

**The Status of Emergency Management Theory:
Issues, Barriers, and Recommendations for Improved Scholarship**

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A massive transformation is taking place in emergency management right now. For good or for bad, the September 11, 2001 terrorist attacks on the United States have resulted in a significant reformulation of the purpose and nature of emergency management. Terrorism has become the hazard of priority among those making policy decisions. The establishment of the Department of Homeland Security, with the incorporation of the Federal Emergency Management Agency, amounts to the most sweeping reorganization of government over the past five decades. Emergency managers have obtained a long-overdue (but still incomplete) recognition from the general public while politicians and legislators have increased funding for the profession to historic levels. The field is also being positively and negatively affected by recent technological developments such as GIS and further industrialization. In addition, training and educational opportunities are providing a more knowledgeable cadre of professionals to meet the future challenges that will inevitably result from further urbanization and modern infrastructure. The demands placed on emergency managers have risen, but there are also other stakeholders that desire to contribute to the goals of disaster prevention and preparedness. Emergency management still retains vestiges of the past of course. But it is, nonetheless, dramatically different than it was in prior years.

In some ways, similar changes are occurring in disaster scholarship and in emergency management research. Our views about the causes of disasters have shifted, and we now more fully understand the plethora of variables that contribute to their occurrence. The lessons from Sociology and Geography remain as important as ever, but

other disciplines are generating vital contributions to the research literature. Revolutionary paradigms have been proposed and others have been introduced as a way to integrate them with the perspectives of the past. Although there are many issues and functions that are understudied, the knowledge base in emergency management is expanding at a dramatic pace. It is very interesting to see academic efforts in this area evolve, even though there are many obstacles yet to be overcome.

The following paper will assess the status of emergency management theory in the context of the ever-changing practical and academic environments. It will discuss whether or not theory is something that should be aspired to among scholars in emergency management. The barriers preventing theoretical development will then be identified as will some of the central concepts and paradigms for the emerging discipline. The paper will finally present this author's views on how to improve understanding of emergency management in the future and highlight conclusions drawn from a session devoted to emergency management theory at the FEMA Higher Education Conference in June 2004. Before so doing, the paper will briefly discuss what is meant by the term "theory."

What is Theory?

The term "theory" conjures up divergent opinions among scholars. However, it is necessary to acknowledge that the reason for this disagreement is probably due to the fact that theory may have multiple meanings. In one sense, *theory may refer to the ideal or preferred conditions that academics are trying to promote in the world around us.* We see the oftentimes disturbing circumstances around us, and we desire a better situation – one that is free from the problems and mistakes that continually confront us. In the emergency management realm, for instance, we note a trend of rising disaster losses and frequently witness uncoordinated and haphazard response and recovery operations. Therefore, our desired objectives are to reduce the probability or impact of disaster, and improve post-disaster functions should one of these deadly, destructive and disruptive events take place.

Another meaning of theory relates to the entire body of knowledge available in the given discipline. It is difficult to say if such a system of information exists in emergency management and what that entails since the field is relatively new and because it intersects with so many other academic disciplines. Regardless, such a collection of philosophy, data and research findings is based on a number of components that help to generate theory. These building blocks include definitions, concepts, principles, classifications, typologies, models and causal relationships.

One of the major purposes of theory is to clarify terms by providing sound academic definitions. In order to convey information and knowledge in any meaningful way, it is evident that issues and phenomena must be accurately and adequately defined. As an example, if there were no general consensus on what a "hazard" is, we would not be able to understand disasters nor explain how hazards relate to other terms such as vulnerability. Without clarity on this subject, a discussion about different types of hazards (e.g., natural, technological, civil) would be impossible or unproductive. Definitions are thus required if knowledge is to be generated and if links are to be found among various topics and variables.

Theory is also equated frequently to concepts, which are heuristic devices that enable understanding. Concepts create mental images of things or activities in the minds of those who speak, read or hear about them. The concept of “convergence” is of paramount importance in emergency management. It implies that people and donations flow to the scene of disaster. This concept helps students recognize that the arrival of human and material resources may help responders deal with the demands made evident by disasters. Alternatively, the notion of convergence may foster recognition of new problems that are created as emergency managers try to harness the skills of volunteers or coordinate the flow of goods and services. Other important concepts are emergence and governmental integration (horizontal and vertical). Without concepts, it would be extremely challenging to ensure comprehension of disaster behavior and foster increased professionalism in the field.

Theory may imply principles that promote ethics and standards in a particular field of study or profession. There are numerous examples of such principles in disaster studies. A popular one is heard in many different contexts: “an ounce of prevention is better than a pound of cure.” Kreps (1991) has also suggested that “preparedness” before a disaster and “improvisation” in the aftermath are the twin foundations in emergency management. Principles are consequently related to the ideal or preferred conditions mentioned earlier, but they are generally more limited in scope or applicability.

Classifications, or illustrations of comparison, are likewise synonymous with theory. Classifications are useful to show the differences among similar types of phenomena. In emergency management, scholars are interested in accidents, crises, emergencies, disasters, catastrophes and calamities. However, these subjects are different due to the number of deaths produced, extent of geographical impact, degree of social disruption, etc. Classifications are thus helpful to show why one issue has more or less of one variable than another. Conveying the degree or extent of phenomena is a major part of any scientific enterprise.

Typologies, which are organized categorizations, have a close relationship to theory. Typologies are similar to classifications in that they are useful for the purpose of comparison. But, whereas classifications typically deal with similar phenomena, typologies mainly focus on different issues. Perhaps the most renowned typology in emergency management research emanates from the Disaster Research Center (see Dynes 1970). It compares organizational tasks and structures on different axes, and shows the unique features of established, expanding, extending and emergent groups. This visualization has generated a significant amount of research in disaster sociology. The value of such typologies for theory cannot be overestimated.

Models are charts that show theoretical links between different variables or relationships in or among groups. Some models show how inputs influence outputs. A good illustration of this is a risk management diagram which depicts factors that augment vulnerability as well as policies or actions which may decrease the probability or impact of disaster. Other models show how individuals or agency divisions relate to organizations. The Incident Management System is probably the most well-known model for practitioners in emergency management. It shows how unified command may take place among many organizations, while also illustrating how individuals in an agency (or multiple agencies) may fall under planning, operations, logistics and finance/records sections. Theory in academia is replete with such models.

One of the most significant types of theories or theoretical components is an explanation of causal relationships. In this case, an effort is made to explore how one (or many variables) may interact with another (or several distinct variables) to produce a certain outcome. In terms of emergency management, we may state that a disaster (D) will occur when a triggering agent (T) interacts with vulnerability (V). In other words, $T + V = D$. If we look at this equation in an alternate manner, we may state that a hazard is most likely to produce a disaster when urban planning has been haphazard, when building codes have not been enforced, when warning systems are underdeveloped, when preparedness measures have been neglected, and when a geographic area contains special populations or other at risk groups. Causal relationships are necessary to understand phenomena, but they are also likely promote policies to remedy the situation. Returning to the example mentioned above, disasters can be reduced by addressing vulnerability (e.g., locating in safer areas, building with disasters in mind, establishing a warning system, developing response and recovery plans, addressing the needs of special populations). This type of theory (known as a paradigm) helps us to know why some problem is occurring and, more importantly, how it can be corrected or resolved.

Is Theory Desirable?

