University of Delaware
Disaster Research Center

ROLE IMPROVISING UNDER CONDITIONS OF
UNCERTAINTY: A CLASSIFICATION OF TYPES

Gary R. Webb
Michael Beverly
Megan McMichael
James Noon
Tabitha Patterson

1999

Role Improvising Under Conditions of Uncertainty: A Classification of Types

Gary R. Webb[1]
Michael Beverly[2]
Megan McMichael[3]
James Noon[4]
Tabitha Patterson[5]

---

[1] Address correspondence to: Gary R. Webb, Disaster Research Center, University of Delaware, Newark, DE, 19716, tel. (302) 831-6618

[2] Department of Sociology, College of William and Mary, Williamsburg, VA

[3] Department of Sociology, College of William and Mary, Williamsburg, VA

[4] Department of Sociology, University of Arizona, Tuscon, AZ

[5] Department of Sociology, College of William and Mary, Williamsburg, VA

Role Improvising Under Conditions of Uncertainty: A Classification of Types

Abstract

Based on archival data from the Disaster Research Center, this paper presents an empirically-derived classification of the various ways key responders to natural disasters, technological crises, and civil disturbances improvise their role performances during the emergency response period. Five types of role improvising are identified: procedural changes, status changes, normative-order changes, equipment changes, and location/facility changes. T-tests and crosstabs are used to examine the relationship between type of disaster event and type of role improvising, and intraclass correlation coefficients are used to assess the inter-rater reliability of the classification scheme. The paper concludes by discussing the implications of the classification scheme for future studies of role improvising in both routine and non-routine social settings and for the practice of emergency management.

Key words: role, disaster, improvisation, inter-rater reliability

Role Improvising Under Conditions of Uncertainty: A Classification of Types

Introduction

Role remains a central concept in sociology, serving as the fundamental link between the individual and society. All social roles are imbued with qualities of both social structure and human agency (Alexander, 1982; Giddens, 1982). As such, they embody institutionalized sets of expectations, relationships, and behaviors that insure stable and predictable social interactions (Stryker,1980; Stryker and Statham, 1985). Roles also reveal social structure as inherently flexible and adaptive during normal as well as non-routine circumstances. Individual role incumbents always bring unique traits and dispositions to their role performances that allow them to creatively alter roles to either satisfy individual needs or meet the demands of a given social situation (Turner, 1962; 1968; 1980; 1985).

In this paper we examine the various ways social roles are altered in situations that are demonstrably non-routine (Kreps and Drabek, 1996; Kreps, forthcoming). Specifically, we describe how key responders in natural disasters, technological crises, and civil disturbances improvise their role performances during the emergency period. Because mass emergency situations are often characterized by ambiguity and confusion, social structure cannot be taken for granted as organizations, groups, and individuals enact responses (Kreps, 1985; 1987; 1989). While these social responses are always tied to existing pre-disaster structures, the emergency period also typically involves emergent social activities. At the organizational level, research shows that a wide variety of community organizations--not just established entities such as police and fire departments--respond to disasters (Dynes, 1970). For example, a private construction

crew may become involved in clearing disaster debris, or an existing neighborhood association may get involved in disaster response and relief activities. At the individual level, people may engage in disaster-related activities that would not ordinarily be expected of them; they may forge new social relationships to complete specific tasks or meet emotional needs; and they may perform routine activities in novel and innovative ways (Bosworth and Kreps, 1986; Kreps and Bosworth, 1993; 1994; Webb, 1998).

Based on transcribed interviews contained in the archives of the Disaster Research Center (DRC), we present an empirically-derived classification of disaster role improvisations. Disasters have long been regarded as strategic research sites for describing and explaining the maintenance and transformation of social structure (Fritz, 1961; Quarantelli and Dynes, 1977; Kreps, 1984; 1989; Drabek 1986), and the DRC archival data are well-suited for that purpose (Wenger, 1989). In the first section of the paper, we review both structuralist (e.g., Stryker, 1980; Stryker and Statham, 1985) and interactionist (e.g., Turner, 1962; 1968; 1980; 1985) conceptions of role and discuss their respective approaches to role improvisation. Additionally, we discuss how the concept of role has been treated in the field of disaster research. Within sociology generally and within the field of disaster research in particular, it is widely held that social roles are flexible, adaptive, and often improvised, but researchers have not attempted to systematically classify how that happens. That is precisely the goal of the research reported on in this paper. While the classification that has been developed is grounded in disaster contexts, we believe it can be applied to a wide variety of social settings where role improvisation is at issue.

2

Following our review of the role literature, the next section of the paper describes the archival data and the analytic approach we used to develop the classification of role improvisations. Next, we present the classification scheme, illustrate its core categories with several examples from the archival interviews, discuss how different types of disaster events affect role improvising, and report the results of a reliability analysis we conducted to assess the utility of the coding system. We conclude the paper by discussing some of the conceptual and practical implications of the research. Because it describes how roles are improvised under conditions of uncertainty, the classification scheme broadens our theoretical understanding of role, compelling us to think more systematically about how social roles are performed in both conventional and improvised ways during both "normal" and emergency situations. In a practical sense, a better understanding of how individuals improvise their role performances during the emergency period can help responding agencies and organizations better prepare for future disasters.

Literature Review

Structuralist and Interactionist Role Theories

Sociologists generally tend to approach the concept of role from two perspectives (Dynes, 1987; Schwalbe, 1988; Heiss, 1992; Callero, 1994): structuralist approaches that emphasize role-playing (e.g., Stryker, 1980; Stryker and Statham, 1985) and interactionist approaches that focus on role-making (e.g., Turner, 1962; 1968; 1980; 1985). Although these two perspectives are often characterized as drastically divergent, they actually converge on the idea that role performances typically involve both role-making and role-playing. For example, although

3

structural role theorists emphasize the patterned aspects of role expectations, relationships, and

behaviors, they also acknowledge that role enactments often require innovation, flexibility, and

ingenuity. Similarly, interactionists focus on the fluid and emergent aspects of social interaction-

-namely, the processes by which actors define the situation and actively engage in role-making--

but they also recognize the recurrent aspect of roles that sometimes constrains the role-making

process. Shibutani's (1961) concept of conventional roles, for example, suggests that some

identities have norms attached to them that are generally accepted and used, and Turner's (1978)

notion of the role-person merger suggests that individuals internalize some roles to such a degree

that they draw on them in a variety of interaction contexts.

While there is general agreement among structuralists and interactionists that individuals

engage in both role-playing and role-making, what is lacking in the literature on role is a

systematic attempt to describe how roles are actually altered in particular social settings. Broadly

speaking, there are two general ways in which role alterations have been treated in the literature.

First, there is a substantial amount of research that looks at how "basic" social roles--such as

occupational, gender (Lipman-Blumen ,1973), and age roles (Mahoney, 1994)--change over time

given certain historical circumstances (Turner, 1990). Another line of research looks at the

various strategies individuals employ in role performances to either manage impressions they

give or "give off" to others (Goffman, 1959), distance themselves from certain roles (Goffman,

1961), or achieve congruity between their sense of self and the roles they are enacting (Zurcher,

Sonenschein, and Metzner, 1966; Zurcher, 1983). In addition to these long-term changes in basic

roles and situational negotiations aimed at enhancing the fit between the individual and the role,

4

however. there are numerous other ways in which roles are altered temporarily to meet the

functional demands of certain social settings. One particular setting in which role alterations can

be vividly observed is during the emergency period of natural disasters, technological crises. and

civil disturbances.

