Launching the DRC: Historical Context and Future Directions

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Abstract This chapter describes the historical context within which the Disaster Research Center at The Ohio State University began in 1963, both what came before and major issues confronted during the early years. Future directions in disaster research are then described. Key areas for the future research agenda include both basic theoretical issues and specific areas of inquiry reflecting paradigm shifts and emergent cultural and social changes.

Keywords Disaster Research Center · Emergency management · Disaster research theory · Research methods

Historical Context

Prior to the establishment of the Disaster Research Center (DRC) at The Ohio State University in September, 1963, other researchers had examined human responses to a mix of tragedies. Their work, albeit quite limited in scope and number, defined the historical context within which the DRC began. The first section of this chapter highlights the major components of this legacy. Then specific challenges are described that awaited the DRC staff. The second section of this chapter outlines a future research agenda. By building on the rich legacy of that 50 plus years of work since the DRC began, those standing on the shoulders of the pioneers from the past can enrich our understanding of the human side of tragedy.

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Following a brief summary of major research efforts completed prior to 1963, three types of challenges that the initial DRC staff confronted will be discussed. These issues pertained to: (1) method, (2) theory, and (3) ethics.

Early Disaster Studies

While folklore in most societies has contained stories of great floods, earthquakes, famine producing infestations, volcanos, and other such events, Dynes (2000) has argued that the first "modern" disaster was an earthquake that struck Lisbon, Spain in 1755. His analysis of Voltaire's writings, especially as reflected in responses to Rousseau, indicate that interpretations of this event were different from those of the past. Why? Because it was viewed in naturalist terms rather than supernatural or religious. People died, not because of their sinful behavior that made deities angry, but because of natural forces that had nothing to do with who was sleeping with whom or any other so-called sinful behavior.

Despite such changed paradigms of interpretation, however, it was not until a young priest who had assisted in dealing with some of those who perished when the *Titanic* sank (1912), that the first social scientific study of a disaster was published. Samuel Henry Prince assisted with the relief efforts in Halifax, Nova Scotia, after a French munitioner (the *Mont Blanc*) loaded with trinitrotoluene (TNT) collided with a Belgian relief ship near the docks (December 6, 1917) (Drabek 1986, p. 2). Shortly thereafter, Prince pursued graduate studies at Columbia University which culminated in the publication of his doctoral thesis: *Catastrophe and Social Change* (1920). While other observers of disaster events had documented aspects of the human response, Prince's work established a new paradigm, one wherein specific cases could be used to develop networks of generalizations that might be tested in subsequent events (Scanlon 1988). Years passed, however, before others would seek to develop systematic study of disaster phenomena resulting from natural events like tornadoes (e.g., Form and Nosow 1958), economic depression (Hill and Boulding 1949) or varied mixes of catastrophic events including war and other human caused events (e.g., Sorokin 1942). What was clear, however, was that response patterns were sequenced across a series of phases, noted early on by Carr (1932). These ranged from warning and evacuation to post-impact behaviors that emerged into complex volunteer and intergovernmental activities related to recovery.

Following World War II, at least three sustained research groups were established to accumulate human response data following disasters. In Quarantelli's (1987a) summary of these, he pointed out that field work conducted under a subcontract from the Operations Research Office at John Hopkins University remained classified for years since it was focused on studying the effects of atomic weapons on military troops. Some of this work, like that conducted by a sociologist, Lewis Killian, University of Oklahoma, also included assessments of civilian behavior in extreme situations such as industrial and natural disasters. Secondly, University of

Maryland researchers focused on psychiatric aspects of post-disaster responses with an objective of "… developing methods for the prevention of panic, and for minimizing emotional and psychological failures" (Quarantelli 1987a, p. 291). Thirdly, and most relevant to the emergence of the DRC, were field teams based within the National Opinion Research Center (NORC) at the University of Chicago under the direction of the late Charles E. Fritz (see 1961). Indeed, one of the graduate students who trained under Fritz, E.L. Quarantelli, would become one of the three co-founders of the DRC (the other two were Russell R. Dynes and J. Eugene Haas). During the years that the NORC field teams functioned (1950–1954), numerous surveys were completed in places like Bakersfield, California, following an earthquake, airplane crashes, and tornadoes in Arkansas, Worcester, Massachusetts, and Waco, Texas. Upon completion of this project (see Fritz and Marks 1954), Fritz relocated to Washington, D.C., where he guided work undertaken within the National Academy of Sciences. One of the most visible products of those efforts was a publication series wherein a variety of researchers detailed their study results, e.g., Wallace 1956—*Tornado in Worcester* and Moore, et al. 1963—*Before the Wind: A Study of Response to Hurricane Carla*. Summaries of these and other research studies appeared in two influential books: (1) an edited collection published by Baker and Chapman (1962) *Man and Society in Disaster*, and Barton's (1963) theory construction effort, *Social Organization Under Stress: A Sociological Review of Disaster Studies*.

This then was the context within which I accepted my position at DRC on September 1, 1963. As a full-time Research Associate, my primary duties were to be the Director of the anticipated laboratory studies that were to complement field studies of group and organizational responses to disaster. My counterpart, Dan Yutzy, also was appointed to a full-time Research Associate position with the designation of "field director." Both of us participated in the training and supervision of numerous graduate students who served as Research Assistants. Among these were Elaine Hobart and Tom Cree who were assigned to assist in the lab studies; field researchers included Bill Anderson, John Quast, Jim Hundley, Jim Ross, David Adams, and Jack Brouillette. During our 2nd year, Manny Schegloff, who was completing doctoral studies at UCLA, joined our team as did Joe Cooper.