Is it necessary that each discipline have a widely accepted theory? This may seem like a strange question, since the argument presented above reiterates that a recognized body of knowledge is a requisite for academic and professional progress. However, there is much more to this inquiry than meets the eye. Many disciplines tout a central theoretical issue or theme in their research literature. Having such theoretical focus helps to clarify the priorities and boundaries of the discipline. For years, Comprehensive Emergency Management has organized emergency management functions into useful but perhaps, overly simplified, disaster phases. Therefore, CEM has been the traditional theory of emergency management. But, it is also vital to realize that a single perspective can limit understanding and explanation. As an illustration, CEM has trouble capturing the wider political, economic and cultural explanations of disasters (Britton 1999). For this reason, other perspectives have been proposed to remedy this weakness. A vivid illustration of this point is the social construction perspective that is being subscribed to currently (see Oliver-Smith and Hoffman 1999); it is opposed to the predominant, technocratic view of disasters. Therefore, while it is true that a single theory can bring identity to a discipline, others may be needed to allow for alternative explanations of the same phenomena.

As can be seen, there is probably no single overarching theory that is currently ascribed to in emergency management. Then again, it might be impossible to develop a theory that would be able to capture every single variable and issue associated with disasters. For this reason, chaos or systems theory, which are frameworks that incorporate a plethora of causative variables, appear to be gaining recognition in emergency management as well as in other disciplines (Koehler et. al. 2001; Mileti 1999). Nonetheless, a theory that tries to explain everything may run the risk of explaining nothing at all. Hence, the presence of a single theory may be beneficial or detrimental, depending on the contributions it makes to scholarship or the limitations it places on a discipline. Put differently, the subscription to a single *theory of emergency management* may be useful if it gives the discipline meaning and direction, or it may be

damaging if it prohibits discourse and limits the exchange of ideas and information to correct the weaknesses of the predominant thesis. However, all scholars interested in disasters should desire *emergency management theory* (defined broadly as a crucial body of knowledge) if learning is to continue and policies are to be correctly conceived and implemented.

What Are the Barriers to Theoretical Development?

Although there is obviously a need to develop a theory of emergency management (or emergency management theory), there is no guarantee that this task will be easy. In fact, there are several major epistemological problems that are hindering the development of knowledge in this area. While there are a number that could be mentioned and discussed, McEntire and Marshall (2003) have identified at least ten significant interrelated concerns which will be reiterated here.

1. *What is a disaster?* One of the major problems confronting scholars in the field is the inability to define our subject matter. In spite of an ongoing effort to define the concept of a disaster, definitive conclusions have not been generated. Perspectives have ranged from acts of God or physical hazards themselves to disruptive social incidents and socially constructed events. Although the complex physical and social aspects of disasters are difficult to describe succinctly, agreement must be found. For, as Quarantelli has so eloquently argued (1995, 225), “unless we clarify and obtain minimum consensus on the defining features per se, we will continue to talk past one another on the characteristics, conditions and consequences of disasters.”
2. *What is emergency management?* Just as we are struggling to define our issue of focus, we are also finding it difficult to identify our field of study. The term “emergency management” has at least three significant problems. First, as scholars we are really interested in disasters, not emergencies. Second, the focus on “emergency” makes the field reactive and limits its applicability to first responders. Third, emergency management may imply that we have total control in our ability to deal with the adverse occurrences we call disasters. Hence, emergency management is both a misnomer and an oxymoron. But a suitable replacement has not been found, and one may never be accepted due to the increasing professional recognition of the name emergency management.
3. *What hazards should we focus on?* Scholars have been somewhat guilty of following the fads of the profession. Practitioners and academics initially gave priority to the civil hazard of a nuclear exchange between the United States and the USSR during the Cold War. Later on, attention shifted to technological hazards (due to Three Mile Island, Bhopal and Chernobyl) and then to natural hazards (due to the Loma Prieta earthquake, Hurricane Andrew, the Midwest flooding and the Northridge earthquake). Today, academia and policy has come full circle (Alexander 2002), even though the civil hazard of modern terrorism is much more complicated than the nuclear threat of the Cold War. The major dilemma here is that we are confronted with a choice between more common, but less consequential events versus infrequent, but higher impact occurrences. It is thus difficult but necessary to find an appropriate approach between generic and hazard specific alternatives.

4. *Should we continue to give preference to the concept of hazards?* Another challenge jeopardizing disaster scholarship concerns an affinity toward the concept of hazards. In the past, a great deal of attention was given toward the physical nature of disasters (e.g., the hazard itself was often synonymous with risk). There is a now growing recognition, however, that “a hazard need not a disaster make” (Cannon 1993). For instance, a hazard will not produce a disaster if there are no people or property to be affected (i.e., in a deserted or isolated area). An additional argument of this school of thought is that it is difficult or impossible to control hazards. Alternatively, we do have an ability to determine our degree of vulnerability to the hazard. For this reason, Steven Bender reminds us that “it is the vulnerability, stupid!”¹ In short, it should be emphasized that hazards do not necessarily imply the presence of vulnerability. However, vulnerability always takes into account hazards (as you have to be vulnerable to something). While there is undoubtedly more discussion about vulnerability now than in the past (Salter 1998), it appears that this shift in thinking has been incomplete and is slow to be fully accepted. One possible explanation for this is due to the fact that the concept of vulnerability has consistently been limited to issues of poverty and political marginalization. There is some evidence that the concept of vulnerability captures much more than these important variables alone however.
5. *What variables should be explored in academic research?* There are a number of issues that are common to most disasters. These variables, which are often the subject of various disaster case studies, include the dangerous location of buildings, improper construction, inadequate warning and poor communication. But it is important to remember that there are a variety of other topics that have a bearing on or a relation to disasters. Examples of these variables are cultural attitudes about development, building code enforcement, political preferences for response instead of mitigation, record keeping, mass fatality management, special populations, critical incident stress, etc. Ergo, the desire to follow evident empirical patterns could be advantageous, but it also may preclude investigation into other important and interesting phenomena. If we are not careful, the search for a “silver bullet” may amount to “burying our head in the sand.”
6. *What actors should be incorporated into academic studies?* Emergency management is predominantly a profession in the public sector, and research has often been directed at the participants in this arena. Unfortunately, such recognition comes at the expense of acknowledging that officials in local, state or federal governments increasingly rely on businesses and non-profit agencies to prevent and deal with disasters (see McEntire et. al. 2003). Of course, this may have positive and/or negative consequences for emergency management. Research in the field will be incomplete if the blurring of sector boundaries and functions is not taken into account in the future.
7. *What phases should be given priority?* Emergency management has traditionally been a reactive profession. It has generally neglected mitigation and disaster recovery concerns and has instead spent much of the time addressing

¹ Comment made during the International Emergency Management session of the FEMA Higher Education Conference on June 8, 2004.

preparedness measures for emergency response. The problem with such an approach is that preparedness and response activities do very little to address rising disaster losses. Consequently, there is a strong and ongoing movement to promote the reduction of risk before or after disaster strikes. No one, for sure, should doubt the need to incorporate a more proactive status toward disasters. Disaster trends suggest we are making continual mistakes which have to be corrected now and in the future. But, it should also be recognized that it is impossible to eliminate all risk. Therefore, scholars must find ways to incorporate each phase into their discussions of emergency management theory (but certainly not rely solely on the reactive approach of yesteryear).

