CHAPTER I

What Is a Disaster?

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Fieldwork is stimulating, challenging, and provides immediate rewards for the researcher. Although contemplating theoretical and paradigmatic issues in one's office may be less enriching by comparison, it is important to deal with such tasks. Devising a definition of disaster or constructing a consensus on a definition is not only a part of sound theory and methodology (Urry, 1995) but also contributes to a clearer vision of the field of study, and on a more practical level, helps to sort out apparent anomalies in research findings and sets the stage for a progression from simple description toward the social scientific tasks of explanation, prediction, and control (Hatte, 1987).

This chapter does not propose a new or unique definition of disaster, but rather recovers efforts to define disaster by social scientists, particularly sociologists. This is accomplished in several places. First, attention is given to issues associated with definitions, including clarifying the goal of defining disasters and the type of definition of interest. The task of presenting definitions from the literature is tackled next. Finally, the definitions are reviewed in terms of levels of consensus and the presence of common themes.

WHAT KIND OF DEFINITION?

Seeking to propose definitions of disaster can be a complex task that brings out the pedantic in us all and may create considerable frustration (Chatter, 2005). Some of the complexity and frustration can be addressed by specifying the purpose and audience for definitions of disaster. Such definitions must be placed into a meaningful context that clarifies the essential goal of the definition and the uses to which the definition is to be put. At the outset, it must be acknowledged that the goals in creating definitions vary and that there is no single legitimate purpose or context for definitions. Further, one must clarify whether disaster is being defined as a concept or as an area of study, although there is an inevitable overlap between the two approaches.

To attack the latter issue first, concepts in this chapter is with the definition of disaster less as a concept than as an area of study. Of course, the two ideas are not completely separable and they clearly overlap. Certainly for methodologists and philosophers of science, the term concept has a very specific meaning in the theoretical lexicon. However, while defining an area of study has implications for theory and theory construction, the subject area is more
meta-theoretical in that one seeks to reproduce parameters on which it is to be studied. At this stage, one can avoid becoming immersed in the challenge of creating mental and operational definitions that pertain largely to context and the conceptualization process.

Howard (1955) makes a useful distinction between real and nominal definitions. A real definition, also called a constructive definition (Cohen, 1983, p. 163), is a supposition that specifies or identifies the critical properties or features of the concept that is being defined. For example, the type of definition is in effect class was intended to capture — with a degree of openness or ambiguity — phenomena within its ambit of meaning. The concept of the circle is a clear defined as "a figure bounded by a continuous curve, every point of which is an equal distance from a given point" (Kemp, 1973, p. 90). On the other hand, a nominal definition may be seen as an expression of detailed characteristics that are not to a given letter, which usually represents a single concept. Zemel (1965) emphasizes the inductive nature of nominally defining a concept, as has been noted that low levels of openness, understandings and nominal definitions are not observable that reflect the form from which, and are captured in the concept of poverty. The nominal definition forms the "starting frame" with which one does not have the concept that is instantiated when developing operational definitions to instantiate a definitive or definitive research process, and research is ultimately aimed or used to test for theory construction.

The notion of causal or constitutive definition leads down a different path, one more dependent on the philosophy of science — whether one espouses a positivist or a non-positivist approach. Mandelbrot (1979, p. 27) has been much criticized (Maxwell, 1970) and revisited (Kuhn, 1970; Rittel, 1970) of the sociological use of phenomena over the years, it remains a valuable — if still totally valid — idea. Thus, Rittel (1979, p. 26) sees a paradigm in the most fundamental picture of scientific inquiry, as he sees it: the definition of what should be studied, what questions should be asked. From this perspective, defining the boundaries of empirical studies — where is the empirical definition ends, and where does the empirical definition begins, and include discussions of how to address issues for policy by an individual researcher who wishes to explore the cause of an empirical event. As such, this perspective is a legitimate means to either capture the meaning or operate within the meaning of a disaster. Consequently, primary definitions and studies must be considered the essential elements for defining a disaster.

The context of definition issues

From a broad perspective, this article will examine and discuss the main points of the definitions of disasters. One issue is that, even if we do not take social science to social science, several definitions are available at any one time, not to mention a large number of empirical studies — the research of a definition is needed, and the research of a definition is needed, and the research of a definition is needed, and that research is representative of the field of research.

Many researchers use the term "disaster" to define the event of a disaster. A decade later, Carr (1932) addressed issues of substance, definition, and empiricism in disasters. In this paper, Carr was the first to define disasters as inherently created in long cycles. However, the first growth in disaster studies began in the early 1950s, accelerated with the founding of the Disaster Research Center in 1957, and the field has virtually been studied since the mid-1970s (Thayer, Lindell, & Perry, 2004). Indeed, as the review of disaster research in 1986, Druzin found that our understanding of the nature of disasters has not been static. Therefore, only a very small minority of the research on disasters has been static since that time. Therefore, in this paper, we consider the essential elements for defining a disaster.
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only to the extent that they explicitly address the occasion of disaster. Also eliminated are phenotypic definitions that focus on the surface features of an agent, such as an animal versus a man-made.

The simple proviso of definitions of disaster also raises a challenge: Chronological time, especially publication dates, is not a particularly effective ordering device, as it implies serial or sequential development. In practice, many people used a definition (or years without publishing) in some version even if it was used only after using it implicitly for years. Many researchers seem to have adopted a different, more specific, or implicit definition rather than a new one. The imperfect solution adopted here is to examine three focal areas: the classic approach and its variants; the human-disaster tradition; and the explicitly socially focused tradition. Like a stage or scenario models, these three "categories" can be seen as overlapping in time and by a small extent in content. They are acknowledged to be analytical separations designed to facilitate discussion. There is no guarantee, however, that these subcategories might not place specific definitions in different places, or that these categories are not further categories. Disregarding, as artificial refining devices are concerned, they are productive.

THE CLASSICAL PERIOD AND ITS EVOLUTIONS

The classical period may be seen as beginning at the end of World War II and continuing with the publication of E. F. Fisk's Defining in 1964. The influence of the thinking and writing in this period on definitions of disaster, of course, extends to the present day. There are, however, several years of intensive study, and the field has been dominated by many definitions of disaster in the 1960s and 1970s. Perry et al.

DEFINITIONS OF DISASTER

Although an effort was made to gather in many formal definitions of disaster as possible, no claim can be made that these presented here exhaust the field. Those selected for inclusion seem to be among the most widely used and for the most complete set (with the possible exception of definitions, that is one of the most complete set). The text has been divided into those that are most relevant to the disaster itself (Quarantelli, 1999a; Perry & Quarantelli, 2005). In choosing definitions, there was a sense of need to accommodate multiple perspectives, but also to focus on the issue of disaster as a principally sociopolitical construct.

Several other definitions are not included in this discussion. For some among the above definitions that are not the subject of disaster or government policies. These are usually used in making decisions about natural disasters, as are hazards of the public interest. The definitions for which such definitions are debated are manifold, but not within a social context. There are at least two excellent discussions of hazard-related definitions in the recent literature (Brown, 2000; Hotelling, 2005). Similarly, hazards and hazard-related definitions are included

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sociologists, or in the social sciences for that matter. For example, Can you define a disaster as a product of its consequences, arguing that since the walls withstood the earthquake and the dam retained the water, there is no disaster? Instead, he looks at disasters as the "collapse of the cultural protectionist system" (Perry, 1994, p. 211). The implicit definition this is a disaster is any event that generates significant negative consequences seems to have resulted in the identification of disasters with events in the natural environment (drought, earthquake, severe storms, etc.), technological societies, and human responses (Durkheim, 1912). This "disaster is a negative, agent-caused event" approach can still be found in spirit of work distinguishing disasters from other events (civil disorders and wars, for example) associated with negative consequences (Burton, 1965; Quarantelli, 1966; Sorensen, 1972). Quarantelli (1986) was among the first scholars to negatively question this practice of defining disasters by surface characteristics of the agent. The early 1960s saw a formally proposed social scientific definition of disasters by Charles E. Fritz, first in a chapter on "disasters" in a social problems textbook (1969) and subsequently in a social science encyclopedia (1985). These definitions are characterized by relying more on the term's usage than on any theoretical basis or even by any other reference. It is not clear that this approach is more useful or less useful than any other approach. The point here is that when one proposes a definition of disaster, one does not start from scratch. As much as it might be appealing to focus solely on the intellectual deficit task, we are influenced by, and need to acknowledge, our reading of the literature. After all, definitions are largely the product of an inductive process. Often, this involves looking back at one's making inferences to clarify rather than eliminate research, while some time constraining intellect in selecting key characteristics. It is likely that, if not correct, the definitions reviewed in the next section will be found in this fashion.

Finally, definitions often grow out of these considerations of overconstraining characteristics, and the consequences of the phenomenon being defined. Indeed, as Stelling (2005) points out, definitions are not intended to be of causation of causal statements. Quarantelli (2005a, p. 33) similarly argues that researchers must separate the conditions, characteristics, and consequences of disasters when developing definitions. The definitions presented below have been selected from the original works to metaphors where possible. Each author's interpretation of characteristics.
coming (one has not actually read and appreciated the human and social variables that were actually studied. Second, the sorts of emergent social thinking that were in process during this period. This framework was ultimately developed by sociological social psychologists (particularly students of Mead's symbolic interactionism), and influenced students of collective behavior (particularly those interested in crowd behavior and disaster mechanics). It was on the strength of the defined role among disaster researchers in the vision that social interactions were supported by norms that might be reinforced instead by disasters, thereby requiring different norms until the environment began to stabilize again (Gillespie & Perry, 1974). Research following this premise included Anderson's (1969) study of change after the 1964 Alaska earthquake and much later. Staffings (1968) generation of 'exceptions' and 'exception routines' as a perspective on disaster and the social order. Thus, although much of it was not published in the open literature, this era saw a great deal of substantive research, some definitive research, and much thinking that spanned attempts at theory development later. In effect, this period generated the first real "database" for subsequent research and theorizing. As the work of the Disaster Research Group came to be published, Anthony B. C. Wallace (1956a, p. 1) in a paper originally given as a commemorative report to the National Academy of Sciences—National Research Council Disaster Research Group in 1954, characterized disasters broadly in social terms that involve not just impact, but the threat of an "interruption of normally effective procedures for reducing certain tensions, together with a dramatic increase in tension." The social qualifications following these interventions was also cited as part of the definition of the disaster. This early definition is generic and refers to the general operation of the contemporary disaster researchers that disasters may be defined with negative social consequences. The use of the term "extreme situations" preferred to the use of the word "disaster" and the use of "social stress" as a key feature of disasters as well as the impact of social consequences generated by an need to change disruptive behavior. Harry Emil Mose was associated with the Disaster Research Group for some years, in the early 1960s what are now classic studies of warning response behavior. As part of his studies of tornadoes in Texas, Mose (1958, p. 210) also emphasized that a delaying feature of disasters is that they may cause people who are living in "havens" or "paradises," and the "loss of life in an essential Haven." These three definitions we remarkably consistent with one another. Each characteristic disaster in terms of the impact on social order, and such focuses on negative consequences. For example, thinking that is implicit in all: the patterns of interference, stability, followed by adaptation to the intertions, followed by a realization (though the necessarily unconscious) of behavior in a social order. These definitions also share a general or generic quality. First, working for the map part is in the same tradition and on many of the same projects as the first three authors, proposed a definition of disaster in 1964 (and reasserted in 1968) designed to capture the sociological notion of disaster. First saw disasters as an event imposing an entire society or some substantial portion of a society. Thus, the major factor of an instantaneous event is sudden loss, external to the system and subject to control. On the other hand, a social process appears to be disasters to the state of technology that might define, but in Mose's (1969) words of a disaster, "...in so many cases to cause disasters by simply changing their system, and at the same time introducing some element in the system of disasters is set by itself by the way that disasters can be of "normal activities" and not by "normal activities."" Harry Turner (1967b, p. 83) re-created part of the Perry definition in "defining disasters," but emphasized the notion that there must be a collapse of social structural arrangements that are previously "socially accepted as adequate." Turner's definitions was given in 1985 in a book on disaster—"in origins in human societies" ("Oh, wait") and adds the notion that disasters take place when processes that are culturally bound to fail show the continued "normal" behavior patterns. Dukiss (1986, p. 15) adopted Perry's words, "defining... but without..." a "society or relatively self-sustained subdivision" be affected. This is interesting because at this time the definition was promulgated (and since for this paper). Later research was directed at disaster affecting an entire society. For decades, it appeared that the literatures on "relatively self-sustained subdivisions" allowed disaster researchers to embrace the definition while studying communities or groups smaller than communities. Perry's definition was generated out of the intellectual synthesis of the major disaster research efforts of the 1950s and the social context of the cold war. The apparent societal and governmental concern regarding a Soviet threat of an external attack came to be reflected in the notion that disasters were high-impact events that occurred to a local society or social group. In retrospect, one advantage of the definition was that it allowed to provide an umbrella for many of theincreasing number of studies done by a growing multidisciplinary body of disaster researchers. After all publication, decades many researchers simply adapted it in evolution or pointed to it. Wetters's (1975) study of bush fire disasters; Perry, Landvik, and Gerber's flood research (1981), and Perry's study of a nuclear power plant accident (1985) are only a few of many examples of what this adapted fit well. Still, in the 22nd century, numerous papers define the umbrella of "Perry fits the work. Buckle (1985, p. 179), speaking of "a conceptual definition of disasters, that one must define a sense of a large number of significant, irreversibly lost and damage from disaster, requiring the use of long-term recovery." Similarly, Smith (1982, p. 380) proposed that disasters are events that produce dead and damage and cause "disastrous social, political, and economic dimensions." Even King and Cooter (1988, pp. 161-163), who closely analyzed their thinking not part of "social disaster sociology." Therefore, researchers to be studied, disasters that are not in the definition of the "Perry's definition; their argument is more about how and where in every..." As recently as 2003, Perry Flicthus, in accepting the Perry definition, pointed out that societal, relatively stable social order and disaster contexts (Perry, 2003, p. 295). Like Flicthus, researchers began to accommodate slight "transformations from the original definition," as what they were studying by adding new ideas to the definition. Thus, over time, small changes began to "seep into the Perry fit," introduced by researchers who largely elaborated what they followed. Perry's meaning. Examples show this broad lasting well into the 1980s. Gibson Sydor (1965, p. 327) characterized a disaster as a "socially, relatively sudden, and frequently unexpected disruption" of a social system from some precipitating event that it is not sufficiently at the social system. Thus, Sydor proposes the notion that the precipitating events are sudden loss, external to the system and subject to control. On the other hand, a social process appears to be disasters to the state of technology that might define, but in Mose's (1969) words of a disaster, "...in so many cases to cause disasters by simply changing their system, and at the same time introducing some element in the system of disasters is set by itself by the way that disasters can be of "normal activities" and not by "normal activities."" Perry Turner (1967b, p. 83) re-created part of the Perry definition in "defining disasters," but emphasized the notion that there must be a collapse of social structural arrangements that are previously "socially accepted as adequate." 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the definition with the provision that "disasters are accidental or uncontrollable events, natural or otherwise." The provision includes the notion of threat as a disaster, as well as clarifies the possibility of accidental origin (as Turner also probably sought to do). All these definitions represent an attempt to define "disaster" from the context, but adding qualifications to the provisions that significantly formalized an understanding of the phenomena that could be studied as disasters.