We immediately were challenged with a multitude of issues. These reflected three general types of concerns: (1) methodological, (2) theoretical and (3) ethical.

Key Methodological Issues

Our initial offices were in a temporary building on the OSU campus that housed the Personnel Research Board (PRB), a long standing multidisciplinary research center. When the simulation laboratory was constructed under the OSU football stadium, it was surrounded by numerous offices that became the home of the DRC in 1964. Five types of activities were identified by the co-directors as immediate tasks.

Literature Review Project

None of us, except for Henry Quarantelli, had read extensively into prior research on disaster responses. Since he had worked with the late Charlie Fritz on the NORC studies at the University of Chicago, he directed us to Fritz's (1961) chapter on disasters in the social problems text by Merton and Nisbet (1961), and the numerous publications within the series published by the National Academy of Sciences, such as the late Harry Moore's study of Hurricane Carla (1963). Then dozens of disaster reports of various types arrived at the Center as did reprints of published articles and a few books like Form and Nosow's (1958) study of the response to a tornado in Flynt-Beecher, Michigan. So it was decided that beyond "basics" like these, research assistants would be assigned reports to summarize using a standardized protocol whereby we could begin to build an inventory that would identify events studied, methods used, organization involved, key findings and conclusions. This not only provided staff training, but also gave a mechanism for a disciplined literature review that many of us used for years. These data sets, all duplicated on blue ditto masters, were helpful to Dynes in his early text that summarized organizational and community responses—a statement that remains most useful yet today (1970).

Field Interview Guide

It was decided that as soon as a disaster occurred, the field team would collect data. The objective was to document the organizations that responded, and to identify their primary roles, operational problems confronted, interagency communication patterns and the like. As these topics and others were being discussed in staff meetings, the Vaiont Dam disaster occurred in Italy (October 9, 1963) and some of our senior staff took off. We all wondered when our chance would come. We didn't have to wait long.

Staff Training

On October 31, 1963, a massive propane gas explosion at the Indianapolis Coliseum left 81 dead and 400 or so injured. As I recall, we were scheduled to discuss a first draft of the field interview schedule the following week, but for training purposes, four of us departed for Indianapolis the morning after the explosion. We discussed key interview question areas while en-route. After completing numerous interviews, a week or so later Hundley, Quast and Anderson conducted additional interviews with emergency responders. Experiences like these gave all of us our first test of the unique opportunities and difficulties post-disaster environments represented, like how to gain access to the disaster scene, means of identification and legitimation

devices such as business cards, and the like. Shortly thereafter, all of us obtained "official identification" papers endorsed by the Office of Civil Defense within the Department of Defense. These even had our individual photograph on them.

Expert Consultations

From time to time funding agency representatives and other researchers visited the DRC. These visits helped all of us gain perspective on prior work, methodological strategy, and difficulties in application of findings. One such visit looms out in my memory for two reasons. The late Harry Moore whose book *Tornadoes Over Texas* (1958) introduced us to the concept of disaster sub-cultures was conducting a DRC seminar on November 22, 1963. We had been in session for a while when the PRB Administrative Assistant came into the conference room with news that President Kennedy had been shot in Dallas. We continued on for a bit, but when she returned with news of his death, none of us really wanted to stay. Memory of our several days of TV watching remains vivid. We had endured the Cuban missile crisis months earlier and many of us had strong views about the ongoing civil right conflicts. Kennedy's assassination, and the media coverage of it, brought a totally new meaning to the concept of disaster.

But this chance to meet Professor Moore personally, albeit truncated, proved most important two years later. In June, 1965, I conducted DRC interviews following a massive flood in Denver. Quarantelli suggested that I apply for a young scholar grant (NIMH) and juxtapose the DRC organizational analysis with a study of family evacuation behavior. I modeled the proposal after Moore's (1963) work on Hurricane Carla. Upon receiving the award, I contacted him and was most pleased with his help, including a copy of his family interview schedule which framed my own data collection. In fact, only a few people know that I later assisted Dennis Mileti with his doctoral dissertation study (1974) of the flash flooding in South Dakota that occurred a few years later. Both Dennis and I are forever indebted to Harry Moore for his kindness and expert help. And I note this as a simple illustration of the serendipitous consequences that frequently have flowed from the DRC. These rarely are documented, but their cumulative impacts have been highly important in the emergent disaster research legacy.

Laboratory Studies

How do you study disaster in a small groups laboratory? This question elicited lively debates. As the elaborate OSU laboratory was completed with sophisticated video and audio recording capabilities, Gene Haas and I consulted with numerous researchers including Harold Guetzkow (1962) at Northwestern who was conducting inter-nation simulations and John Kennedy (1964) at Princeton whose business

simulations were receiving high recognition (e.g., Kennedy and Dold 1964). When the lab was completed, we tested the equipment with a small scale experiment in which students participated. But how much stress could we generate for them so as to relate to our problem of disaster behavior? And how could we generalize any such findings to a disaster environment (see Drabek and Haas 1967)?

Eventually, I formulated a proposal that reflected the writing task I was assigned after the field work was completed on the Indianapolis explosion. That report was revised and expanded after a 1 year follow-up field visit that I completed with the help of Bill Anderson (Drabek 1968). Recordings obtained from the police and fire departments proved to be invaluable and stimulated my effort to create a "realistic simulation" of a police communication system under stress (1965). All DRC staff participated in the simulation sessions; I thanked 28 in my dissertation by name. Officers from the Columbus Police Department communications unit were instructed to "just process citizen calls and cruiser radio traffic as you do daily." "You mean these phones are going to ring?:" "Yes, in about two minutes and you'll be here to respond for an hour or so." Designing and implementing this simulation, which after nine "normal" sessions were followed by stress sessions (air crash), established a new level of training for these officers and important new insights into organizational adaptations under stress (e.g., see Drabek 1969a; Drabek and Haas 1969).

