

Adaptation: A Proposal to Replace Recovery in the Phases of Emergency Management

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ABSTRACT

Mitigation, preparedness, response, and recovery are the four phases of emergency management that have arguably been unchanged since their inception nearly 43 years ago. This paper proposes to replace recovery with adaptation as the post incident phase of emergency management. Recovery focuses on a return to normal while adaptation better encompasses acknowledgement, healing, strengthening, and improving quality of life for a more resilient outcome. This paper reviews seminal work within emergency management and work pertaining to other types of adaptation to better comprehend adaptation as applied to emergency management.

Keywords

Adaptation, recovery, change, disaster, emergency management, transformation, resilience.

INTRODUCTION

Since the dawn of time, violent and relentless natural forces have been altering and shifting the course of events on Earth. Changes in weather have altered the landscape, drying swamps into deserts, creating grand canyons with flood waters, creating islands and land masses, and reshaping the continents. Time and time again, Mother Nature has shown her awesome power in her ability to change the world in which we live. Often, that power is demonstrated in what we claim to be disasters. After a disaster, emergency managers are called upon to bring communities back to normalcy. This has been the doctrine of emergency management for nearly a half-century, and it has served the emergency management community well, but it is time for change. It is time to adapt. The current doctrine has become dogma and inhibits progressive change. In an era where we are grappling with a global pandemic, climate change, and increasing frequency and intensity of natural hazards, it is time to reevaluate what was once considered fundamental in search of advanced concepts that promote healing, strengthening, and survival. Adaptation is a process that fulfills the goals of recovery while applying a different mindset. It is a mindset that focuses on acceptance, change, healing, and improvement. Adaptation will enable emergency managers to take advantage of the opportunities created by disasters and ensure survival and prosperity.

This article is organized first with this introduction followed by a review of literature. The literature review will examine adaptation as in the context of emergency management and irrespective of its relevancy to emergency management. The literature review will explore the origin, meaning and intent of recovery as a phase in emergency management. The literature review will be followed by a discussion that compares and contrasts adaptation versus recovery as a phase of emergency management. A recommendation will then be provided in the conclusion.

REVIEW OF THE LITERATURE

There is little to be found about adaptation in the context of emergency management and what happens after a disaster occurs. There is even less addressing the idea of replacing recovery as an emergency management phase. Since this is an innovative proposal, literature was reviewed about adaptation as a conceptual idea. Documents were examined to identify what adaptation is and why it should replace recovery as a phase of

emergency management.

A study investigating resilience as it relates to emergency management concluded that emergency management should be more proactive (Tveiten et al., 2012). This research shows that emergency management can be proactive by predicting risks early and that emergency management should be adapted to new and future work practices (Tveiten et al., 2012). This study may be limited in applicability to this paper because the study focused on emergency management within the petroleum industry.

In the United Kingdom, the electric power companies have incorporated adaptation into their resiliency strategy (Espinoza et al., 2016). The electrical grid managers develop systems to withstand the initial shock and rapidly recover from natural disaster impacts (Espinoza et al., 2016). The companies then apply adaptation measures to bolster the survivability of the electrical system in anticipation of future events (Espinoza et al., 2016). These system operators are following a framework by Panateli and Manacarella that offers five key resilience components to gauge resiliency, specifically: robustness/resistance, resourcefulness, redundancy, response and recovery, and adaptability (2015).

The North Atlantic Treaty Organization (NATO) and its member nations have embraced the concept of adaptation into its resilience and crisis management cycle (NATO, 2022). This cycle includes the phases of preparation, absorption, and recovery and adaptation (NATO, 2018) (Shea, 2016). NATO expects each member country to be adaptable as part of NATO's preparedness and resiliency doctrine (NATO, 2022).