If one tries to trace the disaster definition proposed by Fritz's non-contemporary disaster research, it appears that the present developments are in common focus to the social order that Fritz and the researchers before him saw as a key defining feature. While the authors cited below may or may not see themselves as operating in a "classical disaster" context, their definitions do reflect a concern, sometimes implied, with the key defining features emphasized by Fritz. A feature that distinguishes each from Fritz, however, is an explicit emphasis on disasters and social process or change and the notion that disasters may be a category of some larger class of events. Perhaps Gary Gey (1995, p. 34) remains closest to Fritz when he defines disasters as "non-routine events" that create social disruption and physical damage. In elaborating his definition, he focuses on four key defining properties—wartime, magnitude of impact, scope of impact, and duration of impact. This definition and elaboration concerns disasters as a category of events within combinations of the defining properties; it reflects the work of Barton (1963, 1969) and perhaps Kerr's later work on disaster theory (1990).

But while Steinberg presents a picture of disasters that firmly place them within a context of classical social theory, while at the same time emphasizing the notions of disruption and change, Steege (1995, p. 130) examines disasters, from a methodological perspective, on the social order as it is characterized by "disasters and change are fundamentally disruptive of order." Steege also acknowledges in his formulation that disasters are only one kind of accident that"ruptures" moves in social order. Latt (2000, p. 363) defined disaster as "a 'social situation' precipitated by socioeconomic destruction by forces of nature." Steege was writing in the context of natural disasters and understood it to include to limit disasters to agents of the natural environment. Steege's work is important both for its extension of Fritz's definition and because it is firmly within the social order. In this latter vision, he focuses "disaster definitions are also completely in conflict with the traditional understanding of disasters as largely social phenomena. But there is an element in each that appears to mean the "event" perspective. As an observer, I also feel that they are fundamentally different in that they explicitly or implicitly view disasters as arising from (or in a person's elaboration) an event. The impact of this on my perspective on disasters and the notion of "disaster" is clearly reflected in the examples that follow (or in the author's elaboration) and adaptation, and change. These two notions were more implicit in the approach taken by Fritz. Each of these authors seems to test justifying, but also to emphasize, a cycle of vulnerability/displacement—adjustment that characterizes disasters. The HAZARDS DISASTER TRADITION

Another tradition of viewing and defining disasters grew out of the hazards perspective common in the literature of geologists and other physical geoscientists. As Quarantelli (1994) has pointed out, a hazards perspective focuses on the hazard—earthquakes, hurricanes, floods, and so forth—and understanding it. Although there may be a concern with social and other issues. What Is a Disaster?

Generally, a hazard is viewed as an extreme event that arises when a hazard interacts with a social system ("the human use system"). Technically, then, disasters are events that take place as part of normal environmental processes; they are not the principal focus of study. It is often pointed out that a hazard approach is a derivative focus of study in that it is different from the classical sociological approach to disasters. From a hazards perspective, Quarnelli (2005, p. 342) argues that hazard cycles and agents are the focus, making disaster experiences. Indeed he points out that some phenomena studied as disasters have identifiable originating agents (Quarantelli, 2005a, p. 347), such as families and computer system failures. This is not to say that researchers operating within a hazard framework have not grown values that relative human behavior in disasters and it does create an opportunity to examine definitional differences from the classic disaster research approach.

John Gillet (1980, p. 3) defined disaster as a part of the environmental process that is even greater expected frequency and magnitude and those major "human hardship with significant damage." The classical hazard is clearly reflected in this definition, but the critical hazards hazard a cycle of environmental process is present, Suarez, Ochoa, and Warner (1984, p. 264) are closer to the traditional geographers' view when they define disaster as "the interaction between an extreme physical event and a vulnerable human population." (Critig, 1998, p. 77), elaborates a view of disaster as an event in which "physical dynamics affect the environment." In 1980 he argued that disasters may be seen as unexpected and unprecedented impacts that "drive social processes of events" (Critig, 1980, p. 10). Each of these definitions highlights the traditional concerns of hazards researchers with the cycle of hazard agents in their vision of disasters.

Recently hazards researchers studying disasters have moved slightly from what might be considered an "agent-centered" approach to a greater focus on vulnerability, David Alexander (1995, p. 4) pointed out that natural disasters can be thought of as "a complex event with significant impact on the "natural environment upon the social system." In later writing, he elaborated this by saying that disasters are not defined by fixed events "but by social forces and there is not a "disaster" (Cullen, 2005). The construct expressed by Alexander is that disasters are not just the events but also the social consequences which are "constantly" changing of the event, Doreen Malin (1999, p. 3) also emphasizes that disasters flow from disaster to society and that in the social system. Malin emphasizes that human can be seen as creating disasters through their environment on the physical environment. Although he still places the origin of disasters in a hazard context, Malin is more explicit about the social significance when studying the event. Further, a more firmly that vulnerability context, Susan Cutler (2005b, p. 39) argued that the hazard is not just as events but instead have "vulnerability (and resilience) to environmental disasters and extreme events."

Each of these definitions retain the hazards origins of disasters, but also move to examine these in social terms, particularly of vulnerability and resilience. As Quarantelli (1990, p. 341) indicates, this emphasis reinforces the traditional notion that in disasters and studying disasters, one should view first a social system, since they not the agent or the social system the social system. To the extent that the researchers a hazards-disaster traditions are moving forward, the are converging with sociological researchers to place people and social relationships in the context of disaster study.
DISASTERS AS A SOCIAL PHENOMENON

Finally, although the tradition of the original disaster studies, there has been a group of people who explicitly focused on social disasters as the defining feature of disasters, while the concept of social change, At present, some of these are being studied as a result of disasters, and it is now widely recognized that, almost all could place their individual roots by the time period. Indeed, their definitions are similar in shape to those of Crapo (1950), Stahlings (1964), and Paffenhorn (1960) whom have placed at their evolution of the classic definition. However, these definitions are distinct in their emphasis on social phenomena. Their question to the deprivation of socially recognized, and the harm done to victims of natural agents. In the major factory, these definitions depart from both the classical era definitions and the hatred disaster perspective.

Allen Burton (1961, 1965, 1969, p. 35) saw disasters as an collective social situation arising when members of a "social system fail to receive expected conditions of life from the system." Burton then moved to a classification scheme that created a matrix of four dimensions (type of group, size of group, type of interaction, and type of interaction). There is also an approach to defining disasters based on the concept of social change that is "integral aspects of social life as a radical change" in the future environment. The reference to social change as the stimulus for disaster is extensively examined in the literature.

E. J. Quarantelli's career spanned the entire era of the present. He was involved in the early research efforts, conducted much research himself, co-founded with Ronald Dwyer the Disaster Research Center in 1967, and founded generators of disaster researchers. It has been well known that he has been a scholar, but also a prolific author for disaster research. (Quarantelli, 1966). He (Quarantelli, 2001, p. 582) identifies disasters as a sense of a theory of defining features. They: (1) unintended societal events, (2) seriously disrupt the routines of collective units, (3) cause the disruption of expected courses of action, and (4) are processes that lead to social change. Below is a summary of some of these definitions highlighting the different social dimensions of disasters:

1. **Intentionality**: Disasters are intended societal events. They are the result of a conscious decision-making process. They are actions taken by human beings that have the potential to cause harm to others.
2. **Disruption of Normalcy**: Disasters disrupt the routines of collective units. This disruption can be physical, social, or psychological. The disruption can lead to a loss of control or a feeling of helplessness.
3. **Rupture of Social Structures**: Disasters cause a rupture in social structures. This can happen in various ways, such as through the breakdown of communication networks, the collapse of government, or the failure of basic services.
4. **Long-Term Impacts**: Disasters have long-term impacts on societies. These impacts can be seen in changes in social norms, policy changes, and shifts in public opinion.

Although these definitions vary, they share a common goal: to understand the nature of disasters and their impacts on society. By examining these dimensions, researchers can better understand the causes and consequences of disasters, and develop strategies to mitigate their effects.
CONSENSUS ON DEFINITIONS

In almost every definition used in the foregoing section, the author or authors included an elaboration to explain intent and often demonstrated causes and consequences of disasters. These elaborations contain clarifying messages, but space limitations prohibited their presentation here. The following comments on themes often rely on these elaborations as well as any interpretation (right or wrong) by the end, the references are there to be checked by skeptics.

More than three dozen definitions of disaster have been presented in this chapter. It would be unrealistic to expect to find homogeneity among them. Clearly there are similarities and overlap; it can certainly be argued that the three structurally conceptualized "baselines" of definitions show considerable similarity within groups. And one would not expect to find consensus definitions in any professional grouping, perhaps especially among social scientists. It is possible, however, to identify several levels of consensus across the definitions as a means of inferring agreement about what disaster researchers see as their field of study.

First of all, there is a level at which consensus exists in the sense of specificity denoted to define consensus. Quarantelli (1965a, p. 338) summarizes this assertion by saying that "it would be difficult to deny that there is a substantial lack of consensus" about the meaning of the term disaster. I agree that computing the depth of each definition (except when multiple authors adopt versions of the definition of disaster also in an environmental of significant change. Similarly, there are differences in social scientific orientation as well: compare the positivist approaches of Sturges, Kirp, and Dombrowsk with the more interpretive approach of Kimball and Guare versus the classic traditional-phenomenological approach of Haywood. All the same time, the task becomes more manageable if the goal is to identify common themes in the definitions.

In a spirit as definite as to what I have referred to as "the natural disaster paradigm" there is some form of consensus in the final sentence that we must be familiar with. About the risk of something that is not known is something that most people do not know and is not something that is not known is something that most people do. The reason is that if we define with the concept of the field that might be obscured in the specific definition and deal with a relatively more manageable risk. Of course there is the risk of misinterpretation when making such inferences about the definition, but most social science is filled with that risk and at some point it is more appropriate to say nothing than to risk being wrong. Kaplanski (1964) warned about reconstructing logic (the scientist's "clean-up" misconception of what they were doing versus logic in use). Environmental definitions cannot be seen as a form of reconstructed logic, and by identifying themes one is at least attempting to capture the logic in use.