Role Studies in Disaster

The first systematic field studies of human social responses to disaster in the United

States were conducted by researchers at the National Academy of Sciences-National Research

Council and at the University of Chicago's National Opinion Research Center (NORC) in the

early 1950s (for detailed historical overviews see Kreps, 1981; Quarantelli, 1987; Quarantelli,

1994). A major concern among many of the early researchers was how individuals who had

disaster-related responsibilities would manage the competing demands of work and family roles

(Killian, 1952; Marks and Fritz, 1954; Moore and Crawford, 1955; Baker and Chapman, 1962;

White, 1962). The early studies found, and subsequent research affirms (Dynes, 1987), that

individuals whose roles involve emergency-related tasks do sometimes experience role conflict,

but they almost never abandon their occupational roles as a result of competing familial roles.

While discussion of the concept of role in disaster studies centers primarily around issues

of role conflict and role abandonment, a few studies highlight important ways in which roles are

maintained and changed in response to disaster. Dynes and Quarantelli (Dynes, 1970; 1987;

Dynes and Quarantelli, 1985; Quarantelli and Dynes, 1977), for example, argue that during the

emergency period of disaster a consensus arises that encourages individuals to perform only

emergency-relevant tasks and to temporarily suspend all other tasks. This "role moratorium"

5

results in a structural process of role simplification, whereby irrelevant roles are eliminated as other emergency-relevant roles become critical. In an earlier study, Barton (1969) describes a similar process that he refers to as role reduction.

In a study of an emergent social service organization that emerged in response to the Detroit riots of 1967, Forrest (1970; 1973; 1978) employs the concept of role carry-over to explain why individuals who play leadership roles in their pre-disaster occupations also assume leadership roles in emergent disaster organizations (see Noon, 1998 for a re-analysis of the same organization and data). In a study of the Beverly Hills Supper Club fire that occurred in Kentucky in 1977, Johnston and Johnson (1988) use the concept of role extension to explain why certain employees of that establishment, particularly food servers, extended their service-oriented occupational roles to help patrons evacuate the building. They also documented the continuity of "conventional" gender roles in the disaster situation: more men helped in the response than women; and men were more likely to engage in fire control, while women engaged in more person-oriented helping behavior like consoling people once they escaped the building.

Kreps and Bosworth (Bosworth and Kreps, 1986; Kreps and Bosworth, 1993; 1994) offer the most systematic treatment of role in disaster, focusing on the degree to which roles are maintained or changed during the emergency period (see also Webb, 1998). In so doing, these scholars distinguish precisely among the expectational (status-role nexus), relational (role links), and behavioral (role performance) dimensions of role (Merton, 1957). The focus of this research is role performance, which is characterized by Kreps and Bosworth in the following way:

6

In any situation where people interact there is a tendency for their behaviors, sentiments, and motives to become differentiated into discrete entities called roles (Turner 1980, p. 126). Once roles have become differentiated, the behavior, sentiments, and motives that appear subsequently in similar situations will tend to become patterned (i.e., they will be performed conventionally). (1993: 436)

Thus, a conventional role performance is one in which an incumbent is familiar with the expectations of a role and conforms to them in enacting that role; an improvised role performance is one in which an incumbent deviates from the conventional performance of an existing role.

But Kreps and Bosworth's long-standing archival research program--on which our research builds--affirms the notion that role performances always involve both conventional and improvised behavior (see also Quarantelli, 1996). Until now, however, no attempt has been made to describe and systematically classify how roles are improvised during the emergency period of disasters. By describing role improvisations in detail and categorizing them as specific types, our classification scheme addresses a major void in both the general literature on role and studies of role in disaster.

Data and Methods

To develop a classification of the various ways people improvise their role performances in the disaster context, we analyzed transcribed interviews contained in the DRC archives. Founded at Ohio State University in 1963 and moved to the University of Delaware in 1985, the DRC has conducted over 500 field studies of organizational and community responses to various

mass emergency situations, including natural disasters, technological emergencies, and civil disturbances. In those studies, DRC researchers have gone into disaster-impacted communities as soon as possible after an event occurred, identified major organizations involved in the disaster response, and interviewed key participants within those organizations. Although interviewees were treated primarily as informants on how their organizations functioned during the emergency period, they also acted as respondents describing their own activities.

In all, the archives contain about 3,000 transcribed interviews and several thousand more untranscribed, tape-recorded interviews. In previous analyses, Kreps and his colleagues have analyzed about 1,600 of the transcribed interviews one or more times, focusing exclusively on roles performed during the emergency period of natural disasters (see Kreps, 1989; Kreps and Bosworth, 1994 for reports on those analyses). Our analysis utilizes the approximately 1,200 remaining transcribed interviews contained in the archives. In addition to studying role enactments in natural disasters (e.g., hurricanes, floods, and tornadoes), we also look at roles enacted in response to technological crises (e.g., gas leaks, chemical explosions, and building fires) and civil disturbances (e.g., the 1965 Watts riots and the 1967 Detroit riots).

In order for a case to be included in our analysis, the interview had to provide detailed information on what the respondent--not the broader organization--actually did during the emergency period; that is, we needed specific information on the behavioral components of the respondent's disaster role enactment (i.e., various spatially and temporally discrete activities enacted toward a common objective). Once the behavioral components of a role performance

8

were identified, we could then determine whether or not a specific component was improvised, and, if so, how it was improvised.

As Table I shows, we extracted 304 cases of role enactment from the transcribed interviews, and those cases accounted for a total of 1,289 behavioral components. The average number of behavioral components for each case of role enactment is 4.24 (st.dev. 2.02), and the number of behavioral components per case of role enactment ranges from 1 to 13. Of the 1,289 behavioral components contained in the entire sample, 303 were improvised in some way. Accordingly, 24 percent of the behavioral components in the entire sample were improvised; 19 percent of the behavioral components in natural and technological disasters and 46 percent of those in civil disturbances were improvised.

*****Table I about here*****

The relatively modest levels of improvising that we found in the entire sample are not surprising given the nature of the disaster events contained in the DRC archives. For the most part, the impacts of disasters in the United States are relatively low when measured as the ratio of damage to remaining local resources (Wright and Rossi, 1981; Kreps, 1989). As a result, existing resources and routines are typically adequate to meet the heightened demands of disaster situations. We would expect, however, for role improvising to be more prevalent and widespread in higher-impact disaster events.

Our focus in this paper is on developing a classification of disaster role improvisations based on the 303 instances of improvising that we extracted from the DRC archives. In producing the classification, we followed an analytic technique similar to the grounded theory

9

approach outlined by Strauss and Corbin (1998; see also Glaser and Strauss, 1967; Strauss, 1987). They describe a three-stage coding process for qualitative data in which each successive stage--open coding, axial coding, and selective coding--becomes increasingly focused.

During open coding, the first stage, "data are broken down into discrete parts, closely examined, and compared for similarities and differences" (Strauss and Corbin, 1998: 102). In this stage of the coding process, we carefully read through our role descriptions and tried to identify general patterns among the many instances of behavioral improvisation. The next stage, axial coding, involves "reassembling data that were fractured during open coding" (p. 124), and relating categories to their "subcategories to form more precise and complete explanations about phenomena" (p. 124). During this stage of the coding process, we identified two general types of improvisation and coded each particular instance of improvising as one or the other. Finally, selective coding, the third stage, is the "process of integrating and refining categories" (p. 143). During selective coding, we refined the two general types of improvisation and identified particular types within each of the two broader categories. Our classification of types of role improvising in disaster is elaborated in the next section.