Key Theoretical Issues

Let me briefly describe four issues that illustrate the range of challenges we faced during those early days.

What Is an Organization?

We hit this one immediately upon our return from Indianapolis. Clearly, both police and fire units were important responders as were several hospitals, the county coroner and sheriff. Also, because the coliseum was located within the Indiana State Fairgrounds, the State Police eventually assumed overall authority. So, "who was in charge?" changed during the response in a very public transition. While units like the Red Cross and Salvation Army clearly could be viewed as separate, did the police and fire represent two organizations or were they in actuality only departments of Indianapolis city government? What criteria define "an organization"? We debated this for some time, but it was not until I had left that Dynes and Quarantelli codified what has come to be known as the very important and useful "DRC Typology" (e.g., Dynes 1970).

What Is a Disaster?

We all thought we knew what this concept meant. After all Fritz (1961) had given us a clear definition. But things got complicated right off the bat as various case studies were discussed. Frequently, the words were spoken—"that's really not a disaster, just an emergency or accident or minor crisis." The issue of scale cropped up first, but then a field team went to Cincinnati after a major flood. When they returned some began talking about a "routine disaster." Pre-flood planning and the regularity of past flooding had permitted emergency officials to "stay ahead" of the event so there was no sense of urgency, no sense of stress. Dimensions like predictability, scope of impact, frequency, and others were proposed along with key ideas reflective of a "stress-strain" theory which many of us pursued (Drabek et al. 1964). Task demand flows, structural capacities and the gaps between them seemed to add depth to our analyses and generalization power to a broader set of social systems (e.g., Haas and Drabek 1973).

What Is Organizational Stress?

The system stress perspective provided integrative power. Social units could vary in size from a single individual, to families, to organizational sub-systems and multi-layered agencies and entire communities. Hence, as theorists like Parsons et al. (1962), Homans (1950) and Barton (1962) had suggested, micro system analyses could be integrated and contrasted. But the issues of definition continued to be debated as did the procedures for adequate measurement. The only thing that was clear was the difficulty and complexity of the task ahead.

How Can Organizational Emergence and Improvisation Best Be Identified and Analyzed?

As I dug into the interviews completed after the Indianapolis explosion, for example, I became aware of many improvisations that were critical to the response. For example, officials with the local Red Cross Chapter set up a telephone welfare inquiry system which was a major community asset. As calls from far and wide arrived at law enforcement offices, fire departments, hospitals, and elsewhere, they were directed to personnel in the emergent component of the Red Cross Chapter. This was not preplanned nor was the rapid construction of a "phone bank" whereby hundreds of calls could be processed daily. We sensed that these types of improvisations increased the response capacity of the community, thereby reducing the overall stress levels, but precise measurement was seen only as a challenging future task. What was clear, however, at least within the complex networks of governmental

agencies and the mixes of volunteer private disaster relief organizations, was this: the prevailing planning strategy of "command and control" borrowed from the military did not fit. And those who pressed to put the round pegs into square holes were destined to fail.

Key Ethical Issues

When the DRC was launched in 1963, we did not have the benefit of the insightful analyses completed recently by Browne and Peek (2014). Certainly their work would have helped a great deal. I'll note four issues that were confronted during our initial years.

What Are the Requirements for "Informed Consent"?

I still recall the rush of emotion I experienced during the first session of the laboratory police simulation—"My God, we've done it! They are behaving just like they did when I observed them at police headquarters." As the three "routine" sessions continued with each of the three shifts of Columbus police officer, I felt pride in the system we had created and thankfulness for the numerous DRC staff who played their roles with skill. And for all of us, the stress session—a fictional air crash scenario—was going to be our chance to "sock it to the cops."

And boy, did we! Their system confronted demand loads far beyond their capability to manage. As the minutes ticked by, their scarcity of resources caused them to fall further and further behind. Captured in the visual and audio recordings were their personal responses of stress, but also a series of improvisations in both resource call-ups and their call processing procedures. Just as our embryonic theoretical structure predicted, their responses reflected the impacts of stress and coping strategies of reduction.

In the debriefs that followed the stress sessions, the officers indicated to me that they had developed a hunch following the first one or two routine sessions. Their conclusion—OSU had been contracted to establish a model performance testing process whereby communications units with police and fire departments could be evaluated. "So we really took this very seriously and thought we might even get evaluations that could affect our future pay levels and promotion opportunity." Of course, we never had mentioned anything like this and were shocked to learn of this emergent laboratory norm.

Remarks like these hit me hard. In fact, about 10 min into the first stress session, I suddenly had a panic response within my gut. "Christ sakes! What if that guy has another heart attack during this experiment?" I knew we had secured signed informed consent statements that were drawn up by the OSU legal staff and signed off on by the Columbus Police Department administration who viewed this

simulation as a helpful training experience for their officers. And it was—but still, what if a personal tragedy occurred? As I learned more about what was going on across the country in so-called small group experiments, including the administration of LSD and other drugs to students—remember Tim Leary—my personal interest in the matter increased and resulted in my participation in the establishment of Institutional Review Boards for Human Subject Protection, both in my own University and several others. Unfortunately, as complex organizational theorists would predict, some such Boards have given birth to excessive rule-following bureaucrats that many researchers resent. Cameron (2015), who has formulated some good coping strategies, put it well. "Just like the ghoulish dementors of the Harry Potter series, IRB committees are typified as the foulest of creatures who feed on the happiness of unsuspecting researchers" (p. 72).