I view a theme as admissible if specified as a common opinion by many (not just most) of the authors of the definitions reviewed. Studying disasters means you look for what? To be sure we must distinguish between the social and natural sciences, but they are understood in human interaction. The researchers captured here under the rubric of "disaster in social phenomena" frequently use the word "overload" rather than event that governs social science. Some definitions and elaborations mention the cause of the disaster as an event or force, but others express the social or political factors that lead people to believe they are being disasters. Many agree that disasters stem not from the event that causes the disruption, but from the social pressure of norms and values, hence the predictions. Vulnerability, a part of many of these definitions, is to be found in social structure and it is the outcomes of vulnerability. There is some consensus, by inference, that the magnitude of a disaster should be measured in lives or property lost, but by the excess of the failure of the normative or cultural system. Another fairly common theme is the issue of resilience. Some definitions at the classical paradigm seek the one point of disaster as the point at which normative instability is reached, while others call this instability the implementation of emergent responses (norms or exceptional routines. The link to emergent norm thinking is unmistakable. Typically, those who emphasize vulnerability include the notion of resilience in some form. Finally, although some authors speak of disasters as social problems, there is a general consensus that disasters are not well understood in a context of social change. One seems to have originated this thinking in 1972 and it is present in much of the work of the classical view as well as being a staple of those who define disasters as exclusively a social phenomenon. Among the last, and is one of the recent classical disaster definitions, as well as a hallmark of the definitions that evolved from the classical period, there is an emphasis on defining disasters in social time and space other than physical time and space. As yet, more disaster researchers ignore social time and space than understand it or incorporate it into their research.

While these common themes fit well with Quarantelli's expansion of a current disaster paradigm, much disagreement about disasters as an area of study remains. Some of the disagreement about disasters rests in issues that are not exclusively defined. That is, for example, disagreement about how disasters should be studied, how the definitions proposed by different groups (e.g., policy formulations, etc.) are organized, and the nature of social science, even when disaster research is subsumed by social science, as well as disciplinary differences such as the hazards-disaster distinction. A few differences are based on definitions and relate to such issues as the extent to which disaster is defined, whether to call the current paradigm of disaster research. Quarantelli (1965a, p. 339) points out that it is not in two fundamental ideas. First, disasters are inherently social phenomena. It is not the burying word or storm surge that makes the disaster; these are the forces of nature. The disaster is the impact on individual coping patterns and the inputs and outputs of social systems. Second, the disaster is rooted in the social structure and reflects the processes of social change. Similarly, there are differences in the social scientific orientation as well: compare the positivist approaches of Sturges, Kirp, and Dombrowski with the more interpretive approach of Kimball and Guare versus the classic traditional-phenomenological approach of Haywood. All the same time, the task becomes more manageable if the goal is to identify common themes in the definitions.
The real work to be done with respect to definitions of disaster has to do first with conceptualization. Two needs exist: (1) what disaster means, and (2) what disaster requires. More specifically, each researcher needs to decide: this is not an empirical task. One must decide on fundamental beliefs as to whether disasters are social phenomena or are the events with which they are often associated or even some natural or technological process. The need for definitional consistency in this chapter seeks a grounding point by identifying areas of consensus in which those differences as a set of definitions. The inconsistencies are vast. A significant point in that this position of making explicit our aspirations and what disaster he began to take hold, although there is much more to be done.

The second part of the work to be done focuses on scaling among sociologists and disaster assessments. It is no longer appropriate to expect that a researcher can continue to do studies without specifying what constitutes a disaster. Further, the task of defining disasters should no longer he treated as an unnecessary abstraction that, escapes the minds of a few social old disaster researchers. There needs to be a serious engagement on the definition issue. A concern with taxonomy—the meaning that underlies typologies or classification systems—would logically evolve out of this dialogue or engagement. Clearly, as other disciplines (such as beauty and biology) have found, we need to further specify our subject matter. This work has seen a modest start. Taxonomic thinking cannot be characterized as the "easy work." It demands that one carefully understand the growing field of findings, appreciate the meaning of disaster as a conceptual term, and engage in both individual and some definitive reasoning to support the creation of classification systems. The outgrowth of this effort is reductive and inclusive term here. There need not be a single taxonomy, many can coexist. But there must be one or more typologies and they must be widely accepted as legitimate in a community. The more complex, the more likely and quickly common in some level will begin to divergent.

Perhaps most critical, researchers will need to develop their ongoing insights in terms of one or more typologies. Most does this apply to the disaster community? It could be each piece of research. At the same time, a task arises to consider the disaster findings of days (decades) past. When we cite these findings, we must begin to group them into one or more of today's typologies. In this way, it would be more to separate findings about liking behavior in situations that do and do not involve conflict. One practical outcome of the use of typologies is that we can reduce the potential ambiguities associated with interpreting our findings across events and at the same time present a clearer and more precise picture to those who may be using our findings in devising social policy. We will begin "interchange" our way out of this problem. Such a task will only Lucy the field further in a kind of intellectual and conceptual model that will produce elaboration and clarification.
CHAPTER 2

A Heuristic Approach to Future Disasters and Crises: New, Old, and In-Between Types

E.L. Quaranfell, Patrick Lagadec, and Ariën Boin

Disasters and crises have been part of the human experience since people started living in groups. Through the centuries, however, new threats and risks have emerged that have added to the possibilities of new disasters and crises arising from them. Only a very small fraction of risks and hazards actually lead to a disaster or crisis, but they are often a necessary condition for such surfacing. New types have emerged while older ones have not disappeared.

The development of synthetic chemistry in the Fifth Century, nuclear power in the Twentieth Century, and the risk of toxic chemical disasters and crises from radioactive fallout. Ancient disasters such as floods and earthquakes remain with us today. This chapter raises the question of whether we are in another important historical juncture with the emergence of a new distinctive class of disasters and crises not seen before.

Our goal is to develop and analyze these possible new phenomena. Our second aim is to categorize all disasters and crises into a systematic conceptual framework. This classifies disasters and crises in addition to older forms; it reconceptualizes elements of old threats with new vulnerabilities. In the future, we will concentrate on new types of disasters and crises, along with continuing manifestations of old ones, as well as new forms that in some respects have characteristics of older entities in a new element. In short, as we move further into the 21st century, risks and hazards will play more prominently than ever before with their occasional manifestations in disasters and crises. This differentiation will present very complicated and challenging problems for planning for and managing with new vulnerabilities.

We offer here a heuristic approach to understanding the disasters and crises of the future. The chapter is presented personally as a guide to further inquiry. Hopefully stimulating more specialization in the concept of disasters and crises in the past, present, and future. Unlike concepts in some areas of scientific inquiry, in which definitive conclusions can be reached (e.g., about the speed of light), our phenomena we are discussing is of a dynamic nature.

NOT NEW SOCIAL PHENOMENA

Human societies have always been faced with risks and hazards. Earthquakes, very hostile age and intergroup relationships, floods, sudden epidemics, threats to take multiple hostages or commit large numbers of persons, animals, fish, plants, and trees relatively quickly; opening phenomena have marked history for centuries and not centuries. Some of them have few scores of disasters and crises.

These explicitly recognized negative social phenomena requiring a group reaction go back to the times when human beings started to live in stable communities, approximately 10,000 to 6,000 years ago (see Lenski, Lenski, & Noll, 1993). However, recent archaeological studies suggest that births started to occur even more regularly, and settled into permanent sites around 9,500 years ago (Bahr, 2005), so community-recognized disasters and crises might have an even longer history.

The earliest occurrences are described in legends and myths, oral traditions and folk songs, religious accounts, and archeological evidence from many different cultures and societies around the world. For example, a "great flood" story has long existed in many languages (Lang, 1985). These philosophical indications of disasters and crises have been used to model both the development of history with descriptive accounts of contemporary occurrences, as well as examinations of past ones.

As human societies have evolved, new threats and hazards have emerged as well. New dangers have been added to existing ones; for example, risks from chemical, nuclear, and biological agents have been added to natural hazards.

International conflict situations have become more damaging, at least in the sense of involving more and more victims. The last 50 years have seen two world wars, massive air and missile attacks by the military on civilians distant from battle areas, and major terrorist attacks, widespread ethnic violence, and so forth. Just in the last decade, genocide may have killed one million people in Rwanda, and millions have become refugees and torn of others have died in Darfur in the Sudan in Africa. Similar attacks have occurred in Indonesia. All of this suggests that terrorism is not a new phenomenon, its targets have expanded considerably.

Also, although we will discuss it only in passing here, a case can be made that there has been a progressive quantitative increase, especially in the last two centuries, of new risks and hazards, e.g., chemical and nuclear. In fact, some scholars and academic have argued that the very attempts to cope with increasing risks, especially of a technological nature, is intensifying new hazards. As the human race has increasingly been able to cope with setting such basic needs as food and shelter, some of the very coping mechanisms involved (such as double-edged consequences of agricultural pesticides) have generated new risks. It is uncertain whether modern society is able to handle these new challenges. Thus, the relationship between chemical, nuclear, bacterial agents, and natural phenomena is increasingly complex. Therefore, it seems that double-edged consequences from new innovations (such as the use of chemical, nuclear, biological power, and genetic engineering) will continue to appear (Terenz, 1998).
SOCIETAL INTERPRETATIONS AND RESPONSES

Societies for the most part have not been passive in the face of these increasing dangers to human life and well-being. This is especially true in much of the social science literature, especially the comments of critics. In fact, some of these writings on social development (e.g., Quarantelli, 2000) are a result of religious beliefs that affirmative religious societies have been more prone to respond to disasters. By extension, it is not surprising that religious societies have been more prone to respond to disasters.

Historical studies strongly indicate that societal interpretations have been more differentiated than once believed and have shifted through the centuries, at least in the Western world. In ancient Greece, Aristotle categorized disasters as the result of natural phenomena or the result of supernatural interventions (Aristotle, 1952). However, with the spread of Christianity about 2,000 years ago came the belief that disasters were "special providence " from God to punish sinners (McKee, 2002, p. 110). Thus, in the Middle Ages, the scholar and educated elites "relied on the presence of the supernatural origins of natural disasters" (Masson-Guilbaud, Platt, & Schott, 2002, p. 19).

While the 17th century, however, such explanations started to be replaced by "more of that typical view as accidental or natural events" (McKee, 2002, p. 110). This, of course, also reflected a growing trend toward scientific thinking in Western societies. Perhaps this reached a climax with the 1755 Lisbon earthquake, which Dyke wrote can be seen as the "first modern disaster" (Dyke, 2000, p. 10).

For our discussion here, it is mostly from the perspective of the educated elites in Western societies. Little scholarly attention seems to have been given so far as what developed in the Russian social systems. One ongoing observation about the Chumash people and fire disasters seems that the pattern is discernible might not be universal. Thus while the presence of nature was encouraged in cities, they were not mandated "since calamities were considered to be expressions of the will of God" (Woodward, 2003, p. 124). Even as late as 1856, an Ottoman architect building code stated that according to religious writings "the will of the Almighty will be done" and nothing can and should be done about that. At the same time, this code allowed the architects that "if it is necessary to build on a site there was no general idea that the presence of buildings or the presence of buildings of a particular kind were" (Henderson, 2002, p. 226). Of course, incomprehensibility between natural and supernatural views about the world are more frequent than those in other societies but that still leaves the distinction important. For an interesting attempt to deal with these two perspectives see the paper entitled "Disaster, a reality or a construct? Perspectives from the past" written by Fuglede (2005), an Indian scholar.

Historian also noted that the beliefs of educated and professional elites and citizens in modern-day societies may be only partially correct. Certainly, this was true in the past. But even recently, an Australian disaster manager asserted that after the 2004 Southern Indian tsunami more of the population seemed to believe that the disaster was "sent by God as a test of faith or punishment" (McKee, 2005, p. 9). At another wiser course, following the terrorist, religiously oriented events in New York, some were in need of "fundamentalist Christians" who were not to visit people as a harbinger of the apocalyptic end of the world. Others were in need of a "bible of the living" who are inclined to see any disaster that "washes the beach of all that can be done to save it" (Nisbet, 2003, p. 16). After Hurricane Katrina, some leaders of evangelical groups spoke of the disaster as a punishment imposed by God for "national sins" (Corporation, 2005).

However, in the absence of systematic studies, the most likely hypothesis is that at present religious interpretations about disasters and civic will still appear to be widely held, but relative to the past probably are more prevalent among people of religion. The distinction in the future may alter the effect of these existing differences in the importance of religious belief on society, which can be noted in the religious belief factors and practice currently existing in the United States and many Islamic countries, compared to Japan or a highly secular Western Europe.

Apart from the varying interpretations of the phenomena, how does society behave? Contrary to the existing and ever increasing interest in risk and risk, it is noted that many groups have a tendency to follow distinct patterns and strategies. But societies have followed different directions depending on the perceived sources of disaster and others. Responses tend to differ with the perception of the primary origin (the supernatural, the natural, or the human sphere).
For example, floods were seen long ago as a continuing problem that reeked of a collective response involving engineering measures. Stones that a Chinese Eliyahu, 23 centuries before Christ, described ‘the floating Yellow River by massive dyke and the building of defensive canals’ may be more legend than fact (‘Khrushchev, 1979, p. 33). However, there is clear evidence that in Egypt in the 20th century, the 12th Dynasty Pharaohs, Amenemhet II, completed southwest of Cairo what was probably their first substantial new canal project (an irrigation canal and fish with sluice gates). Other documentary evidence indicates that dams for flood control purposes were built as far back as 1200 B.C. in Greece (Schröter, 1934, p. 1–9). Such mitigation efforts indicate that those that were long-term and as well that one could be carried out with the physically altering engineering dimension.