Types of Role Improvising in Disaster

Table II presents the classification of disaster role improvisations that we developed from the archival data. As shown in the table, we identified two general types of improvisations--non-material and material--and five particular types within those categories. Non-material improvisations refer to changes in the things that people do or how those things are done.

10

Material improvisations. on the other hand, refer to changes in the tools or equipment used in the performance of disaster roles or in the physical location where those roles are enacted.

*****Table II about here*****

Non-Material Role Improvisations

Non-material improvisations are things that people do during the emergency period of disasters that alter the social, not physical, world. This type of improvisation involves changes in the way a role is performed or in the scope of the role (i.e., what the role entails). Also included in this general category are things that individual role incumbents do that have consequences for the broader normative order. In working with the archival materials, we identified three specific types of non-material improvisations: procedural changes, status changes, and normative-order changes.

Procedural Changes Procedural changes are alterations in the way a role is actually performed. To say that role incumbents sometimes make procedural changes to their roles is not to imply that routine role performances are completely scripted or that individuals play them in rote fashion. However, it is the repetitiveness and standardization of behaviors that make them identifiable as roles. And in many organizations job descriptions and organizational charts specify in some detail what is expected of each role incumbent. Even in disaster situations, pre-planning attempts to provide at least some general indication of what is expected of particular role incumbents. As a result, role incumbents have at least a general awareness of the socially defined appropriate way of performing their roles, and they sometimes must deviate from those guidelines. It is these departures from routine that we refer to here as procedural improvisations.

11

As shown in Table II, procedural changes are the most common type (43.9 percent) of behavioral improvisation in disaster. These changes tend to take two primary forms: in the first form of procedural change, individual role incumbents sometimes short-circuit bureaucratic decision-making processes; and in the second form they sometimes modify the way in which a role is actually performed.

Short-circuiting of a decision-making process is a common form of procedural change during disaster, and the archives provide several good examples of this. In one case, for example, a police chief short-circuited the process of calling in the National Guard in response to a flood. According to plan, the Chief is supposed to first inform the Mayor of the situation, who then contacts the Governor. The Governor then sends a representative to the area to assess the situation. Based on that assessment, the Adjutant General determines whether or not to deploy National Guard troops to the impacted area. In this case, the police chief bypassed the normal procedure by making a direct call to a National Guard Captain because the Chief wanted to get that person to the scene as soon as possible.

In another case, following a tornado, the Assistant Director of the Emergency Division of a hospital put the hospital's disaster plan into effect without first getting the administrator's approval. And in a more extreme instance of short-circuiting, an ambulance attendant, responding to a flood, moved dead bodies without first getting the county coroner's permission, which was a direct violation of state law. In each of these cases, the individual short-circuited planned procedures because he or she did not want to "waste" time with bureaucratic "red tape."

12

In other instances, individuals may bypass procedures because they do not know those procedures exist. This is what happened when a hospital switchboard operator issued an "all clear" signal before getting the administrator's approval. Procedural changes that short-circuit decision-making processes, then, tend to occur either when role incumbents perceive the demands of the situation to be such that following routine procedures would cost valuable time, or when they are not aware of the procedures to begin with.

Another form of procedural change involves alterations in the way a role is actually performed. An extreme instance of this occurred when firefighters during many of the civil disturbances of the 1960s had to alter their firefighting strategies and, in some cases, choose not to fight fires in particular areas. The archives contain several instances of firefighters not going into riot areas or being forced out by rioters because they had no police or National Guard protection. The case of firefighters not fighting fires is an interesting example because it highlights some important behavioral differences between key responders to civil disturbances and those responding to natural/technological disasters. It is very unlikely that those responding to the latter types of events would ever be prevented by citizens from performing their roles. In the former (i.e., conflict situations such as riots), however, responders must deal with public challenges to their role enactments, and such challenges may force them to modify their roles. In some extreme cases, they may not be able to perform those roles at all.

A mortician/funeral home director provides another example of this second form of procedural improvisation. Following a major flood that resulted in numerous fatalities he had to process many of the victims' remains. But due to the unusually high number of bodies and

13

because many of them had partially decayed, he improvised by hosing bodies down and embalming them for sanitary purposes without performing any of the usual cosmetic procedures.

Like the short-circuiting type of procedural improvisation, the primary reason for procedural changes in the way a role is actually performed is typically the perceived immediacy of the situation: incumbents perceive the demands to be such that they must alter their role performance to meet those demands. A lack of resources can also be a major contributor to procedural improvisations. For example, we identified a case in which an ambulance driver was forced to be selective in deciding which victims to transport to the hospital because there simply were not enough ambulances available. Finally, in certain types of conflict situations such as riots, challenges from the public can also force key participants to alter their role performances.

The prevalence of procedural changes during the emergency period of disasters highlights the inherent limitation of a rigid bureaucratic or command-and-control approach to disaster management. Procedural innovations that short-circuit a decision-making process or alter the way a role is performed are often necessary and functional adaptations to extreme circumstances. Any approach to disaster management that constrains or limits role flexibility and adaptability, therefore, is likely to create more problems than solutions (see Dynes et al., 1972; Dynes, 1994; and Neal and Phillips, 1995).

Status Changes Status changes refer to those activities of role incumbents that broaden the scope of their disaster roles. These changes also tend to take two major forms. The first type of status change occurs when a role incumbent takes on new activities that he or she may or may not be authorized to do vis-a-vis the role. A second type of status change involves a role

14

incumbent issuing orders to others over whom he or she ordinarily has no authority. Status

changes account for 19.8 percent of the role performance improvisations in the data set.

An example from the archives nicely illustrates the concept of status change. In response

to a major earthquake, a structural engineer/architect (SEA) in a city government became a key

leader in the city's response. SEA did a variety of things he was not officially authorized to do

even in his role as leader. He broadened the scope of his leadership role, and in anticipation of

challenges to his authority he used bed sheets from the city jail to create makeshift "police" arm

bands for himself and members of his team. Thus, although status changes are generally

accepted by other role incumbents, there is sometimes a need for symbolic innovations to

establish the legitimacy of one's own role enactment.

As with procedural changes, a primary reason for improvisations that broaden the scope

of a role is the immediacy of the situation. Also, the absence of someone else who is able and

authorized to perform particular tasks is a crucial factor. For example, when asked about his

activities, SEA indicated that decisions had to be made and other people did not seem willing or

able to make them. As a result, he engaged in activities that went well beyond the scope of his

role as leader of the city's disaster control center.

This first type of status change--broadening the scope of a role--parallels Johnston and

Johnson's (1988) concept of role extension, which was alluded to earlier (see also Heiss, 1992:

115). In their study of the Beverly Hills Supper Club fire, which killed more than 150 people,

Johnston and Johnson found that employees at the club extended their normal occupational roles

to include disaster-related activities. For example, food servers tended to help patrons seated in

15

their own section exit the building. Moreover, these role extensions followed "conventional" gender expectations with men being more likely than women to engage in firefighting activities. The point here is that status changes are fairly common in disasters, and these changes are often "extensions in regularized ways of the ordinary roles performed by the individuals" (Johnston and Johnson 1988: 39).

