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Reconsidering the Phases of Disaster*

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The use of disaster phases (e.g., preparedness, response, recovery, and mitigation) has assisted both disaster researchers and managers. Disaster researchers have used disaster phases to systematize and codify research results. Disaster managers have drawn upon disaster periods to organize their own activities. Yet, many problems exist with the current use of disaster periods. In summary, I find that the current uses of disaster periods lack conceptual clarity for improving scientific and practical use. As a result, I suggest ways the field can recast the use of disaster phases to improve the theoretical and applied dimensions of the field.

Disaster research needs further theoretical development (Quarantelli 1995). This journal, for example, recognizes the importance of theoretical advancement by publishing various articles (e.g., Quarantelli 1987a; Kroll-Smith and Couch 1991) and devoting two special issues (e.g., Kreps 1989; Quarantelli 1995) to the topic. A central issue related to theoretical development pertains specifically to defining or understanding what the field means by disaster. An important component often embedded implicitly in the meaning of disaster is the notion of "disaster phases."

For years both disaster researchers and emergency managers have relied successfully upon various but similar categories to describe the phases of disasters (e.g., preparation, response, recovery, mitigation). Disaster researchers have used disaster phases to organize important findings and

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recommendations about disasters (e.g., Mileti, Drabek, and Haas 1975; Drabek 1986). Practitioners have relied upon these categories to improve their disaster capabilities (National Governor's Association 1979).

The use of phases or "life cycles" is common in social science research. For example, researchers have used such approaches to gain insight in both the study of organizations (e.g., see Kimberly, Miles, and Associates 1980) and the family (e.g., Glick 1947; Duvall 1957). In these fields, the life-cycle approach has both provided insight and created problems. For example, in organizational research, the life-cycle approach sensitizes researchers to look for change. Yet, it does not help to explain social change. Also, the biological analogy is at best a heuristic device, not a scientific concept (Hall 1991, p. 186). In family research, the life-cycle approach has aided greatly in both theoretical and empirical components of the field. Yet, as Rodgers and White (1993) summarize, four misplaced assumptions have inhibited further growth of the field. Specifically, they relate life-cycle approaches to problems of teleology, determinism, levels of analysis, and logical criteria.

The use of disaster phases has created similar opportunities and problems in disaster research. Since Carr's (1932) paper, disaster phases have assisted researchers in describing activities and organizing data. Yet, the general notion and use of disaster phases have encountered little change in more than 60 years. As disaster research strives for conceptual and theoretical clarification, it needs to develop a more precise (or a totally different and precise) approach to understand what happens during the life cycle of a disaster. Thus, disaster researchers have now reached a critical stage, similar to organizational and family researchers, regarding life-cycle approaches.

Therefore, I suggest that disaster researchers and disaster managers reconsider the current use of disaster phases. To explore the issue of disaster phases, first I review studies that have developed or used various types of disaster phases. Second, I show how disaster researchers and practitioners already recognize major problems with various disaster-phase approaches. Finally, I discuss different options for reconsidering the disaster phases.

Disaster Phases

Codification efforts and taxonomies are part of the scientific process. They provide scientists a way to organize, describe, and explain data. Since the origins of disaster research, researchers have devised and used various classification approaches related to the phases of disasters.

Early Efforts

Carr (1932) first explicitly describes various disaster phases. Although not a formal period, he initially alludes to preparation for disaster. He calls the first formal stage the preliminary or prodromal period. He describes this period as "a preliminary period during which the forces that are to cause the ultimate collapse are getting under way" (Carr 1932, p. 211). Carr calls the next phase the dislocation and disorganization phase. This refers not to the disaster agent, but the "deaths, injuries, and other losses that follow this (cultural) collapse" (Carr 1932, p. 211). Carr calls the third phase the readjustment and reorganization phase. This period reflects a community's attempt to respond initially, and is determined by "its culture, its morale, its leadership, and by the speed, scope, complexity, and violence of the catastrophe itself" (Carr 1932, pp. 211–212). Carr names the final stage the confusion-delay phase. This period reflects "the time of the catastrophe until the emergency plans begin to operate..." (Carr 1932, p. 212). Although unsophisticated, Carr's disaster phases partially draw upon the social (rather than strictly physical) nature of disaster.

Powell's (1954) work represents another early attempt to classify periods of disaster. He contends that eight different disaster-time stages exist. The first stage, predisaster conditions, is not really a stage, but refers to a community's familiarity and attitudes toward a hazard. The second stage, warning, refers to precautionary activity. Threat represents the third stage, focusing upon actions related to surviving an impact. The fourth stage, impact, represents a person's developing perception that a whole community may be devastated. The inventory phase is a time when an individual or community fully realizes the degree of the destruction created. The sixth phase, rescue, represents the emergent, ad hoc efforts to help victims (e.g., search and rescue) following the disaster. The seventh state, remedy, occurs when trained, professional-emergency responders arrive on site. Finally, the recovery phase represents attempts to resume normal operations. Powell's effort signals an important attempt in systematizing and defining disaster phases and serves as an important source for similar efforts.

Stoddard (1968) uncovers seven stages of disaster following a flood. These categories include the preemergency, emergency (i.e., warning, threat and evacuation, dislocation, relocation), postemergency, (short-term and long-term rehabilitation). He also compares his "time models" with works by others (e.g., Carr 1932; Powell 1954). When comparing these different approaches, he observes that different authors have different levels of abstractions (e.g., specific to general). Stoddard argues that the use of time-and-space models in disaster research provides an impor-

tant methodological disaster research tool. Most important, he contends that the different phases of disaster represent different types of individual and group behavior.

