

EFFICIENCY OF THE EMERGENCY
ALERT SYSTEM

By

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To the Faculty of Washington State University:

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EFFICIENCY OF THE EMERGENCY

ALERT SYSTEM

Abstract

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Scholars, emergency workers, and the general public have noted failures in disaster communication over the last decade. Communication breakdowns following catastrophic events have been categorized, defined and studied in a variety of ways most often focusing on the effectiveness of the communication – do people take the right actions? But what about the efficiency of the system – do people actually receive the communication? This study focused on one narrow type of disaster communication: disaster warnings as embodied in the emergency alert system (EAS). Inspired by reports of some unrelayed EAS warnings, this researcher explored the efficiency of the EAS by using in-depth interviews with EAS technicians from western states to seek understanding of why some urgent warnings have not been relayed. The introduction and review of the literature indicate that some EAS messages have not been relayed as one might expect, and people have been seriously injured and in some cases, deaths have occurred. The design of this dissertation study was guided by a basic communication model and Kantian Capitalism theory. These perspectives suggest broadcasters would consistently relay warnings such as “tsunami coming; run now” even though, in our capitalistic system, the broadcast time is costly.

Study results indicate that the federally regulated EAS system is inefficient for a variety of reasons, including the cost of broadcast time. Evidence shows that the EAS will remain inefficient in spite of or perhaps because of ongoing complex Kantian Capitalistic efforts now underway. Making dire warnings mandatory would improve efficiency. Required training and agreed upon criteria could improve efficiency. New technology with common protocol can improve efficiency, for some. However, there is a lack of strong leadership at the national, state, and local levels and that leadership continues to be challenged by constitutional issues and the structure the broadcast corporations in our U.S. public warning system. Results of this study provide opportunity for further research and challenges for public policy development.

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Dedication

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CHAPTER ONE

INTRODUCTION

This chapter introduces my dissertation in six sections followed by a summary. In the first section, I specify the research problem and describe some historical background. Section two discusses past research on effectiveness versus efficiency and places the problem within philosophical political roots, which leads to section three, the purpose of the study. Section four is the statement of the research question which is followed by section five regarding the significance of the question. Section six identifies the scope and focus.

Research Problem

Problem with Emergency Message Rebroadcast

Most disaster communication scholars, and members of the public, believe that emergency messages sent from qualified emergency personnel are routinely rebroadcast by broadcast stations (Beebe, 2004; Carroll, Cohn, Seesholtz, & Higgins, 2005; Francica, 2006; Sorensen, 2005). However, broadcast outlets do not always relay typical Emergency Alert System messages, as most people incorrectly assume (Beebe, 2004, p. subpart A 11.15; Quarantelli, 1997; Teinowitz, 2002) There was no emergency message following the September 11, 2001 attacks on the United States (Collins, 2001). While local emergency managers attempted local messaging, not all stations relayed messages during hurricane Katrina in 2005 (Department of Homeland Security, Sep 10, 2007). In 2006, a volcano alert warning, issued in error but posted for 41 minutes, was relayed by only one local station (of dozens possible in the metropolitan area) as reported by the Associated Press (Spokesman Review, 2006). In testimony prepared for the FCC, the Society for Broadcast Engineers (SBE; 2006) reported message relay

lapses. In 2005 a tsunami warning was not relayed or was incorrectly relayed to people in the danger zone (Oregon Governor Office of Emergency Managers, 2005). In Minot South Dakota a failed relay resulted in death and injury (Democracy Now.org, 2007). These documented instances of failure to relay warnings may have been masked by media coverage of the events that triggered the warnings.

Historical Background

In 1934, a congressional statute created and empowered the Federal Communications Commission to regulate the United States airwaves as successor to the Federal Radio Commission, which had the power to deny radio licenses for stations that did not serve the public interest. The statute noted:

If upon examination of any application for a station license or for the renewal or modification of a station license the Commission shall determine that public interest, convenience, or necessity would be served by the granting thereof, it shall authorize the issuance, renewal, or modification thereof in accordance with said finding. In the event the Commission upon examination of any such application does not reach such decision with respect thereto, it shall notify the applicant thereof, shall fix and give notice of a time and place for hearing thereon, and shall afford such applicant an opportunity to be heard under such rules and regulations as it may prescribe. (Communication Act of 1934, § 309[a])

The FCC also took over wire communication regulation from the Interstate Commerce Commission (ICC) and began to regulate the uses of radio, television and interstate wire communication to assure this valuable public resource would be used in service to the public. The ICC was a regulatory (Interstate Commerce Commission, 2010) body in the United States

created by the Interstate Commerce Act of 1887, with the specific purpose of regulating methods of transportation, originally railroads and later trucking to ensure fair rates and minimize rate discrimination. It was the first independent agency and sometimes referred to as the “fourth branch” of government. The FCC modeled itself after the ICC in that a purpose was to regulate the transportation of information. Currently, the FCC has jurisdiction over the 50 states, the District of Columbia, and the U.S. possessions, which include American Samoa, Guam, The Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands.

In 1949, the FCC prepared a report emphasizing use of the system for important public communication. The report noted the necessity to maintain an informed public and consequently the necessity for FCC licensees to devote time to information of public interest. The 1949 report does not specify warnings to be of public interest but implies that basic safety is a “paramount right.” The Commission consequently recognized a necessity for licensees to devote a reasonable percentage of their broadcast time to the presentation of news and programs devoted to the consideration and discussion of public issues of interest in the community served by the particular station. And we have recognized, with respect to such programs, the “paramount right” of the public in a free society to be informed and to have presented to it for acceptance or rejection the different attitudes and viewpoints concerning these vital and often controversial issues which are held by the various groups which make up the community. According to Limburg (n.d.) as quoted by the FCC took the view, in 1949, that station licensees were “public trustees,” and as such had an obligation to afford reasonable opportunity for discussion of contrasting points of view on controversial issues of public importance. The Commission later held that stations were also obligated to actively seek out issues of importance to their community and air programming that addressed those issues (Limburg, 1994, n.d.).

Prior to 1951, the U.S. government had no mandated method of broadcasting warnings to citizens in the event of an emergency. However, radio stations and networks could voluntarily interrupt normal programming and issue bulletins in the event of an emergency, such as occurred during the attack on Pearl Harbor in December of 1941 and a tornado near Oklahoma City in 1948. This type of broadcasting was the forerunner to CONELRAD (CONtrol of ELectronic RADiation) which was initiated by executive order for civil defense in 1951 and launched in 1952. At this point in time, the FCC had oversight of radio broadcasting. President Truman needed a method to communicate with the public and control airwaves to protect the country. According to the posting on the Truman Library Web site:

On December 2, 1952, the White House announced the development of another defense plan, to be placed in operation within 3 months, which would also minimize the effectiveness of an air attack on the country. The plan, called CONELRAD (Control of Electromagnetic Radiation), was developed on the basis of Executive Order 10312 whereby the President authorized the Federal Communications Commission either to silence radio stations or to control their operations so that electromagnetic radiations might not aid the navigation of hostile aircraft, guided missiles, and other devices of similar purpose. (CONELRAD, 2001)

CONELRAD was activated in order to provide Cold War warnings to the public. Under CONELRAD, in times of national crisis, broadcast FM radio and television stations were required to suspend regular broadcasting and to rebroadcast emergency messages. According to the Partnership for Public Warning (PPW), AM radio stations would go off air after alerting listeners to tune in to the other broadcasters that were relaying warnings and information

(Partnership for Public Warning, 2002, 2003). Indeed, the text of the CONELRAD mandate required:

SEC. 3. Whenever, pursuant to the provisions of this order, any radio station shall have been required to cease operations or whenever the normal operations of any radio station have been interfered with, such station shall be allowed to resume operations or return to normal operations as the case may be, at the earliest possible time consistent with the national security. In exercising the authority delegated by this order, due consideration shall be given to civil defense and other national-security requirements.

SEC. 4. The Federal Communications Commission, the Secretary of Defense, and the head of each government department or agency the stations of which are involved, are hereby authorized to issue appropriate rules, regulations, orders, and instructions, and to take such other action as may be necessary, to assure the timely and effective operation of the plans and for carrying out their respective functions hereunder, and are authorized to require full compliance with their respective plans. (Truman, 1951)

In August of 1963, CONELRAD was replaced by the Emergency Broadcast System, which had the notable feature of expansion for peacetime broadcast of emergency messages by state and local officials. Although the EBS was an available warning system it was never triggered for a national presidential warning. However between 1963 and 1996, it was activated thousands of times for local and state warning messages (Risk Institute, 2009).

In 1994, during the 103rd session of Congress, the Emergency Broadcast System began to be phased out and the Emergency Alert System was introduced to take over its functions. The reason given for these change was aging equipment and new options in technology. As regulations have been modified over time, the implication of the right to safety of life and

property continued, “one of the most fundamental and significant statutory mandates of the FCC is promotion of safety of life and property through the use of wire and radio communication” according to the 2006 posting on the FCC Website page relating to the Emergency Alert System (EAS(FCC, 2006).

In its July 12, 2007, the Second Report and Order and Further Notice of Proposed Rulemaking issued in EB Docket 04-296, the FCC noted they have begun to explore steps towards a “Next Generation EAS,” to help solve some of the continuing problems of communication before, during, and after disaster events. The national alert system was to be jointly coordinated by the FCC, the Federal Emergency Management Agency (FEMA), an agency now within the Department of Homeland Security (DHS), and the National Weather Service (NWS). The NWS is an organization within the National Oceanic and Atmospheric Administration (NOAA). According to a report published in late June of 2009, the NOAA/NWS “weather radio” system, which is familiar to mariners and other weather buffs, has been upgraded to have all-hazard capability. This means that the system could also be used to relay other natural hazard warnings such as earthquakes and, additionally, includes man-made hazard warnings such as terrorism warnings (Moore, 2008, 2009, 2007).

In August of 2009 the FCC site posting noted that the commission stated that a reliable “wide-reaching public alert and warning system is critical to public safety” and that the EAS network should permit “officials at the national, state and local levels to reach affected citizens in the most effective and efficient manner possible.”

Another updated FCC Webpage acknowledges the importance of broadcasters to the public safety and defines a broadcaster role:

When a disaster occurs, citizens depend upon local broadcasters for access to lifesaving public safety and emergency announcements. The FCC recognizes the important role of local broadcasters in helping Federal, State, and local officials provide the general public with advanced notification of and instruction during disasters and emergencies. (FCC, 2009b)

Officials are making efforts to improve the NOAA network and include the new Digital Emergency Alert System. The DHS is working with public television stations to implement a program to disseminate national messages over the newly created digital broadcast airwaves. In 2009, the digital airwaves for radio and television replaced the older analog system. This program called the Integrated Public Alert Warning System (IPAWS) has developed as the DHS response to Executive Order 13407 requiring an alert system as part of U.S. policy (Moore, 2009). The 109th Congress passed legislation to fund public television stations for installing the digital equipment (Warning, Alert and Response Network Act, 2006). This law also required establishment of a committee to make recommendations regarding a Commercial Mobile Alert System (CMAS), which could carry state and local messages as well as the national messages.

Today FCC regulations regarding EAS use require some radio and television stations to have EAS equipment and to test the warning system at regular intervals in order to prepare for the possibility of a presidential activation of the system. Broadcast satellite services, for example, do not participate in EAS (Partnership for Public Warning, 2004). It seems that emergency officials, trained under an older understanding of the EBS, send messages they believe will be relayed and some broadcast stations are equipped to process them and send the warnings to listeners (receivers of the messages) but it appears that is not always happening. For example, as already mentioned, during the hours following the Minot North Dakota train derailment in

January of 2002, the local warning messages were not relayed resulting in death and injuries (Beebe, 2004; Democracy Now.org, 2007). Other examples include undelivered tsunami warnings (Dabrenzio, et al., 2005; Francica, 2006; Oregon Governor Office of Emergency Managers, 2005), problems with communication during a heat wave in Chicago (Klinenberg, 2007, p. 11) and a 2005 chlorine spill in South Carolina (Mitchell, Edmonds, & Cutter, 2005). Only one of many local stations delivered warning information in the 2002 South Dakota Grizzly Gulch fire (Klinenberg, 2007, p. 54). Even though the volcanic mud flow warning in 2006 was issued in error (Associated Press, 2006), it is useful to maintain it as an example of an unrelayed warning.