In addition to performing new activities during the emergency period, role incumbents sometimes issue orders to others over whom they ordinarily have no authority. For example, in responding to a hurricane, a city police department's Executive Assistant to the Superintendent of Police became a key leader at the Mayor's office. In addition to giving orders to other police officers, this individual directed the activities of the Board of Health, Red Cross, Salvation Army, and National Guard. As with the other type of status change, this case illustrates that the immediacy of the situation sometimes forces role incumbents to assume greater authority than would normally be the case. In this example, the Executive Assistant said, simply "decisions had to be made," and in enacting his disaster role, he gave orders to people who would not normally receive orders from a leader in the Mayor's office.

Status changes are interesting not only with respect to individual role enactments but also with respect to organizational-level imperatives. As Kreps (1978; 1989) points out, all organizations have collectively defined reasons for existing (domains), and they all have collectively shared understandings of how things should get done and by whom (task structures). Under conditions of uncertainty--such as during the emergency period of disaster--when basic activities that fall within an organization's domain are not being performed, individual role

16

incumbents sometimes must broaden the scope of their own roles to fill these functional gaps. And when confusion arises about the task structure of the organized response, individual role incumbents sometimes assume greater authority than usual, thereby resolving any questions about the division of labor in the organized response. Like procedural changes, status changes often are necessary and functional alterations to the social structure undertaken to meet the demands of extreme situations.

Normative-order Changes Normative-order changes refer to individual role improvisations that have immediate consequences for the broader normative order. Although their occurrence is relatively limited, these improvisations have important social implications. As with the other non-material changes, these improvisations generally take two forms. The first type of normative-order change occurs when an individual role incumbent places unusual restrictions on public access to public areas. The second type involves the acquisition of private property without an owner's consent, which under normal circumstances would be defined as illegal.

As shown in Table II, normative-order changes are the least common type of role improvising in disaster, constituting only 5.3 percent of the improvisations contained in the data. As an illustration of the first type--restricting public access--consider a sheriff who sets up road blocks around a disaster area that prevent some people from reaching that area, or a public works director who places restrictions on private and industrial water usage in the wake of a flood. As an example of the second type of normative-order change--acquiring private property without the

17

owner's consent--consider a police lieutenant who, in response to a tornado, breaks into a downtown store to obtain lanterns and flares.

An obvious reason for normative-order changes that restrict public access to certain areas is the danger (real or perceived) of the disaster itself. Flood waters or debris from a tornado may make certain roads unsafe and impassable. Public officials may also restrict public access to a disaster-impacted area out of fear of looting. In one of the examples above, a public works director was forced to place restrictions on water consumption because flood waters had created several breaks in the city's water treatment facility, thereby diminishing a large portion of the water supply. The second type of normative-order change--acquiring private property without an owner's consent--is clearly influenced by the availability of resources. When resources are lacking, there appears to be a suspension of private property rights, which is what Quarantelli and Dynes (1970) suggested occurs in their analysis of property norms in community crises. In natural disasters, they argue, private property rights are temporarily suspended for the common good:

> Thus, warehouses can be broken into without the owner's permission to obtain generators necessary to keep hospitals functioning; and the act is seen as legitimate if undertaken for this purpose even though the participants might agree that it was technically an act of burglary. (Quarantelli and Dynes, 1970: 176)

The relatively few instances of this type of normative-order change in the data suggest that although there does seem to be some temporary suspension of property rights, the pre-disaster normative order regarding property rights is still largely maintained and respected in the

18

disaster context. However, disasters are often ambiguous and confusing situations, and they sometimes blur the distinction between what is public and what is private. And role incumbents who must respond to these circumstances sometimes have to modify those roles accordingly.

Material Role Improvisations

Material role improvisations involve changes in the tools or equipment used to perform a role, or changes in the physical location where a role is enacted. As Table II shows, material improvisations comprise about 31 percent of the role improvisations described in the data, which suggests that for the most part key participants tend to use conventional tools or materials in performing their disaster roles, and they tend to enact those roles in their regular settings. Existing material resources are often adequate for responding to disaster, but that is not always the case.

Equipment Changes Equipment changes refer to changes in the tools or equipment that an incumbent uses to perform a role. As Table II shows, these changes are relatively common, comprising 21.1 percent of the role improvisations described in the data (the second largest category). Equipment changes, like the other types of improvisations, can range from minor adjustments to more fundamental changes. As an example of a minor equipment change, a medical transcriber in a hospital assisted in tagging tornado victims as they entered the hospital's emergency room. Because the "normal" disaster tags were stored in another wing of the hospital (where the disaster plan called for emergency vehicles to arrive), the transcriber had to create makeshift tags from scraps of paper and paper clips to attach to victims in the emergency room (where emergency vehicles actually brought victims). In another case, a police officer drove a

19

garbage truck down city streets to evacuate residents during a hurricane because his patrol car could not get through the high water in the streets. Following a tornado, a radiologist set up a dark room for developing x-rays because the automatic processor was not connected to the hospital's emergency generator.

A more dramatic change in equipment was undertaken by a member of the armed forces who worked at a temporary morgue retrieving bodies during a flood. He and the other workers used lumber and wooden doors as stretchers on which to carry bodies because regular stretchers were not available. Similarly, a funeral director/mortician who retrieved bodies from a hospital during a flood stacked the bodies in the bed of a pick-up truck because it was the only vehicle available. Based on these examples, it seems clear that lack of resources is a primary reason why equipment changes occur during the emergency period of disasters. Appropriate equipment for the task is either lacking altogether, unavailable when urgently needed, or inadequate.

Location/facility Changes Location/facility changes involve changes in the physical location where a role is performed. As Table II shows, these changes occur relatively infrequently (9.9 percent of role improvisations in the data), which suggests that existing facilities are usually available and adequate for the disaster response. However, when those facilities are not available or adequate, location/facility changes occur. As with the other types of improvisations, location/facility changes range from minor to more dramatic role alterations.

An example of a minor location/facility change is seen in the instance of a newspaper manager who set up an office in a hotel room and edited an issue of the paper from there because the normal office was damaged by a tornado. A similar example is provided by a hospital public

20

relations director who converted a business office in the hospital into a press room so that he could centralize and control the flow of information into and out of the hospital. Finally, another example involved a civil defense director who, in responding to a hurricane, used his car as an office so he could be in the field and accessible to others.

A more dramatic example of a location/facility change occurred after an explosion occurred at the Coliseum in Indianapolis, Indiana in 1963. It was Halloween night, and people had assembled in the Coliseum at the state fairgrounds to see a "Holiday On Ice" presentation. However, the show was brought to an abrupt end by a violent explosion that killed 54 people immediately, "either from the charring burst of flames or from the tons of concrete which, after being thrown high into the air, fell with crushing impact" (Drabek, 1968: 1). Upon arriving at the scene, the county coroner decided to set up a temporary morgue on the ice rink because it was not feasible to transport all the bodies and the refrigerated rink provided an appropriate and adequate place to hold the bodies until they were identified. In all of these examples, location/facility changes occurred for two primary reasons: the existing facility was unavailable (due to damage) or inadequate (due to high numbers of casualties), or the respondent wanted to centralize and control the flow of information by making himself or herself more accessible.