In the 1980's, doctors realized that the AIDS virus was highly mutable and determined that a vaccine was not going to be achieved quickly so they began to focus on mitigating the symptoms of AIDS rather than attempting to prevent or cure it (Flynn, 2007). In other words, they developed a strategy for adapting to the epidemic. This is one example of how adaptation enables emergency managers to achieve a quicker and preferable end state than an un-adapted course of action in which recovery is the focus rather than adaptation. Before other literature is reviewed, it will be beneficial to examine various definitions of adaptation.

According to *Dictionary.com* (2021), Adaptation includes the following relevant definitions:

Adjustment; any alteration in the structure or function of an organism or any of its parts that results from natural selection and by which the organism becomes better fitted to survive and multiply in its environment; a form or structure modified to fit a changed environment; the ability of a species to survive in a particular ecological niche, especially because of alterations of form or behavior brought about through natural selection; a slow, usually unconscious modification of individual and social activity in adjustment to cultural surroundings. According to its scientific definition, adaptation is a change in structure, function, or behavior by which a species or individual improves its chance of survival in a specific environment. Adaptations develop as the result of natural selection operating on random genetic variations that are capable of being passed from one generation to the next. Variations that prove advantageous will tend to spread throughout the population. In a cultural context, the website defines adaptation as changes made by living systems in response to their environment.

Adaptation usually refers to a process, action, or systemic result within a particular community or cohort that occurs for the system to better cope with an altered state, stressor, hazard, risk, or opportunity (Smit and Wandel, 2006). There are numerous adaptation definitions, and many are linked to climate adaptation. Regardless of the context, the definitions are similar. The themes demonstrated by all the definitions is that adaptation requires change in response to an unfavorable condition to create a more favorable condition and increase the chances of survival. This will be the theme this paper seeks to propose as a replacement for the concept of recovery which is defined by the same source as the regaining of or possibility of regaining something lost or taken away or restoration to any former and better state or condition.

Further literature indicates emergency managers should be community change agents and seize the opportunity for change when there is the biggest desire for it, which is immediately following a disaster (Drabek, 2013). Adaptation requires learning and the ability to identify problems including threats and opportunities quickly and efficiently with a significant degree of decisiveness (Ackoff, 1974). Adaptation also requires the capability to plan and to implement those plans (Ackoff, 1974). Additionally, Ackoff confirms Drabek's theory by stating that reacting to actual or potential threats and opportunities adaptation is accelerated and reflecting on consequences enables quicker learning (Ackoff, 1974).

Cronin and Genovese discussed adaptation in their book *Leadership Matters*. They pointed out that Darwin is often miscredited with the phrase survival of the fittest and that Darwin's true theory is survival of the most adaptable (Cronin & Genovese, 2015). To further the point, they provided an example of a strong tree that can snap in strong winds but that an adaptable and flexible tree will bend in the wind and will survive (Cronin & Genovese, 2015).

James Lee Witt also encouraged a modified version of recovery in his book where he stated, “The recovery after most natural disasters involves rebuilding. It’s a chance to lay new foundations and support beams that can weather the next disaster better. It’s a chance to decide if there’s a way to get out of the way of that disaster altogether. It’s a chance for you to revise your crisis preparations, fine-tuning or rethinking your values, your on-hand resources, your early-warning flags, your reporting systems, your team’s setup and their skills, your support network, your lightning rods and the sparks they create, and everything else I’ve touched on in this book.” He recognized that the disaster creates new opportunity to improve the environment (Witt, 2002). Adaptation can mean rebuilding stronger, but adaptation is more complex and could also mean not rebuilding or not rebuilding the same thing. Adaptation can include being strong, being able to absorb, rebuilding, or even being able to live without that which you once depended on (Friedman, 2016). Adaptation is a grouping of concepts that may be implemented individually or all together (Friedman, 2016). Adaptation requires evolution and natural selection and constant feedback loops (Friedman, 2016). A unique aspect of adaptation is rapid, constant, and endless learning (Friedman, 2016). Feedback loops are used to identify environmental changes from which to select favorable traits and characteristics and then utilize those traits in the next evolution (Friedman, 2016). Learning is key to the adaptation process (Friedman, 2016). Learning is achieved through experimentation where the experiments often fail more than they exceed (Friedman, 2016). The successful experiments are a result of a specialized niche of learned behavior that allow flourishing and regeneration (Friedman, 2016). This change in learned behavior based on experimentation is the essence of the adaptation process (Friedman, 2016).