Codification Efforts

By the 1960s, researchers had studied many disasters to allow codification efforts (Quarantelli and Dynes 1977). For some (e.g., Dynes 1970) disaster periods refer to a temporal category (e.g., before a disaster strikes, while a disaster strikes, after a disaster strikes). In other cases, the use of the phases may refer to functional activities that may or may not also be embedded with temporal considerations (stocking supplies, search and rescue, responding while the disaster strikes, attempting to recovery from the impact). For example, Barton (1970) combines both functional and temporal considerations of disaster. Yet, these and other writers never fully explored the theoretical implications of using the phases in their research.

Like those that follow him, Barton (1970) draws upon Fritz's (1961) definition of disaster. Thus, a disaster is an accidental or uncontrollable event that is:

> concentrated in time and space, in which a society, or a relatively self-sufficient subdivision of a society, undergoes severe danger, and incurs such losses to its members and physical appurtenances that the social structure is disrupted and the fulfillment of all of some of the essential functions of the society is prevented (Fritz 1961, p. 655).

Once Barton defines disaster, he next describes and defines five phases of disaster. The is the predisaster period, which he does not describe. The second period he describes as the time of detection and communication of warning for a specific threat. He adds that this phase could be important with sudden impacts, but not as important with slow-moving impacts. The third phase is the immediate (or unorganized) response. This refers to the activities just following the agent's impact (and as Barton [1970] notes, is not as applicable for a slow-moving agent). He calls the fourth period organized-social response. This phase could last days, weeks, or even years. The final period is the long-run, postdisaster equilibrium. Here, the effected unit readjusts from the disaster. As others do in the future (e.g., Mileti, Drabek, Haas 1975; Drabek 1986), Barton crosslists these periods with various levels of analysis (i.e., individuals, small groups, formal organizations, community systems, states-regionsnations) to derive many propositions of disaster behavior.

Dynes' (1970) review of organizational behavior in disaster draws heavily upon Powell's stages. Thus, he uses the categories of predisaster conditions, emergency states (i.e., warning, threat, impact, inventory, rescue, remedy), and postemergency period (i.e., recovery). Disasters, Dynes argues, follow a general temporal sequence despite the agent. Dynes employs these phases to argue successfully for an "all hazards" approach to disaster.

Drabek's (Mileti, Drabek, Haas 1975; Drabek 1986) involvement with two major codification efforts deals directly with using various categories of disaster. The initial effort abstracts and synthesizes 191 articles, books, and doctoral dissertations on disaster. Mileti, Drabek and Haas (1975, p. 9) base their categories on the "types of activity that do or could occur in relation to a hazard or subsequent disaster impact" (Mileti, Drabek, Haas 1975: 9). By looking at similar approaches developed by Carr (1932), Powell (1954), Stoddard (1968), Barton (1970), and Dynes (1970), Mileti, Drabek, and Haas developed their six categories of: 1) preparedness/adjustment; 2) warning; 3) pre-impact, early actions; 4) post-impact, short-term actions; 5) relief or restoration, and 6) reconstruction. They justify these categories by noting that "Numerous researchers have documented how activities and normative definitions appear to vary across time and vary greatly among events" (Mileti, Drabek, Haas 1975, p. 9). The six phases serve as a central component of the authors' codification effort (it organizes the book chapters). Yet, the authors do not provide a more specific definition for each category. Other theoretical underpinnings in the book receive much more detailed justification (e.g., collective stress, social nature of disaster).

In Drabek's (1986) more recent codification effort, he modifies the disaster phases. His revision reflects the language of the National Governor's Association's 1979 recommendations (i.e., preparedness, response, recovery, mitigation) of disaster phases. Specifically, under the category preparedness, he places "planning" and "warning." Under the category of response, he uses "pre-impact mobilization" and "post-impact mobilization." He divides recovery into "restoration (six months or less)" and "reconstruction (six months or more)." Finally, the category mitigation includes "hazards perceptions" and "adjustments." Like most other codification efforts, this updated effort provides no explicit definition for each category. Yet, by comparing the focus of research based upon the disaster phases, readers obtain a clear picture of the direction and needs of the field. Drabek observes:

> In short, while a crude method of comparison at best, the contrast summarized...demonstrates both continuity—many new findings appeared pertaining to the behavior of individuals, organizations and communities during the emergency phase—and the emergence of new areas of inquiry. Most significant of these were investigations of recovery process and studies dealing with aspects of mitigation. The progress of the past decade clearly reflects a maturing field, one evolving toward better balance across a broader spectrum of research topics. (Drabek 1986, p 413)

Recovery Schemes

Barton (1970) notes that early disaster research ignores recovery-time efforts. However, the past twenty years of disaster research sees an increased focused on recovery issues. The edited work by Haas, Kates, and Bowden (1977) illustrates the complexity of the recovery process. Unlike most other overall codification efforts, the above authors explicitly recognize that recovery reflects a complex process. They note that people use several subcategories (e.g., restoration, recovery, rehabilitation, redevelopment, reconstruction) to describe aspects of the recovery period. In an attempt to handle these conceptual problems, they focus upon four specific periods related to the recovery process Interestingly, they first identify the emergency period as an important component of recovery. They define this period as how people cope with the immediate destruction, noting how social and economic activity become dramatically changed from typical behavior. This period ends when search and rescue, emergency feeding and housing, and debris clearing ceases or is dramatically reduced. The restoration period pertains to the initial efforts to "patch up" the damage and begin some type of normal functioning. The replacement-reconstruction period occurs when major capital is invested to provide massive rebuilding. Finally, the commemorative, betterment, and development reconstruction period marks a community's effort to remember the event, note the post-disaster efforts, and provide motivation for future growth.