In this section we have identified five types of role improvising under conditions of uncertainty: procedural changes, status changes, normative-order changes, equipment changes, and location/facility changes. We classified the first three types as non-material role improvisations and the last two types as material improvisations. We also discussed several reasons why these role improvisations occur. For example, role incumbents sometimes bypass or

21

short-circuit routine procedures because of perceived time limitations; they sometimes broaden their activities or authority because they perceive a need to do so; and they sometimes perform their roles in an alternate location or with different equipment because existing materials are either unavailable, inadequate, or lacking altogether. In the next sections we discuss how role improvisations are influenced by the type of disaster event that occurs, and we report the results of a reliability test we performed to assess the utility of the classification scheme.

Role Improvising and Type of Disaster Event

Because we generated data on role improvisations during natural disasters, technological crises, and civil disturbances from the DRC archives, we were able to examine the relationship between type of disaster event and type of role improvising. We collapsed the role improvisations in our sample that occurred during natural disasters and technological crises (n=207) and compared them to the role improvisations in civil disturbances (n=96). While some researchers argue that there are important differences between natural and technological disasters (Erikson, 1994; Richardson, 1994; Picou, Gill, and Cohen, 1997), in collapsing the two we sided with those researchers who suggest that differences between the two types of events usually are not manifested during the immediate emergency response period (Quarantelli, 1993; 1998).

During the emergency phase of both natural and technological disasters, there is typically a community-wide consensus that the situation should be stopped. Thus, from this perspective natural and technological disasters are "consensus" situations, whereas civil disturbances are "dissensus" events because they involve widespread community conflict. Because our focus is on the emergency period we drew on the consensus/dissensus distinction and compared role

22

improvisations in natural and technological disasters to those in civil disturbances. We

acknowledge, however, that the social and political processes that affect the production of and

long-term recovery from technological crises may differ from natural disasters in important ways.

Our data suggest that role improvising during civil disturbances differs both

quantitatively and qualitatively from that which occurs during natural/technological disasters.

Recall from Table I that 46 percent of the civil disturbance behavioral components in our data set

were improvised in some way, compared to 19 percent of those enacted in natural/technological

disasters. As Table III shows, moreover, type of disaster event not only influences the level of

role improvising, but it also exerts a statistically significant effect on the type of improvisation

that occurs. Role improvisations in civil disturbances are far more likely than those in other

disaster events to be procedural (62.5 percent compared to 35.3 percent) or status (29.2 percent

compared to 15.5 percent) changes. Also, note the relative absence of equipment (4.2 percent)

and location/facility (3.1 percent) changes in civil disturbances compared to natural/technological

disasters (29.0 percent and 13.0 percent, respectively). This suggests that material resources

were available to respond to civil disturbances, but existing social structures did not adequately

guide how things would be done and by whom. Consequently, procedural and status changes

were fairly common among key participants responding to civil disturbances in the 1960s.

*****Table III about here*****

These findings fit nicely into Stallings' (1998) model of disasters as exceptions to

routines. According to Stallings, disasters are exceptions (or disruptions) to a society's

institutionalized ways of meeting basic needs (routines). These exceptions (disasters) evoke

23

societal responses. and when those responses become patterned and institutionalized we can speak of "exception routines." For most disasters in the U.S., it could be argued that there are fairly standardized exception routines for dealing with disruptions. However, the prevalence of procedural and status changes in the data suggest that during the 1960s existing routines could not simply be applied to situations of civil unrest. As a result, following some of the major riots in cities such as Los Angeles and Detroit, the federal government launched massive efforts in the late 1960s to understand how riots developed and why people participated in them, and to develop preparedness plans at the national, state, and local levels (see for example The National Advisory Commission on Civil Disorders, 1968; Skolnick, 1969). These efforts began to decline, however, as episodes of collective violence declined.

Given the relatively recent uprisings in cities like Los Angeles in 1992, it is an open empirical question as to whether communities in the U.S. have developed exception routines appropriate to riot situations. Clearly, social control agencies have developed standardized procedures for managing certain types of large-scale social protests (e.g., mass demonstrations in Washington, D.C.). But the recent protests of the World Trade Organization in Seattle suggest that there may be limitations to existing crowd management practices that emphasize a strong police presence, force, and deterrence. Such a rigid approach may limit situational flexibility and actually constrain the ability of police officers to improvise in highly fluid situations by reducing the number of behavioral options available to them as they encounter crowd participants (for a brief overview of the deterrent approach to crowd management see Neal and Webb, 1994). Thus,

24

another issue to consider is whether role improvising is adaptive or maladaptive in extreme situations.

At this point, we can only say that our data affirm the notion that social responses to civil disturbances differ in important ways from responses to natural and technological disasters. Our results suggest that there is generally more role improvising during the former types of events compared to the latter, and they also suggest that the type of role improvising that occurs differs significantly between disasters and episodes of unrest. Only more research on social responses to, preparedness for, and recovery from mass emergency situations, however, will resolve the issue of whether natural disasters, technological emergencies, and civil disturbances should or should not be treated under the same conceptual rubric. One way of proceeding with that research is to focus on the extent and type of role improvisations that occur in these different social situations as we have done here. To go a step further, future research should be done to assess the consequences (both adaptive and maladaptive) of role improvising in various contexts. In the next section, we discuss the potential utility of our classification for future role studies by reporting the results of an analysis performed to measure its reliability.

Reliability of the Classification Scheme

As with any system of organizing phenomena into categories, a classification of role improvisations under conditions of uncertainty should meet certain criteria. At minimum, the categories of any classification scheme should be exhaustive and mutually exclusive (Frankfort-Nachmias and Nachmias, 1992). Exhaustiveness simply means that every empirical observation of the relevant phenomenon should fit into the conceptual scheme; that is, the categories should

cover the full range of empirical possibilities. Mutual exclusivity is the requirement that

categories within the classification not overlap; that is, a particular observation should fit in only

one category. While exhaustiveness and mutual exclusivity are very important criteria, it is also

important to acknowledge that empirical phenomena are never that "clean." Instead, the

classifications social scientists use to organize a complex reality are ideal types--conceptual

attempts to systematically and fully describe the qualities of a particular phenomenon and to

present it in pure form, which is almost never seen in reality (Weber,1947: 110, in Parsons

trans.).

To assess the degree to which our classification of disaster role improvisations

approximates the ideals of exhaustiveness and mutual exclusivity, we performed a reliability

analysis in which four of the authors used the classification scheme to independently code a

second sample of role improvisations. Although the usefulness of inter-rater reliability in

qualitative research is debated (Armstrong et al., 1997)--for example, some researchers substitute

for reliability terms such as transferability and dependability (Lincoln and Guba, 1985)--it is

certainly one important way in which to assess the utility of a classification scheme. The cases

contained in the second sample of disaster role improvisations (N=186) were extracted from a set

of previously analyzed transcribed interviews specifically for the purpose of the reliability test.

As Table IV shows, the four independent raters were remarkably consistent in their

judgments, and the distributions of their cases by type of improvisation closely resembled the

distribution of cases in the original sample of 303 improvisations. For example, all four raters

coded procedural changes as the most common type of non-material improvisation (and the most

common overall) and equipment changes as the most common type of material improvising. Similarly. all four raters coded both normative-order changes and location/facility changes as being relatively infrequent. The greatest discrepancy among the coders involved status changes. While there is a substantial amount of agreement among coders 1 and 2 on the proportion of status changes (8.6 and 8.1 percent, respectively), coder 3 classified fewer cases as status-changes (4.3 percent), and coder 4 classified a substantially higher proportion of cases (20.4 percent) as this type of role improvisation.

