	1.37	1.50	.61	.63
STD. DEV.	.88	.69	.90	.50	.50	1.08	.49	.51	.50	.50

APPENDIX 2: Means, Standard Deviations
and Correlations of Model Variables Continued

	21	22	23	24	25	26	27	28	29	30
1. ROLE1	.35	-.37	-.40	.06	-.07	-.18	-.03	-.17	.25	-.22
2. ROLE1A	-.34	.26	.36	-.07	.19	.22	.06	.15	-.23	.14
3. ROLE1B	.03	.17	.01	.04	-.26	-.12	-.07	.00	.01	.14
4. ROLE1C	.28	-.39	-.34	.03	.06	-.10	.01	-.14	.21	-.25
5. ROLE2	.23	-.16	-.49	.00	-.02	.06	.00	.06	.00	-.10
6. ROLE2A	-.13	.14	.36	-.03	-.03	.04	.09	.11	.06	.17
7. ROLE2B	.20	-.17	-.47	.02	.00	.02	-.04	-.02	-.03	-.14
8. ROLE3	.17	-.04	-.16	.11	-.38	-.23	.11	.07	.22	.20
9. ROLE4	.03	.04	-.01	-.11	-.14	.19	-.06	.08	-.33	.23
10. DCON	.05	.09	-.20	-.15	.05	.10	.04	-.25	-.14	-.08
11. TCON	-.31	.32	.12	-.14	.09	.12	.21	.03	-.02	.05
12. RCON	-.07	.01	.11	-.01	-.23	-.09	-.05	-.19	.02	-.01
13. ACON	.04	.01	-.19	.24	-.13	.15	.01	-.28	-.03	-.09
14. ELSTAGE1	.54	-.48	-.36	.02	-.25	-.29	-.04	-.29	.19	-.47
15. FOT	.32	-.28	-.32	.37	-.32	-.10	-.04	.04	.40	-.03
16. SIZ	.34	-.21	-.09	.04	-.05	-.17	-.06	.13	.21	.42
17. PLANN	.25	-.27	-.36	.01	-.07	.23	-.07	-.20	.24	-.07
18. RTSTR	.06	.04	.16	-.11	.08	.18	.34	.20	.11	.20
19. VLOSS	.24	-.22	.08	.14	.03	-.09	.15	-.11	.28	.16
20. CDMGE	-.14	.19	.03	.10	-.04	-.01	.19	.20	-.02	-.01
MEAN	.34	.82	.45	.42	2.24	2.55	.68	.82	.63	2.13
STD. DEV.	.48	.69	.50	.50	1.05	1.03	.47	.39	.49	.66

APPENDIX 2: Means, Standard Deviations
and Correlations of Model Variables Continued

	21	22	23	24	25	26	27	28	29	30
21. PINT	1.00	-.86	-.65	.17	-.22	-.12	.01	-.09	.32	-.06
22. INLINKS		1.00	.48	-.24	.17	.11	.15	.07	-.37	.11
23. ITLINKS			1.00	-.12	.15	-.18	.16	.02	-.19	.06
24. LOC				1.00	-.19	.01	.24	.27	.21	.24
25. INTIME					1.00	.30	-.23	.11	-.30	-.08
26. EVENTTP						1.00	-.02	.12	-.34	.25
27. EVENT-MS							1.00	.26	.07	.31
28. DOM-TP								1.00	-.08	.41
29. COMM									1.00	.15
30. C-EXP										1.00
MEAN	.34	.82	.45	.42	2.24	2.55	.68	.82	.63	2.13
STD. DEV.	.48	.69	.50	.50	1.05	1.03	.47	.39	.49	.66

RESPONSE # _____

ELEMENT CODES: ROLE-MAKING--ROLE-PLAYING CRITERIA

Score indications: 1 - role-making dominates
 2 - mix role-making and role-playing
 3 - role-playing dominates
 9 - uncertain

Role boundary expansion versus unique role performance:
 1=unique role performance, role-making dominates
 2=mix of unique role performance and role boundary expansion
 3=role boundary expansion, role-playing dominates
 9=uncertain

EL1= EL2= EL3= EL4=

Continuity versus discontinuity of pre- and post-impact
 role relationships:

1=discontinuity of pre- and post-impact role
 relationships, role-making dominates
 2=mix of discontinuity and continuity of pre- and post-
 impact role relationships
 3=continuity of pre- and post-impact role
 relationships, role-playing dominates

EL1= EL2= EL3= EL4=

Homogeneity versus heterogeneity of roles of key participants:

1=roles homogeneous, role-making dominates
 2=roles heterogeneous with undefined task structure
 3=roles heterogeneous with defined task structure,
 role-playing dominates
 9=uncertain

EL1= EL2= EL3= EL4=

Consistency versus inconsistency of pre- and post-
 disaster status/role:

1=pre- and post-disaster status/role inconsistent,
 role-making dominates
 2=mix of inconsistent and consistent pre- and
 post-disaster status/role
 3=pre- and post-disaster status/role consistent,
 role-playing dominates
 9=uncertain