Later, particularly in Europe, there were many recent efforts to façade mitigation measures. For example, seawall-strengthening building techniques were developed in ancient Rome, although they had been forged by the middle ages (Massoud-Ghoul, Brest, & Weill, 2000, p. 31). The threat from storms and floods forced mitigation efforts in Greece, Sweden, and the Netherlands in the 19th century, developing. The sea was seen as a threat and the consequences of the construction of dykes are not. Many of them were built in the face of a number of threats, such as flooding and storms (Pahlberg-Sunny, 2002). Of course, action taken was not always successful, but the efforts showed that the face of the entire project, disaster, and officials were often too passive but proactive as well as reactive. If nothing else, these examples show that organized mitigation efforts have been undertaken for a long time in human history. To try to prevent or reduce the impact of possible disasters in the face of it, some seem to see that it was invented by the US Federal Emergency Management Agency (FEMA), which certainly did move in this direction at the end of the last century.

Two other major behavioral trends have emerged that are really preventive in impact but not always in reality. One has been the mobilization of responses by emergency-activated groups to be prepared to prevent potential disasters or crises. For example, in ancient Rome, the first groups informally set up to fight fires were composed of slave labor. But when a fire in 6 B.C. burned almost a quarter of Rome, a Corps of Vigiles was created that had full-time personnel and specialized equipment. In more recent times, there are good examples of this mobilization in the planning of public utilities that have standardized operating procedures to deal with emergency situations. As a result, there has been a decrease in disaster-related injuries and fatalities. Various UN and other international organizations such as the International Atomic Energy Agency have tried to head off the development of crises in situations of conflict. In this day, disasters have sometimes led to the adoption of new ideas and threats from newizing into disasters and crises.

An other time, recent trends have been the development of specific organizations to deal with new crises and then with preparedness. Civilian emergency management agencies have evolved from prom in civil defense groups created for air raid warnings (Ehrenfeld, 1986). Accompanying this has been the professionalization of disaster planners and crisis managers. There has been a notable shift from the involvement of amateurs in professional roles in societies such as Canada, the United States, Australia, and some Western European countries. Thus, for about a century societies have been creating specific organizations to deal with new risks for civilians created by changes in warfare, and then improving on these new groups as they have been extended to proactive situations.

Human societies acquired not only in the short run but also in the short time that appeared up to the last century. The very survival of the human race is testament to the coping and adjusting social mechanisms of humans as they face such threats. Occasionally a few communities and groups have not been able to cope with the manifestations of contemporary risks and hazards, but these have been very rare.

Natural disasters or crises involving conflict have had much effect on the continuing existence of cities anywhere in the world. Throughout history, many cities have been destroyed. They have been attacked, looted, burned, flooded, starved, strangled, and poisoned (and in almost every case, probably they have been reestablished (Vale & Campanella, 2001, p. 3). Around the world from the 12th to the 18th centuries, only 42 cities throughout the world were "permanently abandoned following destruction" (Vale & Campanella, 2001, p. 1). The same analysis notes that large cities such as Baghdad, Moscow, Aleppo, Mexico City, and Budapest and we may add more recently Disaster, Tokyo, Hiroshima and Nagasaki, all suffered massive physical destruction and had large numbers of their populations as a result of disasters and wartime attacks. But all were rebuilt and reoccupied; in fact, at the start of the 19th century, "such resilience became a nearly universal fact" about urban settlements around the world (Vale & Campanella, 2001, p. 3). Looking at the earlier mentioned Agra city today as well as Warsaw, Berlin, and Hamburg, a sense of this recuperative tendency is still very strong at the middle of the last century (see also Schröder & Suss, 2003). Given that the widespread predictions in 2005 that New Orleans would never recover from the catastrophic impact of Hurricane Katrina are very unlikely to be correct.

SYSTEMATIC STUDIES ARE NEW

Early efforts to understand and cope with disasters and crises were generally of an ad hoc nature. With the coming development of science in the 19th century, there was the start of dealing with understanding of the physical aspects of natural disasters, and there had been some influence constructed mitigation measures. However, the systematic social science study of such negatively- viewed occurrences is only about a half-century old. This is not surprising given that the social sciences as a whole are about 100 years old. Thus, social science knowledge for coping with disasters has only recently become available.

Disaster and crisis research of a social nature is a new and then a phenomenon. That some of the different processes that are still around in the writing of this chapter is a good indication of the recent origins of this field of study. This history is spelled out in detail, although selectively, elsewhere (e.g., see, 1956; Kepes, 1948; Quarantelli, 1989; Slocum, 1989; Wright & Roots, 1989). But it seems to be the case that there are identifiable but new aspects of this in traditional disasters and crises, some kind of companion has to be made. What are the distinctive aspects of the newer disasters and crises that are not seen in traditional ones? To deal with this and other beyond traditional sociological, we considered what social science studies and reports had found about behavior in disasters and crises up to the present time. We then simply compared those observations and findings with the distinctive behavioral aspects of the newer disasters and crises.

To be sure, such accounts and reports do as much as we can and not complete. Nevertheless, at the present time, case studies and analytical reports on natural and technologically disasters (and some even on other crises) number in the four scores. In addition, numerous impressions of specific natural disasters have been derived from field research (for summaries and sociologies see Alexander, 2000; Cattell, 1994, Dwyer & Turvey, 1994; Dwyer, DeMello, & Pillsbury, 1957; Fahrenheit, 1990; Meltzer, 1990; Oliveira Smith, 1990, Perry, Lidebo, & Prates, 2005; Rosenbath, Bois, & Constan, 2001; Rosenbath, Charles, & Hilt, 2001).
DIFFERENT CONCEPTIONS OF DISASTERS AND CRISIS

Once upon a time, researchers and scholars have been known to occasionally judge disasters and crisis based on collective guilt. Unfortunately, there has been only partial consensus on how to approach the problem. Is it that there have been major efforts to clarify the importance of what is a disaster or a crisis? How is it? If it were true, to play for X or Y at the present of X, there has to be at least some measures against general condition of what X is. Otherwise, people would often talk past one another and show different things, according to a recently edited volume on what is a crisis (Quarantelli, 1998; Perry & Quarantelli, 2005).

At the practical or operational level, a distinction is even more acute. Methods or procedures that might be advocated with simple words are given different, different conceptualization of disaster and crisis that might be involved (e.g., Although police actions for riot occasions tend to be rather different from crisis actions, as discussed above).

It is true that it is more important to look into what causes or generates something that is to identify something. But it is very difficult to discuss what generating conditions are, unless one studies very closely the environment of the relationship. In other words, characteristics have to be relatively identified before one can examine the conditions and the consequences. That is our underlying principle of crisis studies.

However, there is far from full agreement that all disasters and crisis can be categorized into straightforward categories, despite the fact that there have been a number of instances in which the boundaries, or areas, and within different kinds of disaster and crisis. Therefore, if one overall view has any inherent new general conclusions among different disaster and crisis research. To discuss, we will briefly note some of the major findings advanced.

For example, one of the very early attempts to distinguish between cultural and technological disasters, although some suggest that this distinction is not always clear (e.g., the Disaster Research Center's (DRC) never accepted that as a meaningful distinction. The basic distinction was that the inherent quality of the agent (or cause) made a difference. Implicit was the assumption that technological disasters present a different and more varying kind of challenge to humans than do natural hazards or crisis. But most authors have since dropped the distinction as hazards have come to be seen as less important than the social setting in which they appear. Thus, in recent major reviews on what is a disaster (Perry & Quarantelli, 2005; Quarantelli, 1998), this distinction was not even mentioned by many of the twelve scholars who addressed the basic question. But there are still some who say that separating out disasters with a technological base is a worthwhile endeavor (e.g., Yezzi & Wills, 1996, 1997; Cox & Willig, 1994).

Some scholars have suggested that the distinction between cultural and technological disasters is far from clear. Some scholars distinguish between crises and crisis types of events (Stallings, 1986) in order to reconcile the two perspectives. In some research circles, especially among natural and most technological disasters are viewed as common types of events (Quarantelli, 1998). Some think

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contingent with crisis involving conflicts such as civil, humanitarian, and ethnic cleavages and intergroup clashes.

The latter type of crisis is more likely to occur when a major power or powers to make war or to cease the duration of the crisis. In natural and technological disasters, no one deliberately wants to make the situation worse or to cause more damage or failure. Disasters of utilities disruptions regarding civil or technological disasters are predictable, and personal, organizational, and community conflicts will exist, for example, in its recovery phase of disasters, where scoping in conflict (Ackerman, 1980; Drescher & Quarantelli, 1983).

In some crises, the overall interests of major social actors is to deliberately attempt to prevent conflict. In contrast, the utility of disaster preparedness of natural disasters, terminal goals or promoting factors are not only materially good to disrupt social life but they also may modify their behavior depending on perceived consequences.

Apart from a simple observation that interaction between consequences and conflict types of crises, empirical studies have also established behavioral differences. For example, footing behavior is distinctly different in the two types. In typical situations in disaster situations, almost always leading to very rapid, intense, and spatially restricted, done by individuals, and involves growth of opportunity. In contrast, in party crisis actions leading to very common, main and visually supported, produced by voluntarists of groups of individuals or groups of groups, significantly longer (Quarantelli & Drescher, 1980; Quarantelli, 1983). Likewise, there may significant differences in hospital arrival in the two types of crisis, with more variation in conflict situations. There are differences also in the types in which both organizational and interorganizational level factors occur as a result of consequences and conflict types, with more changes resulting from conflict situations (Quarantelli, 1993). Finally, it has been suggested that the mass media operate differently in terrorism situations and in natural and technological disasters (Converse & General Associates, 1999, 2001). However, see Welch (1993) for a summary view that underlines occasional as or more or less being the same as what behaviorally appears in natural and technological disasters.

It is not unimportant to mention that both the Oklahoma City bombing and the 9/11 World Trade Center attack led to sharp clashes between different groups of institutional stakeholders. There were those who saw the occurrence primarily as criminal acts necessitating closure of the location to crisis scene, and others who saw it primarily as a catastrophe from which the victims should be extracted and that the two were more closely related. It is not surprising that the two kinds of situation occurred.

The normal situation is that events are often interpreted in different ways, and these interpretations often lead to different policies. This is why it is important to understand the implications of the events and how they might influence the way in which they are perceived and how they are being perceived. It is important to note that there are different ways of interpreting events and that these interpretations can have different effects on the way in which they are perceived. It is also important to note that there are different ways of interpreting events and that these interpretations can have different effects on the way in which they are perceived.
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Acting, but existing hazards and risks insufficiently require this. (On the differences between the two risks, see Boin, 2005.)

Failing, there also have been recent attempts to categorize conflict situations at one type of disaster. Thus, some talk of natural disasters, accidental disasters (mostly referred to as "technological disasters"), and deliberate disasters. Of course one of the crises we discuss later, computer system failures, can be the result of either technological accidents or deliberate interventions of viruses. Many transportation accidents, such as plane crashes or train wrecks, can also be both. The same can be said for forest fires: some result from lightning, some from lightning-fearing a創新 of an initial draft of this chapter, and indeed, "it is difficult to ignore that some of the phenomena that disasters and crisis researchers are interested in, involve some sort of conflict, and I think some do not mix well with one another (e.g., sexual disorders)." That distinction would seem even more important in exploring any patterns in the interaction between disasters and conflict, or crisis. We also recognize that some crises such as computer system failures can be seen as being related to conflict, that others have argued that disasters, acts of terror, and terrorist acts should be viewed as two different kinds of crises (Fukuyama & Suri, 2003). More recently, some have been attempts to differentiate, in a qualitative sense, disasters from crises (Quarantelli, 2006).

The preceding observations suggest that it would be for better for researchers to avoid focusing on a possible agenda that might be involved and instead to examine the social behavior that appears and in the context of a disaster or crisis. It would also seem that the assumption of participants in the setting cannot be ignored.