What Does a Promise of Interview Confidentiality Require and What Potential Legal Exposure Is Created?

Shortly after we completed the first round of interviews in Indianapolis, several key officials were indicted by a Grand Jury. People like the local fire and police chiefs, and state officials like the fire marshal were alongside the coliseum management and concession vendors who actually brought the propane gas units into the coliseum. Their action was illegal and law suits were filed as victims and their families sought justice. Could we be called to testify? And if asked to reveal what our interviews contained, could we refuse on the grounds that confidentiality had been promised? It was clear that a host of policy decisions had to be formulated by DRC staff (see Drabek and Quarantelli 1967).

What Policy Guidance Was Required Regarding Media Interviews, Sponsor Inquiries, and Such?

Very quickly, the Indianapolis media contacted the DRC regarding lessons learned from our work. And some sponsor personnel inquired requesting the same thing. This could have had the appearance of federal agencies dispatching "university spies" into local communities to obtain evaluative information for future agency decisions. Clearly, both lines of inquiry had potential political implications, especially for the Center and the University. Fortunately, the DRC co-directors handled these matters correctly through responses that reinforced the idea that no comments would be made until the analyses were complete and the official reports published—at least at the level of a DRC "working paper."

You might think that over time such interest would wane. But in October, 2012, nearly 50 years after the Coliseum tragedy, my wife Ruth and I had the honor of

re-visiting the explosion site and photographing the recently placed memorial plaque honoring the victims. And when we arrived at the registration desk for the annual state meeting of the Indiana Emergency Management Association, we were pleased to learn that each registrant was provided a backpack which contained a copy of the DRC report, i.e., *Disaster In Aisle 13* (Drabek 1968). And once again, to a packed banquet audience, I was proud to explain what was learned and how new research has carried us further in our understanding of human response. Indeed, it was a special honor to enter the banquet hall and see a copy of the first edition of our summary volume on nearly every chair in the room (Drabek 2010).

What Dissemination Obligation Does a Researcher Have Who Has Collected and Analyzed Disaster Data?

As I stood before that Indianapolis audience—emergency managers from all over the state—I remembered a flashback to a telephone conversation with the late Harry Moore. "Tom, don't just let our work languish in the dusty shelves of the library. Experiment with different approaches beyond academic journal articles to disseminate." And so I said to Harry, who I didn't talk to very often, inside my head, of course, something like this: "Well Harry, when we first met at your seminar in 1963 at the newly established DRC, never could I have believed that someday my journey would have taken me here." And you know, that really is the truth. So I leave this thought with you, because there is so much more known than is being applied within the emergency management profession today. As I frequently say to such audiences, "Find it, use it, share it" (Drabek 2014c). The challenge remains!

This brief commentary on these three topics, i.e., issues of method, theory and ethics, partially illustrates the rich legacy of the DRC. It reflects the shoulders on which I and others have stood, as we peered out at the complex cluster of phenomena that make-up disaster scenes and human responses and recovery. And to Henry and Russ in particular, and all of the others who peeked into these scenes prior to 1963, we must humbly say "Thanks." But we also say, "We accept the passing of the baton and will do our best to carry the legacy forward." So what needs to come next?

While I worked on the second edition of *The Human Side of Disaster* (2013), reviewing study after study, I asked myself, "Where does this fit?" Gradually I came to realize that my vision of the emerging profession of emergency management was shifting. A new paradigm was needed, one wherein local emergency managers were encouraged to view their profession with a greatly expanded vision—a vision wherein they would see how new research could help them in becoming more effective *community change agents*. Since that time, especially as I have met with hundreds of local emergency managers during conferences where I have had a chance to talk about the human side of disaster, new questions have emerged. These reflect the next steps; collectively they outline a future research agenda. As they are addressed, the research legacy, including the continuing work by DRC staff, now

located within the University of Delaware (since 1985), will be enriched and strengthened.

New Directions

Hundreds of new research questions can be posed given the lapses within our current knowledge, including returns to many of the conclusions that we think we know. Thus, further confirmation, greater precision, and specification of the limits of generalization are required for most, if not all, of the conclusions drawn to date. That said, I will summarize a limited series of topics and questions that at this point in the history of disaster research merit priority. These reflect: (1) basic theoretical issues and (2) expansion of the emergency management interface.

Basic Theoretical Issues

Very long lists can be generated as the necessary lines of inquiry are numerous. Upon reflection, however, five key questions *illustrate* the range of challenges that await the attention of the next generation.

What Is a Disaster?

