The Contributions of Management Theory and Practice to Emergency Management

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Abstract

This chapter takes a look at the impact that management theory and how the basic functions and practice of management as well as the role of the manager and approaches to management have contributed to the practice of emergency management. Current views of management theory stress the changing nature of the external environment and the need to understand and address these external forces for change. The contribution and role of systems theory and contingency theory to the emergency management process is stressed. Although some might view that we do not manage disasters, there is an overlap between the contribution of management theory and emergency management. Management theory stresses the need for effective planning to ensure that organizational goals are obtained. Emergency and crisis management emphasize that effective emergency response and recovery is based on good planning. Building sustainable organizations and communities is a common goal of both management and emergency management. Management and disaster-related issues and concerns along with strategies to improve emergency management practice from the field of management are provided. Finally, recommendations are provided for including emergency and crisis management in management curriculums.

Introduction

Emergency today is a complex function involving public safety and security, business affairs, public and information affairs, information systems administration, communication technologies, mapping sciences and hazard modeling, legal affairs, and coordination with numerous

other organizations. This diverse set of functions and activities requires emergency managers to be

effective managers of programs and operational managers of many direct disaster activities. The

effective management of both program and operational activities requires an understanding of

management principles. This chapter examines the development of management theory and some

of the major contributions that management theory has made to the field of emergency

management. It discusses some of the major management concepts including the role of the

manager, strategic planning, systems theory and contingency theory, which are critical to the

practice of emergency management. The overlap between management theory and disasters may

be seen in concepts associated with crisis management and the importance of values, diversity, and

legal issues to both management theory and emergency management. A solid foundation in

concepts of management will form the basis for any emergency management activity.

The Development of Management Theory and Practice

The field of management grew in its formalization during the latter part of the Nineteenth

Century and throughout the Twentieth Century along with the rise of the industrial revolution. The

growth of management concepts was needed to guide the growth of industrial manufacturing in the

United States and Europe. A similar growth in emergency management theory also evolved in

response to the need for theory, concepts and proven practices in response to the devastating

impacts of hurricanes, floods, earthquakes, and chemical spills. Our current focus on homeland

security is also driving the development of even more concepts in this area.

Management theory provides a sound basis for supporting the emergence of emergency

management theory utilizing the management process from planning, organizing, leading and

controlling (Fayol 1916, Mintzbert 1973, Katz 1974, Koontz 1984). Taylor (1911) considered

management a process and one that "if approached scientifically" would lead to success. His

principles of scientific management initiated a revolution in how we viewed both the process and position of the manager.   Many of the early writers in management contended that there was a right way of organizing work and accomplishing tasks (Gilbreth 1911). Others built on the engineering approaches to acknowledge the impacts of bureaucracies (Weber 1947). Mintzbert explained the role of the "manager" in directing the organization to achieving goals in a rational manner (1971). The interpersonal, informational, and decisional roles he characterized are mutually applicable to the emergency manager in the public, private and non-profit organizational setting.

The theory of management has grown over the past one-hundred years evolving from the time and motion studies of engineers to contributions from social scientists, the Hawthorne studies and a behavioral approach to more quantitative approaches that look for the "best" or optimum functioning of an organization or "total quality management (TQM)" (Gabor 1990). Emergency management has been influenced by the same developments in management theory in utilizing engineering to design the most efficient emergency operations center or emergency response routing for emergency services. The selection of emergency medical and law-enforcement units in response to 911 communication calls and the most recent traffic hurricane evacuation planning suggest that scientific management is applicable to problems today. The ongoing assessment of disaster response programs using quantitative measurement criteria demonstrates that TQM can be used in emergency management.

The behavior scientists have also been involved suggesting the necessity of involving community organizations in planning and mitigation strategies. Finally, emergency management has been influenced by those who stress the need for quality management and the efficient use of resources, even in a disaster.