8. *What disciplines should contribute to emergency management?* Scholarship in emergency management really owes its existence to two fields of study. Geography has enabled scholars to understand the characteristics of hazards, while Sociology fostered an understanding of the social causes of and human behavior in disasters. As important as these disciplines have been and are to emergency management, the research emanating from them may not always capture all types of disaster phenomena. What about the need for knowledge about engineering practices, cultural attitudes, political values, emergency medical care, public health, psychological distress, economic impact, modern technology, management, etc? Obviously, emergency management theory must not forget its roots in the founding disciplines, but it is also true that theoretical progress will be stifled if other fields do not contribute findings on disasters.
9. *What paradigms should guide our field?* Right now, there is an impressive degree of competition among distinct theoretical perspectives in emergency management (McEntire et. al. 2001). As previously mentioned, Comprehensive Emergency Management was the first concept to unify and give direction to the field. Nonetheless, it has been recognized that CEM is somewhat limiting and that a wider policy framework is needed than the preparedness and response mentality of the past. For instance, Britton has suggested that “policy makers and researchers [have recognized] that the application of CEM is, by itself, not providing sufficient community protection from natural or technological hazards” (Britton 1999, 227). As a result, Geis (2000) and Armstrong (2000) have suggested a move toward a “disaster resistant community” while Britton and Clarke (2000), as well as Burby et. al. (2000) and Buckle et. al. (2000), have recommended the need to focus on “resilience” as a guiding principle. In contrast, others such as Boullé et. al. (1992), Berke et. al. (1993) and Mileti (1999) propose the incorporation of “sustainability or sustainable hazards mitigation.”

Although these perspectives overcome some of the problems associated with CEM, they are not free of drawbacks. For instance, Mileti believes that *resistance* is a constraining term as compared to other alternatives (1999, 264). Resistance seems to have a strong inclination to engineering and the physical sciences, but it appears to imply that disasters may be virtually eliminated (as it has trouble relating to preparedness, response and recovery phases). *Resilience* is used in different ways by various scholars, but it generally implies a reactive stance toward disasters. Geis notes that “Websters defines resilience as the

‘ability to recover from or adjust easily to misfortune or change’” (2000, 152). He then asks “Do we want our community to ‘recover’ [or] not allow the . . . event to reach disastrous proportions?” (2000, 152). There are similar problems with *sustainability and sustainable hazards mitigation*. These concepts are justified in that they mention the importance of environmental protection, but they do have difficulty dealing with the current threat of terrorism. Because of its name, sustainable hazards mitigation may not give enough attention to vulnerability also (which is ironic considering the fact that most scholars are calling for social construction perspectives today). Furthermore, sustainable development might inadvertently suggest omnipotence over hazards. Berke comments that sustainable development has little relation to the “emergency preparedness and response issues (e.g., disaster warning, search and rescue, evacuation, and sheltering)” (1995, 14-15; see also Mileti 1999, 197). Perhaps it is for these reasons why Aguirre (2002) has therefore questioned if “sustainability can sustain us?”

The adoption of risk or homeland security by practitioners makes similar types of errors and omissions. Wisner et. al. caution us about accepting the traditional view of *risk*: “too much emphasis in doing something about disasters is put on the natural hazards themselves” (1994, 4). *Homeland security* is a step back from the proactive approaches being recommended today, and it de-emphasizes all hazards other than terrorism. Waugh points out that “even within the Homeland Security apparatus, minimal attention is being paid to matters beyond prevention of terrorism-related disasters, as Secretary Ridge himself has stated” (2004, 11). This rivalry among divergent and incomplete paradigms has created confusion for a discipline that so desperately needs both inclusion and direction.

10. *What is the proper balance for knowledge generation?* A final problem confronting emergency management scholarship deals with the source of findings for the discipline. Scholars stress the value of theory and research over practical experience and knowledge. However, academics often talk with professionals in the field when conducting case studies and pursuing other types of research. Alternatively, professionals in the field highlight the benefit of real-world practices and concerns, and yet they desire that the profession advance in upcoming years. Which of these viewpoints is correct? Could it be that both perspectives have merit and drawbacks? Should theory always be grounded in reality, and should practitioners accept new ways to advance the profession? This dilemma must also be resolved if emergency management theory is to assist both scholars and practitioners in the future.

What Should a Theory of Emergency Management Include?

As we try to overcome the barriers confronting us and advance theory in emergency management, it might be wise to recall a statement made by Claire Rubin in her assessment of “Emergency Management in the 21st Century.” She asserts that “we must save the foundation, but modernize the house” (Rubin 2000, 7). Accepting this comment as a truism, the theory of the past should not be discarded. But prior emergency management theory should be altered and added to in order to meet demands the future

places before us. Below are a few personal comments about what should be included in a theory of emergency management (or emergency management theory). Although this is not meant to be a comprehensive list of suggestions, it might serve as a useful starting point for the emerging discipline.

First, scholars interested in promoting emergency management theory should, as described above, retain the findings from prior research in the field. This would include concepts such as disaster, hazard,² convergence, and emergence. New concepts such as “compound disasters” and “sustainability” should be accepted as a way to illustrate the complexity of modern disasters and the need for environmental protection. Emergency management theory must also incorporate principles such as disaster prevention, preparedness and improvisation. It is also recommended that the needs of special populations be taken into consideration, and an exploration of political and economic marginalization be given. The differences between accidents, disasters and catastrophes must be stressed through classifications while the DRC typology on different disaster organizations should be continually emphasized in the research literature. Models, such as the Incident Management System, should be discussed and compared to alternative viewpoints (see good examples from Dynes 1994; and Neal and Phillips 1995). Other models on decision making (e.g., rational, bureaucratic, incremental, group think, perception/misperception) should also form a fundamental part of emergency management theory in order to understand organizational dynamics and policy making. Such theoretical constructs will be useful to help students and scholars understand the nature of disasters and appreciate the difficulty of successful emergency management operations.

A second recommendation for emergency management theory is to continue to search for an accepted definition of disasters. My own definition is as follows: “disasters are the disruptive and/or deadly and destructive outcome or result of physical or human-induced triggering agents they interact with, and are exacerbated by vulnerabilities from diverse but overlapping environments.” Although this definition may not be accepted and the debate may never be fully resolved, continual effort must be made to understand the physical, social and cascading aspects of disasters. Quarantelli (1998) has edited an outstanding book on the subject and another one is in progress at this time. These books should be standard in any course on disasters and the theory of emergency management. Professors should also strive to teach both conservative and radical interpretations of disasters in their emergency management classes.

Another way to foster theory is to seek an alternative name for the field of emergency management. There are many possibilities being discussed including disaster management, risk management, sustainable hazards management or disaster vulnerability management. While it is doubtful that the term emergency management will disappear because of its increased recognition in recent years, scholars should at least make explicit the drawbacks of continuing to rely on this name for the discipline.

Strong theory in emergency management must also acknowledge all types of hazards – whether they are natural, technological or civil. Downplaying one hazard or

² Although more practical in orientation, it is vital that students understand various terms used to describe hazards including frequency, duration, areal extent, speed of onset, spatial dispersion and temporal spacing (see Burton et. al. 1993). Students must also be aware of the Saffir-Simpson, Richter, Mercalli, Fujita and other scales that measure hazard magnitude.

giving preference to select others in the United States is tantamount to saying we only face certain types of risks. History, however, teaches that our nation can be affected from various agents including floods, earthquakes, tornadoes, power outages, computer failures, chemical spills, riots, terrorism and even space shuttles breaking up on reentry into the atmosphere. Of course, emergency management theory should convey the dilemma between a focus on probability versus consequences, and all disaster research should reflect different needs at the local or state level. What is more, we should finally accept the fact that we cannot control hazards; we can only limit our degree of vulnerability to natural, technological and civil events. Therefore, it will be imperative to acknowledge all types of hazards and downplay the feasibility of controlling them if emergency management theory is to be improved.

A fifth proposal to improve theory is to establish a multi-causal view of disasters and appreciate complexity in emergency management. Due to the large numbers of variables to be studied, it might be wise to utilize the chaos and systems theories to guide research and maintain a broad understanding of disaster phenomena. Mileti observes, for instance, that “researchers have called for a broad view of the disaster problem” (1999, 35). Geis also notes that “everything is interconnected and a holistic, integrated . . . approach is required” (2001, 152). Thus, comprehensive perspectives should become more valued in future disaster scholarship.