Other empirical studies show that the recovery process is not a simple, linear, or cyclical process. Different units or groups may experience, or perceive that they experience, the different stages of recovery 1) at different times and 2) at different rates of time. Bolin's (1982) analysis of long-term family recovery following a tornado and Phillips, Garza, and Neal's (1994) look at aid after a hurricane confirms these patterns. For example, Bolin shows how a community (one unit of analysis) and a family (a different unit of analysis) may go through recovery phases at different times. Phillips, Garza, and Neal (1994) observe that various social-structural barriers led

to different ethnic groups moving from response to recovery at different times.

Quarantelli (1982) looks at a specific component of disaster recovery—the phases of housing. Specifically, he finds that disaster victims may potentially experience four phases related to housing recovery: emergency sheltering, temporary sheltering, temporary housing, and permanent housing Phillips' (1991) analysis of housing following the Loma Prieta Earthquake confirms these different phases Also, her study shows that different groups of people, often based upon such factors as social class or ethnicity, go through the phases of housing recovery at different times.

Overall, recovery studies suggest that subcategories of the recovery process exist. However, different units of analysis (e.g., individual versus group) or different types of groups (e.g., based on ethnicity or social class) may experience the phases of recovery at differing rates. Thus, patterns, phrases or cycles of recovery are not linear.

The National Governor's Association Report

The National Governor's Association (1979) report reflects an important step in professionalizing the emergency-management field. The authors' designed this report for disaster managers rather than researchers. This document has clearly influenced the state of emergency management in the United States positively. The report supports the use of comprehensive-emergency management (CEM). CEM provides a holistic or integrated approach to disaster management. An important component within CEM includes the four phases of disaster activity: mitigation, preparedness, response, and recovery. The report encourages disaster managers to use CEM and the four phases as an integral part of local-disaster management (Drabek and Hoetmer 1991, pp.xx–xxi).

The report defines mitigation as "the initial phase, the one that occurs earliest before a disaster" (National Governor's Association 1979, p. 106). It pertains to efforts to lessen or eliminate the effects of a disaster. Preparedness relates to events closest to an actual disaster. Preparedness fills in where mitigation efforts cannot reduce the effects of a disaster. Noted subcategories include planning and warning. Response occurs right after the disaster. Activities may include search and rescue, emergency shelter, and damage assessment (National Governor's Association 1979, p. 106). Finally, recovery relates to the activities following the response period. Recovery activities focus on efforts to bring the effected area back to its normal or predisaster state. The report notes that recovery may also include short-term and long-term activities. The use of the "four phases of disaster"

today represents a cornerstone in disaster-management practice throughout the United States.

Discussion

Since the beginning of the field, disaster researchers have observed various types of disaster periods. Specifically, different events seem to occur at different times related to a disaster. Also, both academics and practitioners assume that these phases exist, and act as if they do exist. Yet, in the last 30 years or so, disaster researchers or practitioners have accomplished little in defining or refining the use of disaster phases. Yet, as I show in the next two sections, both researchers and practitioners have questioned the use of disaster phases since their initial use.

Critiques of the Phases

The uses of different phases of disaster have provided a good heuristic device for researchers and practitioners. Academics use the disaster phases to codify massive amounts of research or organize a research project. Practitioners use the periods of disaster to handle disaster issues. Yet, both researchers and practitioners have observed or experienced problems with the current use of disaster phases. Therefore, to advocate a reconsideration of disaster phases, in this section I note some critiques of disaster phases from both academics and practitioners. In the following section, I discuss some problems of using disaster phases I have encountered in previous research projects.

Academic Critiques

Since Carr's (1932) discussion on disaster periods, disaster researchers have recognized problems with using the phases of disaster. Carr's initial work warns that social change and disaster phases are not discrete events:

> This is the first thing that follows from the sequence-pattern concept: social change is not an episode, a protrusion, so to speak; it is a series of a cycle of events no one of which is competent to represent the whole. (Carr 1932, pp. 215–216)

Despite a positive approach regarding time models, Stoddard concludes the discussion by saying,

> a simple or complex time model is not comprehensive enough by itself to integrate completely disaster research. Additional constructs are required for methodological and theoretical comparisons and liaisons between findings and the various disaster studies. (Stoddard 1968, p. 12)

Barton recognizes implicit problems in delineating the phases of disaster:

> One of the first steps of the early qualitative work in disaster was to distinguish the phases of the process. Sometimes, the division between phases is arbitrary because the variables that characterize them change by degrees; sometimes sharp rises and falls define a natural turning point. The phases are not by any means identical for each event of a certain kind; we should need to study many cases carefully to pick out the more frequent sequences. (Barton 1970, pp. 48–49)

Others also allude to the fact that these categories are not mutually exclusive. Haas, Kates, and Bowden (1977) make the following important observation:

> At best, such period divisions are arbitrary, and are only useful in distinguishing the major functional activities of a period. Emergency activities do not cease suddenly, to be replaced by other types of activities. There is a blend of activity, with different groups of people working on different phases of recovery activity at the same time. (Haas, Kates, and Bowden 1977, pp. 1–2)

In addition, they make another crucial point regarding the recovery process:

> It is also difficult to find a standard set of measures that identify the *pace* of reconstruction in any one society. The levels of material wealth and assistance available to society, the degree to which a fixed stock of buildings, equipment and inventory (capital stock) is or is not important, the kinds of activities that go on normally and which are, therefore, disrupted and changed, may be different cross-culturally.... As reconstruction begins, the process of development and reconstruction may gradually merge to complicate neat divisions. (Haas, Kates, and Bowden 1977, pp. 1–2)

Thus, they recognize the overlapping, socially defined (or even arbitrary) nature of previous schemes. They also note that those phases within the recovery process may vary temporally based on various variables.