The development of principles and concepts of management encouraged the formalization of schools of business during the Twentieth Century. We currently see the establishment of academic programs in emergency management from concentrations, minors, certificates, and even majors from the associate to the advanced doctoral degree programs. The school of hard knocks is quickly evolving into formal academic programs in emergency management and homeland security. One wonders if the future has academic departments or schools of emergency management and homeland security. The key is that the development of professionals in emergency management requires a formal educational process and an intentional exposure to emergency management theory and concepts. Today over one hundred colleges and universities offer some program in emergency management. The standardization of these curriculums will evolve just as similar initiatives grew in response to a need for quality instructional programs.

The contribution of organizational culture theory and the impact of environmental constraints is an important part of the growth of management theory over the past fifty years (Kotter 1992, Schien 1985). The impact of changes in organizational culture is so well illustrated in the Federal arena during the tenure of James Lee Witt. He led a charge to change FEMA's culture to one of responsive service delivery and proactive emergency response. The changing environment and the impact of the external environment on organizations is fundamental to business as well as government operations and so important in preparedness and mitigation of hazards / disaster (Tapscott 1998).

Finally, management has stressed the need to be aware of managing in a global environment (Adler 1996). Today, we see emergency management emerging from a local approach to one that examines on a regional basis and with the notion of national and international linkages. The need

to monitor the external environment not only locally but on an international scale is becoming a more critical element of the emergency management literature.

Contributions of Management to Emergency Management Theory

Strategic Planning and the Changing Nature of the Organizational Environment: A major contribution of the strategic planning process to management and to emergency management is the need to monitor the nature and changing character of external forces and how they impact the operations of an organization. Environmental scanning clarifies how technology, the law, the press, elected officials, citizens, and the natural environment impact internal operations. Hurricane Andrew provides an excellent illustration of how the external environment changed emergency management theory and practice.

The catastrophic impacts of Andrew in Florida and Louisiana resulted in many changes in FEMA from an increased focus on mitigation and disaster reduction to broader operational planning. Disasters reveal not only the structural strengths and limitations of the physical environment of a community but also how local, state and national response organizations function effectively and ineffectively. Hurricane Andrew also reminded emergency managers that organizational change is often the result of external forces for change. Other external forces for change such as new technologies, laws and regulations as well as community and business needs were major factors pushing for changes in emergency management response and recovery programs, planning tools and approaches to mitigation.

The Role of the Manager: The view of the organization as a system suggests a very special role for managers in the emergency management system. For many years, management theory has suggested a rational or economic technical basis for organizational performance. This is a closed system view and appropriate for the technical level but not for the organizational or institutional

level. The view of the open system creates a more difficult role for management. It must deal with uncertainties and ambiguities and must be concerned with adapting the organization to new and changing requirements. Management is a process, which spans and links the various sub-systems.

The basic function of management is to align not only people, but also the institution itself including technology, processes, and structure. It attempts to reduce uncertainty at the same time searching for flexibility.

Management faces situations, which are dynamic, inherently uncertain, and frequently ambiguous. Management is placed in a network of mutually dependent relationships. Management endeavors to introduce regularity in a world that will never allow that to happen. Only managers who can deal with uncertainty, with ambiguity, and with battles that are never won but only fought well can hope to succeed.

Management Systems Theory and Emergency Management: Systems theory evolved from the basic sciences but is utilized in the social sciences including management theory. A system composed of interrelated and interdependent parts arranged in a manner that produces a unified whole is critical in understanding all parts of the emergency management process. Viewing societies as complex open systems which interact with their environment provides such a critical view of the emergency management system (Barnard, 1938).

Systems theory is based on the idea that everything is part of a larger, interdependent arrangement. It is centered on clarifying the whole, its parts, and the relations between them (von Bertalanffy 1972). Some critical concepts that are applicable to emergency management include some of the following: open system, subsystems, synergy, interface, holism, strategic constituencies, boundaries, functionalism, interface, strategic constituencies, feedback and a moving equilibrium. Emergency management is composed of many parts including: local, state

and national public, private and non-profit units. These units interact in many independent ways and each has their own constituencies, boundaries, function, and sub-units. The units may interrelate in emergency management activities in an open environment with few organizational barriers or collaborative and cooperative efforts limited by specific organizational policies, rules and procedures. Emergency managers acknowledge that effective emergency response and recovery efforts require the cooperation of the entire community; emergency managers do not operate in isolation but as a part of a large open system.