A sixth recommendation for theory is to embrace each of the different actors involved in emergency management, regardless of whether they are from the public, private and non-profit sectors. The local emergency manager may always get most of the attention in future research, but this should not take place at the expense of disregarding the assistance of state and federal officials, diverse government departments, businesses, humanitarian organizations and citizen volunteers. The concept of integration (both horizontal and vertical) may consequently assist as we try to indicate the need for further networking, cooperation, collaboration, communication and coordination in emergency management.

Maintaining a reliance on the phases of disasters should likewise be a priority in emergency management theory. Neal has indicated convincingly that the four phases are a useful, but perhaps over-simplified heuristic device (1997). Nonetheless, mitigation, preparedness, response and recovery have played a significant role in establishing the field and categorizing distinct emergency management functions. While it is clear that more research should be directed towards mitigation and recovery, the findings on preparedness and response should not be regarded as insignificant or useless.

A final request for improved emergency management theory is to integrate research from each of the contributing disciplines. It is vital that students appreciate the diversity of issues and functions to be addressed in the field. These include, but are not limited to: hazard and vulnerability analysis, land-use planning, engineering, planning, training, exercising, community education, grant acquisition, budgeting, warning, evacuation, sheltering, fire suppression, emergency medical care and triage, search and rescue, mass fatality management, media relations, disaster declaration, donations management, debris management, critical incident stress management, etc. In addition, emergency management theory must bear a close resemblance to the sociology of disaster and the findings about human behavior (which helped to establish the discipline the first place). Another important topic to address in future theory is the advantages and

disadvantages of technology in incident management and emergency operations centers. Environmental concerns and an orientation toward the future should also form an integral part of emergency management theory. The cultural, economic and managerial aspects of disasters (e.g., risk assessment, poverty, insurance coverage, theories of leadership) should also be emphasized in emergency management theory. Above all, the political barriers facing the field and creative ways to overcome them (e.g., persuasive arguing and political maneuvering) should be incorporated into emergency management theory. If values and politics are producing most of our disaster problems, it is essential that these be the central issues of future research. Thus, the whole purpose of combining findings from different disciplines is to help one see the “big picture” of disasters and emergency management.

How Can These Challenges be Addressed?

Thus far, this paper has described a few of the problems facing theory development and has listed some of the topics that should be included in future research in the field. But this does not necessarily indicate how these difficulties will be overcome by disaster scholars. Below are three recommendations which may help us improve emergency management theory (or a theory of emergency management).

First, it is very important that scholars think critically about theoretical concepts and paradigms. For instance, it is imperative that we are cognizant of values as they relate to the paradigms being proposed today. We must walk a very fine line between pushing for a more proactive approach in emergency management while recognizing the limits of what we can do to prevent disasters. We cannot see the rise in disaster losses and fail to propose new ideas to deal with them effectively. At the same time, we must take into consideration the inevitability of trade-offs for the public good and be ready to tackle events that require response and recovery operations. Thus, theory must accept both our ability and futility in dealing with disasters.

Along these same lines, scholars must ensure that our perspectives are realistic so that our policy guidelines will be achievable. If our theory is based on faulty assumptions, the conclusions will inevitably be problematic. On the other hand, if our premises are grounded in reality, we will more likely be able to generate theories that will have practical application. Thus, another goal of theory should be to understand the barriers to change and how things can be different so that the means to progress can be more easily identified and implemented.

A third and final proposal to improve emergency management theory is to consider the impressive utility of the concept of vulnerability (see McEntire 2003; McEntire et. al. 2001). Vulnerability, unlike hazards, is undoubtedly the only thing we really have control over in the disaster equation. Thus, the concept of vulnerability may help us better describe and comprehend the true nature of disasters. Vulnerability may also help us to understand the purpose of emergency management since it deals with, in my opinion, the goals of liability reduction and capability enhancement (i.e., reducing risk and susceptibility, and raising resistance and resilience). In this sense, our efforts to manage vulnerability are built upon, but broader than the Integrated Emergency Management System (which assessed risks, determined capabilities, and attempted to close the gap between them). In addition, vulnerability has relation to all types of natural, technological and civil hazards. Stated differently, we can be vulnerable to many things

such as floods, structural failures, aviation accidents, chemical spills, terrorist attacks involving biological weapons, etc.

All types of variables, actors and phases of disaster are also related to the concept of vulnerability (McEntire et. al. 2002; Gabor and Griffith 1980; Pijawka and Radwan 1985; Bogard 1989; Comfort 1999; Weichselgartner and Bertens 2000; Watts and Bohle 1993). For instance, our physical location and infrastructure may make us vulnerable to disasters. Or, our culture, economic conditions, political system, and weak emergency management institutions can bring disaster upon us and constrain how we react to them. Government agencies, businesses and citizens can augment our degree of vulnerability while everyone in the public, private and non-profit sectors may also take steps to reduce it. Activities during the mitigation and recovery phases of disaster may obviously increase or decrease vulnerability (e.g., locating or rebuilding in less hazardous areas). But, as the events of 9/11 have shown, even preparedness and response functions (e.g., the failure to acquire compatible communications equipment, the lack of joint planning and training operations, contradictory warnings and incomplete evacuations) can determine our degree of vulnerability to hazards.

What is more, vulnerability has an extremely close relation to most of the disciplines that contribute to emergency management scholarship (see Table 1, adapted from McEntire 2003).

Table 1
Disciplines and Vulnerability

Discipline	View(s) of Vulnerability	Recommendation(s)
Geography	Vulnerability is determined by the use of hazard-prone areas	Land-use planning that takes into account hazards to reduce risk
Meteorology	Vulnerability is due to a lack of advanced warning of severe weather	Acquisition, creation and effective use of warning systems
Engineering	Vulnerability occurs when structures and infrastructure cannot withstand the forces of hazards	Design and construction of buildings and infrastructure that promotes disaster resistance
Anthropology	Vulnerability emanates from constraining values, attitudes and practices	Alter attitudes to discourage risk-taking practices and susceptibility
Economics	Vulnerability is related to poverty and results in an inability to prevent, prepare for or recover from a disaster	Improve the distribution of wealth and purchase insurance to minimize losses and promote resilience
Sociology	Vulnerability is a product of inaccurate assumptions about disaster behavior and is related to race, gender, age, disability, etc.	Understand behavioral patterns in disasters and pay attention to needs of special populations
Psychology	Vulnerability is a function of overlooking or minimizing risk and not being able to cope emotionally with stress and/or loss	Help people to recognize risk and provide crisis counseling to enable resilience
Epidemiology	Vulnerability is susceptibility to disease or injury and is related to malnutrition and other health factors	Improve provision of public health/emergency medical care before, during and after disasters
Environmental Science	Vulnerability is proneness to environmental degradation, which may change weather patterns and produce long-term disasters	Conserve natural resources, protect green space areas, and ensure that debris management is performed in an environmentally conscious manner
Political Science	Vulnerability is produced by the political structure and incorrect decision making	Alter structure of political system and educate politicians and legislators about disasters
Public Administration	Vulnerability results from misguided laws, the failure to implement policies	Strengthen response and recovery capabilities through preparedness measures, improved

	effectively, and an inability to enforce regulations	policy implementation and increased code enforcement
Law	Vulnerability is proneness to legal liability after disaster due to negligence, which is a failure to act as reason or the law dictates	Understand the law and ensure compliance to widely accepted ethical practices in emergency management
Journalism	Vulnerability is a result of insufficient public awareness about hazards and how to respond to disasters	Dispel myths about disasters, foster increased media capabilities, and educate the public about hazards
Emergency Management	Vulnerability is the lack of capacity to perform important functions before and after disaster strikes (e.g., evacuation, search and rescue, public information, etc.)	Foster public awareness about disasters and build capacities through hazard and vulnerability analyses, resource acquisition, planning, training and exercises
Homeland Security	Vulnerability is due to cultural misunderstandings, permeable borders and fragile infrastructure, and weak disaster management institutions	Correct domestic and foreign policy mistakes, enhance counter-terrorism measures, protect borders and infrastructure, and improve WMD capabilities

Vulnerability is thus apt to unify the field by synthesizing findings from numerous disciplines – perhaps more so than any other concept in the field currently.