Friedman’s perspective that learning drives adaptation is also shared by Hammond (2004) who stated, “All organizations seek to survive and prosper. They do so by enhancing their freedom of independent action or establishing symbiotic relationships through timely adaptation to a constantly changing environment. Those who adapt will survive; those who do not, die. Those who do survive do so by being good at doing observe, orient, decide, and act loops.” He further states that adaptation requires variety and rapidity (Hammond, 2004). The use of variety, experimentation, and learning is also supported by Harford who claims trial and error is an effective tool for solving problems because it uses an evolutionary algorithm that searches for solutions to problems that keep changing (2011).

Adaptation is about changing according to the environment, but it isn’t simply change or adjustment; it is change in response to what is learned about the change in the environment (Simon, 1996). The environment is in a constant state of change. Adaptation identifies the change, learns from it, and matches the change (Simon, 1996) This is further highlighted by Haas & Drabek’s seminal work where they indicated that organizations utilize adaptive processes to respond to changes in the environment (1974). If change is to occur, it must happen immediately (Drabek & Hoetmer, 1991). Support for dramatic action will wane as each day goes by (Drabek & Hoetmer, 1991). Therefore, preparations for development must be made before a disaster occurs (Drabek & Hoetmer, 1991). An emergency manager who is well-prepared can use a crisis to change the public agenda (Drabek & Hoetmer, 1991). A disaster is not just a misfortune; it is also an opportunity (Drabek & Hoetmer, 1991).

DISCUSSION

The term recovery may have outlived its purpose within emergency management. Recovery implies a return. In emergency management it implies trauma has occurred and the goal is to get back to the way things were before the traumatic incident. In so doing, it deters survivors, communities, or emergency managers from taking advantage of the opportunities and possibilities that are created by the traumatic incident. The mere notion of trying to return to a previous status instills an implicit bias that diverts the psyche away from acceptance of the incident and envisioning an improved future.

Drabek and Hoetmer documented recovery concerns for local governments in their seminal work regarding emergency management and local government. They indicated that stakeholders want to return to normal business quickly after a disaster. Simultaneously, the public may favor making significant changes to prevent future incidents from occurring (1991).

Heifetz, Grashow, and Linsky summarized the problem of recovery versus adaptation in a bureaucratic environment since the problem-solving defaults of an organization reveal information about how it functions as a system and how adaptable it is (2009). Defaults are perspectives on events that encourage people to act in ways that are familiar to them and have produced desirable outcomes in the past (Heifetz et al., 2009). Organizations rely on defaults because they are comfortable with them and because they have previously worked well for revealing reality and resolving issues (Heifetz et al., 2009). When individuals inside an organization discover that a particular answer to a specific event worked effectively, they are inclined to repeat that response whenever they encounter a problem of a similar nature (Heifetz et al., 2009). However, the more

often a default is used, the more difficult it is for an organization to modify when new circumstances call for a different course of action (Heifetz et al., 2009).

Recovery suggests bringing those things that were damaged back to their original state. If buildings are the focus of recovery and are returned to their original state, a recovery-based approach limits the ability to improve their construction and subjects them to the same fate if another similar traumatic incident occurs. Recovery, or in this case, rebuilding, should only be reserved for items of historic or environmental significance that intentionally need to be preserved.