<center>*****Table IV about here*****</center>

To statistically test the level of agreement among the raters, we calculated intraclass correlation coefficients based on 186 cases and the four fixed raters who coded each case independently. When only two raters are coding the same phenomenon the kappa statistic (Cohen, 1960) is an appropriate measure of inter-rater reliability, but in the multi-rater scenario intraclass correlation coefficients can be used (Shrout and Fleiss, 1979; McGraw and Wong, 1996). The value of intraclass correlation estimates can range from a negative score (there is no lower bound) to an upper bound of 1.0 (perfect agreement). Based on our data, we achieved an intraclass correlation coefficient of .84 (p<.001), confirming that the four coders were able to use the classification scheme independently and arrive at similar judgments about disaster role improvisations.

Although there was substantial agreement among the coders, we learned some things in the course of conducting the reliability analysis that may affect future applications of the classification scheme. For example, it was clear that in some cases what appeared at first to be a

<center>27</center>

procedural change could also be considered a status change or a normative-order change. Therefore, in order to maintain the mutual exclusivity of the categories it may be useful to treat the non-material side of the classification scheme as a hierarchy of change. Thus, a procedural change that also involves a change in status for the incumbent should be treated as a status change; a procedural or status change that has consequences for the broader normative order should be treated as a normative-order change. Treated as degrees of non-material change, procedural changes are the lowest level of change, status changes involve a higher level, and normative-order changes constitute the highest level of role change. In addition to treating the non-material side of the classification scheme as a hierarchy of change, it may be useful to allow specific role improvisations to be coded as both material and non-material changes. For example, there may be a case when a role incumbent performs his or her role in a new place (a location/facility change) and, at the same time, modifies the procedures involved in performing that role. Although multiple-type cases are less than ideal from a taxonomic point of view, allowing for them makes the classification scheme more dynamic and enhances its ability to capture the complexity and multi-faceted nature of human behavior, particularly under conditions of extreme uncertainty.

Discussion

Although sociologists in general and disaster researchers in particular recognize that improvisation is a fundamental aspect of most role performances, there is a lack of research on how roles are improvised. We have attempted to address that void by identifying, describing, and explaining five specific types of disaster role improvisations: procedural changes, status

28

changes. normative-order changes, equipment changes and location/facility changes. In this final section we conclude by discussing some of the conceptual and practical implications of the role improvising classification.

From a conceptual standpoint, there are at least three ways in which this research can contribute to future studies of role improvising in both routine and non-routine settings. First, although the research focuses on temporary role modifications, the classification may be a useful conceptual tool for describing and analyzing more permanent role changes. Both types of change are important, and it is difficult to understand the latter without first tracing the former. As political and economic shifts and technological innovations continue to occur, existing social roles will change and new ones will emerge. Our classification isolates five dimensions along which these changes can be mapped.

Second, we believe that the classification can readily be applied to a wide variety of social settings, even though it was developed from archival data on disasters. Role incumbents in various social settings routinely bypass or short-circuit decision-making procedures, do unauthorized things or issue unauthorized orders, perform tasks with new equipment or in an alternative location. In fact, the only type of role improvisation that we identified that probably does not routinely occur is the normative-order change. That is because disasters create unique circumstances permitting the kinds of improvisations that under any other circumstances would likely be defined as unacceptable or even illegal.

Nevertheless, there are numerous social settings in which our classification of role improvisations can be used to describe and explain how roles are actually performed. For

example, in most office settings secretaries or coordinators regularly broaden their roles to insure productivity and continuity of operations. In some families roles are altered in such a way that children perform basic parenting functions. And, as a final illustration of the applicability of our classification to other social contexts, consider street performers and "windshield washers" who appropriate public spaces to perform those roles.

Finally, the classification of role improvisations also has implications for how we might define "conventional" role performances in both routine and non-routine social settings. Although sociologists often focus on issues of social change, it is equally important to study social stability (Warriner, 1989). In role terms, this means studying both improvised and conventional role performances in both disaster and "normal" situations. We have defined role improvisations as changes in a role performance that alter its procedures, expand its authority, affect the broader normative-order, or involve new equipment or a new location for the role's enactment. What we and others have not done, however, is define what constitutes a conventional role performance. Is a conventional role performance simply one that closely follows established procedures, stays within the bounds of proper authority, does not violate or alter the broader normative order, employs usual tools or equipment, and is performed in a regular location? As an ideal type, the answer to this question may be yes; but, in reality, the answer must be no. Social roles are never performed mechanistically in rote fashion; rather, role performances always involve at least some degree of improvisation. At the same time, social roles are never completely improvised or invented from scratch; rather, role performances always involve some degree of conventionality (Bosworth and Kreps, 1986; Kreps and Bosworth, 1993).

30

Whether we choose to study improvisation or conventionality, it is clear that one necessarily has implications for the other.

As we noted above, the impacts of disasters in the U.S. are usually relatively modest when measured as the ratio of damage to remaining local resources. As a result, existing resources and routines are usually adequate, and the need for improvising is relatively limited. However, in higher-impact events, such as the recent earthquakes that devastated portions of Turkey (August 17, 1999) and Taiwan (September 21, 1999), we would expect to see more role improvising as incumbents attempt to meet the heightened demands of a major disaster. Our classification--although generated from relatively low-impact U.S. disasters--captures a wide range of role improvisations that may occur in both low- and high-impact disaster events, giving it direct application to the practice of emergency management.

Effective responses to disaster involve flexibility at both the organizational and individual levels (Dynes et al., 1972; Dynes, 1994; Kreps, 1991; Neal and Phillips, 1995). Therefore, those responsible for preparing communities and organizations for disasters should plan for improvisation to occur. Our classification of role improvisations can be used by emergency managers in building flexibility into their organizational and community disaster plans. At the same time, our findings suggest that over-planning can be counter-productive if it actually constrains the role improvisation process. Because preparedness and improvisation are foundations of emergency management (Kreps, 1991), the challenge for practitioners is to recognize and balance the need for both. To assist them in doing that, we need further studies that develop more elaborate explanations of why improvising occurs (see for example Beverly,

31

1999; McMichael, 1999), and that assess the consequences (both adaptive and maladaptive) of

role improvising.

Acknowledgment

References

Alexander, Jeffrey C.
1982   Theoretical Logic in Sociology. Vol. 1: Positivism, Presuppositions, and Current
        Controversies. Berkeley and Los Angeles: University of California Press.

Armstrong, David, Ann Gosling, John Weinman, and Theresa Marteau
1997   "The place of inter-rater reliability in qualitative research: An empirical study."
        Sociology 31: 597-606.

Baker, George W. and Dwight W. Chapman
1962   Man and Society in Disaster. New York: Basic Books.

Barton, Allen H.
1969   Communities in Disaster. Garden City, NY: Anchor, Doubleday.

Beverly, Michael A.
1999   "Explanations of role improvisation in disaster." Honor's thesis. Department of
        Sociology, College of William and Mary, Williamsburg, VA.

Bosworth, Susan Lovegren and Gary A. Kreps
1986   "Structure as process: organization and role." American Sociological Review 51: 699-
        716.