EL1= EL2= EL3= EL4=

ORGANIZATION, ROLE, AND DISASTER

CODEBOOK

<u>ITEM</u>	<u>COLUMNS</u>	
<u>Organized disaster response number: RESPN</u>	3 (1-3)	_____
<u>Event number: EVENT-MS</u>	2 (4-5)	_____
<u>Event type: EVENTTP</u>	1 (6)	_____
1 = earthquake		
2 = tornado		
3 = flood		
4 = hurricane		
<u>Domain type: DOM-TP</u>	2 (7-8)	_____
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		
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 = reconstruction planning		
29 = other		

Element presence at first stage of organization: ELSTAGE1 1 (9) _____

- 1 = D
- 2 = T
- 3 = R
- 4 = A

Composite action/order criteria score at first stage: A/01 1 (10) _____

Description:

Element presence at second stage of organization: ELSTAGE2 1 (11) _____

- 1 = DA
- 2 = TR
- 3 = RD
- 4 = RT
- 5 = AD
- 6 = TA

Composite action/order criteria score at second stage: A/02 1 (12) _____

Description:

Element presence at third stage of organization: ELSTAGE3 1 (13) _____

- 1 = DAR
- 2 = TRA
- 3 = RDA
- 4 = RTD
- 5 = ADT
- 6 = TAD

Composite action/order criteria score at third stage: A/03 1 (14) _____

Description:

Element presence at fourth stage of organization: ELSTAGE4 1 (15) _____

- 1 = DART
- 2 = TRAD
- 3 = RDAT
- 4 = RTDA
- 5 = ADTR
- 6 = TADR

Composite action/order criteria score 1 (16) _____
at fourth stage: A/04

- 1 = role-making dominates
- 2 = mix role-making and role-playing
- 3 = role-playing dominates
- 9 = uncertain

Description:

Domain definition problem: DOMPR 1 (17) _____

- 1 = absent
- 2 = present
- 9 = uncertain

Description:

Domain definition problem at origins: DCON 1 (18) _____

- 1 = no contingency present
- 2 = contingency present, onset at
maintenance of uncertain
- 3 = contingency present, onset at origins
- 9 = uncertain

Task definition problem: TASKPR 1 (19) _____

- 1 = absent
- 2 = present
- 9 = uncertain

Description:

Task definition problem at origins: TCON 1 (20) _____

- 1 = no contingency present
- 2 = contingency present, onset at
maintenance of uncertain
- 3 = contingency present, onset at origins
- 9 = uncertain

Resource mobilization problem: RESPR 1 (21) _____

- 1 = absent
- 2 = present
- 9 = uncertain

Description:

Resource mobilization problem at origins: RCON 1 (22) _____
 1 = no contingency present
 2 = contingency present, onset at
 maintenance of uncertain
 3 = contingency present, onset at origins
 9 = uncertain

Activity performance problem: ACTPR 1 (23) _____
 1 = absent
 2 = present
 9 = uncertain

Description:

Activity performance problem at origins: ACON 1 (24) _____
 1 = no contingency present
 2 = contingency present, onset at
 maintenance of uncertain
 3 = contingency present, onset at origins
 9 = uncertain

Type of local organization: FOT 1 (25) _____
 1 = emergency relevant public bureaucracy
 2 = other public bureaucracy
 3 = emergency relevant voluntary agencies
 4 = special interest groups
 5 = private firms
 6 = emergent groups of individuals
 7 = emergent groups of other groups
 and organizations
 8 = military unit
 9 = other

Response task structure: RTSTR 1 (26) _____
 1 = simple
 2 = complex
 9 = uncertain

Initiation of organized disaster response: PINT 1 (27) _____
 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

<u>If boundary spanning at initiation of response links are: ITLINKS</u>	1 (28)	_____
1 = established prior to disaster by planning		
2 = emergent		
3 = mixed established and emergent		
4 = not applicable		
9 = uncertain		
<u>Number of organizational links at initiation: INLINKS</u>	1 (29)	_____
0 = none		
1 = 1 - 3		
2 = more than 3		
3 = uncertain		
<u>Evidence of pre-planning prior to response: PLANN</u>	1 (30)	_____
1 = no pre-planning		
2 = pre-planning evidenced		
9 = uncertain		
<u>Size of total organization: SIZ</u>	1 (31)	_____
1 = 9 or fewer		
2 = 10 - 20		
3 = 21 - 50		
4 = over 50		
9 = uncertain		
<u>Community disaster experience in past 10 years: C-EXP</u>	1 (32)	_____
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		
<u>Community (rural-urban): COMM</u>	1 (33)	_____
1 = rural area		
2 = urban 10,000 or less		
3 = urban 10,000 - 25,000		
4 = urban 25,000 - 50,000		
5 = urban metropolitan, 50,000+		
<u>Physical location relative to primary impact area: LOC</u>	1 (34)	_____
1 = close		
2 = peripheral		
<u>Time of initiation: INTIME</u>	1 (35)	_____
1 = 1 - 2 hours pre- or post-impact		
2 = 3 - 24 hours pre- or post-impact		
3 = 25 - 72 hours pre- or post-impact		
4 = 72+ hours pre- or post-impact		
9 = uncertain		

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

Victim losses, emotional, structural, material): VLOSS 1 (36) _____

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

Overall community damage: CDMGE 1 (37) _____

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

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