The concept of recovery limits progress and advanced learning because it asks us to look back instead of envisioning a preferable future. It also encourages a denial of the incident instead of acceptance. Recovery implies getting back to the way things were instead of looking forward and adjusting to the way things could be. Rubin, Saperstein, and Barbee conclude in their seminal work that even communities that experience numerous disasters do not focus on an improved end state during the recovery and mitigation phases (Rubin et al., 1985). The pattern and rate of recovery and reconstruction after a disaster are influenced by a number of conflicting forces (Drabek & Hoetmer, 1991). Most of the time, people rush to rebuild their houses and businesses (Drabek & Hoetmer, 1991). Additional pressure to rebuild as soon as feasible is frequently brought on by development and real estate interests, with little to no consideration given to mitigation (Drabek & Hoetmer, 1991). Key local players will need to be reminded repeatedly of the necessity of disaster preparedness by public officials and civic leaders (Drabek & Hoetmer, 1991). This may be best achieved by focusing on adaptation rather than recovery.

The earliest citation of recovery in emergency management appears to be found in a Governor's guide to emergency management in 1979 by the National Governor's Association. This is how it defines recovery: "Recovery activities continue until all systems return to normal or better. They include two sets of activities: Short-term recovery activities return vital life-support systems to minimum operating standards (for example, cleanup, temporary housing). Long-term recovery activities may continue for a number of years after a disaster. Their purpose is to return life to normal, or improved levels (for example, redevelopment loans, legal assistance, and community planning)." (National Governor's Association, 1979)

This definition, and obviously the phase itself has largely been unchanged since that time. The concept is approaching a half-century of unchanged doctrine in emergency management and focuses on returning to normal, albeit making a concession for improvement. However, it continues to focus on what once was. In fact, the word "return" is used twice in the definition, as is the word "normal." These two words may perhaps be the reason why the concept falls short for today's needs in a post incident environment and why adaptation should be considered.

The human race is programmed to adapt, evolve, and survive (Lotto, 2017). Since the beginning of time, our species has been adapting, as have all other species (Lotto, 2017). Our brain seeks ways to help us survive, some simplistic and others creative (Lotto, 2017). It encourages experimentation which leads to learning. Learning leads to adaptation which then results in evolution (Lotto, 2017). The adaptation and evolution process leads to survival therefore survival requires innovation (Lotto, 2017).

Change is a natural part of human evolution. Samuel Henry Prince identified how change results from disaster in his ground-breaking work *Catastrophe and Social Change* while studying the sociological effects of the Halifax Disaster, resulting from a large explosion on a ship in the Halifax harbor in 1917. He stated change occurs even more so after disaster because disaster prepares the groundwork for social change by disturbing social factors and creating a desire for change among the population (Prince, 1920). However, strengthening, healing, and improvement is not an assured result of change (Prince, 1920). Flourishing after a disaster results from wise efforts and sacrifice (Prince, 1920).

After a disaster, things change. It may be a micro, meso, or macro level change, but change does occur. At a micro level, change may occur within a single individual who was deeply moved, affected, or victimized by the incident. Another micro level change could be a single home that was burned down. A meso level change could be illustrated by a single affected community or significant destruction of infrastructure within a general area. Change can also manifest itself at the macro level. Disasters like 9/11 or Hurricane Katrina are great examples of disasters that resulted in significant changes, perhaps even impacting the entire world.

Disasters generate short, medium, and long-term recovery efforts (Drabek & Hoetmer, 1991). Likewise, adaptability depends on short term learning, development beyond the short term, and evolution in the long term (Lotto, 2017). This can also be applied to the discipline of emergency management where emergency managers need to learn, develop, and change doctrine to evolve as a discipline.

Adaptation defined simplistically is changing with the changes. An adaptation process requires a projection

forward and possibly making anticipatory changes. Adaptation does not return to normal because it does not view normal as a legitimate concept. Adaptation has no memory from which to establish normalcy, it only has what is in the present and future. Adaptation does not cling to what once was, it only supports improvement, strengthening, and healing.

An important aspect of healing is accepting what has happened. The world is in a constant state of change and disasters will happen. When disasters happen, lives are lost, people are physically and emotionally traumatized, buildings and infrastructure are destroyed and damaged, and lives are changed. The change is forever. The effects of a disaster cannot be erased. Therefore, to heal appropriately, the goal should not be to go back to the way things were, but rather to acknowledge the change in the environment and to embrace and leverage the opportunities that the change creates. The goal should be to adapt.