Effective emergency response and recovery is dependent on cooperation between local public agencies, business enterprises, and community groups. Shelters are often sponsored by public and private schools and operated by the American Red Cross. Evacuation efforts are often supported by community transportation agencies and school systems. Special needs shelters are often staffed by local medical facilities, volunteers, and community organizations. Traffic control and security is a collaborative effort between numerous local law enforcement jurisdictions. Coordination is critical in linking multiple organizational efforts in a seamless response and recovery effort.

An *open system* involves the dynamic interaction of the system with its environment. This theory is fundamental to understanding hazards and emergency management for it maintains that everything is related to everything else. Emergency management has a dynamic relationship with the environment and receives various inputs, transforms these inputs in some way, and exports outputs. These systems are open not only in relation to their environment but also in relation to themselves; the interactions between components affect the system as a whole. The open system adapts to its environment by changing the structure and processes of the internal components.

Systems are composed of *sub-systems.* That is, the parts that form the system may themselves be a system. The emergency management system includes police, fire, and emergency medical agencies; each agency with their own system (sub-system of the emergency services system). The emergence of homeland security makes this concept even more important in understanding how the parts relate and that each part has sub-parts that impact the functioning of the whole.

The combined and coordinated actions of the parts of the system achieve more than all of the parts acting independently. This concept known as "synergy" is critical to the field of management and equally to emergency management. The performance of an enterprise is a product of the interaction rather than sum of its parts, but it is entirely possible for the action of two or more parts to achieve an effect of which either is individually incapable. Synergy is characterized by the whole being greater than the sum of its parts. It explains why the performance of a system as a whole depends more on how its parts relate than on how well each part operates. Indeed, the inter-dependence of the parts is such that even if each part independently performs as efficiently as possible, the system as a whole may not. Synergy is an important concept for emergency managers in that it emphasizes the need for individuals, as well as departments to work together in a cooperative fashion (Bedeian, 1989). An emergency response is not just a single unit but many different parts that, when effective, understand how they work together to protect public safety and property.

Emergency management, as with the field of management is dependent on conceptual frameworks or models. As an example, management theory suggests that social organizations are *contrived* and constantly evolving and not static mechanical systems. They have structure, but the structure of events rather than physical components, cannot be separated from the processes of the

system. The fact that social organizations are composed of humans suggests that they can be established for an infinite variety of objectives and do not follow the same life-cycle pattern of birth, maturity, and death as biological systems. Social systems are made of imperfect systems. The cement which holds them together is essentially psychological rather than biological. They are anchored in the attitudes, perceptions, beliefs, motivations, habits, and expectations of humans.

Management systems theory notes that organizations are not natural as with mechanical or biological systems; they are contrived. They have structure or *boundaries*, but the structure of events rather than physical components. The human and organizational boundaries cannot be separated from the processes of the system. The fact that social organizations are contrived by human beings suggests that they can be established for an infinite variety of objectives and do not follow the same life-cycle pattern of birth, maturity, and death as biological systems. Social systems are made of imperfect systems. The cement which holds them together is essentially psychological rather than biological. They are anchored in the attitudes, perceptions, beliefs, motivations, habits, and expectations of human beings.

A systems approach does not provide a means for solving all problems. It is however, useful for viewing the relationships between interdependent parts in terms of how these relationships affect the performance of the overall system (Kast 1985; Freemont 1985). Systems theory provides emergency managers with a critical perspective to view and understand how to prepare for and respond to hazards and mitigate their adverse impacts.