Callero, Peter L.
1994   "From role-playing to role-using: Understanding role as resource." Social Psychology
        Quarterly 57: 228-243.

Cohen, Jacob
1960   "A coefficient of agreement for nominal scales." Educational and Psychological
        Measurement XX: 37-46.

Drabek, Thomas E.
1968   Disaster in Aisle 13: A Case Study of the Coliseum Explosion at the Indiana State
        Fairgrounds, October 31, 1963. Book and Monograph Series 1. Newark, DE: Disaster
        Research Center, University of Delaware.

————
1986   Human System Responses to Disaster: An Inventory of Sociological Findings. New
        York: Springer-Verlag.

Dynes, Russell R.
1970   Organized Behavior in Disaster. Lexington, Mass.: D.C. Heath.

1987   "The concept of role in disaster research." In Russell R. Dynes, Bruna De Marchi, and Carlo Pelanda (eds.), <u>Sociology of Disasters: Contribution of Sociology to Disaster Research</u>: 71-102. Milan: Franco Angeli.

1994   "Community emergency planning: False assumptions and inappropriate analogies." <u>International Journal of Mass Emergencies and Disasters</u> 12: 141-58.

Dynes, Russell R. and E.L. Quarantelli
1985   "Role simplification in disaster." In <u>Role Stressors and Support for Emergency Workers</u>: 23-37. Washington, D.C.: U.S. Government Printing Office.

Dynes, Russell R., E.L. Quarantelli, and Gary A. Kreps
1972   <u>A Perspective on Disaster Planning</u>. Report Series 11. Newark, DE: Disaster Research Center, University of Delaware.

Erikson, Kai T.
1994   <u>A New Species of Trouble: Explorations in Disaster, Trauma, and Community</u>. New York: Norton.

Forrest, Thomas R.
1970   "Emergent organization: A new approach for study." Master's thesis. The Ohio State University, Columbus, Ohio.

1973   "Needs and group emergence: Developing a welfare response." <u>American Behavioral Scientist</u> 16(3): 413-25.

1978   "Group emergence in disasters." In E.L. Quarantelli, <u>Disasters: Theory and Research</u>: 106-25. London: Sage Publications.

Frankfort-Nachmias, Chava and David Nachmias
1992   <u>Research Methods in the Social Sciences</u>, 4th ed. New York: St. Martin's Press.

Fritz, Charles E.
1961   "Disasters." In Robert K. Merton and Robert Nisbet (eds.), <u>Contemporary Social Problems</u>: 651-94. New York: Harcourt Brace & World.

Giddens, Anthony
1982   <u>Profiles and Critiques in Social Theory</u>. Berkeley and Los Angeles: University of California Press.

35

Glaser, Barney and Anselm Strauss
1967   The Discovery of Grounded Theory. Chicago: Aldine.

Goffman, Erving
1959   The Presentation of Self in Everyday Life. Garden City, NY: Doubleday.

Goffman, Erving
1961   Encounters: Two Studies in the Sociology of Interaction. Indianapolis, IN: Bobbs-
        Merrill.

Heiss, Jerold
1992   "Social Roles." In Morris Rosenberg and Ralph H. Turner (eds.), Social Psychology:
        Sociological Perspectives: 94-129. New Brunswick, NJ: Transaction Publishers.

Johnston, Drue M. and Norris R. Johnson
1988   "Role extension in disaster: Employee behavior at the Beveryly Hills Supper Club fire."
        Sociological Focus 22(1): 39-51.

Killian, Lewis M.
1952   "The significance of multi-group membership in disaster." American Journal of
        Sociology 57: 309-14.

Kreps, Gary A.
1978   "The organization of disaster response: some fundamental theoretical issues." In E.L.
        Quarantelli (ed.), Disasters: Theory and Research: 65-87. London: Sage Publications.

1981   "The worth of the NAS-NRC (1952-63) and DRC (1963-present) studies of individual
        and social responses to disasters." In James D. Wright and Peter Rossi (eds.), Social
        Science and Natural Hazards: 91-122. Cambridge, Mass.: Abt Books.

1984   "Sociological inquiry and disaster research." Annual Review of Sociology 10: 309-30.

1985   "Disaster and the social order." Sociological Theory 3: 49-65.

1987   "Classical themes, structural sociology, and disaster research." In Russell R. Dynes,
        Bruna De Marchi, and Carlo Pelanda (eds.), Sociology of Disasters: Contribution of
        Sociology to Disaster Research: 357-401. Milan: Franco Angeli.

36

1989   Editor. Social Structure and Disaster. Newark, DE: University of Delaware Press.

1991   "Organizing for emergency management." In Thomas E. Drabek and Gerard J. Hoetmer (eds.), Emergency Management: Principles and Practice for Local Government: 30-54. Washington, D.C.: International City Management Association.

Forthcoming   "Sociology of Disasters." In International Encyclopedia of the Social and Behavioral Sciences.

Kreps, Gary A. and Susan L. Bosworth
1993   "Disaster, organizing, and role enactment: A structural approach." American Journal of Sociology 99(2): 428-63.

Kreps, Gary A. and Susan Lovegren Bosworth, with Jennifer A. Mooney, Stephen T. Russell, and Kristen A. Myers
1994.   Organizing, Role Enactment, and Disaster: A Structural Theory. Newark, DE: University of Delaware Press.

Kreps, Gary A. and Thomas E. Drabek
1996   "Disasters as nonroutine social problems." International Journal of Mass Emergencies and Disasters 14: 129-153.

Lincoln, Yvonna S. and Egon G. Guba
1985   Naturalistic Inquiry. Newbury Park, CA: Sage.

Lipman-Blumen, Jean
1973   "Role de-differentiation as a system response to crisis: Occupational and political roles of women." Sociological Inquiry 43(2): 105-29.

Mahoney, Anne Rankin
1994   "Change in the older-person role: An application of Turner's process role and model of role change." Journal of Aging Studies 8: 133-148.

Marks, Eli S. and Charles E. Fritz
1954   "The NORC studies of human behavior in disaster." Journal of Social Issues 10: 26-41.

McGraw, Kenneth O. and S.P. Wong
1996   "Forming inferences about some intraclass correlation coefficients." Psychological Methods 1: 30-46.

McMichael, Megan
1999   "Why role improvisation occurs in disasters." Honor's thesis. Department of Sociology, College of William and Mary, Williamsburg, VA.

Merton, Robert K.
1957   Social Theory and Social Structure. New York: Free Press.

Moore, Harry E. and Fred Crawford
1955   Waco-San Angelo Disaster Study: Report of the Second Year's Work. Department of Sociology, The University of Texas: Austin, TX.

National Advisory Commission on Civil Disorders
1968   Report of the National Advisory Commission on Civil Disorders. Washington, D.C.

Neal, David M. and Brenda D. Phillips
1995   "Effective emergency management: Reconsidering the bureaucratic approach." Disasters 19: 327-37.

Neal, David M. and Gary R. Webb
1994   "Rethinking Crowd Management." Bridges: A Special Edition of the National Coordinating Council on Emergency Management Bulletin Fall: 13-15.

Noon, James N.
1998   "Revisiting key issues about collective behavior, organizing, and role enactment." Honor's thesis. Department of Sociology, College of William and Mary, Williamsburg, Virginia.