Past Research

In the past sociologists, ecologists, psychologists and communication scholars have examined various aspects of disaster studies. For example, sociologist Quarantelli (1977), writing in the *Annual Review of Sociology*, noted that very little research had been done on the sociology of disasters. Since then his and other research have provided detail on how people respond in disaster situations. Other researchers include Drabek and McEntire (2003) who provided an excellent review of emergent behavior in disaster, which they described as a “particular branch of disaster sociology.” The article reviewed and attempted to validate previous findings as well as critique many of the political approaches regarding emergent phenomena.

An article by Oskamp (1995) summarizes the ecological concerns and suggests that advanced technology and social psychology can help alleviate environmental problems and problematic behavioral processes and responses. P. S. Anderson and Gow (2004), communication scholars, concluded in one study that local officials are responsible for determining whether information is sufficient to issue public warnings related to tsunamis or

other potentially disruptive environmental issues. Oliver-Smith (1996) did an analysis of anthropological issues related to disasters and noted there is potential for further research that could lead to anthropological theory building, particularly in issues related to human and environmental relations and sociocultural changes. The article closed with a discussion of those potentials which could include issues of disaster warning communication. Oliver-Smith (1996) suggests that an anthropological approach is well-suited to “learning from and with others” to improve on human relations and communication in disaster situations. Yet repeated catastrophic event “after action reports” continue to bemoan the failures in communication before, during and after disasters.

Communication scholars have focused on the role of mass media in communicating information about disasters. Indeed, in 1989, growing interest in the field of disaster communication inspired a book called *Bad Tidings*. This eclectic collection of peer reviewed research included studies such as content analyses of disaster coverage and audience responses to disaster communication (L. M. Walters, Wilkins, L. & Walters, L., 1989).

A more recent publication, *Communicating Disasters, An Asian Pacific Resource Book* (Gunawardene & Noronha, 2007) brings together 21 authors who present research and insights regarding effective communication before, during and after disasters. Most of the 21 authors are from Asia and they analyze lessons following the massive December 2004 tsunami and conclude that planning helps to avoid communication problems after disasters. They focus on effectiveness and information “about” disasters.

Haddow and Haddow (2009) in their book *Disaster Communications in a Changing Media World* emphasize that effective communication, defined as saving lives during a disaster, depends on using radio or TV news and newer technology such as text messaging. The authors

describe the traditional media role and insist that it has been eclipsed by new media (such as computer programs and sites, smart phones and other technological devices) and encourage accepting the changes and looking for new communication tools and opportunities. Their convincing analysis discusses how traditional media messages are relayed via new media. However, the discussions do not directly address the initial efficiency question of this dissertation, which is why some messages that are transmitted from emergency managers are not relayed by the traditional media.

While this mass communication scholarship has great strength and merit, the focus is on information *about* disasters, coverage *of* disasters and the effectiveness of disaster warnings and other disaster communication (Beebe, 2004; Botan & Penchalapadu, 2008; M. S. Carroll, Cohn, Seesholtz, & Higgins, 2005). Some researchers have documented the startling statistics concerning how few states have plans for communicating important information *to* the public (Botan & Penchalapadu, 2008; M. S. Carroll, et al., 2005). Botan and Penchalapadu did a study where he ranked each state regarding plans for communicating to the public. The research showed that only Washington DC, New Mexico and Ohio had a strategy that would allow for two-way communications with the public and 22 states had no plans at all (see Table 1). From the Botan and Penchalapadu table we can readily see that, throughout the nation, very little effort has been spent on the concept of communicating directly with the public. This dissertation may help reveal some possible explanations, and offer possible solutions.

Some researchers, (Klinenberg, 2007; McChesney, 2004; Sorensen, 2005) appear to incorrectly assume consistency or efficiency of a nationwide warning system that communicates from emergency managers to the American people. Perhaps the paucity of planning indicated by the Botan and Penchalapadu (2008) study reflects a similar hidden assumption. This may be a

dangerous assumption and worthy of review and research. The danger comes from the fact that potentially lifesaving messages remain undelivered even while disaster coverage continues.

Some people may die while others are entertained with disaster stories.

Table 1.

States with Plans to Communicate to the Public

State	RQ 1: Two-way communication		RQ 2: Vulnerable populations		RQ 3: Separate component		Total score
	Two-way strategies employed	Phone lines only	Specific strategies employed	If no strategy, mention?	Separate component present	If no component, mention?	
DC	4		2		2		8
New Mexico	4		2		2		8
Ohio	4			1	2		7
New Hampshire		2	2		2		6
Vermont		2	2		2		6
Georgia		2	2		2		6
South Carolina		2	2		2		6
Mississippi		2	2		2		6
Nebraska		2	2			1	5
Alaska		2		1	2		5
Arizona		2		1	2		5
Virginia		2		0	2		4
Maine		0	2		2		4
Oregon		2		0	2		4
Pennsylvania		0	2		2		4
Oklahoma		0	2		2		4
North Carolina		2		0	2		4
Texas		2		0	2		4
Alabama		2		0	2		4
Rhode Island		0	2			1	3
California		0	2			1	3
Wisconsin		0		0	2		2
North Dakota		0		0	2		2
Kentucky		0		0	2		2
West Virginia		0		0	2		2
Washington		0		0	2		2
Colorado		0		0	2		2
Louisiana		0		0	2		2
Utah		0		0	2		2

Adapted from *Assessing the Role of Public Communication in State Emergency Plans*, by C. Botan and P. Penchalapadu, 2008, unpublished manuscript.

Differentiating Effectiveness and Efficiency in Disaster Communication

The research surrounding disaster communication is always complex and often confusing. One of the reasons for such confusion is that researchers often mix concepts of effectiveness and efficiency of messaging. For example, in some studies there is emphasis on whether or not people took appropriate action in a disaster situation (D. Mileti & Sorensen, 1987, 1990; Schneider, 1992; Sorensen, 2005). That is effectiveness. The same researchers may or may not ask questions related to when, or even if, the subjects had actually received warnings before the event. For example, Mileti and Peek (2000) focus on the social psychology of public response, while Schneider (Schneider, 1992) focuses on the public administration and public official communication and how that impacts public response. This conflict between effectiveness and efficiency may also be seen when researchers have noted media coverage of an event as entertainment but did not provide useful guidance for people to be able to take appropriate action (M. S. Carroll, et al., 2005).

Following the recent catastrophic earthquakes, tsunamis and hurricanes that resulted in hundreds of thousands of deaths and injuries, studies have shown that, for a number of reasons, not all people take protective action even when warnings are issued. For example, some warning messages may become distorted as they are passed along and thus inadvertently misinform. Some people may have physical disabilities or insufficient resources to respond appropriately. In some cases, people find denial of impending harm convenient or comforting and thus take no action at all. However, even the proverbial ostriches give an indication of effectiveness. People cannot decline an action if they do not hear about a warning. There is a popular myth that, in disaster situations, whether or not people take action is a personal choice. That has been shown to be false (Schoch-Spana, 2005). People do the best they can with the resources they have. This

proposed study focuses on efficiency of the relay of a warning message after emergency personnel issue the message – not the public responses to the messages. In other words, what happens to a warning message immediately after it leaves the hands of the emergency manager? Is it immediately relayed via broadcast stations to those people the EM believes are at risk? If not, why not?

In the past, some assumptions about warnings may have contributed to the creation of a simple yet efficient warning system. These assumptions are: (a) trained experts know when to warn people, (b) some warnings must be relayed quickly, (c) most warning messages are “too important” not to be mandatory, and (d) emergency warnings should always be relayed. The evidence shows that when the new technology of wireless radio arrived, it was thought to present a powerful opportunity to communicate and relate public service messages and a way to satisfy a duty to the public. Douglas (1987) wrote about the 1899 radio noting that this new medium might be a technological device that democracy needed. It was decentralized and each person could control and use it whenever and wherever he or she wanted. Douglas could well have been describing the new technologies of today such as computers, the Internet or smart phones. People today may assume that today’s new technologies will provide an efficient warning system and perhaps that is correct.

One comprehensive study ending in 2005 indicates a continuing assumption that all credible messages are routinely relayed when indeed they are not. Sorensen (2005) did a review of the last 20 years of disaster communication and the article titled the *Hazard Warning Systems: Review of 20 Years of Progress* summarized “advances in warning-related predictions, forecasts, disseminations, and responses over the past 20 years” (p. 119). Sorensen accomplished this by addressing four questions:

How have prediction and forecasting improved?

How has warning integration improved?

How has warning dissemination improved?

What do we know about response to warnings? (Sorensen, 2005, p. 119)

Sorensen's (2005) data showed that "specialized warning devices are capable of more rapid dissemination of a warning than the media can achieve" (p. 122). Sorensen is referring to devices such as open ocean buoys, which can collect information regarding tsunamis. However, the data do not look at *why* that might be happening. In other words, the data and results do not clearly focus on efficiency—only effectiveness. The conclusions of this mega-review include suggestions for even faster data gathering prior to warning issuance and also improved procedures and management practices. The study also wisely suggests that officials consider preparing a national plan. Yet embedded in the conclusions is the assumption that warnings, once issued, will be relayed.

An understanding of how messages are managed after they leave the originator could provide insight into the evidence that indicates a declining efficiency. Within the last decade and following some high impact and high visibility catastrophic events, such as the Asian tsunami and Hurricane Katrina, researchers have noted disaster-related policy changes (Birkland, 2004). First, Birkland (2006) indicated that there is evidence of legislator interest in learning from disasters and the continuing research points to altered legislation as a tangible indication that public action, as demonstrated in congressional testimony and some following legislation, modifies social policy (Birkland, 2006). Yet, if social action had succeeded in improving the emergency alert system, one would expect that the last decade would show greater efficiency in relay of warning messages. However, the findings show occasional, sometimes deadly, lack of

relay (Klinenberg, 2007). A study by Redd (1991) indicates changes in broadcaster public service time. Could that be related to the reduced efficiency of the warning system?

Interesting evidence collected in the 1990s evidence shows that many small nonprofit organizations had lost their broadcast voice to the public. Indeed, the data collected by Redd (1991) shows that PSAs declined dramatically during that period (see Table 2).

Table 2.

Radio Public Service Announcements

Station	Before deregulation	After deregulation	Percentage retained	Percentage reduced
A	695	297	43	57
B	122	78	64	36
C	498	112	22	77

Note. Adapted from “Radio Deregulation: The Impact on Black Families and Nonprofit Local Agencies,” by L. N. Redd, 1991, *Journal of Black Studies*, 22(2), p. 227.

Redd (1991) shows that each of the three studied stations reduced the number of PSAs it ran after deregulation. Station A reduced its PSAs by 57%, from 695 to 297 such announcements. Station B dropped from 122 to 78, a decrease of 36% in PSAs. Station C eliminated 386 or 77% of its PSAs. The deregulatory changes of 1981 removed the percentage of airtime required for nonentertainment programming. A 2008 study “*Shouting to be Heard*” done by researchers at the Kaiser Foundation with data collected between 2005 and 2008 showed that PSAs further declined from previous amounts of between 1% and 5.9% of airtime to the recent .4% to .5% (Kaiser Foundation, 2008). It is reasonable to conclude that warning messages proportionally declined as well.

Embedded in most of the more contemporary recent studies is the false assumption of efficiency—that the warnings *are* relayed from emergency specialists to the public via licensed broadcast stations and that, if a warning is dire and comes from a credible source, it is *always* relayed. However the evidence shows that while many warnings that are dire and from official, credible, sources are relayed—some are not relayed (Klinenberg, 2007).

Political Stances Rooted in Philosophy

The “reasons” the warning was not broadcaster-relayed are complex, but they are rooted in political philosophy regarding capitalism and social service. Very broadly speaking, policies are influenced by two political extremes:

1. Libertarianism, which emphasizes unburdened personal freedom, supports free-market enterprise and the importance of good intentions in individual personal behavior. Generally, the libertarian, free-market thinkers politically tend to be republicans who favor fiscal responsibility or members of the populist “tea party” political action group. For these people, the center of decision-making for action resides within the individual. What is good for me (or my business)

may or may not be good for others but survival of the self (or the business) is of the greater importance. Benefits to the community may be important but do not drive political decisions.