In his Presidential Address at the World Congress of Sociology in New Delhi, India (August, 1986), Quarantelli asked, "What should we study?" In doing so, he raised this most fundamental question, one that he and others have returned to several times (e.g., see Quarantelli 1987b, 1998; Perry and Quarantelli 2005; Perry 2006). And today, when many around the world wonder where and when the next terrorist attack will occur, some would suggest that disaster researchers need to refocus. "Why do research on the warning processes that saved lives prior to a tornado that hit—fill in your most recent case—when the biggest threat facing most people is future acts of terror?" So they ask. But the question Quarantelli first posed reflected much more than arguments designed to prioritize or constrain. It is not a question of whether or not flood studies should receive higher funding priority than terrorism, just as it is not frost consequences versus tornado or earthquake vulnerabilities. Thus, as with earthquakes, as Stallings (1995) documented years ago, the social construction processes whereby terrorism comes to be defined as a public issue must be illuminated. Stampnitsky's (2013) work is an important step in this direction. And as government agencies are reorganized to adapt better to threats and actual acts of terror, researchers must seek to aid policymakers to maintain perspective (Tierney 2005). Technological innovation has enriched organizational

environments. Information overloads increase the difficulty of decision-making in the complicated global world of today, wherein diplomacy failures give way to drone-based killings which some argue is a superior strategy to massive troop invasions (see Rothkopf 2014, pp. 316–336). We must explicitly recognize that different theoretical frameworks and orientations serve to define and delimit the phenomena any researcher or group of such choose for their focus.

Clearly, not all disaster events are the same in their impact (Quarantelli 1997). So the real question is, how and why are some disasters different in the threat perceptions that are socially constructed and the patterns of diverse impacts on social systems ranging from family groups to communities and societies? Civil disturbances and riots, for example, appear to stimulate looting patterns that differ significantly from behaviors observed after a tornado has smacked a city, as Quarantelli and Dynes (1970) documented years ago. So by asking the broader question within a context of theoretical exploration, rather than funding or political rhetoric, we begin to underscore not only pattern differences for certain behaviors like looting, but address an even more fundamental question: i.e., what are the *limits of generalization* for any specific finding or conclusion?

Following Quarantelli's suggestion that there may be qualitative differences among certain types of disaster events, Kreps and his team explored numerous pattern differences within hundreds of organizational units hidden within the DRC archives (Kreps 1989; Kreps and Bosworth 1994). These analyses were placed within fundamental sociological theories of social structure and process. Others, like Erikson (1976), whose seminal work on the impacts of the Buffalo Creek flood (1972) in West Virginia unveiled the far reaching effects of a "loss of community," has argued that a "new species" of disaster is defined by a single key variable—agent toxicity (Erikson 1994). While others of us would place this objective quality, *and* perceptions of it, into a more complex taxonomy of disaster events (see Drabek 1989), future work must go beyond the analogy we borrowed from the biologists. Most likely multivariate networks of variables will be laced together within dynamic models reflecting changes over time, rather than static sets of taxonomic niches that might identify different "types" or "species" of disaster events. System levels may vary from micro to more macro units with varying qualities of vulnerability, resilience, and risk that are in turn impacted by alternative stressors reflecting either internal or external agents or both simultaneously. It is analyses rooted within frameworks reflective of this type of reasoning that will be the future of disaster research.

What Are the Historical Antecedents to Disaster?

All disasters occur within a historical context. Many have critiqued the NORC field teams and others following that tradition including much of the early work conducted by DRC staff (e.g., Hewitt 1983; Klinenberg 2006). Referring to field study reports as "the quick hit" tradition, they correctly point out the failure to assess "root

causes". In doing so, economic and political decisions are not identified that resulted in the nexus of conditions that predated specific disaster events (Burton et al. 1978; Wisner et al. 2005). In Colorado, for example, thousands of abandoned mines are leaking toxic waste products into groundwater runoff especially after heavy rainfalls. In August, 2015, an EPA team tried to relieve pressure building up within the Gold King Mine near Silverton, Colorado. Suddenly, millions of gallons of toxic waste water were released. The ribbon of toxic sludge plunged downward into the Animas River which runs through the tourist town of Durango and into Farmington, New Mexico. From there the sludge flowed through a section of the Navajo Nation and headed for Lake Powell in Utah (Hughes 2015; McGhee 2015). Drinking water safety and environmental impacts remain vulnerable from the mining history of this state, like many others. This event differs from contaminated portions of the West Virginia Elk River in January the year prior. There it was leaking chemical storage tanks that put people at risk (Griffin et al. 2014). And prior to that it was the continuing flow of oil leaking from the explosion at the *Deep Water Horizon* oil rig (April 20, 2010). These few examples illustrate another dimension of disaster, i.e., industrial accidents, but also highlight the issue of antecedents. While some events appear to be more "natural" than others, even weather phenomena like tornadoes and especially floods illustrate why some have concluded that there is no such thing as a "natural" disaster (Hartman and Squires 2006). Flooding in New Orleans after Hurricane Katrina illustrated the point all too well. How "quick hit" studies can be enriched through a broader historical perspective remains an important challenge.

How, When and Why Is Disaster Reflected in Popular Culture?

Few recall, if they ever knew, that Shakespeare's play *The Tempest* probably had its origins in an actual hurricane that hit the Bahamas when the English Ship *Sea Venture* was enroute to Jamestown, Virginia in 1609. Sylvester Jourdain, a possible cousin of Samuel Jordan, one of the first American colonial legislators, kept a journal depicting their journey. The passengers were delayed months while they tore the ship apart and constructed two smaller vessels—the *Patience* and the *Deliverance*—that safely took them to Jamestown (May 20, 1610) (see Fitzwater n.d.). Disaster events have long inspired others, often perpetuating false images of actual human response (Quarantelli 1960).

But there is much more to this significant cultural area than the job of debunking. Drama, music, poetry, and other forms of artistic expression are only the obvious. Anniversary celebrations, monument and memorial construction are reflections of important recovery processes that only a few have explored to date, e.g., Eyre and Dix 2014; Quarantelli and Davis 2011. As this research area matures, it will provide important insights into the human condition as it reflects disaster and how people cope.