Picou, J., D. Gill, and M. Cohen
1997   Editors. The Exxon Valdez Disaster: Readings on a Modern Social Problem. Dubuque, IA: Kendall/Hunt Publishing Co.

Quarantelli, E.L.
1987   "Disaster studies: An analysis of the social and historical factors affecting the development of research in the area." International Journal of Mass Emergencies and Disasters 5: 285-310.

_____
1993   "Community crises: An exploratory comparison of the characteristics and consequences of disasters and riots." Journal of Contingencies and Crisis Management 1: 67-78.

1994 "Disaster studies: The consequences of the historical use of a sociological approach in the development of research." International Journal of Mass Emergencies and Disasters 12: 25-49.

1996 "Emergent behavior and groups in the crisis time of disasters." In Kian M. Kwan (ed.), Individuality and Social Control: Essays in Honor of Tamotsu Shibutani: 47-68. Greenwich, CT: JAI Press.

1998 Editor. What is a Disaster? Perspectives on the Question. London: Routledge.

Quarantelli, E.L. and Russell R. Dynes.
1970 "Property norms and looting: Their patterns in community crisis." Phylon 31: 168-82.

1977 "Response to social crisis and disaster." Annual Review of Sociology 3: 23-49.

Richardson, B.
1994 "Crisis management and management strategy: time to 'loop the loop'." Disaster Prevention and Management 3: 59-80.

Schwalbe, Michael L.
1988 "Role taking reconsidered: Linking competence and performance to social structure." Journal for the Theory of Social Behavior 18: 411-436.

Shibutani, Tamotsu
1961 Society and Personality: An Interactionist Approach to Social Psychology. Englewood Cliffs, NJ: Prentice-Hall.

Shrout, Patrick E. and Joseph L. Fleiss
1979 "Intraclass correlations: Uses in assessing rater reliability." Psychological Bulletin 86: 420-428.

Skolnick, Jerome H.
1969 The Politics of Protest: A Task Force Report Submitted to the National Commission on the Causes and Prevention of Violence. New York: Simon and Schuster.

Stallings, Robert A.
1998 "Disaster and the theory of social order." In E.L. Quarantelli (ed.), What is a Disaster? Perspectives on the Question: 127-45. London: Routledge.

Strauss. Anselm
1987   Qualitative Analysis for Social Scientists. New York: Cambridge University Press.

Strauss, Anselm and Juliet Corbin
1998   Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory. Thousand Oaks, CA: Sage.

Stryker, Sheldon
1980   Symbolic Interactionism: A Social Structural Version. Menlo Park, CA: Benjamin/Cummings.

Stryker, Sheldon and Anne Statham
1985   "Symbolic interaction and role theory." In Gardner Lindzey and Elliot Aronson (eds.), Handbook of Social Psychology, vol. 1: 311-79. New York: Random House.

Turner, Ralph H.
1962   "Role-taking: process versus conformity." In Arnold Rose (ed.), Human Behavior and Social Processes: 20-40. Boston: Houghton-Mifflin.

1968   "Role: II. sociological aspects." In International Encyclopedia of the Social Sciences 3: 552-57. New York: Macmillan and Free Press.

1978   "The role and the person." American Journal of Sociology 84: 1-23.

1980   "Strategy for developing an integrated role theory." Humboldt Journal of Social Relations 7: 123-39.

1985   "Unanswered questions in the convergence between structuralist and interactionist role theories." In H.J. Helle and S.N. Eisenstadt (eds.), Micro-Sociological Theory: Perspectives on Sociological Theory: 22-36. London and Beverly Hills, CA: Sage Publications.

1990   "Role change." Annual Review of Sociology 16: 87-110.

Warriner, Charles K.
1989   "The heavy hand of culture." In Gary A. Kreps (ed.), Social Structure and Disaster: 295-305. Newark, DE: University of Delaware Press.

Webb, Gary R.

1998   Role Enactment in Disaster: Reconciling Structuralist and Interactionist Conceptions of Role. Dissertation No. 33, Disaster Research Center, University of Delaware: Newark, DE.

Weber, Max

1947   "The fundamental concepts of sociology." In Talcott Parsons (trans.), Max Weber: The Theory of Social and Economic Organization: 87-157. New York: The Free Press.

Wenger, Dennis E.

1989   "The role of archives for comparative studies of social structure and disaster." In Gary A. Kreps (ed.), Social Structure and Disaster: 238-50. Newark, DE: University of Delaware Press.

White, Meda Miller

1962   Role Conflict in Disasters: Not Family but Familiarity First. Research Report Submitted to the Disaster Study Group. Washington, D.C.: National Academy of Sciences-National Research Council.

Wright, James D. and Peter H. Rossi

1981   Editors. Social Science and Natural Hazards. Cambridge, MA: Abt.

Zurcher, Louis A.

1983   Social Roles: Conformity, Conflict, and Creativity. Beverly Hills, CA: Sage.

Zurcher, Louis A., D.W. Sonnenschein, and E.L. Metzner

1966   "The hasher: A study in role conflict." Social Forces 44: 505-514.

Table I Cases of Role Enactment and Behavioral Components of Role Performance

	Natural Disasters and Other events	Civil Disturbances	Total
Cases of role enactment	245	59	304
Number of behavioral components	1080	209	1289
mean	4.41	3.54	4.24
st.dev.	2.10	1.44	2.02
range	1-13	1-8	1-13
Number of improvised behavioral components	207	96	303
mean	.85	1.63	1.00
st.dev.	1.05	1.16	1.11
range	0-6	0-5	0-6
Proportion of improvised behavioral components	.19	.46	.24
mean	.20	.48	.25
st.dev.	.25	.32	.28
range	0-1	0-1	0-1

Table II Types of Role Improvisations and Their Distributions

	N	Percent
Non-material		
Procedural changes	133	43.9%
Status changes	60	19.8
Normative-order changes	16	5.3
Material		
Equipment changes	64	21.1
Location/Facility changes	30	9.9
Total	303	100.0

43

Table III Type of Role Improvisation by Type of Disaster Event

	Natural/Technological Disasters		Civil Disturbances	
	N	Percent	N	Percent
Non-material				
Procedural changes	73	35.3%	60	62.5%
Status changes	32	15.5	28	29.2
Normative-order changes	15	7.2	1	1.0
Material				
Equipment changes	60	29.0	4	4.2
Location/Facility changes	27	13.0	3	3.1
Total	207	100.0	96	100.0

Chi-square=47.73
p<.0001

Table IV Reliability of the Role Improvisation Classification

	Coder 1	Coder 2	Coder 3	Coder 4
Non-material				
Procedural changes	48.9% (n=91)	59.1% (n=110)	63.4% (n=118)	57.5% (n=107)
Status changes	8.6 (n=16)	8.1 (n=15)	4.3 (n=8)	20.4 (n=38)
Normative-order changes	5.9 (n=11)	6.5 (n=12)	3.8 (n=7)	.5 (n=1)
Material				
Equipment changes	30.7 (n=57)	21.5 (n=40)	23.7 (n=44)	16.8 (n=31)
Location/Facility changes	5.9 (n=11)	4.8 (n=9)	4.8 (n=9)	4.8 (n=9)
Total	100 (n=186)	100 (n=186)	100 (n=186)	100 (n=186)

Average Measure Intraclass Correlation Coefficeint=.8349[***]

[***]$p<.001$