2. Social responsibility, which emphasizes duty and obligation to others in society. The center for the decision-making that guides action resides in the community and is by definition not “self” centered. What is good for the community may or may not be good for me, but survival of the community is of the greater importance. Benefits to me personally may be important, but do not drive political decisions.

These two political positions are rooted in the long-standing dichotomy of deontology and teleology. Deontology and teleology are two major schools of philosophy. The two extremes of thinking contravene each other. Deontological theory values the obligation or duty of an individual person to act in a moral manner. Deontological philosophy, sometimes called duty or personal ethics, centers on the *intentions* of the person in the decision-making situation. Individuals or organizations are expected to dutifully do the right thing in spite of results. Libertarianism is rooted in deontology. The term “deontology” is derived from the Greek *deon*, “obligation, duty” and *logia* -- meaning the logic of obligation and is sometimes called the “philosophy of moral obligation” (Deontology, 2009). The duty and obligations of the person who acts are more important than ultimate consequences. Immanuel Kant, a deontologist, most known for his categorical imperative, argued that it is always wrong to lie, regardless of the consequences (Chalier, 2002; Colebrook, 1999; Kant, 1781-1797).

Teleological theory requires the impact on others in society be the test of morality (Brandt, 1959, 1979; Westberg, 1994). Teleology, a form of consequentialism, holds that the final results of an action are the most important – what ought to be for others. Social Responsibility is a concept rooted in teleology in that the focus is on the results of behaviors

towards other people. Generally, social responsibility is considered to be an ideological philosophy that says individuals as well as organizations have a responsibility to more than themselves. Results matter. The concept of social responsibility was a central theme in the Hutchins Commission review of media in society (Blanchard, 1977; Bok, 1979).

Purpose of the Study

There are two purposes of this dissertation. The primary objective is to identify and analyze evidence that could provide “sense-making.” For this study, sense-making refers to a naturalistic decision-making process as a cognitive procedure. Sense-making “provides an empirical base that anchors the theoretical ruminations in concrete examples and findings” (Klein, Moon, & Hoffman, 2006). In other words, sense-making as a process to find comprehensible awareness and understanding in highly complex situations in order. Ideally, this understanding might shed light on opportunities for improving problematic situations.

The second purpose is to identify specific reasons for lack of efficiency, meaning reasons for failures by broadcasters to issue potentially life-saving public warnings in a dependable, unflinching, manner. Many government regulations centered on the public good. In 1934, the FCC came into existence and placed the airwaves in a trust status with broadcasters. These airwaves were to be used as a public good to be treated like other traditional public services, such as defense and law and order. The legislation stated that the public airwaves were to provide benefit or “service” to the public. Public service is a key principle in the communication laws defined in the Radio Act of 1927 and the Communication Act of 1934—that in exchange for public airwave use broadcasters agreed to take actions to benefit the public. The mandate phrase is that “broadcasting serve the public interest, convenience and necessity.” Does that principle still

apply? Are public warnings still a public service? If so, why are some not immediately relayed to the public?

Research Question

With the research goals in mind, this dissertation asks the following research question: Why do broadcast stations performing under current broadcast regulations sometimes fail to relay/rebroadcast emergency warning messages?

Significance to Theorists, Researchers and Practitioners

Theorists

There have been substantial reviews of the importance of broadcast communication in our society with recent national debate focusing on the role of government in public communication, including the communication of emergency messages (W. A. Anderson, 1969; Baker, 1979; Birkland, 2004; Botan & Penchalapadu, 2008; Dow & Cutter, 1998; G. D. Haddow & Haddow, 2009; K. G. Haddow; Klinenberg, 2007; Manoi & Baker, 2007; J. G. Taylor, Gillette, Hodgson, & Downing, 2005). By examining and analyzing reasons for failures of the Emergency Alert System to efficiently provide adequate warning to citizens, the results of this study offer a new model describing contemporary crisis communication which helps to explain some failures. Past researchers who have noted breakdowns in emergency communication before and after catastrophic events have inferred that broadcast regulations may be a key issue (Klinenberg, 2007; McChesney, 2004). This study, which concentrated on the emergency warning system, has identified and refined a perspective about critical variables, their possible interrelationships and their discernible impact on the common good.

Researchers

The methodological framework in this study could provide benchmarks as well as useful guidelines for future researchers working in this general area. Particularly, they could find these results significant in helping them frame research issues and select critical variables for investigation. These results could also assist future scholars in resolving conflicts about specific findings about disaster communication. Finally, crisis communication scholars could possibly use the outcome of this study to make modifications general crisis communication models.

Practitioners

Practitioners could use these results to clarify why some EAS messages are not rebroadcast from emergency professionals to the public, as intended. The findings could also prove useful to emergency professionals by helping them decide, during critical events, whether or not to use the EAS as a primary warning system. They may be able to use the data to assist in designing a more efficient warning system. Moreover, study results could be significant to broadcasters by helping them develop awareness of reasons why emergency messages may not be immediately relayed. Such knowledge may encourage them to monitor areas of inefficiency and help reduce the number of situations of failure to act in the public interest. An in-depth understanding of how the system is functioning may be helpful to policy makers and regulators by helping them understand the extent to which the results of regulations match their intentions as they continue to propose beneficial changes in legislation.

Listening to the voices of users of the system may help determine whether or not earlier intent to protect the public remains strong. Insights from study results could assist policy makers in identification and analysis of possible failures in the warning system and could help them understand why the warnings from emergency managers are sometimes not broadcast to the

general public. Practitioners may thus come to better understand their roles in the warning system network as well as effective strategies that could be used to help increase certainty in warnings. Moreover, if members of the public better understand the strengths and weaknesses of warning systems, they may be motivated to take personal or communal action to consider alternatives such as subscribing to commercial warning systems. Understanding the findings of this study could also motivate citizens to lobby for regulatory changes that might provide greater certainty in warnings. If legislators had quality data that helped to better understand the strengths and weaknesses in the system, they might pursue a greater commitment to assuring that officially issued public warnings will be relayed in an efficient, timely, unfailing manner. On another level, the results of this study could also assist political and even ethical theorists in developing a better understanding about responsibility, duty, and the role of communication in crisis management. Do broadcasters have a responsibility or duty to warn others if the warning could harm their shareholders? Is it the duty of a broadcaster to protect individual listeners and thus act for the civic good or is there a greater responsibility to a fiscal capitalist orientation? What are appropriate actions when duties collide? Are people motivated by concepts other than the common good and duty to one another?

Scope and Focus

This study will attempt to evaluate the efficiency of the message delivery system, which deals with relaying emergency warnings from trained emergency managers to the public but not its effectiveness, which deals with public behavior in response to warnings. Other researchers have focused on effectiveness (G. D. Haddow & Haddow, 2009; Manoi & Baker, 2007; Quarantelli & Dynes, 1977; Sorensen, 2005; L. M. Walters, Wilkins, & Walters, 1989) or comprehensiveness of broadcaster coverage (Hindman & Coyle, 1999) . This dissertation will

capture participants' perceptions about missed relays but will not attempt to quantify warning messages delivered or delivery rates. Quantitative researchers may wish to gather such data for future analysis.

For purposes of this study, efficiency is defined simply as “unimpeded broadcast relay from the emergency expert to the public.” This investigation will analyze interviews with a sample of practitioners and try to highlight their perceptions and observations. In order to clarify why broadcasters apparently have moved away from routinely and dependably rebroadcasting emergency messages, this study will examine responses of users of the system cross-referenced with any informative documents that participants or informants may reference. While there is an abundance of information on FCC regulations and how various changes have modified radio and television *content*, addressing these issues is beyond the scope and intention of this investigation. This investigation will focus narrowly on the *efficient* issuance of public warnings and on the participant reflection regarding efficiency.

Chapter 2 will present an in-depth analysis of pertinent literature while a detailed description of methodology will be laid out in Chapter 3. Results of the study will be reported in Chapter 4. Chapter 5 will provide discussion of results; evaluate how the results of this study compared to findings of any similar studies -- given the strengths and limitations of this investigation -- and make suggestions for future research.

Summary

This chapter introduced the dissertation in three sections. The first section described the major problem to be addressed by this investigation: “Why do broadcasters fail to relay all EAS warnings?” The second section identified possible significance of results to other researchers, and the third section delineated a scope and focus for this study. Using analysis of the

Emergency Alert System and oftentimes failure of the system to relay warnings, this researcher posed the research question: Why do broadcast stations, performing under current broadcast regulations, sometimes fail to relay/rebroadcast emergency warning messages?

Next followed a general discussion about how broadcasters have arrived at an inconsistent state of affairs where warning messages may not be dependably rebroadcast. In the third section, the scope and focus of the attempt to answer the research question posed is discussed. Next was a review of the possible significance of results to theorists, methodologists, practitioners and members of the general public interested in saving lives and protecting property. The remainder of this dissertation will include a literature review, research methods, results, discussion, conclusions, and recommendations for future research.

CHAPTER TWO

LITERATURE REVIEW

This literature review contains one main section with an introduction to a basic communication model and then there are six sub-sections. A brief review of capitalism and social responsibility precedes discussions of ethics of social responsibility, Kantian Capitalism, social duty and social action, and fiscal responsibility of broadcasters. These sections help to provide insight into one of the possible reasons for lack of warning relay. The last sub-section reviews the concept of social pressure on regulators. These perspectives provide a theoretical framework for analyzing data and reviewing the results of this study of the EAS.

This systematic literature review follows years of work in the field of disaster communication. As a disaster response reservist who had opportunity to personally interact with an estimated 8000 individual media professionals (mostly broadcasters) and hundreds of emergency managers (EMs) in approximately 800 counties of 43 states, this researcher collected observations, which indicated something had changed about how broadcasters relayed disaster warnings from the EMs to the public. In the field, one could observe and verify that some messages were relayed and some were not. No doubt many stations, especially smaller local stations, were working hard to support their local communities (Hindman & Coyle, 1999). However, some disasters appeared to be covered as entertainment (M. S. Carroll, et al., 2005; Spence, Lachlan, & Griffin, 2007) and little information for survivor assistance was being relayed from experts to the affected public. Could it be that somewhere in recent history there was a shift in commitment to warnings? This researcher made the decision to go back to school to dissect what other researchers were discovering and attempt some sense-making (Dervin,

1999; Savolainen, 1993) regarding disaster warnings. By narrowing this review to the specifics of the EAS and the digital emergency alert system (DEAS), the 2010 official U.S. warning system, this researcher will attempt to make sense of what others have found.

Theoretical Framework

Communication Theory

Many definitions of communication exist and are useful in comprehending the process of how we communicate. Examples range from the study of interpersonal communication (C. R. Berger, 1979) propaganda (Lasswell, 1938; W. Lippmann, 1914; W. Lippmann, 1922; W. Lippmann, 1936) uses and gratifications (Postman, 1985) mass communication (McQuail, 1983) (McQuail), oral or written communication and how orality can be defined as non-literate, even to imply savage versus civilized (Ong, 1982). There are related studies and theories on dissemination or diffusion of information (E. M. Rogers, 1962; E.M. Rogers, 2003), corporate communication (Riel & Van & Fombrun, 2007), creation of social systems using communication (Leydesdorff, 2002), the new network communication in society (Castells, 1996).

A basic communication model and theory first posited by in the late 1940s by Shannon (Shannon & Weaver, 1949) provides a basic systematic framework in which to optimally frame and review the EAS. His ground-breaking approach, rooted in mathematics introduced an abstract concept called channel. For Shannon (Shannon & Weaver, 1949) the channel was the telephone system which included equipment, people and noise – or static. Over the years, researchers have broadened the concept of noise to include any interference in the clarity of the message received at the destination.

This forward thinking approach allowed Shannon to develop measurements and quantitative analysis of transmission of communication. These concepts remain fresh some 60

years later as computer specialists wrestle with notions of bandwidth and noise in contemporary communication systems.