The systems perspective to emergency management integrates the diverse interdependent (or interconnectedness of the system) factors including individuals, groups, formal or informal organizations, attitudes, motives, interactions, goals, status, authority. The job of an emergency manager is to ensure that all parts of the organization are coordinated internally and with external

organization that are involved in emergency management activities. The emergency management thus is leading and directing many activities so as to achieve established organizational and community goals. A systems view of management suggests that all parts of the organization are interdependent. For example, if a service unit functions well, but the personnel section does not replace retired staff in a timely manner, the system malfunctions.

The open systems approach recognizes that organizations are not self-contained. They rely on their environment (including the social, political, technological, and economic forces) for life sustaining inputs and as sources to absorb their outputs. No organization can survive for long if it ignores government regulations, the courts, outside interest groups, private service providers, or elected officials. An organization should be judged on its ability to acquire inputs, process these inputs, channel the outputs, and maintain stability and balance. Outputs are the ends, where acquisition of inputs and processing efficiencies are means. If an organization is to survive over the long term, it must remain adaptive. System concepts such as subsystems or units within units; synergy or that the group has greater outputs than each single unit, boundaries, holism or viewing the larger context rather than a narrow view, interface, and adaptive organizational mechanisms to change are crucial in marshaling community resources so critical in emergency management. The importance of leadership and adaptive behavior are stressed by many writers (Lewin 2000; Toffler 1985; Garvin 1993; and Sugarman 2001) who stated that today's leaders including emergency managers must discover ways of creating order in a chaotic world.

Finally, chaos theory suggests that even in general management systems theory, organizations must adapt to complex change and institutionalize institutional learning through feedback systems. Chaos theory states that just a small change in the initial conditions may have

significant change in the long-term behavior of the system. The classic example quoted by many to illustrate the concept is known as the butterfly effect.

> The flapping of a single butterfly's wing today produces a tiny change in the state of the atmosphere. Over a period of time, what the atmosphere actually does diverges from what it would have done. So, in a month's time, a tornado that would have devastated the Indonesian coast doesn't happen. Or maybe one that wasn't going to happen, does (Stewart, 1989).

Individual response and rescue efforts in evacuating buildings in 911, illustrate that single acts can have dramatic impacts for a city, a country and the world. On a small local the disaster of 911 required public, private and non-profit organizations to adapt and form new relationships to recover from the terrorist attack. New recovery organizations evolved from local resources as illustrated by the St. Paul Episcopal Church support effort for workers in the World Trade Center pit. The St. Paul response effort evolved from local resources, but was supported by public, private and other non-profit groups throughout the United States. Many studies from the 911 disaster provided lessons learned; each study noted that successful strategies were based on flexible ongoing adaptations to changing events (Kendra 2003, Rubin 2001, Sutton 2002, and Weber 2002). Chaos theory thus provides the emergency manager with a broad perspective for appreciating how other agencies and external organizations are interdependent with and impact emergency management operations.

Contingency Theory and Approach: Contingency theory suggests that management principles and practices are dependent on situational appropriateness. Luthans (1976) notes that "The traditional approaches to management were not necessarily wrong, but today they are no longer adequate.   The needed breakthrough for management theory and practice can be found in a

contingency approach." Different situations are unique and require a managerial response that is based on specific considerations and variables. The appropriate use of a management concept or theory is thus contingent or dependent on a set of variables that allow the user to fit the theory to the situation and particular problems. It also allows for management theory to be applied to an intercultural context where customs and culture must be taken into consideration (Shetty 1974). Adapting theory to the context is extremely important to a new homeland security international context.

For management and emergency management alike, the successful application of any theory or concept is greatly influenced by the situation. For example, a functional organization structure with many layers of management functions best in stable environmental conditions and routine operations. For emergency management, the operating environment is ever changing and must be flexible to accommodate the many different hazards that a community or business faces. Emergency managers must build an organizational culture and structure that improvises and acknowledges that each disaster is unique. As a result, a more dynamic organizational structure could be structured based on the nature of the problem (hazard) and who needs to be involved and the actions taken (Kreps 1991). Utilizing an organizational design that is rigidly structured regardless of the situation might not provide the appropriate basis for quick and comprehensive decision making in a crisis or disaster.