What Theoretical Frameworks Will Inform Assessments of Adaptations and Consequences of Climate Change?

While a host of future disaster events will be ascribed to the broad concept of "climate change", the sociological community, including disaster researchers, should refocus. Recently an expert study team, under the guidance of Dunlap and Brulle (2015), outlined a multitude of perspectives and challenges. Clearly, others will follow (e.g., Phua 2015). And as they pick up on these themes the literature comprising "disaster research" will be redirected in ways not yet clear. As the challenges are confronted, the intricate webs of institutional and political networks will be exposed and more clearly understood.

What Theoretical Frameworks Will Guide Analyses of Cross-Societal Comparisons and Assessments of Both Global Impacts and Multinational Response and Relief Efforts?

When a massive earthquake struck the highly vulnerable nation of Haiti (January 12, 2010), we saw the transition from disaster to catastrophe. Some would argue that Hurricane Katrina represented this shift for the United States. Clearly the complexities exposed by the earthquake that struck the northern section of Japan (March 11, 2011) illustrate the point. And as the debris field caused by the monstrous tsunami began to reach the western shores of the U.S.A., many wondered about damages to the Fukushima nuclear power plant and its contamination. Future epidemics, war related migrations, and events like this earthquake will provide opportunities and challenges when researchers seek to build on recovery analyses like those completed by Delany (2015), Kiyota et al. (2015) and others (Companion 2015). Some, like McEntire et al. (2012) will focus on a narrow but highly important topic like the processes used and difficulties encountered with unidentified bodies in mass-fatality management. By comparing the experiences following the Haiti (2010) earthquake to subsequent incidents in India, Bangladesh and Sri Lanka, this team highlighted recent trends that "… reveal that more research is urgently needed on mass-fatality disasters" (p. 323). Peacock's (1997) agenda for cross-national and comparative research programs still awaits implementation.

Aldrich (2012) demonstrated that pathways for increasing community and national resilience can be explored empirically within theoretical frameworks that link a host of concepts together. And in doing so, we begin the transition to a new paradigm wherein disaster victims are viewed as survivors who will enhance community resiliency especially if they are assisted by a new type of emergency manager who understands what it means to be a community change agent and how to implement a broad range of strategies designed to reduce vulnerabilities and enhance resiliency (Drabek 2013; Urby and McEntire 2015).

Expansion of the Emergency Management Interface

As I have reviewed dozens of recently published disaster research studies, I have detected an altered view of emergency management as the evolution continues to mature from a bureaucratic occupation into a full blown profession wherein research is actively reviewed and conducted. Those working within academic settings will still lead the way on more basic research reflecting the themes just outlined, but members of this new profession will collaborate more frequently with their academically based colleagues. And the topics they will investigate will enrich the existing knowledge base in an exponential manner. What are some of the topics that will be explored during the next decade or two? Again, my list is not intended to be comprehensive, rather it is *illustrative*. But the following strike me as being especially noteworthy and certainly merit the attention of future researchers.

Professionalism

Disasters are non-routine social problems (Kreps and Drabek 1996). Viewed from this perspective, emergency management professionals can better understand why victims should not be blamed when warnings fail to help them get to safe havens. Rather than accepting the excuse that "we warned them but they were too stupid to leave", the professional asks: "how must our warning system be changed to produce higher levels of evacuation compliance?" Hence the professionalization process, as others have noted (Springer 2009), has far reaching consequences that merit study.

In 1996, the Federal Emergency Management Agency (FEMA) initiated a project to encourage faculty at colleges and universities to implement relevant curricula and degree programs in emergency management. To date about 200 such programs have been implemented. The content, quality, and impacts of these programs require assessment. FEMA also encouraged "a whole community approach" (FEMA 2011; Sobelson et al. 2015) which reflects both my community change agent concept (Drabek 2013, pp. 267–287) and the views of researchers, like Mileti (1999), who approached disaster mitigation through the rich tradition of sustainability.

Recently, Jensen and Chauvet (2014) provided a snapshot of our current reality through interviews, both face-to-face and via telephone, with purposive samples of county level emergency managers in North Dakota (n = 53) and Florida (n = 67) (see p. 355). These data clearly indicated that the concept of sustainability remains complex and rather nebulous for most in their samples, not too unlike what one discovers in much of the academic literature. Be that as it may, other researchers like Aldrich (2012) have empirically linked community resilience to social capital theory in a highly creative series of studies (e.g., see Aldrich and Sawada 2014). Similarly, Robert Gardner (2015) illustrated how an "emergency community" (EC) model offers: "A radical alternative to traditional relief approaches…" (p. 258). Reflecting on emergent community leadership groups during recovery from

Hurricane Katrina in several Louisiana and Texas locales, he illustrated how this model "…empowered volunteers to work *with* and *within* existing communities to rebuild frayed social ties through the intentional cultivation of community interaction. Their decentralized, collaborative decision-making processes allowed considerable organizational flexibility to improvise, retool, and respond to emergent community needs" (p. 264).

As the Boston Marathon attacks (April 15, 2013) reminded us, small groups of individuals can kill and injure large numbers of people and cause extensive economic disruption and loss (Arsenault 2013). While the tactic of terrorism has been used throughout history, around the world recently its use has increased. As political and religious extremists indoctrinate their converts with intensified levels of hate, such actions take on an emergent, but false, legitimacy. Hence threat detection and prevention also must be incorporated into the goal structure of emergency management. But the insights of "big picture analysts" like Tom Friedman must be remembered as these functions are implemented. We must never lose awareness that "… the greatest dangers we Americans face are excess of protectionism—excessive fears of another 9/11 that prompt us to wall ourselves in, in search of personal security…" (Friedman 2007, p. 574).