The concept of vulnerability also captures and integrates findings from many of the paradigms proposed in the past or recommended today (McEntire 2003; McEntire et. al. 2002). A focus on vulnerability acknowledges that we must take a holistic approach to disasters (as was the intent of Comprehensive Emergency Management). It also suggests the need to protect the environment and develop in a safe manner (in accordance with the sustainability school) as a way to reduce the probability and costs of future disasters. Furthermore, vulnerability likewise shows relevance to resistance (e.g., safer engineering) and resilience (e.g., the ability of social, political, economic, and cultural systems to rebound after a disaster) perspectives as well. Risk and vulnerability are often used interchangeably in the research literature. Vulnerability is also discussed frequently in those circles formulating homeland security policy – especially as it relates to epidemiology and bioterrorism (Falkenrath et. al. 1998). The concept of vulnerability may incorporate many of the views of all other disaster and emergency management paradigms to date.

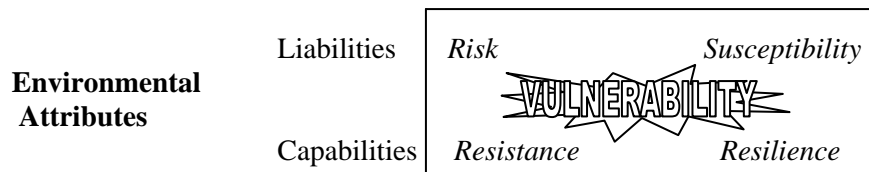
Interestingly, a recent survey of the literature adds support for the model of vulnerability proposed by McEntire in his dissertation (2000) (see table 2). Weichselgartner reviewed (2001, 88) several definitions of the concept of vulnerability and some interesting parallels to McEntire’s model have become evident. Livermann (1990), Dow (1992), Smith (1992), Cutter (1993), Bohle et. al. (1994), and Dow and Downing (1995) recognize the *physical* and *social* dimensions of vulnerability along with the many associated variables that influence this process and situation. Different academicians also recognize how values, actions, inactions, circumstances, poverty, choices, land-use, exposure, etc. (i.e., *liabilities*) contribute to vulnerability (see Bogard 1989; Cutter et. al. 1993; Watts and Bohle 1993; Dow and Downing 1995). Vulnerability has frequently been tied to capacity or *capabilities* in the literature (see Kates 1985; Dow 1992; Timmerman 1981; Radwan 1985; Bohle et. al. 1994). Many scholars often see how *risk* and *susceptibility* relate to vulnerability (see Gabor and Griffith 1980; UNDRO 1982; Petak and Atkisson 1982; Susman et. al. 1983; Pijawka and Radwan 1985; Green et. al. 1994; Dow and Downing 1995). Other students of disasters have indicated a link between vulnerability and the concepts of *resistance* and *resilience* (see Timmerman 1981; Blaikie et. al. 1994).

Table 2

Environments

Physical
(including natural,
built, technological)

Social/Organizational
(including cultural, political
psychological, economic)



From McEntire, David A. (2000). *Sustainability or Invulnerable Development? Justification for a Modified Disaster Reduction Concept and Policy Guide*. Graduate School of International Studies, University of Denver: Denver, Colorado.

Hence, there may be at least some justification for viewing vulnerability in this manner. Vulnerability should thus be considered of paramount importance for the discipline of emergency management, and could be regarded as a central feature of future theory in this area.

Conclusion

Just as the profession of emergency management is undergoing a massive transformation, so too is scholarship in this area. Never before has there been such a pressing need to advance our knowledge of emergency management. This paper has tried to identify what is meant by the term “theory,” and has endeavored to illustrate why theory may be both beneficial and detrimental for academia. After identifying the barriers preventing theoretical development, ideas were given as to what should be included in a specific theory of emergency management (or in emergency management theory generally). The paper also recommended ways to improve understanding of emergency management through critical reflection and a reliance on the concept of vulnerability. Although the views presented herein may or may not be accepted by other disaster scholars, it is hoped that the paper will at least encourage others to help shape the direction of the vital discipline of emergency management.

Conference Postscript

On June 8, 2004, a panel comprised of three knowledgeable and respected scholars made important observations about the future of emergency management theory during an afternoon session of the FEMA Higher Education Conference. This panel, which was moderated by David McEntire, included Thomas Drabek, John Pine and Richard Sylves. Each provided unique views about emergency management theory, including its past evolution and current research opportunities.

David McEntire is the Coordinator of the Emergency Administration and Planning Program at the University of North Texas. In his opening remarks, he

illustrated that a number of scholars have called for a broad, revolutionary, complex, interdisciplinary and integrated view of disasters. His plea was that researchers give increased attention to the concept of vulnerability in order to reach these desired objectives.

Thomas Drabek, a renowned Sociologist who is now retired from the University of Denver, illustrated that theory may have different contextual meanings. For instance, there are normative and substantive theories (e.g., the first describing how things should be vs. the second that provides prescriptive lessons for policy makers). He also indicated that theory could have micro and macro level applications (i.e., some theory may cover a broad range of issues while others may be relevant to specific phenomena only).

John Pine, the Director of the Disaster Sciences program at Louisiana State University, shared thoughts from both environmental and management perspectives. He declared that our theory should have the purpose of reducing degradation of our natural habitat to ensure that our development is sustainable. Dr. Pine likewise showed how management theories may have positive impact upon emergency management practices. He also indicated his preference that systems theory be utilized more frequently by scholars interested in disasters.

Rick Sylves is a well-known Political Scientist at the University of Delaware. He reiterated the fact that disasters are political phenomena and that organizations involved in disasters operate from unique bureaucratic missions. Dr. Sylves also mentioned that policy makers are confronted with a difficult choice: basing decisions on popular opinion (a Jeffersonian model) vs. forming policy based on expert advice (the Hamiltonian model). He suggested that politics be given more attention in future emergency management theory.

While the comments of these scholars diverged significantly based on their respective disciplines, they did agree in a few areas. Drabek's conference paper supported McEntire's assertion about the centrality and utility of the concept of vulnerability. However, Drabek, Pine and Sylves collectively asserted that there will not be an over-arching or meta theory of emergency management. While it would no doubt be difficult for any single concept to capture every conceivable variable and issue pertinent to disasters, it is clear that some theories are more inclusive than others. At the risk of running counter to a very distinguished panel of seasoned researchers, I would offer again the possibility that vulnerability may amount to a more holistic concept. The close relation between vulnerability and a variety of other concepts and theories relevant to disasters is worth considering. Note the following examples:

- **Social constructionist views** – Vulnerability is a concept that is directly related to the social construction viewpoint which is so prevalent in today's scholarship. Vulnerability does not neglect hazards because there can be no vulnerability without hazards (i.e., you must be vulnerable *to something* - an earthquake, industrial explosion or terrorist attack). However, the social construction school explicitly shifts paradigms from hazards (which we cannot control) to the role of humans in disasters (i.e., our degree of vulnerability to a hazard or several hazards, which we can and do determine on a daily basis).
- **Marxist interpretations of disasters** – It has been well-documented in the research literature that economic conditions and political powerlessness are

related to disaster vulnerability. Poor people, minorities and other marginalized people are most likely to live in dangerous areas and substandard housing, and are least able to deal with the adverse effects of droughts, tornadoes and other hazards.