Another futuristic aspect of Shannon's (1949) study is his concept of redundancy. In analyzing human hand-written communication, he determined that a high degree of redundancy was essential for the receiver to gather the complete message in the same way that the sender intended. As in this study, Shannon did not focus on whether meaning was transmitted nor whether actions were taken, or not taken, as result of the transmission. He saw redundancy of information as an opportunity to reduce uncertainty in the transmission. Since that seminal theory was offered, others have added complexity and attempted to refine the Shannon linear model.

The first model however remains useful and well-respected because its five parts are easy to understand. There is an (1) information source, where the message is gathered. (2) There is a transmitter where the message is encoded. (3) The channel was the telephone and is where the signal is carried. (4) The receiver (telephone operator) decoded the message and finally in Shannon's model there is (5) the destination.

Most researchers criticize the model as being too simplistic and emphasize that communication must include the concepts of meaning and understanding. However, for this study of warning messages, the focus is an extremely narrow point in the process – whether the message is relayed or not – yes or no and if not why not. As already described, the scope of this study does not include whether or not the message was understood -- so that people could take proper action. That is the issue of effectiveness of the communication. For clarity, looking once more at the component of *effectiveness* the current warning model – patterned after Shannon and Weaver might look like figure 1.

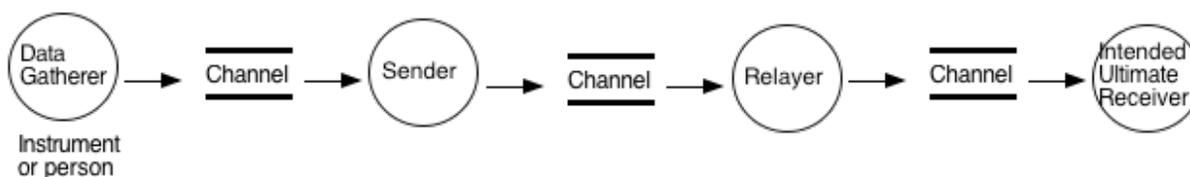
Current Warning Model

Figure 1. Current warning model.

Using this model, weather forecasters or tsunami researchers might assist in information gathering send that via computers to an EM who uses EAS to send to broadcast channels where the message is relayed to a radio or television broadcast station then on to the ultimate intended recipient.

With this effectiveness model there are at least three opportunities for noise – one at each channel. While noise is a given in contemporary communication, the concept does not explain the human non-action of non-relay. For purposes of this study noise, though occasionally applicable, is a concept that could confuse the sense-making. This complex model does not offer sufficient clarity for understanding the focus of this study. This study focuses only on the moment when the message arrives at the broadcast stations. At that moment this study asks -- is the message relayed or not and if not why not?

Ironically, simplifying the model increases usefulness and clarity of this study. With the narrow focus of efficiency, a simplified three-part version of the Shannon and Weaver model helps to keep that contracted focus. That model then would look like figure 2.

**Basic Communications Model
Shannon and Weaver**

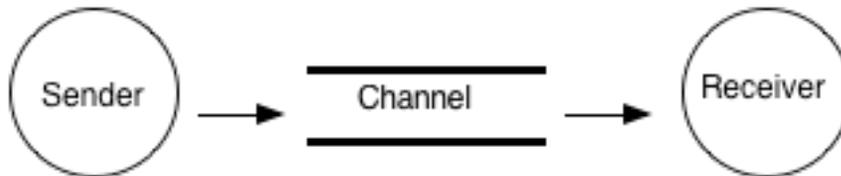


Figure 2. Basic communications model of Shannon and Weaver.

The efficiency question of this study is more readily observable in a simplified model. Does the message move through the channel, or not? If not, why not? Others have found this simplified version useful for contemporary communication issues (M. S. Taylor, Waung, & Banan, 1996). The Taylor (1996) model can be seen in figure 3.

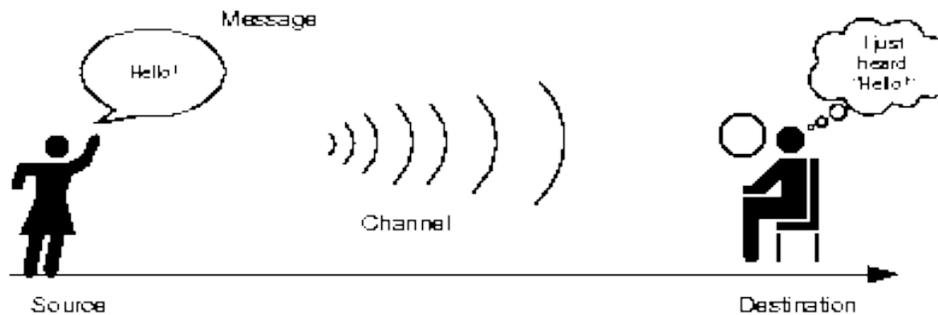


Figure 3. Taylor model. (M. S. Taylor, et al., 1996).

In the simplified version of the basic communication model, the source is a trained emergency professional. The channel is a broadcast station and the destination is people at risk in any given situation. Notice there is an assumption in this simplified Taylor (1996) model that the channel passed along the message and that the receiver at the destination “heard” the hello (a packet of information).

For this study, an important additional assumption is that the trained emergency professional has properly gathered, processed and vetted warning information (scientific or social data) in the most efficient manner possible for emergency situations and made a decision that the warning is essential to the well-being of the people at the destination. If the warning is relayed exactly as it is sent through EAS, it is an exact transmission (with rare noise issues). Therefore, another assumption is that the packet is either delivered (relayed) or not. In September of 2010 transmission standards were adopted regarding the EAS packets reinforcing appropriateness of this assumption (Holland, 2010) and the use of the simplified model for this study.

Capitalism and Social Responsibility

The U.S. contemporary broadcast system is a collection of, primarily, capitalistic corporate entities. Capitalists such as Adam Smith (1776) see a capitalistic system as one that mandates individuals must maximize their own financial self-interest as the best way to achieve the goal of a socially responsible society. Smith (1776) wrote of enlightened self-interest as an “invisible hand” of capitalist accumulation, which in turn would drive growth of the capitalist system. A high-functioning system some Capitalists would argue (Bitterman, 1940; Campbell, 1971; Smith, 1776), is socially responsible. Friedman (1962), another capitalism advocate and a political libertarian, also emphasizes free markets and claims they provide strength to freedom

and democracy. Further, Friedman insists socialist systems, that put social responsibility before profit, do not.

Ethics of Social Responsibility

The concept of ethics and social responsibility in corporate business has a long history, but until 20th century, formal writing was minimal. Carroll (1999) distilled some 50 years of the expansion of definitions. According to Carroll's research, the modern era of literature regarding corporate social responsibility began in the 1950s with Bowen's (1953) publication of *Social Responsibilities of the Businessman*. Interestingly, Carroll (1999) notes that Bowen meant businessmen – not businesswomen because, “there apparently were no businesswomen during this period, or at least they were not acknowledged in formal writings (H. R. Bowen, 1953, p. 269).”

This early work earned Bowen (1953) recognition as father of Corporate Social responsibility (CSR) with his simple question “What responsibilities to society may businessmen reasonably be expected to assume?” (p. xi). Citing results of a *Fortune* magazine survey done in 1946 he defined social consciousness or CSR as being “responsible for the consequences of their actions in a sphere somewhat wider than that covered by their profit-and-loss statements (H. R. Bowen, 1953, p. 44).

During the rest of the 20th century, various scholars presented refinements in the conceptualizations of CSR. Davis (1960), defined CSR as “businessmen's decisions and actions taken for reasons at least partially beyond the firm's direct economic or technical interest” (p. 70). Frederick (1960) added that CSR meant that corporate profits are to be used “for broad social ends” (p. 60) and elaborated that profits should not only be used for private personal gain. McGuire (1963) added an important new component to the definition stating “The idea of social

responsibilities supposes that the corporation has not only economic and legal obligations but also certain responsibilities to society which extend beyond these obligations (p. 144).” This definition adds to economic and legal obligations, but it does not clarify what obligations may be appropriate.

Definitional refinements and debates continued in the later 1960s and 1970s with Johnson (1971) adding a view that CSR, means “multiple goals rather than only maximum profits (p. 59)”. In the mid 1970s, Sethi (1975) added the dimension of social responsiveness to the discussion. He defined such corporate behavior by saying “Thus, social responsibility implies bringing corporate behavior up to a level where it is congruent with the prevailing social norms, values, and expectations of performance (p. 62).

This definition inspired weighty discussions regarding identification of social problems and various mechanisms or activities and corporate behavior to address them. Towards the end of the 1970s, Zenisek (1979) observed that discussions of CSR required greater empirical and theoretical support, and proceeded to offer his own definition requiring a “fit” between business ethics and societal expectations (p. 359).

Carroll (1979) proceeded to enhance that definition “The social responsibility of business encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time” (p. 500). This addition of legal responsibility provides an important milestone. According to Carroll (1979), society expects capitalistic businesses to make a profit but also assumes the businesses to “play by the rules.” Elaborating, Carroll (1979) insists that society expects businesses to need incentives and rewards therefore are allowed to make a profit but they also should be obligated to obey the laws.

The 1980s researchers slivered the concepts and added discussions regarding public policy, corporate social responsiveness, general business ethics, stakeholder theory, and Kantian Capitalism theory. The concept of corporate citizen was added into the discussion of CSR with Carroll (1991) noting, “The CSR firm should strive to make a profit, obey the law, be ethical, and be a good corporate citizen” (p. 43).

From the late 1990s into the 21st century, scholars have continued to refine the concept of the ethics of social responsibility in the business world. The primary business obligation of financial success was enhanced by social obligations but businesses must also abide by the law and behave as a responsible individual citizen might behave (A. B. Carroll, 1979; A. B. Carroll, 1991). The struggle has continued to fit profit and responsibility together and find ways to allow corporations opportunity to act as responsible corporate citizens. A solution for many has been to marry the social duty ethic of Kant’s philosophy with the legal and fiscal needs for profit.

Kantian Capitalism

Kantian Capitalism uses the philosophy of Immanuel Kant and his followers as an applied business practice (Phillips, 2003). Kantian Capitalism is sometimes called Stakeholder Theory and was popularized by Freeman (1988) who challenged the earlier ideas popularized by Friedman (Friedman, 1962) that the only duty of business was to maximize wealth for the owners or “stockholders.” Freeman said that businesses must serve all those (stakeholders) affected – the customers, suppliers, employees, communities and owners. Friedman would argue that if any abuses to humans were to occur then the free market would correct them. Both Friedman and Freeman have roots in Kant’s philosophy of the deontological duty and insist that businesses must treat shareholders with dignity. Those shareholders will in turn create the good society.

Kantian Capitalism is to some a conundrum if not an apparent contradiction (Calhoun, 2008). One understanding and reconciliation of the two ideas of profit making and social responsibility might be found in the classic parable of Kant regarding “truth” and “truth-telling.” The categorical imperative, a critical component of Kantian philosophy, notes that one must never tell a lie and insists that the individual responsibility to personal ethical duty demands absolute adherence to truth. For purposes of contemporary understanding, one can modernize the often-repeated parable that has to do with always telling the truth. In Kant's parable (researcher version) “Jane” bangs on the door begging for protection from men who are chasing her and our exemplar “Tom” responds. Tom answers the frantic knock at the door to find a hysterical Jane who begs Tom to hide her from evil men chasing her. Tom hides her in the closet. Soon men come to the door requesting information on a fugitive. Tom, who cannot tell a lie, readily points to the hiding place and as a result, Jane is taken away and killed. Kantian ethicists argue that Tom could not be expected to know if Jane was innocent or not, and it was the “others” who are responsible for her death. Further, even in such an extreme case, some would argue that one must do one's ethical duty to truth and never tell a lie (Chalier, 2002; Kant, 1781-1797). A capitalism parallel might be that “one must never break a contract.”

For Kant, the center of ethical duty lies within the individual decision-maker. For him, the ethical responsibility of an individual is to an ethical “self” which may or may not benefit the greater society. Kantian Capitalism grounded in categorical imperative thinking is also an individually-centered philosophy and allows “others” to harm stakeholders as long as the decision-maker categorically intends goodness. One example, that was well-covered by 2009 popular media, was large corporations paying out huge bonuses to corporate managers after

accepting government (greater society of taxpayers) “bail-out.” The managers described the bonuses as necessary because they were required to honor contracts.