This is not the place to go into a possible conceptual dissection and we will not attempt to do so. Anyone who has been in a study should acknowledge that there are different views on what constitutes the social behavior of a group. That is, there are different views on what counts as an act, and different views on what counts as an act as possible as possible, or what counts as a crisis. However, there is perhaps a little bit more here to note that the severity or intensity of the phenomena are crucially different from major or minor, or minor in terms of crisis, or different from major or minor, or minor in terms of the set. 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infected persons dead. It particularly hit Canada with outbreaks in Vancouver in the West and Toronto far away in the East, in time, of the several hundred persons who became ill, 44 died and thousands of others were quarantined. The city’s health care system virtually closed down except for the most urgent care, with countless procedures being delayed or canceled. This led to widespread anxiety in the area, resulting in the closing of schools, the cancelation of many meetings, and because visitors and tourists stayed away, a considerable negative effect on the economy (Commission Report, 2001, p. 25). The report notes a lack of coordination among the multitude of private and public sector organizations involved, a lack of consistent information on what was really happening, and panicky speculation on who should be doing what. Although SARS vanished worldwide after June 2003, to this day it is still not clear why it became so virulent in the initial outbreak and why it has disappeared (Yarow, 2009).

The SARS computer F virus spread in August 2003. This was hardly the first deliberate introduction of an electronic virus into computer systems. The first occurred in 1981 (see http://www açısından.com/for报仇for a comprehensive history of computer virus epidemics). The SARS virus carried its own SNMP mail program and used Windows® network shares to spread (Schwenk, 2005). Actually this virus was developed only out of a set of other viruses that were circulating at the same time, but it is seen as the dominate one in the world. It affected many computer systems and the need for awareness and knowledge is even more extensive. The damage was very costly in terms of time, effort, and resources. A variety of organizations around the world, public and private, attempted to deal with the problem. Initially unconfirmed, there eventually emerged an informal way of passing information on how to cope with what had happened (Koerner, 2003).

What can we generalize from not only these two cases but others that we looked at before? At least, we highlighted a number of common dimensions. In any recent analysis, we have reduced them to six. The characteristics we depict are still in ideal typical terms, but this is, from a social science perspective, what the phenomena would be if they exist in pure or perfect form.

First, the phenomena spread across many international and national governmental boundaries. There was, for example, the huge spatial trip of SARS from a local outbreak in China to metropolitan Toronto, Canada. In some instances, the phenomenon may spread to produce possible outbreaks around the world, like the SARS computer F virus. It crossed functional boundaries, jumping from one sector to another, and crossing from the private into public sectors (and sometimes back).

Second, the phenomena spread very fast. Cases of SARS were world in less than 24-hours, starting with a beep who had been in China and then flying to Canada, quickly infecting persons in Toronto. The spread of the SARS F virus was valued the fastest not Weekley (Spread, 2005; Thompson, 2004). This quick spread is accompanied by a very quick if not simultaneous global awareness of the risk because of mass media attention. Despite this speed, however, at the start, the end of the happening’s course is not clear cut.

Third, there is a known chain of clear points of origin at least initially, along with the fact that the possible susceptible areas are far are from clear. This is what when SARS first appeared in Canada. There is much ambiguity as to what to figure. Ambiguity is of course major hurdles of disasters and crises (Torney, 2006), but it appears even more drastic in these seven cases.

Fourth, there are potentially Post actual number of victims, directly or indirectly. The SARS computer F virus infected 9% of e-mail users in China, which is about 20 million people (Koerner, 2003) and those three friends of e-mail messages around the world were infected.

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by this view (Koerner, 2003). In contrast to the geographic reach of most past disasters, the geographic reach of these events is often more limited. Firms, traditional local community "solutions" are not obvious. This is more contrary to the common emphasis in emergency management philosophy. The firm and first focus of planning and managing disaster for the local community at it is a generally understood potential and recreational organizations are typically involved very early in the initial response. Theuncan can be very even be a prime actor in the situation.

Firms, although imposing organizations and groups are major players, there is an exceptional amount of emergent behavior and the development of many informal or spontaneous linkages. In some respects the informal social networks generated, involving much informal information exchange, are not always easily identifiable from the outside, even though they are often the crucial actors at the kernel of the crisis.

We call these phenomena "bureaucratic social networks" (CSN’s). This term is an extension of the earlier label of "social networks" advanced by Latour (2005). The larger phrase is used to emphasize the fact that these temporary networks operate within different societal and social contexts, disrupting the fabric of different social systems.

POSSIBLE FUTURE TSSR

If a disciplinary approach is worthwhile, it should be able to somewhat predict the future, visualizing that the social sciences multiple disasters have little attempted. In this section, we present several future scenarios that could be TSSR. Even though some of these scenarios discussed might seem like science fiction, they are well within the realm of realistic technological possibilities.

The first scenario is the possibility that asteroid or comet may hit the Earth (G Jutis, 2005). Of course, this has happened in the past, but even more recent impacts focus us on relatively low hazards. There are two major possibilities with respect to impact (McGovern, 2003; Wiser, 2002). A landing in the ocean would trigger a tsunami-like impact. The second is the possibility of the comet hitting the Earth. However, we know that several high in the atmosphere, which would affect food production as well as creating economic disruption. This would be akin to the Tchernobyl volcano eruption in 1981, which led to very cold summers and deep failures (Post, 1977). The planning and management problems for handling an event like this that could be of a global nature would be immense.

In recent times, the Soviet astrophotometer spacecraft have gone up over Canada (Skirover, 2003) and the Columbia space shuttle explosion occurred (India) over a large part of the United States. The survey analysis of these more geographically, limited instances suggests that they had many of the characteristics of TSSR as could appear in a context impact. They would present as an accelerant effect coordinating organizations that had not previously worked with each other and other unfamiliar groups, public and private (ranging from the U.S. Forest Service to local Red Cross volunteers to regional medical groups). The threat occurred almost over a large part of the United States (Donohue, 2003). This clearly indicates characteristics of TSSR if a major collision of asteroid impact occurs, with reduced crossing of boundaries, very large number of displaced victims, no local community "solutions" for the problems, and so forth.
A heated approach to future disasters and crises

their social and political worlds. On the positive side, this often enables thermo-discourse regular interaction and beliefs about the phenomena they study or deal with a daily basis. However, on the negative side, they tend to look insatiably for premonitory signs and overall worst-case scenarios. In a term advanced a century ago by Veblen, they end up in a "moral reckless" to see one another "as expected phenomena.

In the disaster and crisis areas, this orientation is reinforced by the strong tendency of social critics and intellectuals focused on social issues to stress the negative. For example, a recent publication by a sociologist at Cambridge University (Hess, 2000) gives civilization as we know it only a 50-50 chance of surviving the 21st century. Some of these kind of statements are very popular in novels (in general, where attention is focused on what could or did go wrong), along with no-nonsense accounts about nothing happening and few about positive outcomes (Fischer, 1998a; Gilmour, 1984; Cohn, 1880; Quaternary, 2002; Smith, 1912; Walters, Wilkins, & Walters, 1983; Western, 1992; Werner & Quaternary, 1999).

Let us note two cases where predictions were made about disaster and crises occurred. When the Mt. St. Helens volcano erupted on May 18, 1980 it leveled hundreds of square miles of forest, spewed mudflows that ran into the shipping channel of its nearby Columbia River, and killed almost all plant and animal life in a large area that was buried under ash and debris. The surrounding landscape was almost totally barren and devoid of almost any kind of life. Experts stated that the environment in the affected area would take centuries to recover. However, 25 years after the eruption, and with almost no effort by people to recreate the area, the original species of trees, plants, birds, and animals have come back and are flourishing more readily than at the time of the disaster. In fact, the crow was marked by the reappearance of 70 species of birds new to the area (LaCorte, 2005).

Similarly, Hiroshima, the target of the first atomic bomb, was not only physically destroyed by a huge number of people, perhaps 100,000 people, were killed, and yet the actual number of casualties in Hiroshima, 2010, in the museum that now exists at the exact point where the bomb fell, there is a 550-square-degree photo of the scene around that point, taken a few days after the attack. Except for a few piles of stones, there is nothing but rubble as far as the eye can see in every direction. Some believed this scene would not change for decades. But a visitor to the museum today can see in the windows behind the circular photograph every sign of a bustling city and its population (for a description of the museum see Dewar & Quaternary, 2006). Hiroshima, unlike the Mt. St. Helens area, did receive much aid throughout. But both came back in ways that observers at the time of the disaster did not foresee. (For a description of the immediate post-impact devastation in Nagasaki, see Hall, 2000).

Likewise, who would have predicted that starting in 2000, the Russian nuclear organizers would have to deal with the terrorist threat, in addition to the original threat, in addition to the nuclear threat? This type of activity and the nearby abandoned city of Prypiat, where radiation readings are still dangerously high (Chayes, 2005).

It sometimes helps to look at the past, see what was projected at a particular time, and look at what actually happened. The worldwide expectations about what would happen at the turn of the century to countries are now simply remembered as the "21K excesses. It would be a remarkable study to take projections by researchers about the future of ongoing crises and disasters, and then to look at what actually happened. In the 1960s, in the United States, thousands made rough projections about the imminent future course of social and university events in Berkeley. Not only had their initial appearances not been forecast, but only had their initial appearances not been forecast, but it would be a mistake to say that the" or that the 60s would go from photo albums to university campuses, or also that they would have properly equipped. We should be able to do a better job that we have done so far in making projections through the years of this method of analysis.
about the future. But perhaps that is taking more of disaster and crisis researchers than is reasonable. After all, social scientists with expertise in certain areas, to take recent examples, failed completely to predict or forecast the monsoon rains of the Soviet Union, the peaceful transition of Black South Africa, the collapse of the Soviet Union in 1991, the development of a new market economy in communist China.

THE DIFFERENTIATED AND CHANGING SOCIAL SETTING

A disaster or crisis always occurs in some kind of social setting. By social setting we mean the social systems that influence or are influenced by the crisis or the disaster. The differences among the social systems are what gives rise to the different terms in which a crisis or a disaster can be described. Thus, the social setting can be seen as a social structure, a cultural framework or a social arena, but it is not something independent of the social systems that influence or are influenced by the crisis or the disaster. It is not the social system that determines the crisis or the disaster. It is not the social system that determines the social setting.

What about the future? Let’s look at existing social structures around the world. What are the differences between the social structures, the social institutions, and the social diversity?

As examples we might note that Australia and the United States have more decentralized governments than do France or Japan (Horner, 2002; Scholl, 2004). This affects what might or might not happen in times of disasters. For instance, given the research evidence that top-down systems have more problems in responding, it might have been expected, as it did occur, that there would be a considerable delay in the central government response to the earthquake in Kobe, Japan (see the chapter on national planning and response by Brunn in this handbook, where he extensively discusses Japanese disaster planning and managing; see also Nakamura, 2000).

As another example, a mass media system exists in almost all societies, but even with the same technologies this social institution operates in rather different ways in China compared with Western Europe. This is especially important because to a considerable extent the mass communication systems are the major source of “information” about a disaster or crisis (see the chapter by Scarlato in this handbook). In major ways, it is socially constituted disasters and crises. This is partly illustrated by the fact that in the former Soviet Union even major disasters and internal conflicts in the form of flows were simply not openly reported (Bengt, 1988). And only late in 2005 did Chinese authorities release information that hundreds of deaths in several disasters could be widely published, but not for other kinds of crises (Kahn, 2005).

Finally, another social structural dimension has to do with the degree of social diversity in different systems. Social groupings and categories can be markedly different in their homogeneity or heterogeneity. The variation, for instance, can be in terms of life styles, class differences, or demographic composition. The age population in Western Europe and Japan is in sharp contrast to the very young populations in most developing countries. This trend in the population in the United States is young and is expected to continue in Iran where the figure is 30% in India, whereas it is 36%. This is important, because the very young and the very old disproportionately incure the greatest number of fatalities in disasters. The ethnic diversity in different societies and their effects on disaster preparedness, response and recovery, see the chapter by Bein in this handbook.

Human societies also differ in terms of their cultural framework. As anthropologists have pointed out, they have very different patterns of beliefs, norms, and values. At one extreme, there can be widely held different conceptions of what constitutes an acceptable or unacceptable disaster and cause. The source can be attributed to supernatural, natural, or human factors as indicated earlier. This can markedly affect everything from what mitigation measures might be considered to how recovery and reconstruction will be approached. For instance, indicators of what kind of action should be followed in different situations can vary tremendously. For example, the same kind of help outside of one’s own immediate group at times of disasters and crises ranges from full help to none. Thus, although the Kobe earthquake was a complete surprise, some extensive volunteering after disasters was very rare in Japan, but comparison of the United States and Japan is in this respect, see (Fox, 2000). In societies with extreme cross-cultural ethnic or social differences, volunteering to help others outside of your own immediate group at times of disasters or crisis is almost unknown.

Finally, much of what is valued can differ substantially. For instance, even the value of doing disaster research and implementing findings from studies varies from one culture to another. This activity is valued very highly in the United States compared to, say, Indonesia, with Pakistan falling somewhere in between.