Equally controversial, however, are future limits on building within high risk locations. This should be and will remain controversial. It is a complicated matter that communities must confront with full recognition of the range of viewpoints that define "levels of acceptable risk" for structures of varying types. Flood prone lands used for tennis courts, may not be acceptable to many for a school location. As with building codes, it is not the role of the emergency manager to try and dictate specifics, but rather to nurture community processes and group participation required to reach temporary levels of consensus and acceptance. And as the impacts of climate change begin to emerge, such as sea level rise and greater intensity of storms, new adaptations will be required (Klinenberg 2013). Flooding in Houston, Texas during May, 2015, illustrated the "new normal" (e.g., Rieken and Weber 2015). This flooding was repeated during the fall, thus reinforcing the "new normal" vision. There also must be advocacy for maintenance and renewal! Bridges, dams, roadways, and the like, must be attended to with a vision rooted in public safety over the long haul (Ix et al. 2012).

Less obvious than the need to garner public enthusiasm for funding needed bridge repairs, however, are important social dimensions that may increase vulnerability. Wide scale economic inequalities can erode the stability of a community far worse than a bridge collapse. Yet, few emergency managers have developed an awareness of this social factor or its consequences. Like racial, gender, or age based discrimination, social constraints define community vulnerability with a potency that exceeds the physical dimensions that commonly frame such discussion (Perrow 2007; Kroll-Smith et al. 2015). More recent research studies have documented the complex layers of social constraint that identify more vulnerable community sectors (Thomas et al. 2013). Effective emergency managers, who explore the rich insights that flow from viewing disasters as nonroutine social problems, will begin to grasp these less obvious processes (Kreps and Drabek 1996). And when they incorporate

them within their portfolio, their effectiveness as community change agents will be enhanced. And so too the safety and security those for whom they work.

Four additional shifts in orientation and perspective are required by both researchers and emergency managers.

Redoing Gender

Decades ago, early disaster researchers like the late Harry Moore and his colleagues (e.g., Moore et al. 1963) documented clear variations in responses to hurricane warnings that reflected the reality of gender. In the years that followed, many other researchers, including myself (e.g., Drabek 1969b), published data tables that confirmed Moore's observations—typically, females responded more quickly and with higher levels of threat perception than did males (Drabek 1986, pp. 74–83). A recent study by Pace and Montz (2014) underscored this pattern variation within the literature they reviewed on risk perception (see p. 469 for a summary). Unfortunately, despite mailing a reminder card to the 601 North Carolinians within their sample—all were within the warning areas impacted by Hurricane Irene in 2011—only 31% responded. And a majority of these people were "…older retired males with college degrees and in high-income brackets" (p. 472). Thus, while other factors that have been documented to pattern risk perceptions such as gender, only locational differences could be analyzed carefully within this data set. Turned out, no matter how they sliced the data, one conclusion emerged: "…risk perception varies with location, but perhaps not to the extent or in the direction that one might hope" (p. 476). Hence, they recognized that other social factors may be far more influential in structuring risk perceptions and various decisions that might be forthcoming, like evacuation and related social processes.

Clearly the matter of gender is far more complex than this research or most other studies reflect. Fortunately, a series of scholars have begun to shine lights into greater depths of impacts reflecting gender differences as illustrated by recently published volumes by Pardee (2014), David and Enarson (2012), Fothergill and Peek (2015) and Weber and Peek (2012). Their insights into the dynamics of the recovery processes after Hurricane Katrina have pushed disaster research forward and pinpointed numerous areas for future research.

Judith Weshinskey-Price (2015) built on this research base and offered numerous specific recommendations to emergency managers who must move toward a new paradigm wherein the constraints of gender are better understood and taken into account. For example, she emphasized that: "Emergency managers should also make an effort to obtain patterns of resource distribution in their communities, such as the percentage of female-headed households living in poverty and gender-specific employment rates…" (p. 44). Furthermore, she suggested that emergency managers should: (1) allocate funds for staff education on gender issues; (2) include more women into key agency positions; (3) allocate time for consulting with women's work organizations; and (4) seek better understanding of the social composition of

their community (see p. 43). A related area that has been explored minimally is the unique, and at times intense levels, of role conflict that many women in the work place confront especially single mothers. Thorpe's (2015) case studies of several Indiana National Guard women who served tours in both Iraq and Afghanistan is a brilliant piece of work that illuminates their pain. Those selecting careers in emergency management, especially during times of crisis will suffer similar challenges. Identification of coping strategies and potential policy change are required.

I have been especially impressed with the insightful analyses of the processes Pacholak (2013) labeled "redoing gender." Through a focus on one of the largest wildfires in Canadian history that resulted in millions of dollars in property loss and the evacuation of 26,000 people living near Kelowna, British Columbia, in August, 2003, Pacholak's in-depth interviews with both structural and wildfire personnel revealed the complexity of emotional and behavioral responses by two women and 37 male firefighters (see p. 21). Her analysis carefully takes our understanding of "doing gender" to "undoing gender" and finally to "redoing gender" within this occupational group. Beginning with the recognition that both women and men can operate a chainsaw and work on a fire line, she assessed the altered definitions and perceptions of restrictions that had previously constrained the images that defined gender differences. Hence, "…the work of women disrupted the doing of gender by men. This is a hopeful sign of gender change" (p. 103). In short, going many steps beyond prior analyses of the processes whereby disasters accelerate trends already in process (Anderson 1970), this fire exacerbated gender crises and "…demanded the production of a new firefighter" (Pacholok 2013, p. 113). And that change might not have "… even materialized at all, if it had not been for that fateful lightning strike in the remote reaches of Okanayan Mountain Park" (p. 113). Clearly, these matters comprises a core research agenda of highest priority.