Another example that speaks to good intentions, also well covered by the media, is the 2009 Madoff financial pyramid scandal. Investors included non-profit organizations intending that large unrealistic profits promised by investment manager Madoff would be used for good causes. Madoff alone was “blamed” for the losses while the charity investors explained their intended goodness. The April 20, 2010 Gulf Oil Spill qualifies as another example with ongoing debate. Clearly, the BP officials never intended to do harm to the environment and they intend to clean up the spill. Those officials and others strongly expect that the need for continuing corporate profits will be honored and further drilling worldwide must continue in areas where legal permits have been previously issued. By that reasoning, it may be true that always maximizing profits for corporations is parallel to a Kantian duty to never tell a lie. The primary duty of any corporate officer is achieved by honoring contracts and protecting profits. Further, individual proof of respect for the larger community resides in sharing some of those profits with other stakeholders (to include cleaning up oil spills) and contributions to charities.

Kantian Capitalism, sometimes referred to as creative capitalism, challenges the idea that the only role of business is to make a profit. Those who espouse this theory demand that businesses, large or small, should, in their decision-making, seek to serve the interests of the entire community (Besser, 2002; Evan & Freeman, 1993; Freeman & Evan, 1988). Some political scientists argue that the considered political judgments of modern corporation owners should recognize that property rights are not absolute over people (Glendon, 1991). These concepts are often taught as part of a new business management paradigm in university programs (Selix, 2009). Research shows that profits can be increased within organizations that display care

and concern towards internal and external stakeholders (Freeman & Evan, 1988). Stakeholders are defined as those who have some stake, usually financial, in the success or failure of a given enterprise (Evan & Freeman, 1993). Indeed, Kantian Capitalism is often invoked as a justification for making donations to charities from profits. Conversely, some corporations are inspired to increase public donations and voluntary public service following discovery of problems within the organization. Creating the appearance of being socially responsible is a common public relations strategy for beleaguered businesses (Ledingham & Bruning, 2000). Kantian Capitalism, some would argue, can be seen as the bridge between libertarian style free-market capitalism and social responsibility.

Kantian Capitalists insist that they have both ethical superiority and a competitive edge over other businesses (Freeman & Evan, 1988). Practitioners explain that businesses in a capitalistic society can do well (make profit) and at the same time act in socially responsible ways. Examples often point to businesses that refused to fire people (to protect profits) after the terrorist attacks of September 11, 2001 (Siharian, 2002). Instead, the cited businesses created high morale by keeping their employees and paying them even when they could not work. This later was credited with getting those businesses back up and running with even better profits.

However, Kantian Capitalism in actual business practice continues to be dominated by regulatory activity (Turpin, 2005). Each class of stakeholders has legal and/or regulatory protection that is different from the other classes. For example, Corporate Executive Officers have different legal protection than do board members or individual stockholders. The Kantian Capitalism approach in the United States, with roots in the Kantian categorical imperative, generally has the legal reality that managers owe a fiduciary duty to stockholders that is not

normally granted to any other group—and that duty remains paramount in practice (Legal Dictionary, 2009). Indeed, Greenfield (2005), notes

The fundamental assumptions of corporate law have changed little in decades. Accepted as truth are the notions that corporations are voluntary, private, contractual entities; that they have broad powers to make money in whatever ways and in whatever locations they see fit; that the primary obligation of management is toward shareholders, and shareholders alone. Corporations have broad powers but only a limited role. They are entities that have as their primary objective the making of money. Not much else is expected or required of them. (p. 1)

This Kantian Capitalism frame, which is the combination of social duty and libertarian capitalism, is most appropriate as a lens through which to analyze the issue of why some warning messages are not relayed from informed disaster officials to the public.

Social Duty and Social Action

Issues of social duty and social action in response to societal problems are appropriate but complex. People must educate themselves to be responsible and self-regulated. Self-regulation as an individual learned responsible behavior provides long standing and continuing research opportunities (Carver & Scheier, 2001) (Bandura, Grusec, & Menlove, 1967). The relatively new status of corporations as responsible citizens continues to be refined in U.S. law (Barley, 2007). One well-known example is the Kefauver-Harris drug amendment, which was a landmark case. The company sold thalidomide as a sleeping aid for pregnant women. The drug caused horrible birth defects and social pressure forced enactment of a law requiring companies to behave as caring individuals would by ensuring the safety of drugs before marketing them (Barley, 2007).

The results of this doctoral study indicate that broadcast corporations, public officials and ordinary citizens may come to see a need to identify responsible parties for social action as a life saving duty. While the area of study regarding social duty and social action is related to this study but beyond the identified scope. Briefly however, the concepts of privity and product liability are introduced and defined here as underpinnings of this current study.

Early in the 20th century judges began to acknowledge that products of the industrial revolution have unintended impacts on individuals. One doctrine in contract law is called privity, which means that when the injured party has not directly contracted with the offending party, then there is no privity and no responsibility is due. For example, if company X makes a dangerous product then sells it to a dealer who then sells to a consumer, the injured consumer cannot sue the dealer who did not make the product, nor can the consumer sue the manufacturer because they are not in contractual privity. In 1916, there was the landmark case of *MacPherson v Buick Motor Company*. The case involved an injured individual who purchased a defective automobile from a dealer. In the final ruling the court found that the concept for general duty of care should apply to all those who might foreseeably be affected by corporation conduct (Cardozo, 1916). In this doctoral study, the product is the warning, the manufacturer is the emergency manager, the dealer is the broadcast station owner, and the consumers are the target population(s) or receivers of a warning.

Other critical cases in this area include the 1932 *Donoghue v Stevenson* case in Britain which is generally credited as setting out general principles where one person would owe another person a social duty of care (Jepson, 2010). Another related case is that of the chemical spill in Minot North Dakota, referred to earlier, involved a class action component -- settled in 2007 for more than seven million dollars -- continues under appeals (Class Action World, 2010). Other

smaller cases remained in litigation until 2010 (KXMCTV, 2009, 2010). The 2010 U.S. Gulf Oil Spill will likely offer newly refined rulings regarding corporate duty and responsibility. These issues of legal responsibility, corporate social duty and the potential for the success of future social action remain unsettled. Results of this study may provide fresh ways of looking at these issues and inspire alternate social, legal or regulatory action.

Fiscal Responsibility/Legal Action

Many researchers point to deregulatory efforts to improve broadcaster profits by allowing multiple station ownerships leading to major conglomeration that began in the 1970s and with changes in the 1980s and 1990s (McChesney, 2004; Quarantelli, 1997; Sorensen, 2005). A Kantian Capitalism perspective on the reasons for and impacts of changes may assist understanding of why some emergency alerts are not relayed.

Social Pressure on Regulators

Researchers indicate that stronger and stronger fiduciary protective legislation (also called deregulation) has been implemented over the last few decades (McChesney, 2004; Quarantelli, 1997; Sorensen, 2005). Much of the change can be seen in larger and larger broadcast corporations which some contend leads to greater automation including automation of broadcast warnings. Some failures have occurred because a station was part of an automated group and the station receiving a warning had no staff available to override the automated programming. In the often quoted case of the chemical spill in North Dakota, one person died (Democracy Now.org, 2007; Klinenberg, 2007). After Hurricane Isabel, the Virginia Governor's study noted that specific communications from the state office to disaster survivors remained undelivered because most of the warnings applied to specific communities in the state and did not apply to all of the many stations in the automated conglomerate (VA, 2003). Organized

broadcasters have successfully lobbied that growth was essential to survival as rising costs made smaller broadcast stations inefficient (NAB staff, 2004). Fiscally protective arguments continue and include the need for stations to control their airtime and to be able to honor contracts for valuable paid time. Contracts and contract law impact the fiscal reliability. One aspect of contract law demands that once written and signed, there are penalties, usually financial penalties, for breaking contracts.

The FCC deregulation of the last three decades occurred both because of and in spite of several high visibility events that generated public outcry and demand to “improve” disaster communication. Yet it would seem logical that larger automated stations, with larger audiences, could provide increased efficiency. This research reveals additional explanations for the occasional failure of warning message relay and the slow decline in warning efficiency over the last 30 years.

Summary

This literature review presented a critical examination of theories with which to frame the analysis and conclusion of this study. Broadcasters appear to have successfully lobbied for Kantian Capitalistic changes, which include deregulation with strong, ethical intentions, but there may be some other unintended phenomena that have impacted the nation’s warning system.

Using the framework as identified in this literature review, this study will examine the following research question: Why do broadcast stations, performing under current broadcast regulations, sometimes fail to relay/rebroadcast emergency warning messages?

CHAPTER THREE

METHODS

This chapter has two sections. First, there is an explanation of the decision to use a multifaceted qualitative approach to answer the questions. The second section titled “Qualitative Interviews” provides details on the qualitative method to be used to answer the question, “Why do broadcast stations, performing under current broadcast regulations, sometimes fail to relay/rebroadcast emergency warning messages?” This section outlines the design of the qualitative interviews intended to solicit rich information regarding the participants’ reasons, and the thinking about those reasons, for relay and non-relay of messages.

Quantitative Versus Qualitative Research

In the past, researchers have vigorously debated the pros and cons of qualitative versus quantitative styles of research (Creswell, 1994, 1998; Lindlof & Taylor, 2002). This researcher began the doctoral studies assuming the use of quantitative methods and was originally skeptical of any other method for research. During the coursework at the Edward R. Murrow College of Communication, a short study accomplished using qualitative methods provided introduction to the potential depth and richness of qualitative inquiry. Since then, other professors, fellow students and my committee chair encouraged keeping an open mind and starting with the research questions, and letting the questions guide the type of methods. Some social scientists (Lincoln & Guba, 1985; Schwandt, 1989) consider qualitative and quantitative approaches to be mutually exclusive, but others (Patton, 2002) encourage a combination of approaches derived from the problem at hand. Most contemporary researchers now acknowledge that each style has strength in different situations and that the type of question dictates a best method approach.

Indeed, some note that combining methods may be the new standard for research because combining techniques allows researchers to be more flexible and complete in their investigative and evaluative techniques (Onwuegbuzie & Leech, 2007).

Quantitative Approach

Quantitative research begins with theory to be proved or disproved and assumes a controlled environment, preferably laboratory conditions, where variables can be tested and compared (Creswell, 1994; Tan, 1985). It is objective because the researcher withholds personal judgment. The quantitative researcher, by design, is independent or outside of the research processes.

According to some (Creswell, 1998; A. C. Strauss, J., 1990), quantitative researchers have an ethic philosophy of the role of the researcher as a nonjudgmental outsider—recording the facts and having no impact on the “subjects” or the results. A quantitative researcher must remain unbiased and use descriptive statistics and complex mathematical procedures to seek significance of results. Indeed, the researcher must know and understand t-test procedures, univariate and multivariate analyses of variance, chi-square test, regression analysis, factor analysis, and modeling and be adept in use of statistical software such as the Statistical Package for the Social Sciences (SPSS). Using these tools, a researcher normally seeks statistical significance. Some researchers (Onwuegbuzie & Leech, 2005, 2007) note other types of significance possible in quantitative inquiry: (a) statistical significance, (b) practical significance, (c) clinical significance, and (d) economic significance. However, they contend that even strong quantitative results can be misleading particularly to those not as familiar with the statistical analysis and technical language of reporting results. Further, they contend that misinterpretations could adversely affect ensuing policies.

Qualitative Approaches

Some questions simply do not lend themselves to statistical analysis. According to Strauss and Corbin (1990), qualitative research includes “any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification” (p. 17). Qualitative researchers seek understanding and possible extrapolation to similar situations. For example, “why” questions are best answered in plain language by living people not statistics. Qualitative study is usually conducted in the field (Marshall & Rossman, 1980), and the researcher is often an insider with interest and involvement in the issue to be studied (Glesne & Peshkin, 1992). Qualitative research may be informed by theory as seen in a literature review; however, there is no intention to prove or disprove a particular theory, rather qualitative research can build on existing theory or potentially explore and reveal other possible theories. For qualitative studies, theoretical perspectives must guide the *analysis* of the research, and the results may suggest new or refine existing theory (Creswell, 1998). Also, these studies tend to be written in ways that translate information and meaning from the field participants and informants so that it can be readily understood by almost any researcher and perhaps even by lay audiences. It sets out to capture “the thick, rich, lived experiences “of subjects (Denzin, 1978; Denzin & Lincoln, 2000; Lincoln & Guba, 1985). There are five major traditions in qualitative study: biography, case study, ethnography, grounded theory and phenomenology (Creswell, 1998).