Social practices and cultural frameworks of course are always changing. To understand disaster and crises, it is necessary to identify and understand these that may be operational with respect to both social structures and cultural frameworks. In particular, for our purposes, it is important to raise needs that might be arising across structural and cultural boundaries.
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[Page 33]

France (of the same magnitude as one in Iran) will probably be reacted to differently. A riot in Sweden will be a somewhat different phenomenon than one in Myanmar. To understand and analyze such happenings requires taking into account the aspects just discussed. It is hard to believe that countries that currently have no functioning national government, such as Somalia or the Congo or marginally organized states such as Afghanistan, will have the same reaction to disasters and crises as societies with fully functional national governments. Different kinds of disasters and crises will occur in rather different social bearings. In fact, events that today are considered disasters or crises were not necessarily so viewed in the past.

In assessing these cross-cultural and cross-categorial differences, we are not saying that there are no universal principles of disaster and crisis behavior. Considerable research evidence supports this notion. We would argue, for example, that many impacts of effective warning systems, problems of bureaucracy in responding, and the crucial importance of the family household are roughly the same in all societies. To suggest the importance of cross-national and cross-categorial differences is simply to suggest that good social science research must take differences into account while at the same time searching for universal principles about disasters and crises. This is consistent with disaster researchers and scholars, e.g. (Olson-Smith, 1984) who have argued that studies in these areas have seriously nego-
tiated the historical context of such happenings, what we have called the social setting. Of course, this neglect of the larger and particularly historical context has characterized much social science research of any kind (Wallis, 1989); it is not peculiar to disasters and crises studies.

SOCIAL AMPLIFICATION OF DISASTERS

The last section brings us to a consideration of other crises and disasters that only partly share the characteristics of TSRS. Many crises and disasters have received traditional characterization, be themselves are new in some important aspects. These represent cases of what we will call the social amplification of crises and disasters (SACD). Often initially developed as an idea about a social augmentation process with respect to risk (see especially Peijnen, Kaapenop, & Slote, 2007). To them, risk depends not only on the changing of dangers and perils, but also on how we view them. This may be an important reason why different perceptions of risk can lead to different responses and actions. In the larger context in which it appears. The idea that there can be social amplification of risk rests on the assumption that aspects relevant to human interaction with the environment are biological, psychosocial, and cultural nature in such a manner that they may increase or decrease perceptions of risk (Kaapenop & Kaapenop, 2005). It is important to note that the perceived risk could be raised or diminished depending on the factors in the larger context, which makes it different from the vulnerability paradigm which seeks to assess the factors involved will be primarily negative ones. We have taken this idea and extended it to the behavior that appears in disasters and crises. Hence the development of new agents or hazard or risks as can be seen in TSRS, there are also the existing social settings as well as changes in these that crucially affect if and how some crises and disasters will occur and be perceived.

Extreme heat waves and massive blizzards are hardly new weather phenomena (Brunt, 2004). The historical record as well as contemporary studies on the social and psychological impact of such happenings is surprisingly sparse (Hewitt & Norton, 1971; International Federation of Red Cross and Red Crescent Societies, 2004, pp. 37-53). Kupper, Kowalc, and Montreux, 2004; Shermer & Hewitt, 1963). As climatological bases they have been around as long as...
as the human race, and in that respect, like hurricanes and cold waves, they have very old antecedents (for statistical data see Burr, 2004).

Two recent hurricanes, however, have contained new elements. In 2003, a long-lasting and very intensive heat wave hit western France. Nearly 15,000 persons died (and perhaps 22,000 to 25,000 in all of Europe). Particularly noticeable was that the victims were primarily socially isolated elderly persons. Another characteristic was that officials were very slow in accepting the fact that there was a problem and so there was very little social response (Lagadec, 2004). A somewhat similar earlier incident occurred in 1995 in Chicago that was not much noticed until reported in a study 7 years later (see Klinenberg, 2003). It exhibited some of the same features, namely, isolated victims, bureaucratic indifference, and mass media inanitude.

At the upper temperature extreme, in 1998, Canada experienced an accumulation of snow and ice that were considerably beyond the typical. The ice storm heavily impacted electric and transport systems, especially around Montreal. The critical infrastructures that were affected created chain reactions that reached into banks and refereces. At least 66 municipalities declared a state of emergency. Such a very large geographic area was involved that many policy officials believed "that there was no scene that could be the focus of attention" (Stanco, 1998). There were also many emergent groups and informal network linkages (Stanco, 1999b).

In some ways, this was similar to what happened in August 2001, when the highly interconnected eastern North American power grid started to fail when three transmission lines in the state of Ohio came into contact with trees and thus caused circuiting (Townsend & Moss, 2003). This created a cascade of power failures that resulted in blackouts in cities from New York to Toronto and eventually left around 50 million persons without power, which, in turn, disrupted everyday community and social routines (Ballaran, 2003). It took months of investigation to establish the exact cause of failure propagation through a huge complex network. Telecommunications and critical infrastructures were driven out of a complex interconnection and network systems that spread over a large geographic area with multiple end users. Therefore, localized disruptions can cascade into large-scale failures (for more details, see Townsend & Moss, 2003).

Such power blackouts have recently become very common. They occurred, among other areas, in Auckland, New Zealand in 1999 (Newman, Stein, & Stevns, 2002); in Buenos Aires in March (Offenberg, 2004); in Stockholm in 2001 and 2002; in Siberia in 2000 (Kronenfeld, 2003); and in Moscow in 2005 (Arvedlund, 2005). All of these cases initially involved a large regional outage; communications and hardware failures in complex technical systems that generate further consequences, creating a crisis with major economic and political effects. These kinds of crises should have been expected. Even a decade ago, a National Research Council report (1993) forecast the almost certain probability of these kinds of risks in future network linkages.

Blackouts can also be deliberately created either for good or malicious reasons unrelated to problems in network linkages. Employees of the now defunct Enron energy company, in explicit Western energy markets, reportedly deliberately turned off lines in a perfectly functioning Las Vegas power plant to profit from their failure; their stock price continued to climb (Bloomberg, 2003). In the earliest days of electricity in New York City, the mayor ordered the power cut off when power shortages were experienced and service was restored in a number of neighborhoods of citizens and electrical workers (Jones, 2004). One should not think of blackouts as solely the result of mechanical or physical failures creating chain-like cascades.

These examples thus represent the wider or more traditional types. It is the social setting in which they occur that makes them critical and important (this is consistent with similar thinking experienced in Warren, DiMaggio, Emerson, & Davis, 2004). The social settings are more complex and differentiated than ever before, so SADCs are more

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request than ever before. In fact, these so-called open spaces may be more common that TSSRs. We believe SADCs can be expected in the future and probably are an accelerating trend.

THE FULL RANGE OF ALL DISASTERS AND CRISSES

Where do TSSRs and SADCs fit into the full range of all disasters and crises? We have already indicated that we see TSSRs as adding to the complex of such events rather than replacing them. That said, our view is that we should think of disasters and crises as falling into one of three conceptual categories: old, new, and in-between types. In this section we discuss old ones, making a note that new disasters are still not well understood.

In the United States in 2004, there were 78 federally declared disasters (as well as 43 fire management assistance declarations). While we did not examine all these occurrences, we did look in some very closely.

For example, four major hurricanes hit the state of Florida that year (for an epidemiologic survey of residents in the state, see Centers for Disease Control [CDC], 2004). We are fortunate in that we found that thinking of them in some major new ways, or even in planning favor or managing them. The problems, individuals, or organizations, that surfaced were the usual ones, and how to handle them successfully is fairly well known. More important, emergent settings were actually somewhat better handled than in the past, perhaps reflecting that officials may have had pressure in earlier years to report. Thus, the warnings issued and the evacuations (the first three of these, in fact) took place before the storm. Looting concerns were almost nonexistent, and fewer than 10% of people showed possible mental health effects. The pre-impact organizational mobilization and placement of resources beyond the community level was also better. The efficiency and effectiveness of local emergency-management officials were markedly higher than in the past. Yet everything was done well.

Long known problematic aspects and failures to implement measures that research has suggested a long time ago were found. There were major difficulties in interorganizational coordination. The recovery period was plagued by the usual problems. Even the fatalities showed up as pre-impact mitigation efforts were known.

From our viewpoint, the majority of contemporary disasters in the United States are merely versions of the earlier ones. What could be seen in the 2004 hurricanes in Florida was similar to what the CDC had studied in the 1960s and the 1970s. As the electronic age advances beyond individual and social social systems and systems (e.g., the already mentioned aging of the population), new elements may appear, creating new problems that will necessitate new planning. If and when that happens, we may have new kinds of hurricane disasters, but whatever that trajectory will be slow.

Apart from the Florida events, we can also report what the senior author of this chapter witnessed experienced in his local area. As the famous sociologist Herbert Blumer used to say in his class lectures a long time ago, it is something until checked in two theoretically important points against personal expectations. In 2007, an estimate was made that the closing of almost all schools and government offices in the state of Delaware. This was accompanied by the widespread cancellation of religious and sports events. Air, road, and train services were disrupted to the board. All of this resulted in major economic losses in the millions of dollars. There were scattered interruptions of critical life systems. The governor issued a state of emergency declaration and the state as well as local emergency management offices fully mobilized. To be sure, what happened did not rival what surfaced in the Canadian blackout.

as the human race, and in that respect, like hurricanes and cold waves, they have very old antecedents (for statistical data see Burr, 2004).
discussed earlier. But it would be difficult to argue that it did not meet criteria often used by many in categorizing disasters. For example, it met two of the criteria the CREED used to declare a disaster: any one of which is enough for the classification: declaration of state of emergency and 100 persons affected. (But did not show up in the CREED statistics?) Equally important, what happened was not that different from what others and we had experienced in the past. In short, it was a traditional disaster.

Finally, at the same time we were thinking about the Florida hurricanes and the Delavan snowstorm, we also observed other events that many would consider disasters or crises. Certainly, a BP oil leak explosion in 2005 would qualify. It involved the third largest refinery in the country that produces about 3% of the U.S. gasoline supply. More than 100 people were injured and 15 died. In addition, refinery equipment was physically destroyed and nearby buildings were leveled. There was full mobilization of local emergency management personnel (Pragle, 2005). At about the same time, there were wildfires in the states of Utah and California, a storm with hundreds of deaths in a Bombay, India temple, riots and plane crashes in hit places around the world, as well as large bus accidents; a dare report the swalm away five villages, bridges, and roads in Pakistan; recent coal mine accidents and collapse in China; recent false reports in Asia about various, that greatly changed local realities; striking of ferries with many deaths; and localized riots and hostage-taking. At least 16 dot press reports, it does not seem that there was anything distinctly new about these occasions. They seem to generally resemble many such prior happenings.

It does not appear to us that TSRRs and SACDs will totally supersede at least dot more circumstantial and localized crises that will continue to have traditional characteristics, including the need to be handled at the local community level. Unless current social trends change very quickly in hyperbolic directions (e.g., marked changes as a result of technological advances), the situation will continue to be more of the traditional and local community disasters and crises (such as localized floods and tornadoes, hostage-taking or mass shootings, exploding tanker trucks or overloaded trains, circumscribed wildfires, disturbances if not riots at local sport venues, large plane, ferry, or pipeline discoveries of unknown very new local wildlife, storms, mass airplane crashes, storms and flood, and flights in buildings, etc.).

Mega-disasters and global crises will be rare in a numerical and relative sense, although they may generate much media attention. For example, recent terrorist attacks on the Madrid and London train systems were certainly major crises and symbolically very important, but numerically these are far more local train waves and collisions every day in many countries in the world. The more local and crises will continue to be the more numerous, despite ever increasing TSRRs and SACDs. Overall, the world is faced with a mixture of old, new, and in-between types of disasters and crises, but number of each type are far less equal.

**IMPLICATIONS**

What are some of the implications for planning and managing that result from taking the perspective we have suggested about crises and disasters? If our descriptions and analyses of such events are useful, then it should be possible for some new kinds of planning for and managing of TSRRs and SACDs. Non-traditional disasters and crises require non-conventional processes and social arrangements. They demand innovative thinking (outside of the box) as Lagadaj (2005) has frequently said (see also Lois and Lagadaj, 2000).

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This does not mean that everything has to be new. As said earlier, all disasters and crises share certain common dimensions or elements. For example, if early warning is possible at all, authorities have consistently shown that acceptable warnings have to come from a sufficiently recognized source, have to be consistent, and have to indicate that the threat is or is fairly probable. These principles would seem to apply also to TSRRs and SACDs, although other elements might be necessary.

Actually, if the older types of risks and hazards and their occasional manifestations in cities and disasters were all we needed to be worried about, we would be in rather good shape. As previously mentioned, few threats actually manifest themselves in disasters, for example, the 14,600 plus tornadoes appearing in the United States between 1952 and 1973 only 9% involved casualties, and 26 of those occasions accounted for almost half of the fatalities (Ngo, 1990). Similarly, it was noted in 1993 that while about 1.3 million people had been killed in earthquakes since 1900 more than 9% of those had died in only 12 occurrences (Jones, Nogu, Smith, & Wagner, 1993, p. 19).