- **Weberian perspectives of emergency management** – Researchers commonly assert that culture is a major reason for rising disaster vulnerability. Our values, attitudes and practices are leading to greater losses each decade. In addition, a lack of professionalization among emergency managers and weak disaster institutions make us vulnerable to disaster (e.g., planning based on false assumptions, an inability to respond effectively to a disaster, or failure to enforce building codes and land-use regulations).
- **Organizational behavior** – Organizations typically look after their own interests and do not understand how their actions or inactions affect other agencies. These factors, in addition to cultural barriers across units, discourage joint planning, training and exercising. The lack of communication among departments before and during the 9/11 terrorist attacks augmented the vulnerability of first responders in New York City. This vulnerability was translated into a disaster when hundreds of police officers and fire fighters lost their lives in the line of duty.
- **Emergent behavior** – When a disaster occurs, people and resources will flow to the scene and new organizations will appear almost instantaneously. Many of these volunteers are untrained and may create serious problems for first responders (e.g., well-intentioned individuals may injure or kill victims when performing search and rescue operations). In addition, spontaneous organizations often outstrip the capacity of emergency managers to effectively utilize them. Emergence is therefore associated with both liability and capability challenges as presented in the aforementioned model of vulnerability.
- **Risk perception and communication** – Most people are typically apathetic about disasters. They do not understand what can happen, they downplay potential consequences, or they exaggerate their ability to deal with disaster. Such attitudes produce the vulnerability that emergency managers are trying to reduce. If risk can be conveyed in an accurate and convincing manner, the public will be more likely to take steps to reduce vulnerability.³
- **Development** – Many scholars are aware of the links between development, vulnerability and disasters. If development is occurs haphazardly, vulnerability will be increased and additional disasters will result. If development is well-planned, however, vulnerability will be reduced and disasters will be less frequent or severe. When disasters occur, development opportunities are presented and

³ Risk and vulnerability are often used interchangeably in the disaster literature. The reason for this conceptual substitution may be due to the fact that risk becomes synonymous with vulnerability if we acknowledge that we cannot control hazards in the risk equation (e.g., hazard + vulnerability = risk). There are some notable differences between the two concepts however. As previously mentioned, risk may give too much attention to physical variables and material losses. Vulnerability, on the other hand, includes these variables but also incorporates social, political, cultural and other factors that lead to disaster. What is more, risk management helps us to understand the need to address the probability and consequences of disaster. In contrast, vulnerability indicates *how* probability and consequences may be effectively managed by reducing the liabilities of risk and susceptibility and raising the capabilities of resistance and resilience.

vulnerability may be corrected during recovery. Alternatively, if vulnerability is not taken into account during rebuilding, disasters will recur and development will again be set back.

- **Sustainability** – Environmental degradation may create additional vulnerability in the future. For instance, the depletion of natural resources (e.g., overgrazing or deforestation) may result in an increased possibility of desertification, famine and flooding. Pollution and global warming may increase our vulnerability to severe weather, prolonged episodes of drought, and coastal flooding in low-lying island nations. Improper disposal of debris after a disaster may also create vulnerability to unforeseen environmental disasters.
- **Technology** –Power grids, nuclear power plants, chemical manufacturing and shipping, computers, cell phones, GPS and GIS each have a multifaceted relation to vulnerability. The complexity of modern infrastructure and an over-reliance on computers may make us vulnerable to complicated and cascading disasters. On the other hand, modern communications equipment as well as advanced hardware and software applications may build our capabilities to prevent, prepare for and respond to disasters.
- **Decision theory** – Disasters are almost always characterized by a lack of information. It is this uncertainty that makes responders and citizens vulnerable to injury, death, disruption and other adverse effects of disasters. Incorrect perceptions, bureaucratic politics and other factors consequently have a bearing on the creation or reduction of risk, susceptibility, resistance and resilience.
- **Systems theory** – Research now illustrates that the natural, built, technological, social, political, economic, cultural, organizational and psychological environments have direct impact on our level of vulnerability. But these diverse systems interact in complicated ways. For instance, the location and construction of our buildings may be due to policy enforcement, cultural preferences, income levels, risk perception, urbanization, education of the population, etc. Systems theory is thus applicable to the model of vulnerability presented in this paper.
- **Chaos theory** – As can be seen in the above discussion of systems theory, there are many variables that interact to produce vulnerability. Chaos theory suggests that it is impossible to detect simple linear cause and effect relationships. Instead, there are many variables that interact in convoluted ways to produce disaster. Chaos theory would thus recommend that vulnerability be reduced by addressing multiple variables simultaneously (i.e., there may be order in policies that appear to be chaotic).
- **Management theory** – Disasters are political and organizational problems. Some of the vulnerability in our communities may be corrected through effective leadership and strategic planning. The ability of emergency managers to sway public opinion and actively pursue objectives will likely increase steps taken for mitigation and enhance the preparedness level of the jurisdiction (thereby reducing vulnerability).
- **Paper plan syndrome** – Some communities assume that the presence of an emergency operations plan is all that is needed to deal with disasters. Having a written document without developing capabilities to implement the plan does nothing to ensure adequate response and recovery operations. In addition, other

types of vulnerabilities can only be addressed through risk assessments, land-use planning, improved engineering; they are not amenable to emergency planning alone.

- **Networking and collaboration** – Scholarship has repeatedly shown that disasters require multi-organizational responses. Getting public, private and non-profit agencies to work together before, during and after disasters is likely to reduce liabilities and raise capabilities. For instance, encouraging developers and land-owners to support safe development will reduce liabilities while increased contact and cooperation among disaster response organizations will build capabilities.
- **Compliance model of evacuation** – Research has indicated that there are a number of variables that influence whether or not a person evacuates during an impending disaster (e.g., age, gender, race, education, activities of neighbors, etc). An understanding of these variables would help responders predict who is not likely to leave (thus increasing their vulnerability) and determine what can be done to encourage them to evacuate (thus reducing their vulnerability).
- **Policy making** – Political processes not only allocate values in society, they also knowingly or unknowingly distribute vulnerability among the population. If we institute law based on public opinion, we may neglect less visible but more common forms of vulnerability (e.g., citizens are more concerned today about our vulnerability to terrorism than our vulnerability to flooding). On the other hand, if our policy only takes into account expert advice, our society may become more vulnerable to civil hazards such as riots and terrorism (e.g., the public may become hostile if its desires are not considered in the policy process).
- **Preparedness and improvisation** – It is possible to see ties between vulnerability and the twin foundations of emergency management also. What emergency managers and first responders do before and after a disaster has a great bearing on vulnerability. If planning, training and exercises are taken seriously, the capability of the community is enhanced. Improvisation, for its part, may either make people susceptible or may increase opportunities for resilience.
- **Integration** – Because there are so many participants involved in emergency management, it is crucial that these organizations espouse and implement consistent and achievable policies. The current national disaster assistance program discourages local communities from reducing vulnerability because federal resources can be acquired for relief and reconstruction purposes.⁴ The delegation of additional homeland security tasks to the local level without the provision of sufficient human resources may also increase the vulnerability of jurisdictions to disasters; emergency managers may not be able to meet all of the assignments and responsibilities that need to be performed before disaster strikes. Vulnerability is accordingly related to the concept of integration also.

Thus, the view of vulnerability presented in this paper may have applicability to numerous concepts and theories discussed in past and current emergency management scholarship. Of course, vulnerability may not capture all phenomena related to disasters,

⁴ The current emphasis on Hazard Mitigation Action Plans may reverse this disturbing trend.

but a variety of topics being discussed in scholarship have a clear relation to vulnerability nonetheless.