Adaptation requires the person, community, or process to accept that an incident has occurred, and that change has resulted from the incident. From this point of view, adjustment to the environmental change can be made. This adjustment should be an improved, stronger, and beneficial end state, allowing learning from mistakes and encouraging trial and error. The traumatic incident should be analyzed to determine what caused the disaster, what was needed to survive the disaster, and what would have been a preferred situation before the disaster occurred. From this point, there can be additional analysis evaluating future hazards and vulnerability and decisions can be made about what an adapted environment needs to look like and how to achieve it.

A traumatized person that experiences a disaster survives and flourishes if, after they experience disaster, they are willing to adapt. If they are willing to accept the reality of the experienced trauma, learn from it, and adjust to the new reality, they will fare well. Those who long to return to a pre-disaster state may survive but will likely not flourish.

A community that experiences disaster must be willing to adapt. Adaptation will allow a community to identify what has changed and adjust to the change enabling its members to take advantage of new opportunities to thrive which may be found in the economy, technology, social structures, or within the government.

An emergency management program can prosper by leading its citizens, community, and governmental organizations through an adaptation process that puts its stakeholders on the path it needs to be versus where it has been. The emergency management program may adjust processes so the system can better cope with future hazards, risks, vulnerabilities, altered states, stressors, or opportunities. Any emergency management program that leads its benefactors to modify their environment and/or behavior such that it is better fitted to survive in the future is a stronger program than one that asks it to simply recover.

Disasters will continue to occur, and people will continue to be affected by them. Our ability as humans to adjust to our environment and create opportunity out of change enables us to become stronger. Our ability to adapt permits us to evolve into a stronger species that can thrive and flourish. By failing to adapt, we put ourselves at risk. In her book *The Unthinkable*, Amanda Ripley cautioned of such failure indicating that we are at risk of devolving rather than evolving (Ripley, 2008). She concluded that we can either adapt and improve at surviving or we can devolve and become worse at surviving (Ripley, 2008).

CASE STUDY: COVID-19

Beginning in early 2020, the United States initiated its response to the COVID-19 global pandemic. As a novel coronavirus began its worldwide spread which would ultimately be blamed for the deaths of millions of people and the ruining of the global economy. The concept of recovery was never an option for emergency managers. To recover, COVID-19 would need to be eradicated and life would need to return to a 2019 status.

People, communities, jurisdictions, and organizations adapted in many ways. The short-term adaptation process included the wearing of face coverings, implementing social distancing protocols, and installing plexiglass barriers. Adaptation resulted in building virtual capabilities, working from home, increasing delivery services, and outdoor dining. In the long term, adaptation involved vaccinations and developing herd immunity. The U.S. will never go back to a scenario that eradicates COVID-19 and will never return to life in 2019. Life will continue to move forward, and the U.S. will embrace the changes made and will be stronger from adapting and thereby evolving.

Returning to 2019 is not what happened. Adaptation was the only realistic option. Across the globe, adaptation occurred. Adaptation occurred to keep the economy moving. Adaptation occurred so educations at school were minimally interrupted. Adaptation caused the creation of new businesses taking advantage of new demands within communities. Adaptation gave businesses new operating models which have been retained or modified and continued despite the elimination of COVID precautions. Businesses continue to embrace more personal delivery options, web-based meetings, and remote working.