Informed by Creswell (1998) and Bowen (2005), a decision was made that the question of this study is most appropriately addressed using grounded theory. In the classic text *Discovery of Grounded Theory*, Glaser and Strauss (1967) explain that the main goal of qualitative research is to generate theory, not just describe or test a prior theory. Such theories are not “a perfected product” but rather are “everdeveloping” (B. G. Glaser & Strauss, 1967, p. 32). They describe a

grounded theory as one that is inductively derived from the study of the phenomenon it represents. That is, it is discovered, developed and provisionally verified through systematic data collection and analysis of data pertaining to that phenomenon” (B. G. Glaser & Strauss, 1967). Glaser and Strauss pioneered the grounded theory research technique, which is referred to as the constant comparative method. Over time, the method has been refined and proponents suggest that similar data be grouped and labeled by general concept. Concepts can be categorized and linked in various ways, for example by relationship. By repeating the reviews and reanalyzing the data, it is possible to develop different conditions and dimensions of the data and to finally discover a possible theory to help answer “why” and “how” questions (B.G. Glaser, 1978; B. G. Glaser & Strauss, 1967; A. Strauss & Corbin, 1990). Some argue that these processes lack specificity but allow for creativity in the art and science of grounded theory research (A. Strauss & Corbin, 1998). To compensate for lack of specificity one must increase transparency and trustworthiness in data gathering and data analysis (Boeijs, 2002; McCaslin & Scott, 2003). In grounded theory, there would be more emphasis on justification of a theory of “why” *following* the findings and a lesser emphasis on theory and literature review preceding the findings. Padgett (2004) provides in depth guidance on grounded theory and includes discussion of mixed methods in dissertation study and evaluation research which will inform this study.

In general, the qualitative researcher is interested in heightening awareness and creating dialogue regarding an issue or a problem or meaning within the discussion (Creswell, 1998); (A. Strauss & Corbin, 1990). The quantitative researcher may often be able to generalize to a larger population. However, in qualitative study, social meanings and how social behaviors impact outcomes may provide conceptual knowledge that also can be generalized to a larger population (Shapiro, 2006). Conceptual knowledge can enable generalizability about communications

across a wider range of persons, setting, times and messages that may be beyond the surface results. There is a higher burden for determining generalizability of findings in qualitative research and the results must be examined in the light of the complexity of the topic.

By definition, qualitative inquiry attempts to make sense of social or human problems in a complex, holistic picture. This inquiry can best be viewed through the lens of grounded theory. In general, theories help a researcher be more consistent when viewing facts than by simply using common sense. A theory can point to alternate, sometimes controversial ways of viewing the issue to be studied. A researcher collects the data, in a natural setting, from detailed transcripts of interviews from participants and key informants (Wimmer & Dominick, 1997). Grounded theory helps a researcher to be more consistent in analysis of existing facts than the use of simple common sense. Qualitative grounded theory is valuable in that it “illuminates the meanings people attach to their words and actions” (Wolcott, 1995). For this study, it will be useful to discover and analyze the lived experiences of individuals who use the warning system on a regular basis, (Lindlof & Taylor, 2002).

A grounded theory qualitative approach is appropriate for this study because there has been little previous research on why some warning messages remain unrelayed from encoders (emergency specialists) to decoders (the general public at risk) and on the general ability (in terms of efficiency) of emergency specialists to communicate to the public. By employing traditional grounded theory analytical techniques of analytic coding and category creation using a conditional relationship guide and a reflective coding matrix, it may be possible to better understand this problem. As mentioned earlier, the major goal of this study is to understand what appears to be a deficiency in the research on warnings and to provide some insight into the decline of efficiency or why some warnings are not always relayed to the public. This insight

may also clarify confusion in the literature about use of the broadcast media to communicate to the public.

Conceptual knowledge can enable generalizability about communications across a wider range of persons, setting, times and messages that may be beyond the surface results. There is a higher burden for determining generalizability of findings in qualitative research and the results must be examined in the light of the complexity of the topic and the vigor of the method and analysis of the data. Social meanings and how social behaviors impact outcomes may provide conceptual knowledge that can be generalizable (McCormick, 1997).

Suitability of Qualitative Approaches for This Research

A qualitative researcher often takes a critical position in analyzing the resultant data (Miles & Huberman, 1994). The topic of disaster warnings and the discovery of reasons why some warnings are not relayed is worthy of qualitative critical review. Qualitative research, in particular grounded theory, is best suited to achieve the goal of this study, which is to discover *why* some warnings are not relayed.

This investigation about emergency warnings is best conducted with participants in the field, which also suggests a qualitative interview approach. This researcher's interaction with interviewees may have an impact on them and on interpretation of the results. This weakness would be overcome by openness and transparency in the interview process along with formal member-checking to verify accuracy of the interview results. Padgett (1998) suggests additional strategies for improved vigor during the inquiry process. Prolonged engagement is one strategy and the participants in this study were encouraged to continue to talk until they had no more to say on the subject. Padgett also recommends peer debriefing and support which may be accomplished in consultation with key informants. Key informants are not actual participants,

but informants who can add insight and depth to the data. Trustworthiness and triangulation are two other strategies, further discussed below.

In this study, in order to answer the research questions of “why” and “how” judgments will be required, insider information may be essential and therefore qualitative methods are most appropriate (Creswell, 1994). Qualitative study requires the research to be immersed in the environment of the participant with the researcher—who has background in the problem area—an “insider.” The intention of the proposed study is to meet those qualitative criteria.

The research question is: Why do broadcast stations, performing under current broadcast regulations, sometimes fail to relay/rebroadcast emergency warning messages?

This question provided opportunity for using a qualitative approach, yet did not rule out accessing supportive quantitative data if needed for verification, cross-referencing or triangulation. Qualitative study, usually done in context with participants in the field, offers potential results expressed in verbal terms that are highly descriptive. This researcher used the results from interviews, described below, to capture “the thick and rich lived experiences” of subjects. Qualitative research methods, including in-depth interviews used here, are an integral part of this study and provided the opportunity for a new understanding of a particularly complex societal problem. In the analysis section (Chapter 4) the reporting of the detailed lived experiences of participants was supported by other research documents and informants which helped confirm the participant reports. We can see from those results a more holistic picture of the issue of public warnings. After the qualitative data were collected through interviews, this researcher then explored other data sources to help provide explanations of the themes that emerged. Qualitative research maintains an assumption of a social construction of reality where

one looks to participants to help derive meaning and suggest clarity of understanding (P. L. Berger & Luckman, 1966).

Positionality

Qualitative researchers acknowledge that their data analyses cannot be unbiased (Adler, 1987). This researcher is deeply concerned about the topic of disaster warnings and has 19 years of involvement in emergency communications, as a full-time employee of the U.S. Army Corps of Engineers supporting the communication efforts of flood fighters. These years of service were followed by 10 years as reservist and emergency communication specialist for FEMA where this researcher also taught courses in public information during disasters and continued as a reservist for the Department of Homeland Security for five years before beginning a doctoral program. This researcher continues to serve in the capacity of a reservist.

One potential weakness in this study is that it is likely that this intense involvement with the topic could introduce biases. On the other hand, the years of experience working in the field of emergency communication prior to beginning doctoral studies may also provide depth of understanding. Biases can be addressed with increasing trustworthiness in the research process.

Trustworthiness and Triangulation

To enhance trustworthiness of qualitative research, i.e. credibility and validity, it is common for researchers to use several strategies. Collecting data from participants in the field, in the natural environment of the participant, is one way to improve validity. Cross-referencing also improves validity (Batteson & Ball, 1995; Lecompte & Preissle, 1993). Additionally, a researcher can improve validity with *data triangulation*, defined as the use of multiple sources of data such as multiple documents from different sources (Miles & Huberman, 1994). This researcher accessed multiple sources, including transcripts of regulations, reports, meeting notes

and news clippings to conduct a post analysis to help explain the themes that evolved from the data. The reader will see therefore inclusion of documents related to the emergency warning system and the community of emergency warning specialists. This part of the investigation included archival research with both electronic (Internet-based) and hard-copy documents such as newspapers, minutes and reports of meetings, letters, email and other related documents. The evidence gathered in this qualitative study has been strengthened by collaboration with informants and triangulation with supporting evidence.

Triangulation can be accomplished in several ways. In triangulation, the researcher uses more than one method. Denzin (1978) describes four possible methods of triangulation: (a) data triangulation which involves space, time, and interviewees; (b) investigator triangulation which involves more than one researcher; (c) theory triangulation with more than one method or theory used to interpret the data; and (d) methodological triangulation involving more than one method to gather data.

This study includes (a) interviews, (c) more than one theory to interpret data and (d) two data gathering methods – interviews and document analysis. Both are detailed below. Theory triangulation can add to trustworthiness in a grounded theory study during both data gathering and data analysis. Multiple theories can allow for more perspectives for reviewing the evidence collected. Multiple perspectives offer greater “truth” validity and rigor for a study. In order to further assure rigor and to minimize the strong potential for bias and misperceptions, all data and evidence collected have been analyzed through the lens of the basic communication model of source, channel, and destination as seen earlier in figure 1. In such a basic communication model, the channel could be a broadcast station. Additionally, the data were viewed through the lens of Kantian Capitalism, which is a blend of social responsibility and fiscal responsibility.

Qualitative Interviews

Qualitative interviewing is the primary data collection method used in this study to answer the question “Why do broadcast stations, performing under current broadcast regulations sometimes fail to relay/rebroadcast some emergency warning messages?” The nature of this “why” question required use of grounded theory to deconstruct the discourses in order to expose some reasons for the actions taken or not taken. Indeed, in-depth interviews deconstructed with grounded theory, needed to be integral to this study. Qualitative interviewing, followed by grounded theory analysis, provides a tried and tested process for understanding complex communication problems. These interviews were guided by a semi-structured script as described in the protocol below. The script was approved by the Washington State University IRB.

Interviews provided a “voice” to participants. Voice in qualitative inquiry allows the participants and the researcher to adopt a critical interpretive position (Tierney & Lincoln, 1997). In this research concerning public warnings, the voice of the people directly involved in the use of the system assisted in the understanding of “why” by highlighting the meanings attached to their actions and words. One task in designing any interview that intends to capture “voice” is developing a question protocol. Key concerns include length of interview, types of questions, specific wording of the questions, and sequencing.

There are two basic types of questions: open-ended and closed-ended. Closed-ended questions allow participants to answer “yes or no” or to choose from a list of choices. Open-ended questions allow participants to answer in their own words, their own voice. This study used open-ended questions that encouraged open discussion with the selected participants. However, open-ended questions are not random or unstructured. An interview protocol (interview guide) provides structure, even though the interviews are conducted as conversations.

According to Patton (2002), use of an interview guide provides more structure than a conversational interview and, at the same time maintains, a high degree of flexibility.

Interviewing in this study was also informed by the concept of participant as ally which features a methodological approach to studying deeper motivations and experiences and wherein a researcher encourages honest sharing of feelings or observations regarding the issue being researched (Witz, 2006). By capturing the participants' stories, listening to their words, interpreting their voices, using coding and structured review, themes emerged which assisted this researcher in answering the research question.

Focus

In order to narrow the frame and further focus the archetypical warning message concept, this researcher narrowed the research geographically to the west coast of the United States for reasons already described. To repeat, most people think of time sensitive, urgent, warnings such as tsunamis and fast moving fires when they think of the need for EAS. Hurricanes, storms and floods, which also need warning information, are slower moving and tracked by the weather service. The western states have all of the slow moving events of the other states but are also subject to possible tsunamis and large fast moving fires. This uniqueness, yet commonality of disasters with other states, may contribute to some insights applicable beyond the western coastal states.