In analyzing earthquake recovery in northern Italy, Hogg (1980) makes a similar observation about the demarcation of disaster phases,

> Emergency activities, for example, do not cease at one time to be replaced by other procedures, but there is a blend of activity with different groups of people working on different phases of recovery at the same time. (Hogg 1980, p. 184)

Quarantelli (1982), Kroll-Smith and Couch (1991)[2], and Phillips (1991) made similar relevant observations about these phases related to their practical use. Quarantelli notes:

> Sheltering and housing phases do not usually progress in a neat linear fashion. In a given situation, some disaster victims may be entering the permanent housing phase while others are still in the emergency sheltering phase. Furthermore, there may be several moves as a family goes from one temporary housing situation to another. As a consequence, governmental organizations and relief groups may concurrently be dealing with segments of the populations at different stages in the sheltering and housing activities after a major disaster. (Quarantelli 1982, p. 78)

Practitioner's Critique

From a practitioner's viewpoint, the National Governor's Association (1979: xiv) report initially hints that the phases of disaster may overlap by suggesting, "It is evident that *the four phases of emergency management—mitigation, preparedness, response and recovery—are not adequately understood* (original italics)." The authors elaborate upon this point later in the report:

> In fact, the Functions and Effects Study generated the notion that the relationship between mitigation, preparedness, response, and recovery is not even linear. Rather, some preparedness activities (like educating government officials) could really have mitigation effects; and some recovery activities mitigate against future disasters (like using housing loans to relocate residences out of a flood plain). The Functions and Effects experts hypothesized at least a cyclical relationship among these four phases of disaster activity. (National Governor's Association 1979:108)

Most recently, a monograph on disaster response and recovery primarily authored by practitioners made the following observation:

> Emergency response and recovery is not a linear process; decisions that are made during the emergency phase will impact the recovery process. In practice, however, recovery often takes place in an ad hoc fashion because key decisions are not part of a strategic program to restore services and rebuild communities (Durham et al. 1993, p. 30)

Therefore, if disaster researchers wish to improve the theoretical development of the field dramatically, I argue that we should reanalyze the current heuristic related to the phases. Specifically, we should reconsider how we use or define these phases, and what impact these phases may have upon practitioners. Next I turn to my own experiences with attempting to use the phases of disaster.

Critiques from the Field

Since I started studying disasters almost 20 years ago, I have drawn upon the notion of disaster phases as an important research tool. Yet, I started to notice that problems emerged when using disaster periods. In the following, I briefly describe some of these troublesome encounters that have led to me suggest the field reconsider how we use the phases of disaster.

ECGs Study

My participation in a large three-year National Science Foundation study of emergent citizen groups (ECGs) in disasters (e.g., Neal 1984, Quarantelli 1985) while a graduate student with the Disaster Research Center (DRC) first directly alerted me how the phases of disaster overlapped. As our research group wrote case studies, we faced difficulties at times in trying to categorize when a group formed (either before or after a disaster) and what phase its activities were related toward (i.e., mitigation, preparedness, recovery). Sometimes, "pre-disaster or post-disaster" would not work. Nor could we classify the main thrust of activities as "preparation or mitigation." Therefore, as part of our coding scheme related to disaster periods and ECGs, we developed a category called "mixed."

For example, floods had devastated one community we studied. Several neighborhood groups emerged. Initially, these groups focused upon recovery and restoration issues. However, these groups also focused upon mitigation efforts. For example, ECGs aided victims in developing programs for buying flood-prone property. ECGs participated in planning efforts by advocating the development and use of a warning system (some would argue that a warning system is a mitigation rather than a preparation phase). Thus, these groups that formed in the "recovery period," focused upon recovery, mitigation, and preparation efforts. Furthermore, a white upper-middle class ECG resolved their flood issues and recovery/mitigation issues much more quickly than a middle-class African-American neighborhood. Thus, the two different groups experienced the transition from one phase to another differently (although an umbrella group coordinated both groups' activities).

In another community, one ECG had formed regarding disaster preparedness and mitigation issues. The group representatives expressed concerns about hurricanes and a possible chemical hazard from a nearby plant. One of their actions pertained to educating the public regarding evacuation (i.e.,

mitigation). Part of the education process was actual disaster drills (i.e., possibly preparedness). Although officials and group members directed efforts toward the hurricane, they also focused activities toward the chemical plant. Thus, not only was there a question about which disaster phase was involved, but also a question about which disaster phase the group was involved in and for which hazard.

In a case related to a technological hazard (see Neal 1984), different groups involved with the hazard defined the periods differently. To those individuals or groups that perceived a problem already existed with a hazardous chemical plant, they took actions reflecting response (e.g., perceived-health problems). Others initiated mitigation efforts (e.g., prohibit the construction of a hazardous waste incinerator). Yet, those that owned or managed facilities that manufactured or stored hazardous chemicals perceived little if any hazard. Thus, within the community, multiple realities developed about the hazard/disaster, and what phase(s), if any, the hazard or disaster was in.

In summary, the ECGs study from DRC showed me that the use of disaster periods created analytical problems. The categories often overlapped, different groups perceived and experienced the disaster phases differently, and individuals or groups defined differently the actual or potential event.