CASE STUDY: GREENSBURG, KANSAS TORNADO

On May 4, 2007, the Town of Greensburg, Kansas was 95% destroyed and the other 5% was severely damaged by an EF5 tornado. The tornado killed 10 of Greensburg's estimated 1,594 residents. The concept of recovery would have every building returned to its original state. This was not an option for the residents nor its governing body. They chose to adapt. The city council passed a resolution stating that all city buildings would be built to Leadership in Energy and Environmental Design (LEED) standards, making it the first town in the nation to do so. Several homes and buildings that replaced destroyed ones included hazard mitigation improvements. These buildings can now withstand 195 mile per hour winds. Greensburg adapted and emerged from the rubble as a "green" town, with the help of Greensburg GreenTown, a non-profit organization created to help the residents learn about and implement the green living initiative. As a part of their adaptation efforts, this City is now and completely powered by a 12.5-megawatt wind farm. In so doing, Greensburg has demonstrated the adaptation mindset discussed in this paper by utilizing the very hazard that destroyed their town and channeled it into a energy solution. Greensburg today stands as a model often described as the greenest in America.

COMPARISON

These two incidents are quite different from a hazard perspective. One is a pandemic where a biological illness caused global consequences to people's lives, livelihood, and quality of life. The pandemic was a long-term event where some may still is arguably still ongoing. Adaptation had to occur during and will still occur once the pandemic is declared over. As a result of the pandemic, public health agencies implemented draconian mitigation measures in an attempt stop the spread of the disease. These measures had severe consequences on businesses that failed to adapt to the new measures. Those businesses that were able to transform and provide new or modified services in alignment with the measures had far less impact to their business. Governments that also adapted to support their businesses by issuing special permits to offer outdoor dining, special parking for pick-up retail, and offering other variances to local ordinances.

Greensburg, by comparison, was a local incident weather-based incident whose damage to a small geographic area, compared to the pandemic, did its damage in just a few minutes. Adaptation couldn't occur during the tornado. The changes made after the destruction were a product of planned and deliberate steps by the community and its leaders. The changes took years to implement. Several in the community did not embrace the changes on an individual level and in an attempt to return to normalcy simply rebuilt private property to the same standard their destroyed property had before. Just like in the COVID-19 incident, those that adapted, and the community, are more prepared and protected for future tornados and energy is now more sustainable. In many respects, the adaptable are flourishing after the disaster.

FUTURE WORK

The topic of adaptation as it pertains to the phases of emergency management raises interesting opportunities for future research. Specific adaptation strategies can be identified for specific hazards. Adaptation for floods are likely to be different than adaptation for tornados. Researchers can also attempt to identify how to synthesize hazard specific adaptations and fuse them together to provide even more protection and opportunity for flourishing. Research should also be focused on both physical adaptation of property and the community and behavioral adaptations of people. Sociological research might also inquire as to why some people are quick to adapt to a new situation and others resist. This could lead to actions emergency managers can take to promote adaptation and increase resiliency within a community.

With this paper serving as a proposal for adaptation to replace the recovery phase of emergency management, it begs to question what other emergency management phases and emergency management doctrine has become dogma. Emergency management as a discipline may need to itself adapt to the threats and hazards that are present now that weren't present, or as frequent, or as severe four decades ago. Future research might focus on how planning can incorporate adaptation concepts into emergency operations plans, comprehensive emergency management plans, strategic plans, and even in incident action planning during an incident. Other research may include how to teach adaptability in emergency management training courses or in emergency management higher education curriculum. Emergency managers will also need to know how successful adaptation efforts are, therefore research may be conducted to determine mechanisms to measure community adaptation measures and efforts.

CONCLUSION

When disasters occur, change also occurs. It could be social change, environmental change, economic change, or even personal change. As emergency managers we should be seeking to evolve our communities, jurisdictions, and organizations to thrive and flourish in the face of change. Evolving requires adaptation. The current practice of recovery falls short of an evolutionary concept. A recovery concept has a focus of returning to normalcy and going back to life before a disaster. Recovery is not an evolutionary process; it is a static process. An adaptation process is dynamic and allows emergency managers to focus on acceptance, healing, and adjustment to current and future conditions. Adaptation enables communities, jurisdictions, and organizations to seize the opportunities created by disaster instead of succumbing to the destructive impacts of it. Adaptation is evolutionary and enables the building of long-term resilience. Adaptation should replace recovery in the four phases of emergency management.

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