This point aside, it is very evident that the participants in the 2004 FEMA Higher Education Conference desire that an instructor guide on emergency management theory be developed. Only two people replied on their surveys (see attachment A) that a course on emergency management theory is not needed (while another person was unsure about the benefit of such a course). One of these respondents justified his/her response by commenting that “you can theorize all day, but the actual benefit comes from practitioners.” What this person might not realize, however, is that the profession of emergency management is directly influenced by theories, concepts, norms and assumptions, regardless of whether we think it is or not. Therefore, virtually everyone agrees that a graduate course on emergency management theory would be helpful to advance scholarship and the profession of emergency management.

This is not to say that there was concurrence on what such a course would entail though. Below are two lists that rank preferences in terms of the numerical value attached to each topic or the number of votes cast.

Value Rank (average preference order)

What is EM theory?
 Purpose and scope of EM
 What is a disaster?
 Phases of EM
 Epistemology and EM
 Twin foundations of EM
 Systems theory
 Disciplinary contributions to EM
 Command/control vs. problem solving
 Emergency/DRC typology
 Chaos theory
 Sustainable development
 Resilience
 Social construction of disasters
 Hazard vs. vulnerability approaches
 Federalism and EM
 Networking and collaboration
 Human behavior in disasters
 Apathy and politics
 Risk perception
 Resistance
 Organizational behavior
 Marx/Weber perspectives
 Change after disasters
 Decision making theories
 Development and disasters

Vote Rank (number of total votes)

Decision making theories
 What is EM theory?
 Purpose and scope of EM
 Risk perception and communication
 Systems theory
 Hazard vs. vulnerability approaches
 Sustainable development
 What is a disaster?
 Disciplinary contributions to EM
 Epistemology and EM?
 Phases of EM
 Command/control vs. problem solving
 Apathy and politics
 Human behavior in disasters
 Networking and collaboration
 Federalism and EM
 Chaos theory
 Organizational behavior
 Resilience
 Social construction
 Twin foundations of EM
 Resistance
 Change after disasters
 Emergence/DRC typology
 Marx/Weber perspectives
 Development and disasters

There were also a number of other topics/theories that were recommended for the emergency management theory course (that did not appear on the survey). A few of these suggested topics/theories included management principles and practices, legal issues and ethics, leadership, crisis and consequence management, public health, heuristics, post-modernism, paradigms and paradigm shifts, neo-institutionalism, and policy formation and implementation.⁵

If FEMA decides to develop an instructor guide on emergency management theory, it might be advisable that the agency consider two strategies to ensure the completion of a successful end product. First, it would be advantageous to assemble a focus group of well-known scholars from a number of disciplines to discuss what should be included in the instructor guide. These researchers could add to, refine, verify or change ranking preferences presented in the above lists. Second, attempting to develop an instructor guide with such a broad range of topics, concepts and theories would be virtually impossible for a single contractor. A logical approach would be to assign sessions out to individual scholars who have expertise in the specific areas that need to be covered (although one or more people may be in charge of overseeing the entire project).

Regardless of how this instructor guide would be developed, our emerging discipline and profession will not advance without additional emergency management theories or an attempt to develop a theory of emergency management. Further research and an instructor guide in this vein will undoubtedly help promote the important profession and discipline of emergency management.

References

- Aguirre, B. 2002. "Can Sustainable Development Sustain Us?" *International Journal of Mass Emergencies and Disasters* 20 (2): 111-125.
- Alexander, D. 2002. "From Civil Defense to Civil Protection – and Back Again." *Disaster Prevention and Management* 11 (3): 209-213.
- Armstrong, M. 2000. "Back to the Future: Charting the Course for Project Impact." *Natural Hazards Review* 1 (3): 138-144.
- Berke, P.R. 1995. "Natural Hazard Reduction and Sustainable Development: A Global Reassessment." *Working Paper no. S95-02*. Center for Urban and Regional Studies.
- Berke, P.R., J. Kartez, and D. Wenger. 1993. "Recovery after Disaster: Achieving Sustainable Development, Mitigation and Equity." *Disasters* 17 (2): 93-108.
- Blaikie, P., T. Cannon, I. Davis and B. Wisner. 1994. *At Risk: Natural Hazards, People's Vulnerability and Disasters*. Routledge: London.

⁵ As can be seen, some of these topics are more practical in nature than theoretical.

- Bogard, W.C. 1989. "Bringing Social Theory to Hazards Research: Conditions and Consequences of the Mitigation of Environmental Hazards." *Sociological Perspectives* 31: 147-168.
- Bohle, H.G., T.E. Downing, M.J. Watts. 1994. "Climate Change and Social Vulnerability." *The Sociology and Geography of Food Insecurity.* *Global Environmental Change* 4: 37-48.
- Boullé, P., L. Vroklijks, and E. Palm. 1992. "Vulnerability Reduction for Sustainable Urban Development." *Journal of Contingencies and Crisis Management* 5 (3): 179-99.
- Britton, N.R. and G.J. Clarke. 2000. "From Response to Resilience: Emergency Management Reform in New Zealand." *Natural Hazards Review* 1 (3): 145-150.
- Britton, N.R. 1999. "Whither the Emergency Manager?" *International Journal of Mass Emergencies and Disasters* 17 (2): 223-235.
- Britton, N.R. and G.J. Clarke. 2000. "From Response to Resilience: Emergency Management Reform in New Zealand." *Natural Hazards Review* 1 (3): 145-150.
- Buckle, P. M. Graham, and S. Smale. 2000. "New Approaches to Assessing Vulnerability and Resilience." *Australian Journal of Emergency Management* 15 (2): 8-14.
- Burby, R, R.E. Deyle, D.R. Godschalk, and R. B. Olshansky. 2000. "Creating Hazard Resilience Communities Through Land-Use Planning." *Natural Hazards Review* 1 (2): 99-106.
- Burton, I., R.W. Kates and G.F. White. 1993. *The Environment as Hazard*. Guilford Press: New York.
- Cannon, T. 1993. "A Hazard Need not a Disaster Make: Vulnerability and the Causes of 'Natural Disasters.'" Pp. 92-105 in Merriman, P.A. and C.W.A. Browitt (eds.) *Natural Disasters: Protecting Vulnerable Communities*. Thomas Telford: London.
- Comfort, L., B. Wisner, S. Cutter, R. Pulwarty, K. Hewitt, A. Oliver Smith, J. Wiener, M. Fordman, W. Peacock and R. Krimgold. 1999. "Reframing Disaster Policy: The Global Evolution of Vulnerable Communities." *Environmental Hazards* 1: 39-44.
- Dow, K. and T.E. Downing. 1995. "Vulnerability Research: Where Things Stand." *Human Dimensions Quarterly* 1: 3-5.
- Dow, K. 1992. "Exploring Differences in Our Common Future(s): The Meaning of Vulnerability to Global Environmental Change." *Geoforum* 23: 417-436.

Dynes, R.F. 1994. "Community Emergency Planning: False Assumptions and Inappropriate Analogies." *International Journal of Mass Emergencies and Disasters* 12 (2): 141-158.

Dynes, R.R. 1970. *Organized Behavior in Disaster*, Lexington Books: Lexington, Mass.

Falkenrath, R.A., R.D. Newman, and B.A. Thayer. 1998. *America's Achilles' Heel: Nuclear, Biological and Chemical Terrorism and Covert Attack*. MIT Press: Cambridge, Mass.

Gabor, T. and T.K. Griffith. 1980. "The Assessment of Community Vulnerability to Acute Hazardous Materials Incidents." *Journal of Hazardous Materials* 8: 323-333.

Geis, Don. 2000. "By Design: The Disaster Resistant and Quality of Life Community." *Natural Hazards Review* 1 (3): 151-160.