Response and Recovery following the Loma Prieta Earthquake

The Loma Prieta Earthquake provides another setting where Brenda Phillips and I noticed problems when using the traditional phases of disaster (e.g., Neal 1990; 1993; Phillips 1991; 1993). For example, during the first week following the earthquake, we observed authorities allowing Single-Room Occupancy (SRO) victims (with the aid of one other person and a couple plastic garbage bags) ten minutes to recover items from their hotels. The restricted time for victims (during a transition phase from late response to early recovery), coupled with the SRO housing shortage, exacerbated community conflict regarding SRO residents obtaining new housing during the long-term recovery period. Thus, events during the end of the response phase directly effected long-term disaster-recovery efforts. Additional housing-recovery research by Phillips (1991) shows that different categories of disaster victims exit and enter disaster-housing phases at different times. She finds that some special-population groups (e.g., elderly, Hispanics) take a much longer time to transition from temporary to permanent sheltering, and from sheltering to temporary and permanent housing than other population segments.

The New Madrid Analysis

Earlier this decade I completed a review of potential-social impacts following a catastrophic New Madrid Earthquake for the American National Red Cross (Neal 1992; Neal et al., 1992). The key question the American Red Cross (ARC) wanted answered was "how quickly could the Red Cross mobilize locally and nationally to provide rapid food and sheltering to disaster victims?" Our analysis initially looked at response-time activities. However, as we expanded our analysis, we found that the physical and social disruption from a catastrophic earthquake would prohibit the ARC (or any other organization) from mounting a rapid and effective response. Further analysis suggested that perhaps preparation could enhance response; specifically, the development of key-response networks and agreements. Of equal importance, both structural- and non-structural-mitigation techniques would lessen dramatically response needs. In essence, effective mitigation and preparation would lessen response time. Logically extended, effective mitigation and preparation when coupled with an effective response could decrease the time for both short- and long-term recovery. This analysis further convinced me of the interconnectiveness of the disaster periods.

Hurricane Andrew—What Is Preparation, Response and Recovery?

Phillips' earlier work on the Loma Prieta Earthquake (e.g., 1991; 1993) further opened our eyes to disaster phases during our initial trip to south Dade County, Florida, following Hurricane Andrew (e.g., also see Phillips, Garza, and Neal 1994; Neal 1995). I will illustrate with three examples.[3] First, the hurricane's path allowed ample warning for some agencies to anticipate their response. For example, both the Federal Emergency Management Agency (FEMA) and the American National Red Cross placed many disaster managers in central Florida a day or two before the hurricane struck south Dade County. The naive observer would perhaps call this activity "preparation" or a "pre-disaster" response. However, these activities by FEMA and ARC were not pre-disaster oriented. Rather, they intended to improve their immediate response by preplacement. Thus, FEMA and ARC initiated response activities before the hurricane struck.

Second, within 10 days following the hurricane, many of the county's population were fully involved with initial-recovery activities. For example, water and electricity became available for many of the residents. Those needing food could rely upon a formalized (yet temporary) delivery system. Yet, at the same time, we observed that FEMA and other relief organizations were just beginning to provide aid to rural Haitian farm workers on the edge of the Everglades. Thus, while recovery had commenced for some effected

victims about 10 days after impact, the farm workers were just beginning their transition from response to recovery.

Finally, the notation of the disaster phases affected emergency-responders' decisions. The lexicon of the four phases appeared to force disaster managers and responders to think and respond in a linear, separate-category fashion. Thus, this paradigm in the end can hurt effective response. One high-level manager involved with the Federal Response Plan made the following reflection about two weeks after Hurricane Andrew occurred:

> My feeling is that recovery needs to start day one, or even prior to a disaster. It would be wise to set up a group or task force, or a committee. They get together to gather information as the disaster begins. The potential for fragmentation is enormous. It actually goes back to intelligence, damage information. It is difficult to plan for recovery when you do not have a sense for how long it could take. You know, recovery has already begun. FEMA has already issued over one million dollars worth of checks.... Anyway, why not have a recovery unit? That would be cool. They should deal the long term recovery within hazard mitigation. In any event that needs to be happening from day one.

As part of this observation, this official saw a clear blending of response, recovery, and mitigation. A Red Cross official observed a different set (i.e., preparation, response, recovery) of categories blending:

> I think sheltering has evolved from the days before the storm hit (i.e., preparation) and the day of the actual storm (i.e., response) to now where we have a pretty solid group of folks that are still in the shelters (i.e., recovery).

Discussion

The previous review highlights several related points and critiques about the use of disaster phases. The review suggests that disaster phases are good heuristic devises for disaster researchers and disaster managers. Yet, both researchers and practitioners express concern about their use. The primary concern scattered throughout the literature is that the disaster phases are not mutually exclusive. Like family life-cycle researchers discovered, the phases appear to overlap or blend into one another.

Other factors exacerbate this issue. As noted above, some activities are difficult to distinguish. For example, some actions (e.g., the development of a warning system) are hard to distinguish whether they are mitigation or preparation. Also, the activities during one phase (e.g., preparedness and/or mitigation) may influence how well (or poorly) responders, managers, or victims handle another phase (e.g., response or recovery). Researchers have at times treated the disaster phases as scientific constructs to order data and for scientific analysis. However, as the organizational and family literature show, assumptions based on life-cycle approaches and assumptions often fall outside the realm of appropriate scientific analysis. Here, the phases within the disaster life cycle fall outside the scientific necessity of well-defined, mutually exclusive concepts.