Sampling Criteria

Sampling means the use of a subset of an identified population to represent a larger population. For this study the population of concern was the people who are directly involved with relaying dire warnings using the current warning system. While the people who use EAS are likely to best understand its function, there is no indication in the literature that the voices of

these people have been heard. A purposeful and selective sampling frame must be representative of the population and demands the judgment of experts in the subject matter being studied (Patton, 2002; Stuart, 1962). This sampling frame was a cross sectional representation of the population of technicians nation-wide. Drawing on the experience and expertise of this researcher, this study is narrowed to the U.S. west coast and the people using the warning system in western states including Alaska, Washington, Oregon, and California. The west coast is determined to be suitable section of the United States for the following reasons. When people think of the need for warnings, they often think of dire situations and a need for speed. There are many types of potential catastrophic warnings, but tsunamis (earthquake-generated ocean waves) and lahars (volcanic mud flows) have a great urgency for action. Recent technological advances make information more readily available in advance of such events and offer the potential to provide early warnings that could save lives (Little, Birkland, Wallace, & Herabat, 2007). Other parts of the United States are not as prone to these particular events and while they are important as well, limiting this study to the western coastal states helped to further narrow the focus to the high quality, urgent, warning messages. In addition, the literature indicates past specific attempts to change warning system policies in reaction to the 2004 SE Asian tsunamis (Congress, 2006; Senate, 2005). The western coastal states have a history of tsunamis, but also have all the other natural disasters found in the rest of the United States. These others include flooding, the most common natural disaster (Bowman, 2008), fires, occasional tornadoes, and winter storms that can generate hurricane wind levels. This commonality of disasters, in addition to the tsunami potential may contribute to some generalizability of results beyond the western coastal states.

This researcher used Web based directories to assist in selection of participants for this dissertation project. Using information gathered on the Web, as contrast to personal contacts,

increased confidentiality. In September of 2009, according to the Web directory named *100000 Watts*, there are 1,820 digital TV stations, 11,079 FM radio, 5,103 AM radio and 4,361 low power FM and TV stations listed in their directory. There are 2700 broadcast television stations and approximately 10,000 commercial radio stations and 2,500 non commercial radio stations in the United States (100000 watts staff, 2009). At each of those stations, there can be technicians involved in the use of the EAS warning system. A technician is defined as one who has direct or indirect responsibility for the rebroadcast of messages that are sent from federal, state or local emergency managers who have expectation of relay to the public. This pool of technicians served as the broad sampling frame for interviews.

The sampling set in this study is a small set from the larger population of warning system technicians on the west coast. This selection of technicians was a judgmental or purposive sub-sample of those possible to measure based on the following criteria:

To be part of this quality sample of participants, each individual had the following characteristics.

1. Occupied a role in the rebroadcast of warning messages using EAS equipment,
2. Was representative of a sector of the Western Coastal states (Washington, Oregon, California),
3. Represented a different technical tier of the broadcast warning system, e.g. Hands-on technician, system planner, decision maker, public service department manager, system owner, emergency manager,
4. Had at least five years of experience or familiarity with the EAS broadcast warning system,
5. Was not in the same organization as any other participant (to assure confidentiality),

6. Had access to a private, comfortable, space of their choice for an in-depth telephone interview.

Reliance on criteria is a common sampling method strategy employed when there is a finite number of people who have expertise in the area being studied (Cochran, 1977; Lohr, 1999).

This researcher attempted to reveal reasons and meanings based in concepts and themes expressed by specific participants. Participants were contacted in each of six cross-sectional categories as outlined in Table 3, which shows the types of information anticipated for each category of participants.

Organizations with Web presence posted contact information for potential participants involved with EAS. For this project, the most useful organizations were the National Association of Broadcasters (NAB), The Society for Broadcast Engineers (SBE) and The Partnership for Public Warnings (PPW). The final number of interviews (13) was determined by the criteria and categories as outlined above (A. Strauss & Corbin, 1998). The issue of sample size can be examined from a few perspectives. Quality versus quantity is one perspective and in qualitative research, the size of the sample is less important than the quality of the sample (Douglas, 2003; Onwuegbuzie, 2003; Thompson, 2004). If only a few participants answer the questions in depth then a small sample may provide sufficiency. This researcher expected that one participant in each category as described in Table 3 would answer the questions and provide sufficiency for data analysis to uncover meaning and structures that the selected participants used for sense-making in the environment of emergency warnings.

Table 3.

Participant Categories

Participant categories	Number interviewed	Anticipated data
PC1-Hands on technician	2	Background on EAS equipment and use. Detailed experience with relay and non-relay of messages
PC2-System planner	1	Background on potential for system use in relay or non-relay of messages. Perceptions of relationships between technicians and policy makers
PC3-Decision maker	1	Role in system installation and use. Perspectives on challenges and opportunities
PC4-Public service department manager	1	Understanding of broadcaster objectives/missions, Possible information on statistics of emergency messages relayed or not relayed
PC5-System owner	1	Overview of emergency message use and importance to the broadcaster station
PC6-Emergency manager (message sender)	7	Understanding of message selection and initiation of the relay process

However, initial data analysis of the first few interviews indicated a need to understand potential differences in observations from large metropolitan emergency managers in contrast to small rural area managers. Additional participants were sought based on the refined criteria (representing large and small population subsets).

According to Tarnai and Paxson (2009), there are challenges to conducting telephone interviews that can be addressed with planning (as part of the selection criteria) and open conversation. For example, it is important to establish that the participants have privacy for their interview so that they may feel free to speak openly. For this study, participant privacy is addressed under criteria and again in the protocol for the interview.

In many field studies, a researcher maintains field notes in addition to appropriate tape or video recordings. Phone “field” studies provided an additional challenge to the researcher. A level of description of the physical environment was accomplished with questions to the participant, which were tape recorded for this study. This researcher noted observations about tone of voice, pauses, timing of replies and made any other appropriate comments in hand-written notes accomplished during the taped interviews and during replay of the recordings.

The participants were selected from a sampling frame of those maintained or recommended by professional organizations. For example, the SBE and the NAB have websites for chapters in the selected states, which provided names of organizational officers and members. The researcher also contacted, by phone or email, individuals known from personal experience who provided additional suggestions. From that list a selection was made that met all of the established criteria.

Commonly, interviewees are assured of confidentiality in research projects. However, it is possible that the people involved in emergency warnings, who might participate in this study,

may know one another. Confidentiality was carefully protected by using pseudonyms, verbally and in writing and by adhering to the proposed criteria for sample selection. This sampling process initially generated more than one person per category that met the criteria. The next level of process was to contact potential participants in advance to discuss their ability and availability to participate. This process was repeated until at least one person was identified for each of the categories listed in the criteria and in Table 3 participant categories. Each one was re-contacted by phone and scheduled for an appointment for the interview. After gathering data with the initial participants it became evident that data would be required from rural areas and other participants were added to achieve informational sufficiency. The confidential interviews were conducted from the researcher's home office following approval of the study by the doctoral committee and Washington State University's IRB. The semi-structured interviews were conducted with the participants situated in a comfortable, private and familiar setting within their selected spaces (Denzin & Lincoln, 2000).

Protocols

The interviews were guided by protocols found below. Interviewees were audio-recorded with permission, and hand written notes were taken at the same time. Notes contain a brief synopsis of the conversation and also, clearly separated reflective observations derived from the verbal description of surroundings as articulated by the participants and the tone of voice, pauses or anything else that might contribute to deeper understanding. The purpose of the synopsis was as backup in the event of any failure in the technology of the recording, which did occur once. During one of the longer interviews, the researcher neglected to turn over a two-sided tape at the appropriate time and lost several minutes of taped conversation. The transcription indicated

where notes substituted for the audio and later the interviewee reviewed and approved the transcript with no changes.

The intention of the researcher notes in the reflective journal section was to add credibility to the process by recording researcher observations, and also any thoughts or opinions that may arise during the course of the interviews (Ortlipp, 2008). By making researcher thoughts and feelings visible in the notes it is possible to acknowledge how personal experiences are entwined with the research and thus create a high level of transparency. Pseudonyms were used in the written notes sections to protect confidentiality, and the tape recordings are secured safely in a locked drawer of the researcher's home office where 6 months after completion of the study they will be destroyed. Each interview began with an introduction, a request for permission to record, and warm-up questions designed to achieve comfort and rapport. Every interview concluded with a prompt for more information or final thoughts. The interviews lasted between 25 minutes and one hour, but no limits were placed on the time participants could continue to talk. The recordings were transcribed after the interviews using a transcriber machine. This researcher preferred the personal opportunity to process and reprocess the data, which allowed additional qualitative observations of participant tone or timing. All such observations were added to the hand-written reflective journal.

Member-Checking

Following the transcription of the interviews, a draft was emailed to each participant for member-checking. Member-checking is a technique often used in qualitative research to establish validity in data collection (Creswell, 1998; Lincoln & Guba, 1985). The data for this study are the interview texts, which were tested by directly requesting that the participants review and confirm their own words. This was done initially informally, during the course of the

interview with follow up questions as needed, and then formally, when each participant was asked to review the transcribed notes of the interview. All responses to the member-checking were added to the data and any personal notes about participant response were noted in the reflective journal.

Measurement

The purpose of the protocol was to elicit responses that capture the “thick and rich lived experiences of technicians and their interactions with emergency warning systems. The interviewer used the prompts as needed in order to capture a substantial narrative from respondents. The protocol for the interviews was as follows.

1. Hello. Is this still a good time for us to talk?
2. Are you in a comfortable space where you can talk freely?
3. Can you look around and describe your space for me?
4. Tell me a little about yourself. Thank you.
5. Could you please tell me how the warning system works at your (work) station (or work place)?
6. Why do you think that some warnings are rebroadcast and some are not?
7. Do you think the system is working appropriately?
8. Are there any changes you might suggest?
9. Who makes the decision to relay or not to relay messages received through the emergency warning system?
10. How does that person arrive at the decision to relay or not to relay a message?
11. What are the criteria used to make the decision?
12. How does (each criteria) function in the decision-making process?

If there are no criteria: What is considered when deciding if a message should be relayed?

13. What human factors are considered?

14. What economic factors are considered?

15. How does the size of the potentially impacted population affect the decision?

16. How does the number of advertisers in the potentially impacted area affect your decision?

17. Do you have anything else you would like to add?

18. Anything else?

Interpretation

Capturing the stories and listening to their words was followed by interpretation. According to Strauss and Corbin (1990), it is important to recognize that the analysis is an interaction between the researcher and the data. There are several potentially successful techniques used by the grounded theory researcher to tease out maximum efficacy in a study. This researcher first used an open coding technique of reviewing each transcript line by line for concepts. Next was a review of the concepts using reflective coding traditionally called axial coding to narrow down the many concepts to those related specifically to the question (A. Strauss & Corbin, 1990, 1998). Selective coding and a traditional constant comparison process further grouped and narrowed the concepts to a few selected themes. Additional to this traditional process using the written transcriptions, this researcher used the collected audio tape recordings and added an additional step of coding one time from the actual audio, looking for any subtle tone changes that might imply alternate codes or meanings. This “audio coding” was added to the reflective coding matrix as suggested by Scott (2004). By developing a conditional relationship guide, this researcher was able to move beyond the intuitive level of acting like an

investigative reporter who asks the questions what, when, where, why, how and with what result (A. Strauss & Corbin, 1998). The conditional relationship guide was developed by this researcher following the architecture of the Wilson Scott guide (Scott, 2004; Wilson Scott & Howell, 2008) for creating a systematic process of analyzing qualitative data. In addition, the data were processed through a reflective coding matrix that was modeled after a reflective coding matrix by McCray (2004) to increase the opportunity for achieving meaningful results in this “naturalistic inquiry” (Lincoln & Guba, 1985).

Analysis Assumptions and Criteria

A basic assumption of this researcher was that if trained, professional emergency management specialists determine a message is important, and they use identified procedures for forwarding warning messages, those messages are important and should be relayed to the broadcast public. Another assumption was that not everyone will act appropriately, or even at all, after receiving a warning. However, that is an issue of effectiveness, which was not addressed by this study. The focus for this study was efficiency -- was the message actually relayed? In the cases where a message was not relayed, people have no choice whether to take an action or not. The last assumption, based on other research, is that even with plentiful newer technology most people own radios or televisions and look first and sometimes exclusively to broadcasters for information (Perez-Lugo, 2004). In 2002, the California Office of Emergency services called the EAS “the fastest, cheapest, and the most effective means of warning the public-bar none!” (OES CA, 2002, p. 1). The following statistics are from information gathered by PPW (2004, pp. 21-22) and published on the Web under the heading *Where Americans turn in a crisis* (see figure 4).