The Overlap between Management Theory and Disasters

A major goal of emergency management is to minimize the adverse impact of a disaster on a business, community or large geographic area. The efforts of many organizations to build a more sustainable community, business or country are consistent with emergency management goals of hazard mitigation. Sustainability: In 1987 the United Nations World Commission on Environment

and Development coined the term "sustainable development". It defined sustainable development as "meeting the needs of the present generation without compromising the ability of future generations to meet their own needs". This means that while we are harvesting natural resources and developing our land we must do so in a manner that will allow other generations to have at least the same opportunities that we currently have.

Sustainable development is more of a compromise between the traditional standards of conservation and preservation. Conservation suggests that we should use the earth's natural resources while at the same time replacing them for future use. It focuses more on the renewable resources while for the most part ignoring exhaustible resources such as oil and natural gas. At the other extreme is preservation, which suggests that we leave nature alone. These two viewpoints are at opposite ends of the spectrum, which lends itself to small numbers of supporters from the general public. Sustainable development is a kind of middle ground between these two ideologies that is more likely to be accepted by a larger group of people. It is based upon a logical viewpoint that people will not want to diminish their quality of life or standard of living to preserve the environment. It takes into account that the economy will continue to grow and develop but also encourages ways to do this that will have as little negative impact on the environment as possible.

For many years society, the economy, and the environment were all seen as separate entities. The key to understanding sustainability is understanding the way in which these three issues link together. Sustainability deals with quality of life issues as well as achieving balance between the three. In order to be sustainable we must learn to manage economy and society in a way that doesn't harm the environment while at the same time learning to live within our limits and divide resources equitably.

Sustainability also is a fundamental theoretical contribution to our understanding hazards, disasters and their impacts (FEMA 2000, Livable 2000, and Burby 1998). Making rational choices concerning land use, development, and economic development has tremendous implications for dealing effectively with hazards and disasters.

Crisis Management:

Management theory has embraced as a part of the planning process the preparation of contingency plans and crisis management to address threats and hazards (Pearson 1998). The development of a crisis audit including "What if" questions and contingency plans when things go wrong are critical elements of business planning and analysis (Roberts 2001). The management literature reflects an appreciation for the need for business to grow more aware of the need to provide some level of protection against an unplanned disaster (Myers1999). Management needs to know how to structure strategic planning to include plans to minimize disruptions in operations in times of crisis and disasters. The Harvard Business Review published a crisis management series on the best articles relating to disasters and business interruption (2000). Laye's assessment of how to keep business going when catastrophe strikes (2002) is a reflection of the attention that hazards and disasters have had on the literature since 2001.

Values Diversity and the Legal Environment: A critical element in the emergency management is the development of an understanding of potential impacts of a disaster. Vulnerability analysis focuses on physical, political, economic and social vulnerability (Cutter 2001). Mileti (1999) states that disasters can do more than impose deaths, injuries and economic losses, they can redirect the character of social institutions, alter ecosystems and impact the stability of political structures. Blaikie et al (1994) note that some groups in society are much more vulnerable to disaster losses and suffer differently; variations of impact from disasters evolve from

class, caste, ethnicity, gender (Enarson 1997), religion (Bolin 1986), disability, or age (Bolin 1983). Vulnerability is the susceptibility to hazard, disasters, or risk. And, it can also be a measure of resilience.

In emergency management, there needs to be a balance in examining vulnerability and understand the social, economic and environmental impacts from disasters. Too often we see the damage to structures rather than the immediate and long term impacts of disaster to our environment or social systems. Our organizations must be inclusive and offer balanced perspectives rather than just a single perspective. It is not enough to just examine the economic impacts of flooding or earthquakes on local communities but examine other impacts such as social or environmental. We need to encourage faculty to seek out alternative views in the forms of books, journals, and research reports and expose students to these perspectives.