Second, the manner the field handles the issue of disaster phases actually reflects a larger problem in the field. Specifically, how do we define disaster? Kreps (1984, p. 324) comes closest to recognizing the relationship among disaster phases, the theoretical components of disaster (i.e., social order and social action), and the definition of disaster (primarily in a heading in his paper). Unfortunately, he does not elaborate upon the connection of defining disaster and disaster phases. Thus, recognizing and recasting our notion of disaster phases may actually help the field more precisely understand or define "disaster." Despite efforts to define disaster (e.g., Fritz 1961; Barton 1970; Dynes 1970; Dombrowsky 1981; Kreps 1986; Britton 1987; Drabek 1989; Quarantelli 1989), the field has made little progress over the last 40 years. Quarantelli recently summarized the problem:

> The basic current problem we see in the area of disaster studies is that we do not know what we are studying, or more accurately put, we have up to now advanced only very vague notions about our focus of research. There is something wrong about a field of study which attempts to delineate the characteristics of something, tries to depict the conditions leading to that something, and gropes to show the consequences of that something, without having a relatively clear conception of what is the "something." What are the central and defining features and outer limits of that "something" —in other words, what is a disaster? (Quarantelli 1994, p. 39)

Overall, the phases of disaster have provided a good heuristic device for the initial stage of disaster research and management. Yet, the life-cycle approach to disaster has changed little since Carr's (1932) first delineation. Thus, continued current use of the phases of disaster *may continue to stifle how researchers define and study disasters, and how practitioners manage disasters*. To stimulate thought and development of new approaches to disaster phases, I suggest some possible paths and implications regarding disaster phases. Specifically, I urge that the research community take a new fresh look at using or creating phases of disasters. Some perspectives to developing new approaches follow.

Disaster Phases Are Mutually Inclusive

As previously indicated, disaster phases overlap. From a theoretical and applied viewpoint, researchers and practitioners must first recognize that disaster phases are not discrete units. From the earliest formal disaster research, I have documented how researchers and practitioners have used disaster phases, assumed their mutually exclusive nature, yet seemed troubled that such phases are not mutually exclusive.

Overall, the field should now recognize the following related characteristics of how disaster phases are currently used. First, different phases may occur simultaneously. Second, what happens (or does not happen) during one period (e.g., amount of mitigation or preparation) directly effects what happens (or does not happen) during another period (e.g., response, recovery). Theoretically and conceptually, disaster researchers and practitioners should change their thinking about disaster phases and recognize their interconnectiveness.

Disaster Phases Are Multidimensional

Another component of the mutually inclusive nature of disaster phases is that they are multidimensional. The studies reviewed in this article suggest two related different patterns. First, individuals may experience the disaster phases at different times than groups, groups may experience the disaster phases at different times than organizations, and organizations may experience the disaster phases at different times than communities. Second, units within categories may go through the disaster phases at different times. Some individuals may pass from response to recovery more quickly than other individuals, some groups may pass response to recovery more quickly than other groups, some organizations may pass from response to recovery more quickly than other organizations, and some communities may pass from response to recovery more quickly than other communities. Phillips' (1991) discussion of attempts to find disaster victims housing and shelter demonstrates that different groups of people, primarily

based upon socioeconomic status and ethnicity, enter and leave the four phases of sheltering and housing at different times.

The Phases Should Reflect Social Rather Than Objective Time

Giddens (1987), although not the first, makes an important theoretical distinction between social and objective time. Giddens defines clock time as the use of quantified units. Clock time represents "day-to-day" structured activities. Typically, studies refer to disaster phases with hours, days, weeks, or years. Social time, however, is contingent upon the needs or opportunities of a society. For example, Giddens uses the process of

harvesting as an example of social time as an event that occurs. Activities are not based on calendar dates or clock time. Farmers harvest crops when they are ready, contingent upon various weather and soil conditions. Although the general time of harvest does not vary, the specific time of harvesting becomes quite important. Thus, harvesting begins when the crops are ready and ends when harvesting is done. Work may "daily" occur as bodies and technology allow.

Disaster and hazard researchers have recognized the social time aspect of disasters. Dynes (1970) alludes to social time regarding the social consequences of a disaster. Dynes observes that social time:

> is important because the activities of every community vary over a period of time during the day, the week, the month, and the year. Such patterned activities have implications for potential damage within the community, for preventative activity within the community, for the inventory of the meaning of the disaster, for the immediate tasks necessary within the community, and for the mobilization of community effort. (Dynes 1970, p. 63)

Haas, Kates, and Bowden (1977, pp. 1-2) also speak of the notion of social time. In looking at

the different phases of the reconstruction period, they note that many different social factors (e.g., wealth, building inventory) may affect the *pace* of recovery.

Disaster events, like harvest time, force us back to social time. Members of a community tend to matters based on need and opportunity. During this defined stage, "people turn the clock off." Many of us involved in disaster field work have seen cases where disaster managers and responders work long days, and "go off the clock." One indicator that the response phase is ending occurs when male managers begin wearing ties and jackets again, or when women managers begin wearing skirts and hose again.[4]

Approaching disaster from a social-time perspective may help resolve or redefine a new approach to understanding the phenomenon of disaster phases. Moving from clock time would also help highlight certain empirical findings by Quarantelli (1982), Bolin (1982) and Phillips (1991) regarding how different groups go through the different phases at different times. Social time removes us from the traditional categories, or at the very least, provides a path to help us (re)define potential disaster categories. Considering the redefinition of disaster phases based on social time may help us with the broader and more important struggle of defining disaster.