Green, C., A. van der Veen, E. Wierstra, and E. Penning-Rowsell. 1994. "Vulnerability Refined: Analyzing Full Flood Impacts." Pp. 32-68 in E.C. Penning-Rowsell and M. Fordham, *Floods Across Europe: Flood Hazard Assessment, Modeling and Management*. Middlesex University Press: London.

Kates, R.W. 1985. "The Interaction of Climate and Society." Pp. 3-36 in R.W. Kates, J.H. Ausubel and M. Berberian (eds.) *Climate Impact Assessment*. Wiley: New York.

Koehler, G.A., G.G. Kress and R.L. Miller. 2001. "What Disaster Response Management Can Learn From Chaos Theory." Pp. 293-308 in Farazmand, A. (ed.) *Handbook of Crisis and Emergency Management*. Marcel Dekker, Inc.: New York.

Kreps, G.A. 1991. "Organizing for Emergency Management." Pp. 30-54 in Drabek, T.E. and G. Hoetmer (eds.) *Emergency Management: Principles and Practices for Local Government*, ICMA: Washington, D.C.

Liverman, D. 1990. "Vulnerability to Global Environmental Change." Pp. 27-44 in R.E. Kasperson, K. Dow, D. Golding, and J.X. Kasperson (eds.) *Understanding Global Environmental Change: The Contributions of Risk Analysis and Management*. Clarke University: Worcester.

McEntire, D.A. and M. Marshall. 2003. Epistemological Problems in Emergency Management: Theoretical Dilemmas and Implications. *ASPEP Journal* 10: 119-129.

McEntire, D.A. 2003. "Searching for a Holistic Paradigm and Policy Guide: A Proposal for the Future of Emergency Management." *International Journal of Emergency Management* 1 (3): 298-308.

McEntire, D.A., R.J. Robinson, and R.T. Weber. 2003. "Business Responses to the World Trade Center Disaster: A Study of Corporate Roles, Functions and Interaction

with the Public Sector.” Pp. 431-455 in Monday, J. (ed.) *Beyond September 11th: An Account of Post-Disaster Research*. Special Publication # 39, Institute of Behavioral Science, Natural Hazards Research and Applications Information Center, University of Colorado: Boulder, Co.

McEntire, D.A. 2002. “An Assessment of Disaster Vulnerability: Fifteen Tenets About a Crucial and Complicated Concept.” In *Proceedings of the 9th Annual Conference of the International Emergency Management Society*, Waterloo, Canada, May 14-17th.

McEntire, D.A., C. Fuller, C.W. Johnston, and R. Weber. 2001. “A Comparison of Disaster Paradigms: The Search for a Holistic Policy Guide.” *Public Administration Review* 62 (3): 267-281.

McEntire, D.A. 2000. *Sustainability or Invulnerable Development: Justification for a Modified Disaster Reduction Concept and Policy Guide*. Ph.D. Dissertation. University of Denver: Denver, Colorado.

Mileti, D. 1999. *Disasters by Design: A Reassessment of Natural Hazards in the United States*. Joseph Henry Press: Washington, D.C.

Neal, D.M. 1997. “Reconsidering the Phases of Disaster.” *International Journal of Mass Emergencies and Disasters* 15 (2): 239-264.

Neal, D.M. and B. Phillips. 1995. “Effective Emergency Management: Reconsidering the Bureaucratic Approach.” *Disasters* 19: 327-337.

Oliver-Smith, A. and S.M. Hoffman. 1999. *The Angry Earth: Disaster in Anthropological Perspective*. Routledge: New York.

Petak, W.J. and A.A. Atkisson. 1982. *Natural Hazard Risk Assessment and Public Policy: Anticipating the Unexpected*. Springer: New York.

Pijawka, K.D. and A.E. Radwan. 1985. “The Transportation of Hazardous Materials: Risk Assessment and Hazard Management.” *Dangerous Properties of Industrial Materials Report* (September/October): 2-11.

Quarantelli, E.L. 1998. *What is a Disaster?* Routledge: New York.

Quarantelli, E.L. 1995. “What Is a Disaster?” *International Journal of Mass Emergencies and Disasters* 13 (3): 221-229.

Rubin, C.B. 2000. “Emergency Management in the 21st Century: Coping with Bill Gates, Osama bin-Laden, and Hurricane Mitch.” Natural Hazards Working Paper #104. Institute of Behavioral Science, Natural Hazards Research and Applications Information Center, University of Colorado: Boulder, Co.

- Salter, J. 1998. "Risk Management in the Emergency Management Context." *Australian Journal of Emergency Management* 12 (4): 22-27.
- Smith, K. 1992. *Environmental Hazards: Assessing Risk and Reducing Disaster*. Routledge: London.
- Susman, P., P. O'Keefe, and B. Wisner. 1983. "Global Disasters: A Radical Interpretation." Pp. 264-283 in K. Hewitt (ed.) *Interpretations of Calamity*. Allen & Unsin: Boston, MA.
- Timmerman, P. 1981. "Vulnerability, Resilience and the Collapse of Society." Institute of Environmental Studies, University of Toronto: Toronto.
- UNDRO. 1982. *Natural Disasters and Vulnerability Analysis*. Office of the United Nations Disaster Relief Coordinator: Geneva.
- Watts, M.J. and H.G. Bohle. 1993. "The Space of Vulnerability: The Causal Structure of Hunger and Famine." *Progress in Human Geography* 17: 43-67.
- Waugh, W. 2004. "The All-Hazards Approach Must be Continued." *Journal of Emergency Management* 2 (1): 11-12.
- Weichselgartner, J. 2001. "Disaster Mitigation: The Concept of Vulnerability Revisited." *Disaster Prevention and Management* 10 (2): 85-94.
- Weichselgartner, J. and J. Bertens. 2000. "Natural Disasters: Acts of God, Nature or Society? – On the Social Relation to Natural Hazards." Pp. 3-12 in M.A. Andretta (ed.) *Risk Analysis II*, WIT Press: Southampton.

Attachment A

Theory of Emergency Management Survey

Wayne Blanchard is considering the development of a graduate instructor guide covering emergency management theory. Please answer the following questions and return this form to David McEntire.

1. Do you think there is a need for an instructor guide on emergency management theory?
_____ yes _____ no
2. Below is a list of possible topics to be included in an instructor guide on emergency management theory. Please read through the list, select 15 of the following topics and rank in order of importance (e.g., 1 is most important; 15 is still on the list but is least important).

_____ What is a disaster? (divine, natural or man-made causes)
_____ Chaos theory
_____ Organizational behavior theory
_____ Twin foundations of preparedness and improvisation
_____ Social construction perspectives
_____ Marxist vs. Weberian perspectives of disasters (radical/cultural interpretations)
_____ Epistemology and disaster studies
_____ Human behavior in disasters (myths and exaggerations)
_____ What is emergency management theory?
_____ The purpose and scope of emergency management
_____ Federalism as the context of emergency management
_____ Hazard vs. vulnerability approaches
_____ Command and control vs. problem solving approaches
_____ History and complexity of the four phases concept
_____ Emergence and the DRC typology
_____ Disaster resilient community approach
_____ Disaster resistant community approach
_____ Sustainability/sustainable hazards mitigation
_____ The psychology of risk perception, assessment and processing
_____ The merit and drawbacks of development
_____ Understanding apathy and overcoming the politics of disaster
_____ Disciplinary perspectives of disasters
_____ Importance and strategies of networking
_____ Decision theory (rational, bureaucratic politics, incrementalism, garbage can model, uncertainty in choice, etc.)
_____ Does change occur after disaster?
_____ Systems theory
3. Please list (below or on the back) any other topics which should be included and provide any other recommendations for the development of an instructor guide on emergency management theory.

Thank you for your assistance!