Management theory shares this view and encourages diversity and non-discrimination in employment and contracting. An appreciation of organizational values and potential conflicts in international operations must be acknowledged and addressed. In the traditional sense, equal opportunity in organizational performance can be applied both internally and externally in business affairs (Thomas 1990 and Hall 1993).

Many disciplines have stressed individual privacy in their programs and activities. State and federal privacy provisions are common in health care statues to protect the privacy of individuals. Emergency managers must understand and ensure that staff and volunteers know what personal identification information may be released to the public in disaster response and recovery. Public information cannot be obtained from the Centers for Disease Control (CDC) that provides any indication of the health and well-being of individuals in a community. Much of the data is only

released in groups of 100,000 or greater. The aggregation of data is intended to protect the privacy of individuals.

A fundamental element of the practice of emergency management that is also present in the field of management is its evolution from many disciplines from engineering, business, sociology, psychology, political structures, and urban planning to name only a few. Management also grew from many disciplines, especially from engineering (scientific management), psychology, sociology, and quantitative methods. Emergency management draws from many disciplines and suggests that emergency management is an interdisciplinary process. An appreciation of organizational and group dynamics, individual motivation, leadership, program and organizational assessment, and planning are all elements of both the emergency management and the management process.

Management and Disaster-Related Issues and Concerns

The unintended consequences of human action are described by Chiles (2001). He documents many examples of our failure to adequately manage technology. He shows that chain reaction catastrophes have occurred as the world has grown more technologically complex and our machines have become more difficult to control. He suggests that we may have a false value of technology and do not adequately place limits on its use. Emergency management should also share his suggestion that we acknowledge the potential adverse impacts technology and the need to ensure human assessment of technology.

The terrorist attacks of 2001 have made the business community increasingly sensitive to the impacts of disasters and especially terrorism on domestic and international operations. Risk management is now a part of any large operation and a dependence on insuring risk is no longer the

only contingency. Businesses are increasingly looking at avoiding disasters and identifying

methods to mitigate disasters.

The insurance industry has adapted to this changing environment by excluding coverage for

terrorism in business policies or calculating the potential costs associated with insuring this risk in

their plans. Most organizations can no longer afford to insure for this risk. Insurance companies

have also reassessed coverage for many natural hazards and taken steps to adequately cover their

potential vulnerabilities.   The increased costs to public and private organizations for insuring

against hazards has increased to the point that it may impact business plans and future strategies.

Improving the Management in Emergency Management

The field of management has stressed the need for the development of positive

organizational culture and organizational learning. The management environment today and in the

future will provide new challenges and organizational responses. The management literature has

been sensitive to this need and been quite responsive. Emergency management must also

acknowledge the need for organizational learning and the importance of a positive organizational

climate to effective operations. Possibly more executive education would support the increasing

interdependence between the Department of Homeland Security, the business community, as well

as state and local operations.

During the past thirty years, the business community has focused on the importance of

quality control and service. Emergency management operations must share this emphasis and

adopt methods of organizational assessment and quality control to enhance all elements of the

emergency management process.

The management literature has for many years stressed the importance of strategic planning

(Drucker 2002). A greater awareness of the value of environmental scanning and the broader

impacts of international affairs on internal operations will be increasingly important to the emergency management community. Business may call on emergency management for help in identifying strategies to cope with a dramatically changing environment.

Recommendations: Emergency Management in Management Curriculums

Few business schools have embraced the contribution that emergency management theory and practice can make to the success of business operations. As a result, attention to hazards and disaster impacts are limited to crisis management and contingency planning. Few if any schools of business have worked with emergency management curriculums on their campuses and exposed their students to other disciplines that are so much a part of disaster research. Interdisciplinary courses that expose students from throughout the campus to the nature of hazards and disaster impacts are needed. Including students from business programs will expose other hazard oriented coursework to the vulnerability of business operations and impacts well beyond financial considerations. An integrated approach to college and university curriculums will prepare students to understanding the changing nature of hazards and disasters in an increasingly interdependent world.

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