The Phases Should Include Others' Perceptions

Generally, researchers have imposed their reality of disaster phases upon others. Thus, the field has derived neat, clean patterns of disaster phases. Yet disasters (and social reality/ies) are not neat and clean. As the field of collective behavior highlights, individuals in social settings have different perceptions of reality—social settings are not homogeneous (e.g., Turner and Killian 1987).[4] Thus, to tap further the mutually inclusive, multidimensional and social-time aspects of disaster phases, researchers should draw upon multiple publics and their definition of disaster phases.

A logical starting place includes interviewing disaster managers and others directly involved with disaster issues. The only problem with this approach is that many disaster managers may have been already "contaminated" by the four words of emergency management suggested by the National Governor's Association, advocated by FEMA, and used by researchers. Thus, data gathering by researchers must tap activities by disaster managers *without* using such words as preparedness, response, recovery, and mitigation. Another source of data would include the different perceptions of victims (and/or victim advocacy groups). A third source would include government agencies (federal, state, local) and their representatives' perceptions of disaster phases. Furthermore, researchers could draw upon various groups' language to describe phases rather than force a phase into one of four.

Focus on Cross-Cultural Approaches

Cross-cultural disaster research may also provide further insights regarding disaster phases. Although they may often overstate their argument or show an incomplete understanding of the sociological disaster research, some critiques (e.g., Torry 1979) highlight the importance of incorporating an anthropological perspective in disaster and hazard research. I find Schneider's (1957) classic study how the residents of a South Pacific island (i.e., Yap) culture handle a cyclone as an excellent example. Here, cyclones do not create a disaster nor disrupt their daily routines. The ideas of mitigation, preparation, response, recovery, and even disaster hardly fit. For housing, the indigenous population uses local materials. After a cyclone, the easy availability of housing supplies allows a community to rebuild quickly. Schneider's paper suggests that the residents do not experience "unmet needs." Rather the event is part of everyday life. They have found a way to live with the "hazard." Thus, although this physical event occurs, the notion of preparation, response, and recovery falls outside their own experience.

The notion of disaster phases (coupled with many other social factors) provides a different notion of disaster in other settings. For example, events such as droughts, famine, and pestilence may not work as effectively under the lexicon of mitigation, preparation, response, and recovery. Quarantelli (1987a) observes that much of disaster research has evolved from sponsors' interest in the United States on issues of disaster response (or initially more specifically, war). Responding to Quarantelli's (1979) call for expanding cross-societal research (which is finally beginning to emerge in the disaster community) may help to solve the issue of disaster periods in other cultural settings.

Disaster Phases and Social Change

Any use of disaster phases or "lifecycles" infers certain important theoretical assumptions about social change. Disaster phases have an implied cyclical or linear process of social change. Whether change has cyclical or linear components has been an important theoretical issue for years in sociology (e.g., see Parsons 1966; Lauer 1979). In addition, embedded within both cyclical and linear models of change is an assumption of determinism (see my comments later). Thus, if one draws upon the notion of disaster phases, regardless if they are seen as linear or cyclical, then by implication all the theoretical implications of social-change theory become imbedded in any disaster-phase approach. Furthermore, it is assumed that both the phases and activities within the phases are inevitable. The issue of disaster, and phases and social change is an important consideration since the "what is a disaster?" debate draws directly upon whether disasters are a "social problem," (e.g., Drabek 1989; Kreps and Drabek 1996), part of a "reconstructionist" approach (e.g., Stallings 1991), or part of social change (e.g., Quarantelli 1987a). I do not see these important aspects of these approaches as contradictory. Interestingly, these three approaches reflect the three main theoretical issues of sociology (see Hinkle 1980): social statics (generally associated with functionalism), social change (generally associated with conflict theory), and social emergence (generally associated with symbolic interactionism).

That social change has been an important assumption or issue in disaster research should not be a surprise. The first true academic study deals with the issue of change (e.g., Prince 1917), and many studies since attempt to detect both the short and long-term impact of disasters on social change. Also, with disaster research having strong theoretical ties with the study of collective behavior (Wenger 1987), and with the field of collective behavior often looking at issues related to social change (e.g., riots, social movements), another link between disasters and social change has implicitly

existed for decades. Thus, whether researchers side with the social problems or social constructionist definition of disaster, if they draw upon or use current or even future developments of disaster phases, then by definition they have incorporated a "social-change" dimension to disaster. In fact, any study using the phases for clarification or codification purposes has an implied social-change component.

Disaster Phases and Determinism

In addition, linear or cyclical models generally have assumptions of determinism. Thus, it is assumed that the phases must occur in a specific order. In addition, specific activities must occur within a specific phase. Furthermore, the next phase cannot occur until a certain threshold of activities is underway or completed until the next phase occurs. At one level, these empirical questions need to be answered. At another level, such issues as change and determinism are at the heart of good theory building. Yet, as Alexander (1982) cautions, good theory must have components of both deterministic and voluntary behavior at all levels of analysis. We do not live in a strictly deterministic world. Thus, as family cycle researchers have learned, we must move with theoretical caution when embracing phases as part of a theoretical model.

Disaster Phases Are Not Relevant

Finally, we may find that the issue of disaster phases is not the relevant question to ask. To take the notion a step further, perhaps disaster phases really do not exist! As Kaplan (1963, p. 53) observes, "Every conceptualization involves us in an inductive risk. The concepts in terms of which we pose our scientific questions limit the range of admissible answers." However, the extended literature that uses some form of disaster phases indicates that "something" exists. Both researchers and practitioners have seemed to have socially defined some notion of disaster phases for their use. The researchers' job is to create theoretical clarification.