Social Media

Disaster warnings, responses, and recovery behaviors, like all other areas of social life, have been impacted greatly by social media (see Drabek 2017). Evidence of this revolution in social behavior is beginning to emerge with insights that are most revealing, including the popularity of text messaging (Harrison et al. 2015). For example, Sultan (2014) documented that in 2012 there were more than 60 million Blackberry Messenger (BBM) users and another 300 million WhatsApp users. He also reported that his online survey of 552 undergraduate students enrolled at a large university in Kuwait revealed that nearly one-third (32%) used BBM or WhatsApp more than 12 times per hour. In the U.S.A., Crosswhite and her colleagues (2014), have documented similar use patterns. For example, through an advertisement on Facebook, which had over 604 million users in 2012, they surveyed 127 young adults. Their results documented that just over 66% sent or received more than 1000 texts per month; only 14% received or sent fewer than 500 texts per month; and 20% sent and received over 5000 texts per month. Emergency management personnel are

implementing social media in a wide variety of ways too (Wukich 2015). Renda-Tanalli (2014), for example, documented such use during Hurricane Sandy within Maryland's emergency management organizations. Research on the diffusion, impacts, and consequences for emergency response and recovery will be a top priority during the next decade. Successful implementation of these technologies into emergency management programs will be a core requirement.

Importance of Improvisation

In response planning the importance of improvisation must be emphasized. It really is one of the two pillars of emergency planning, the other being preparedness (Kreps 1991). When hospital personnel in Memorial Hospital in New Orleans experienced Hurricane Katrina, for example, they faced difficult priority decisions. Who should be evacuated first when power was lost and only a few patients could be moved as boats and rescue helicopters made their way? As Fink (2013) described so vividly, these situations required much creative thinking and many there did risk their lives as they successfully moved many patients under very dangerous conditions who later were evacuated successfully. Unfortunately, others were not evacuated soon enough to extend their lives. So despite much improvisation, the outcome was less than desirable!

In contrast, as Fink pointed out, during responses to Superstorm Sandy (October 29, 2012), hospital personnel in New York hospitals had learned many lessons from Katrina, both about the complexities inherent in triage decisions and the importance of improvisation. "Yet incredibly, just as in Katrina, some staff members said they had never pondered or planned for what they would do in case of the failure of the backup plan to the backup plan—a complete loss of power" (Fink 2013, p. 464). Efforts to transport fuel to keep backup generators operational, rather than patient evacuation as a priority, is but one of many improvisations that hospital personnel devised. Similarly, Angle et al. (2012) documented the many ways that nonprofits and voluntary organizations tried to fill in the gaps in governmental aid as the Katrina recovery process continued for years. While these improvisations helped thousands of survivors, this team concluded that their efforts still fell short—they were not an adequate substitute for a more effective governmental response.

The attacks on the World Trade Center (WTC) meant that the New York City Office of Emergency Management had to establish operations at an alternative site since WTC 7 had been its home base. With detail and precision, Wachtendorf and Kendra (2012) documented the many forms and types of improvisations that were implemented by agency personnel. Even before these activities were underway, others were moving people out of the impacted area across water routes. While some were using routine conveyances, many were moved through improvised procedures. So how did the alternative EOC come to be? The insights from Wachtendorf and Kendra (2012) greatly enhance our understanding but also underscore future directions.

> As one official said, 'It [the organization] was in my head." By maintaining a shared vision of the resource and the structures, activities, and tasks it was supporting, the ERON was able to reproduce the EOC while carrying out response activities during a large-scale and protracted disaster. A virtual EOC peristed in the minds of those who had trained and worked in the facility despite the loss of 7WTC. (p. 270)

> While the study of the EOC reestablishment points to several key factors . . . research on other episodes and on organizations in other environments may lead to a fuller understanding of their distinct improvisation form. (p. 271)

These two researchers also documented the improvised means that hundreds of thousands used to get out of Manhattan after 9/11. Indeed, they aptly named their report "American Dunkirk" since this represented the largest water-based evacuation in U.S.A. history (Kendra and Wachtendorf 2016). While researchers have recognized and documented emergent groups and improvised behavior for decades (Dynes 1970; Drabek and McEntire 2002), studies with comparative designs are required so that patterned variations can be identified with greater precision, and to offer practitioners future awareness of these processes. Even today many responders still express surprise at how their date with disaster precipitated improvisations of varied types.

Bridge Building Activities

As I have (2014c) emphasized, much more is known about human responses to disaster than is being used today by emergency management professionals (Drabek 2014b). Researchers must implement a variety of strategies to build information transmission bridges (Lindell and Perry 2004). Obviously, to simply hand out a list of suggested journal articles or books will not get this job done. Yet, few researchers make much effort to reach out across the divide (Drabek 2009, 2014a). Consequently, few practitioners ever benefit much from the mountains of study findings that simply gather dust in academic libraries. A variety of strategies can be implemented to improve the knowledge transfer process. And future research is required to document the relative efficacy of these and those yet to be imagined and tried (Cwiak 2014). The potential risk reduction payoff of this research agenda is immense. And so too is the increased level of public safety for the entire nation and beyond.

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