That said, we can also say that the older risks and hazards and their relatively rare manifestations in cities and disasters are being copied with much better than they ever were even just half-century ago. For example, there has been a remarkable reduction in certain occurrences of both major fires and minor property destruction in some natural disaster excitements associated with hurricanes, floods, and earthquakes (see Stanion, 2004, for data on North America). In the affected area, the outcomes have been much more severe, but even here, for example, the sewage of worldwide seems very unlikely.

But given that, are there certain aspects about coping that might be distinctive of SACDs and TSRRs? Certainly all kinds of systematic practices might be asked. For example, by us assume that a health risk is involved. If international cooperation is needed, who talks with whom about what? At what time is action initiated? Who takes the lead in organizing a response? What legal issues are involved? (For example, if health is the issue, can health authorities close airports?) There might be many agents and much technical information around, if so, and they are not consistent, whose role and ideas should be followed? What should be given priority? How could a forced quarantine be enforced? What of citizen issues? Who should get limited vaccines? What of scares and stigmas? (Brown, 2001, Stern, & Sandellos, 2005).

Let us move on to a more general level of planning and managing. We briefly indicate, issues in an outline form, half a dozen principles that ought to be taken into account by disaster planners and crisis managers. (Here, for a much fuller discussion about planning for and managing severe crises see the chapter by Lagadaj in this handbook.)

First, a clear distinction should be made between the planning and managing processes. As their terms are used in the literature, planning usually refers to the strategies that need to be used in a situation. Managing has reference to the tactics that might be used in dealing with crisis situations. There is a logic correlation between planning and managing in the first place, even for traditional crises and disasters. But in new kinds of disasters and crises, there are likely to be, for reasons already indicated, far more contingencies present in the situation, that is why even more of a focus on managing is needed.

Second, the appearance of such emergent social phenomena (groups and behavior) needs to be taken into account. The same for such emergence that are not in response to "natural causes" in the situation this happened most recently in the recent "search for the Columbian Natalie times as discussed in Donaghe, 2003). There are always new or emergent groups at times of major disasters and crises but in SACDs and TSRRs they appear at a much higher rate.
Networks and network links also have to be particularly taken into account. There is a tendency to think of groups and interorganizational ties. That is appropriate for traditional types of disasters. However, in TSIR and SACCC these less important than the informal networking that occurs. Research on this topic is vitally helpful today by the exposure of a relatively recent body of literature including professional journals (e.g., "Global Networks: A Journal of International Affairs").

Third, there is the need to be imaginative and creative. SACCC and TSIRs create new and higher levels problems as a result of the diversities and characteristics of these events. Hurricane Katrina, which was a climatic event with a disaster, might seem to suggest other challenges are almost impossible to meet. However, this is not the case. A good example is found in the immediate aftermath of 9/11 in New York. In spite of the total loss of the New York City Office of Emergency Management and its EOC facility, a completely new EOC was established elsewhere and started to operate very efficiently within 72 hours after the attack. There had been no planning for such an event, yet around 750,000 persons were evacuated by water transportation from lower Manhattan (Kett, Wachslab, & Quarantelli, 2005). These are not minor examples of what can be done.

Fourth, communication and internal conflicts must have built-in contingencies (Boin, Kofman-Bus, & Oosterveld, 2004). Most such training and educational efforts along such lines are designed to be like scripts for plays. This is a very poor model to use. Many concomitants exist in TSIRs and SACCCs, therefore similar integrative happenings should be built into exercises and training (Perry, 2004). Balanced contingencies, unknown to most of the players, make sense, make things happen. If not planned, the result will be confusion and disorder. Relating to this is that openness with information rather than secrecy is mandatory. This runs against the norms of existing bureaucracies and other organizations. The more information the mass media and citizens have, the better they will be able to make the decision (Wagner, 2003). However, all this is easier said than done. For example, in hyper urban urban areas, there are typically a variety of "information sources" that all do not seek information in the same way, using the same language or the same cultural reference frames" (Catalano & Wulf, 2001, p. 251). Nevertheless, in the United States in 2005, a full week demanded introduction of Congress, The Ready, Warning, and Alert Act, which calls for the establishment of a centrally located working group composed of federal government officials and state and local officials to determine, report, and functional agencies and create a new community based on information sources, response, recovery, reconstruction, and integration plans.

Finally, there is a need to start thinking of local communities in ways different than they have been traditionally connected. In new communities have been seen as accepting some geographic space and existing in some chronological time. Instead, we should visualize the kinds of communities that exist today in cybersecurity. These new communities must be thought of in both social space and social time. Viewed with these newer kinds of communities can be seen as very important in planning and managing disasters and crises at across national boundaries. To think this way requires a moving away from the traditional view of communities in the past. This will not be easy given that the traditional

A Scarcity Approach in Future Disasters and Crises
years, one subfield of sociology has categorized, for example, panic flight in larger fires and financial panic in genetic subtypes within the field of collective behavior (Blumer, 1979; Simmel, 1931). Both happenings involve new, emergent behaviors of a nonintentional nature. In this respect, scholars long argued both types of behavior into the same category. Although disaster and crisis researchers have not looked to financial collapse, perhaps, is a time when they did so, and particularly to examine if there are other instances of TSSRs. These kinds of happenings seem to occur very quickly, have ambiguous consequences, cut across social and political boundaries, involve a great deal of emergent behavior, and cannot be handled at the community level. In great, what should the social psychologist do? Innovative, for phenotype model (paradigm) by Perry in this handbook’s 17-18, humans, and has been used to successfully conceptualize and evaluate specific scientific research proposals, maybe students of disasters should also pay less attention to phenotypic factors. If so, would other disaster phenomena such as AIDS also be approached as disasters? One overall point is that new research along the lines indicated might lead researchers to see phenomena in ways that are different from the way they had been seen in the past.

Finally, we have said little about the research methodologies that might be necessary to study TSSRs and SACTs. Up to now, disaster and crisis researchers have argued that the methods they use in their research are completely different from those used throughout the social sciences. The methods are simply applied under circumstances that are relatively unique challenges (2002).

In general, we agree with this position. But two questions can be raised. First, if social scientists venture into such areas as genetic engineering, cybertherapy, robotics, and complex infectious diseases, do they need to have knowledge of these phenotypes in a discipline that they presently do not have? We have to remember that we have been using statistics to understand the SARS phenomena, which we had not experienced in studying disasters associated with earthquakes or chemical explosions. This may suggest the need for interdisciplinary research. Perhaps it also indicates that social scientists ought to expand their knowledge base before returning to study certain disasters and crises, especially the newer ones. In this sociology of science there have always been studies of how researchers from different disciplines (e.g., gene research, psychology) work with one another and with phenomena they have. Researchers in the disaster and crisis areas should look at these studies. Even better, research might be conducted along these lines on social scientists who have not specifically studying TSSRs or SACTs. We are not aware that there has been even one such study done anywhere.

Possibly more important, greater use should be made of the newer technologies that are currently available. Social scientists generally and students of disasters and crises in particular have done very little to take advantage of newer computer and related technologies such as digital cameras and cell phones or electronic journals, to name a few. We will report findings. If we are going to study complex system disasters, would it not be appropriate to use computers as much as possible in such studies? (For specific suggestions, see Quinsey, 2003a, pp. 359-366.)

CONCLUSIONS

Our view is that the area of disasters and crises is changing. In addition to the traditional kinds, we see an ever-increasing number of new and unique crisis and disasters. It is therefore likely that there will be both qualitative and quantitative changes of a negative nature.

Although this might seem to be a very pessimistic outlook, it is not so. There is reason to think that we, as a whole and collectively at a human species in the future will be able to cope with whatever new risks and hazards come into being. To be sure, given hazards and risks, there are bound to be diseases and crises. Life is not easy; however, it is not so much with reference to the situation that we will eventually in disasters and crises.

Finally, we hope that the approach in this chapter has been a heuristic one. We were not limited to what we have actually written in this chapter. We believe that scientific research is never ending as its quest for knowledge, rather than just being such once added, and therefore ‘those of us should prepare to have all the answers’ (2003, p. 97).
The Crisis Approach

The terms "crisis" and "disaster" are often used synonymously. In academic discourse, however, these concepts refer to different situations that prompt different questions and responses. Our purpose is to distinguish between the two categories: "crisis" refers to unexpected, undesirable, unmanageable, and often unrepeatable situations (Kremien, 1983).

We speak of crisis when a community of people—organization, a town, or a nation—perceives an urgent threat to core values of life-sustaining functions, which must be dealt with under conditions of uncertainty (Roethlisberger, Dick, & Comfort, 2001). A crisis may thus result from a wide variety of threats: think of the Cuban Missile Crisis, Chernobyl, SARS, 9/11, 2001, and the Asian tsunami. Many forms of personal tragedy can become crises.

A disaster is typically, but not universally, defined in terms of a specific episode that is collectively perceived as very harmful (Hendy & Quattrini, 2006). The agents of destruction may vary, but in most traditional definitions they fall within the category of natural forces (Stahel, 2006). A list of disasters typically includes floods, hurricanes, tsunami, and earthquakes that have caused major physical and infrastructural damage. In the past, disaster researchers have paid less attention to other types of catastrophes such as terrorism, hostage-taking, ethnic conflict, and financial and technological breakdowns.

With a slight conceptual jog of the imagination, we can relate both concepts: a crisis, then, is viewed as a crisis with a devastating ending (Bouw, 2003). Not every crisis ends in a disaster. In 1991, the Cuban Missile Crisis brought the world to the brink of nuclear war, but the Americans and Soviet leaders were able to stand off Disaster. Every disaster does fit the crisis definition (i.e., the multiple crises caused by Hurricane Katrina in the late summer of 2005).

A crisis approach complements the disaster approach in several ways. First, it seeks to answer not questions that are of immediate interest to those who study disasters. By studying crisis, we learn something about the origins and development of disaster. Second, the crisis approach takes a broader view of types of "disaster." This shift occurs in development in the disaster field that seeks to study all forms of disruptive events (not just natural disasters). Third, the crisis approach urges us to think of the possibility of disasters. Whether one is in a crisis or not may be an opportunity to others (see also Corn, 1983).

The purpose of this chapter is to demonstrate the complementary nature of the crisis approach. We build the chapter around two sets of questions that seem equally relevant to crisis and disaster researchers. The first set addresses the nature of crises, inspiring into the causes, characteristics, and consequences of crises. The second set addresses the effectiveness of crisis management. Familiar questions—what to do about nearly every crisis—include: Why do so many crises occur in the first place? Even though most crises seem to provide warning signs that are particularly recognizable in hindsight? Why do the managers make mistakes? Why do some lessons learned and why do other lessons learned get lost?

We end the chapter off with a brief introduction to the crisis concept, the key questions, and the various approaches to the theoretical pillars used to answer those questions. We next address four cases of crises, followed by a discussion of how policymakers deal with the dynamics of breakdown. The chapter concludes with an assessment of the crisis approach, considering both the academic and professional points of view.
The Crisis Approach

The crisis approach provides the foundation and inevitability of emerging dangerous technologies to large-scale bureaucratic (Cullen, 1980; Sargent, 1993). It is built on the research of group decision-making, social psychologists have created an impressive body of work that has become a focus of the crisis approach. Through their work, we have learned much about individual decision-making under stress (Baumol, 1979; Janis & Mann, 1977). Moreover, social psychologists have shown that group decision making is not necessarily efficient because of the shortcomings of the imagined individual's decision-making process (Hart, 1964; Jones, 1982; 't Hart, Stern, & Sambamurthy, 1997). These findings suggest that critical decisions must focus on crisis. The crisis approach can be applied to important crisis decision making, without being limited by the constraints inherent in which governmental decision-making takes place (Stern & Sambamurthy, 2002).

In addition, psychologists have done important work that helps us understand the relationship between human crisis technology, organizational culture, and the development of crises (Stern, 1990). This field of study has developed a comprehensive perspective on crisis decision-making, which is known as crisis decision-making (Falk, 1991). Their research shows that well-informed operators make crisis decisions in a very particular way; they compare their situational assessment with mental simulations of similar situations. They select the decision that comes with the simulation that matches their assessment. It tells us that crisis decision making differs quite dramatically from the incremental, semisystematic way in which routine decisions tend to be made.

A decisional perspective also informs the study of international policy shifts, which takes place in the field of International Relations (IR). Crisis scholars—a small minority in this huge field of political science—took interest in international conflicts in terms of high-level decision-making (Huntington, 1972; Janis & Mann, 1977) as well as dynamic interactions between parties (Buzan, 1991). By exploring the escalation and outcomes of international conflict, they study how persuasive perceptions, bureaucratic politics, and group dynamics affect the critical decisions made during a crisis (Almond, 1971; George, 1991; Jarvis, 1976; Lebow, 1983). This rich field of study has developed a comprehensive theory of leadership behavior in times of crisis.