Implications

The current use of disaster phases will continue to exacerbate the theoretical confusion or even gridlock in the field. Yet, I do not believe that we should eliminate their use. Rather, if recast in a more sophisticated manner, the use of disaster phases should help the field with its definitional and theoretical struggles. Lessons learned from the organizational and family "life-cycles" approach can also help avoid pitfalls and understand the additional theoretical implications of such a strategy. Let me offer some

possible integrated starting points and caveats based upon my previous comments.

We must differentiate whether the use of any phrase refers to temporal or functional aspects of disaster. They should not have multiple meanings. For example, an initial elementary-temporal approach could build upon a notion of before a disaster strikes, while a disaster strikes, and after a disaster strikes. Yet, as we have often found, including those illustrated in this paper, when a disaster occurs can be as much of a socially (and/or politically) defined event as it is an objectively defined event. As a result, a temporal approach toward disaster phases must recognize that different groups of people (e.g., perhaps based on social class or ethnicity, or perhaps based upon organizational membership or location within an organization) could define the "before, during, and after" periods all quite differently.

In addition, different units of analysis (e.g., individuals, groups, organizations) could also define before, during, and after differently. In comparison, an initial functional approach could draw upon the four "phases" now currently in vogue (e.g., preparedness, response, recovery, mitigation) as functional activities. Thus, specific activities could be classified (e.g., search and rescue equals response; rebuilding a house equals recovery). The next logical step to aid analysis would be to cross-tabulate the temporal periods of "before, during, and after" with functional activities. This type of analysis and consideration could be further extended by including both the unit of analysis and various social categories such as social class or ethnicity. This type of three-dimensional approach would also strongly highlight the idea that disaster phases are multilayered. Overall, not only do different groups and units of analysis experience the phases at different times, but that multiple aspects of time (i.e., objective and subjective; before, during, after a disaster) intermesh with specific activities.

Summary and Conclusion

The use of disaster periods provides a useful heuristic device for disaster researchers and disaster managers. These various approaches of disaster phases give researchers an important means to develop research, organize dates, and generate research findings. Similarly, the use of disaster phases benefits disaster managers in attempting to improve their capabilities. Yet, the current use of disaster phases creates broad definitional problems of the field. I show that the current attempts to describe disaster phases are good heuristic devices, but not effective scientific concepts. Yet, scientific, empirical, and theoretical conclusions are drawn from the use of these phases. Thus, if we wish to improve the field and obtain a clearer under-

standing of what a disaster is, we must enhance the theoretical component of the field. This includes developing a more systematic, scientific approach to describe disaster phases (assuming we find they actually exist).

Therefore, I suggest related approaches to reexamine the issue of disaster phases: 1) disaster phases are mutually inclusive, 2) disaster phases are multidimensional, 3) disaster phases should reflect social rather than objective time, 4) disaster phases should include multiple perceptions of the event (e.g., disaster managers, emergency responders, victims), 5) disaster phases should consider how various cultures adjust to disasters and hazards, 6) disaster phases are explicitly tied to notions of social change, 7) disaster phases are tied to assumptions of determinism, and/or 8) the phases of disaster are not relevant. Perhaps a clearer definition of disaster would help clarify the above issues. Or, a clarification of disaster phases may help to define disaster more clearly.

The systematic analysis of disaster behavior is over 40 years old. Researchers have generated hundreds of important findings with both relevant applied and theoretical benefits. Yet, the issue of defining disaster phases reflects a broader theoretical stumbling block. I believe we must investigate and reexamine empirically and theoretically the phases of disaster. This research agenda will help us define both the concept "disaster" and its phases. Both disaster theory and disaster management will benefit from such an endeavor.

Notes

1. Yet, although their conclusion about the multidimensional aspect of disaster phases is much in line with what I argue in this paper, their path to the conclusion is much different. First they assume that the disaster-stage model was first incorporated by Baker and Chapman (1962) as a linear model. As I have noted elsewhere, Carr (and others) since 1932 have used disaster phases. Second, Kroll-Smith and Couch assume disaster phases are linear. Yet, the most recent models, especially since 1979, clearly reflect cyclical assumptions. Third, they claim that their ecological-symbolic perspective of disaster encourages one to look at the subjective dimension of phrases, and at different analysis units experience disasters at different times. Yet, as I show above, the agent-generic approach to disasters has already underscored these points (e.g., Quarantelli 1982; Phillips 1991).

2. Brenda Phillips, graduate student Lisa Garza, and I visited Dade County and researched the initial impacts of Hurricane Andrew soon after impact. Phillips and Garza revisited Dade County, Florida, seven months later. Phillips and I made a final visit to Dade County, Florida, one year after the Hurricane.

3. I must credit Henry Quarantelli and Ben Aguirre for their insights with these ideas. Quarantelli mentioned the notion of attire and transition during one of our DRC staff meetings about fifteen years ago. Quarantelli and Aguirre discussed the general ideas of social time and disaster in an informal setting during a professional meeting in 1987.

4. It should be no surprise recognizing the problematic-theoretical similarities between disaster research and its "half-sibling" (e.g., see Wenger 1987), collective behavior. Both disaster research and collective behavior are at a theoretical standstill (e.g., see Aguirre and Quarantelli 1983), and both still rely upon every-day language rather than a broader scheme for describing events (e.g., see Weller and Quarantelli 1973, McPhail 1992). Works by Kreps and Bosworth (1994) and Dombrowsky (1981; 1987), (and perhaps Barton's 1970 classic work) reflect the theoretical attention disaster research needs to build.

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