In political science, crisis has predominantly been studied in more structural-functionalist terms. In studies of political development, crises reflect the necessary phase of a crisis in a nation’s system’s crisis toward democracy (see Almond, Finger, & Mink, 1973; Lipset & Stouffer, 1971; Zimmerman, 1983). The sociological meaning of the term was thus preserved, as political scientists applied it to describe a phase in which established institutions had less influence. But the term was used in a nonmetaphorical manner, which has made the study of crisis slightly suspect in this field ever since. When political scientists refer to crises, the social question is: What crisis events are taking about? In more recent years, this question has led to intriguing contributions that shall assess the subjective nature of crisis and its outcomes.

Bureaucratic scholars have proposed a substantial body of work that reframes the question of crisis in a new way (Feuring & Simone, 1995; Kluver, 1996; Meehl & Pachter, 1990). The rising number of books and articles on the topic of crisis continues to suggest the emergence of a crisis field in its own right. Ever since it has become a matter of style to appropriately produce cases, works on the problem of crisis studies, which have helped crisis researchers understand the importance of regulatory environments (or the lack thereof).
The Crisis Approach

The "right" approach to a crisis problem, the operators continued to exacerbate the problem. Finally, someone figured out the correct source of the problem, just in time to stave off a disaster.

The very qualities of complex systems that drive problems at the heart of every real technological crisis. As sociotechnical systems become more complex and increasingly interlinked, tightly coupled with one another (subsystems), their vulnerability to unforeseen cascades increases (Brown, 1999; Turner, 1971). The more complex a system becomes, the harder this for anyone in understanding is in its entirety. Tight coupling between a system's component parts and with shape of such systems allows for the rapid propagation of uncertainties (errors and events) throughout the system.

Complexity and lengthy chains of adversity can do real damage to national and international finance and systems. In recent years, BSE [bovine spongiform encephalopathy] and foot-and-mouth disease have started to inflict major losses on European livestock markets.

The same characteristics can be found in crises that breach low-tech environments such as social or political contexts. Those crises, on the other hand, do not start to inflict any losses on European livestock markets.

The core concept here is the systemic failure to understand the dynamics of crisis systems. Understanding systems dynamics, this chapter is based on the belief that complex systems have a natural tendency to evolve in ways that are unpredictable and difficult to control.

The first step is to understand the nature of the crisis and the dynamics of crisis management. In the next two sections, we present the key insights generated in this field with regard to key questions formulated earlier.

The URGENCY OF CRISIS

Choices were once explained in terms of bad luck or God's punishment, but this view has become obsolete (Bevere & Birt, 1985; Gmannon, 1989; Steffens, 1989). Crisis is the result of multiple causes, which interact over time to produce a threat with devastating momentum.

This may be somewhat retrospective, as it defines the traditional logic of "triggers" and underlying causes. Linear thinking "big events must have big triggers" is given way to a more subtle perspective that emphasizes the unintended consequences of increased complexity (Buchanan, 2000). The approach does not seek to identify specific factors that "cause" a crisis. It proposes that necessary conditions underlie a system's capacity to cope with disturbance. The agents of disturbance may come from anywhere—ranging from earthquakes to human actions—but the ultimate cause of the crisis lies in the inability of a system to deal with the disturbance.

The causes of vulnerability often reveal deep within the system. They typically remain unexpressed, or key policymakers fail to attend to them (Turner, 1979). In the process leading up to a crisis, these seemingly innocent factors combine and transform into disruptive forces that cause no immediate threat to the system. The factors are sometimes referred to as "pathologies," as they are present long before the crisis becomes manifest (Brown, 1999).

The notion that crises are an unavoidable outcome of complex systems has been popularized by Charles Perrow's (1984) analysis of the nuclear power accident at Three Mile Island. Perrow describes how a relatively minor glitch in the plant was misunderstood in the control room. The plant operators initially thought they understood the problem and applied the required technical response. But as they actually misinterpreted the warning signal, the situation worsened the problem. The increased stress magnified the operators' (they could not understand why the problem persisted) and invited an urge response. By again applying...
society increases its vulnerability to disaster by building in places where history warns not to build. The costs of natural and man-made disasters continue to grow, while scenarios of future crises prove more murky (see the chapter by Guarantelli, Jaffe, and Milan in this handbook).

Before anything can be done to prevent crisis scenarios from materializing, emerging threats must be explicitly recognized as crises. There are at least three reasons why many potential crises fail to gain such recognition:

First, threats to shared values or life-enhancing functions simply cannot always be recognized before their disastrous consequences materialize. As the crisis process begins to unfold, policymakers often do not see anything out of the ordinary. Everything is still in place, even though hidden interactions are at play at the pillars of the system. It is only when the crisis is in full swing and becomes manifest that policymakers recognize it for what it is.

The second reason is found in the contested nature of crisis. A crisis need not, for example, "speak for itself." The definition of a situation as, or cultural social, say, the outcome of a subjective process. Many often do not perceive it as an immediate consequence of their perception or appreciation of a threat. In fact, we might say that crisis definitions are continuously subverted by the forces of public opinion (Gilpin, 1977). One man's crisis may be another man's opportunity.

Even of course would agree that a serious threat is emerging, the state of this new problem is far from missed. Government with urgent actions every day attention to these problems, and additional attention from another. With the threat to be recognized as a crisis, it must clear many empirical hurdles (Birkland, 1997; Bowyer & Hart, 1996).

Now that we have explored the origins of crisis, let us see how public agencies deal with the problems of emerging adversity. If they fail, the actions of crisis managers will lead straight back into an explanatory process with potentially disastrous consequences.

CRISES MANAGEMENT: CRUCIAL CHALLENGES FOR LEADERSHIP

Citizens whose lives are affected by crisis contingencies expect governments and public agencies to do their utmost to keep them out of harm's way. They expect the officials in charge to make critical decisions and provide direction even in the most difficult circumstances. So do the journalists who produce the stories that help to shape the crises in the minds of the public. And do many of people, public interest groups, institutional watchdogs, and other organizations that help to monitor and influence the behavior of leaders. However mishandled, unfair, or illusion these expectations may be hardly met. These expectations are real in their political consequences (Thomas & Thomas, 1928).

The challenges of crisis management appear to rise, not because the mechanisms of crisis have changed (the jury is still out, as discussed earlier). Crisis management itself has become more challenging because the crisis context has changed over the past decades. Analysts agree, for instance, that citizens and policymakers alike have become at once more fearful and less tolerant of major hazards to public health, safety, and prosperity. The modern Western citizens have little patience for imperfections; he has come to fear pitches that he has learned to see more of what he fears. In the culture of fear—sometimes referred to as the "risk society"—the role of the modern mass media is crucial (Beck, 1992).

1. Although much more pronounced today, the tendency to search for culprits following the occurrence of disasters and crises is widespread (see, for example, Maffesoli and Quennel (1997) as well as Doigins (1992)).
Making Critical Decisions

Responding to crises typically involves government and public agencies with pressing time constraints. There can be many kinds of problems that need to be addressed. The nature of the crisis, the resources available, the time constraints, and the political environment all determine the nature of the decisions to be made. This is particularly true in situations where the crisis is complex and multifaceted, requiring a broad range of expertise and resources.

The classic example of crisis decision-making is the Colosseum Crisis of 1965, during which President John F. Kennedy was presented with pictures of Soviet missile installations under construction in Cuba. The photos conveyed a geopolitical reality that was very different from the previous intelligence assessments, and it was up to him to decide what to do about it. Whatever his choice, the options presented to him by his advisors—air strikes, an invasion of Cuba, a naval blockade—and the other alternatives, were complex and fraught with risk. The decision-making process involved several different types of expertise, ranging from military strategy to political considerations.

Many critical decisions are not taken by individual leaders or by small informal groups of senior policymakers. They emerge from a variety of different factors, including the decision-making climate and the decision-making processes that have been established in the organization. An effective response also requires interagency and interorganizational cooperation. After all, the crisis cannot be implemented by a single organization, and it is important to coordinate resources and efforts to ensure that the overall response is effective and efficient.

A crisis may also lead to severe consequences, such as the Colosseum Crisis of 1965, when President Kennedy was presented with pictures of Soviet missile installations under construction in Cuba. The photos conveyed a geopolitical reality that was very different from the previous intelligence assessments, and it was up to him to decide what to do about it. Whatever his choice, the options presented to him by his advisors—air strikes, an invasion of Cuba, a naval blockade—and the other alternatives, were complex and fraught with risk. The decision-making process involved several different types of expertise, ranging from military strategy to political considerations.
The crisis approach outlined in this chapter provides a framework for understanding the dynamic evolution of crisis and the prospects for public management of urgent threats. The approach adapts a long time line, which makes it possible to trace a crisis from its early stages to its final stage in public memory. It addresses the research community to complement operational perspectives, with political perspectives. More importantly, perhaps, in its capacity to map out the interplay between crisis dynamics and response failures.

Two lessons seem of particular relevance to practitioners. First, one should accept that even the smartest and most competent government officials can never guarantee that major disruptions will not occur. Policymakers cannot escape the dilemma of crisis response by taking on crisis prevention. Crisis prevention is a necessary and indeed vitaly important activity, but it operates only to known emergencies—those that happened before. This requires a strategy of resilience (Wildavsky, 1988). This lesson resonates with key insights in the disaster field.

The second lesson reveals that crises is a label, a semantic construction people use to characterize situations or events that they somehow regard as extraordinary, volatile, and potentially far-reaching in their negative implications. The intensity of scope of a crisis is thus quite deliberately determined by the nature of the threat, the level of uncertainty, and the time available to decision makers. A crisis is in a considerable extent what people—impressed by the inevitable mass media media attention following an uncontrolled event—make of it.

Why people collectively label and experience a situation as a crisis remains somewhat of a mystery. Physical risks, numbers, and other stenciling objective indicators are important factors, but they are not decisive. A flood that kills 240 people in a year or less routine emergency in Bangladesh, but it would be experienced as a mass disaster in the Philippines. Crises are in the eye of the beholder. It is people's frames of reference, experience and memory, values and interests that determine their perceptions of crisis. A sense of "collective stress" results not just from some objective threat, but from the interactive interaction between events, individual perceptions, media representations, political realities, and government efforts at "meaning making."

This process of collective understanding is one of excitation and de-excitation. It is subject to the influence of actors who have a stake in playing up a crisis trend, or playing it down. And this is exactly what happens when unexpected incidents or major disruptions are predicted or actually occur. Different political, bureaucratic, societal, and international stakeholders will not rely on their own pictures of the situation and classify it in terms of threat and opportunities, but many of them will actively seek to influence the public perception of the situation. Once a particular definition of the situation has been taken in mass media and political discourses, it becomes a political reality that policymakers have to take into account and act upon. Initial definitions tend to be persistent.

An effective crisis response will invariably require a two-pronged strategy: dealing with the events "on the ground" (whether literally as in civil emergencies or, metaphorically, as in a war or a market crisis), and dealing with the political visibility and instability triggered by these events. Neglecting one or the other is detrimental to any attempt to exert public leadership in a crisis.

This observation helps to set two challenges for further research. First, much work remains to be done on the understanding of crisis dynamics. If crises cannot be prevented, we must learn to recognize them in time. Early warning can work only if it builds on a solid theory of
CHAPTER 4

Methodological Issues

ROBERT A. STALLINGS

"It's the same, only it's different." This sounds like one of former American baseball player Yogi Berra's malapropisms. Nevertheless, it is appropriate when discussing methods of disaster research. Fifty years ago, Lewis Killian (1967:166) stated it this way: "Basically, the methodological problems of field studies in disasters are those common to any effort to conduct scientifically valid field studies in the behavioral sciences. The disaster situation itself, however, causes special or aggravating problems...." (p. 49). The basic tools of disaster researchers—a theory, a working hypothesis, an appropriate research design, a plan for selecting cases for study, a strategy for gathering data or recording observations, and a way to extract meaning from the materials collected—are easily recognizable as those used in all of the social sciences. Yet, issues specific to disaster research need to be addressed. Simply put, the difference in doing research on disasters is the context in which it is carried out (White, 1967, p. 60; Taylor, 1978, p. 276). The greater the difference between that context and the everyday world in which the rest of social science research takes place, the more unique are the challenges of disaster research (Stallings, 2002, pp. 21-22). This means, for example, that studies conducted during the crisis time period (as done from Quarantine, 2004) face challenges that research carried out during the four stages of recovery or during pre-disaster mitigation and preparedness phases do not. The latter encompasses only the most difficult tasks found in all social science research—no more, no less. This chapter focuses on issues that arise in conducting research in settings that are outside of the day-to-day. Additionally, it is skewed toward methods of disaster research employed by sociologists because the author's background and training are in this field.

No attempt is made in this chapter to discuss the range of methodological issues currently facing the social sciences in general or even sociology in particular. Instead, these issues have been disregarded because they seem to compare the essence of the differences, when it exists, between disaster studies of all types and "everyday" research (1) usage, meaning generally when the process of observing or collecting data and other materials takes place in relation to...