108,620,000 TVs	x	2.7 people in a home	x	98.2% of the U.S.	=	288 million Americans w/one or more TVs
108,620,000 radios	x	2.7	x	98.5%	=	289 million Americans w/one or more radios

Figure 4. Percentage of Americans owning radios or televisions—where Americans turn in a crisis.

The regular test messages for EAS direct people to turn to radio or television and most people own both radios and televisions. Research surveys indicate that radio and television are the sources people turn to when seeking emergency information.

Harris Interactive, a worldwide market research and consulting firm, reports that “adults in the U.S. referred to the television (78%) and the radio (15%) as their primary source of information after the terrorist attacks on the World Trade Center and the Pentagon. A survey conducted by TVB on consumer media habits and perceptions found that broadcast television is cited by more adults as their primary news source than other mediums. Broadcast TV was named by 43.6%, cable TV by 28%, newspapers by 12.1%, radio by 9.2%, public TV by 3.9%, and the Internet by 3.2%” (Partnership for Public Warning, 2004, p. 21).

With these statistics in mind, the critical criterion for assessing the system becomes efficiency of communicating potentially lifesaving warning messages to the public, via television and radio, with a view to assuring equality and justice (by reaching the homes of more than 98% of the American public). In assessing the study results, the more efficient the relay of the warning the greater the possibility there is an equal opportunity to receive warnings and the greater the possibility that justice is served. For example, if all stations in a given geographical

area successfully relay a tsunami warning, there is a greater the possibility that more people will actually receive that warning (increased efficiency) and thus a greater the possibility that they can choose an action or not (effectiveness). If the warnings are broadly available via multiple broadcast stations it is less likely that any injustice such as racial, sexual, handicapped or other types of discrimination can systematically occur.

Grounding the efficiency analysis in theory also assists in minimizing bias and improving replicability by another researcher. I examined the data sets from the perspectives of the basic communication model and Kantian Capitalism and also was guided and re-guided by the themes that emerged from the interviews.

Urgent public warnings are intended to save lives and protect property. There are describable reasons some warning messages are not relayed. This study attempted to reveal some of those reasons by using the basic communication model and Kantian Capitalism as viewing lenses. These selected lenses served appropriately for providing perspectives to assist in the analysis of the gathered evidence.

Summary

This chapter outlined a combination of methods used to answer the research question. The first stage of the investigation involved a set of qualitative interviews analyzed using grounded theory with data organized with a reflective coding matrix and a conditional relationship guide designed to discover why some broadcast stations failed to relay/rebroadcast some emergency warning messages. The second phase was an analysis of documents suggested by participant and informant responses as well as those indicated by the themes emerged during the qualitative analysis. A basic communication model plus Kantian Capitalism theory individually and combined provided strong theoretical framing to assist in examining the

transcripts and the identified supporting documents. This researcher was able to develop narrative descriptions to provide sense-making and to help describe why some warning messages remain unrelayed. Additionally the data point to potential solutions to the occasional failure of the broadcast system to relay warning messages and suggest ways to generally improve efficiency of warnings in the United States.

CHAPTER FOUR

ANALYSIS

This chapter provides a description of the preliminary coding, grouping and systematic re-grouping of coded data using a conditional relationship guide and a reflective coding matrix to reveal themes. It then incorporates selections of participant data from the transcripts, which support the themes, and additional document evidence which supports participant observations and facts. A summary closes this chapter.

Coding and Analysis Process

Transcripts of all interviews were sent back to participants for member-checking. All participants were given the option that after two weeks a “no reply” would mean the transcript was acceptable as presented. A reminder request was sent after 10 days. There were no corrections of fact and no indications of incorrect tone or inadequacy of capturing the intention of the answers in any of the checked transcriptions. Five of the 13 participants elected to not provide comments and it was assumed that the transcriptions were acceptable as presented.

A line-by-line review of the 212 pages of transcription, revealed hundreds of key concepts that had relationship to the general topic of emergency communications. In general, the anticipated results were achieved in each category. These data were marked and open coded using color highlighting and manual sorting. However, some data did not directly relate to answering the research question, “Why do broadcast stations performing under current broadcast regulations sometimes fail to relay/rebroadcast emergency warning messages?” A structured review of those concepts showed that many of them related to effectiveness. Ideas related to

effectiveness may be useful at another time, but are not appropriate to this study of efficiency. Those concepts were discarded.

At this point the interviews were sorted into participant categories PC1 through PC6 and concepts were gathered into participant categories. Subsequent review confirmed that each participant provided anticipated basic results. Two PC1s -- hands on technicians provided background in EAS equipment and use with essential insight into the programming of the EAS boxes. That experience clarified some of the relay and non-relay of messages. The PC2 system planner highlighted the potential for system use in relay or non-relay of messages and offered perceptions on the somewhat dysfunctional relationships between technicians and policy makers. The individual planner who participated in this study also specialized in FCC compliance matters. The PC3 decision maker clarified system installation and use with a big-picture perspective on challenges and opportunities. The PC4 was not actually a public service department manager. This title no longer exists in the broadcaster system, and the people in community relations that were contacted declined to participate and directed me to the EAS technician at the station. However, discussion with those who elected to not participate provided enough information to find a contractor who served the public service role for a group of stations in one state and in an area that crossed state borders. PC4 provided understanding of broadcaster missions and objectives, but declined to provide statistical information on numbers of emergency messages relayed or not. PC5 a system owner for a group of communication businesses that included broadcast and print offered his opinions and understanding of emergency message use and importance to the broadcaster station. In order to develop sufficiency in the multiple arenas of the Emergency Manager (EM) a total of seven EMs or PC6s participated providing understanding of message selection and initiation of EAS message relay to the public at risk.

The interview protocol, including the warm-up questions, revealed initial themes but not all data were useful. For example, the warm up question asking participants to tell about themselves elicited the theme that the selected participants had many years of service working with EAS and the earlier EBS. While that is useful information, which improves validity of the data, it does not constitute a theme related to the research question. The next process of axial coding helped make connections, not by statistical reasoning such as counting the number of participants who have a similar concept, but by interpretation. Initial interpretations, which are contextual and somewhat intuitive, were achieved using selective coding to reveal facts and patterns. There were two glaring and dominant facts that directly answered the RQ.

1. Some warnings are not relayed because the FCC does not require warnings to be relayed, except for ones activated by the president of the United States. No president of the United States has ever used the EAS. Consequently, all warnings relayed by broadcasters are voluntary.
2. Voluntary warnings are often not relayed because there is no training and no suggested rules (criteria) for relay.

These facts were confirmable using regulatory document review found at the open governmental Web site Electronic Code of Federal Regulations as well as the FCC Website (FCC, 2009a, 2010c). These facts helped identify more specific reasons broadcaster personnel do not voluntarily relay warnings, through sense-making and further analysis. Following the factual confirmation, the next step was to create a conditional relationship guide, using the facts as anchor. By placing concepts into these relational categories, related themes began to appear from the concepts in the complex remaining data. The categories of what, when, where, why, how and consequence can be seen in Table 4.

Table 4.

Conditional Relationship Guide

Category	What	When	Where	Why	How	Consequence
EAS The EAS “boxes” are a technical part (part 1 of 2 parts of the warning system)	EAS box programmed to relay all EM activated warnings	Situation occurs, EM activates warning box	Initiated at EM goes to broadcast station owner to “box” to PP1 and out on airwaves	Boxes can be programmed immediate automatic (voluntary but displaces commercials or programs)	Broadcast station box relays warning to PP1 and out on airwaves	Efficient. If people hear/see warning they have option to act or not (effectiveness possible)
EAS The people performance (part 2 of 2 parts)	EAS box programmed for people to make individual or group voluntary decisions	Situation occurs, EM activates warning box	Initiated at EM goes to broadcast station owner	Decision is required to activate box to go to PP1 or “other.” No decision is a decision for “other” – all “other” is cost-driven. No training for decision making	Broadcast station box will relay or not relay warning.	Efficient and Inefficient. If there is relay and if people hear/see there is option to act or not (effectiveness possible). If no relay, no choice is available to act or not (effectiveness not possible)
EAS relay failure for any reason	If no relay and people or property damage occurs	Situation occurs, EM activates warning box	Initiated at EM, fails to go to broadcast station owner, to “box,” PP1, phone lines, daisy chains	Technical issues. No decision, negative decision, uninformed decision – all are default for “other”	Silence – no warning relayed	Inefficient . No choice (effectiveness not possible)
Nationwide (not just federal) plan mandatory or voluntary EAS plus multiple, alternative technologies	Multiple systems	Situation occurs, EM activates multiple systems which can target large or small geographic areas or populations	Initiated at EM, goes to broadcast owner, “box” (all of above will still apply) to PP1 NOAA, phone, cell phone, computer, etc. some auto-activate after EM action	Technology still evolving, costs to organizations and individuals, broadcasters may be replaced or become a small part of a system	Multiple warning relays, individual acquisition systems, push systems	Efficient. More people likely to hear/see. Option for action or no action (effectiveness possible)

Note. No legal requirement to warn – EAS completely voluntary (except presidential). Adapted from Scott (2004).

This systematic review, using the guide, helped to enable related themes to begin to emerge and to provide initial insight into understanding and interpreting the data.

The relationship guide assisted in clarifying major actions and interactions that result in efficient (or inefficient) warning relays. Broadcaster owners have no legal (or constitutional) obligation to provide warnings when warnings displace paid commercials or programs. EAS technical equipment often simply called the “box” allows voluntary warning but the boxes must be programmed by decision-makers who need training and some criteria to help make decisions. Additionally, participants have indicated that collaboration skills to work with all parties responsible for system efficiency (corporate, federal, state, local) would assist in creating appropriate plans. Data indicates that the warning system is costly, in a variety of ways. Further reflection was needed to reveal the larger themes that might guide new models and new theory building. A reflective coding matrix developed after McCray (2004) facilitated another level of analysis.

The reflective coding process, as expressed in table 5 and combined with the results of the conditional relationship guide, points at larger themes and indicates further sense-making and some answers and more details about “why” some warnings remain unrelayed. The matrix reflects many hours of total immersion in the data. The days of sorting, resorting, cutting papers into pieces, resorting and reconsidering relationships initially resulted in apparent chaos. The forced structure of the matrix pulled together concepts that initially were not evident but in the last analysis are the essence of qualitative research, which demands deep reflection that is grounded in the data.

Table 5.

Reflective Coding Matrix Structure

Core categories	Broadcaster owners have no legal obligation to warn. Warning system is costly. EAS boxes which allow voluntary warning must be programmed by decision makers who may need training, criteria, plans and collaboration skills.				
Processes	Identify responsible parties (RP)	Train/educate RP or designee	Develop criteria	Make decisions	Improve efficient relay of warnings
Properties	Value warnings	Understand warning process	Accept personal responsibility	Work as part of a system/team	Feel pride in saving lives/property
Dimensions	Demands of complex requirements and voluntary programming	Metropolitan complexities (geography and population)	Rural complexities (geography and population)	Complex multiple solutions	Require improved chances of efficiency
Contexts	Federal tests may confuse expectations	State input may or may not be adequate	Local issues may or may not be acknowledged	Planning/ MOUs often absent or insufficient	Difficult to maximize system efficiency
Modes for understanding consequences	Value personal responsibility	Avoid blame	promote and trust the criteria	Value collaboration	Acknowledge self and others in saving lives and property

Adapted from Scott and Howell (2008) and McCray (2004).

Themes are not in ranked order.

Theme 1 -- There is no legal requirement for either the warnings or the process for deciding whether or not to voluntarily relay warnings.

Theme 2 -- Warnings are voluntary because they use valuable airtime sometimes displacing advertising or entertainment.

Theme 3 -- There is no requirement to displace advertising or entertainment at any time.

Theme 4 -- The people who program the boxes to use airtime are not the people responsible for the decision-making.

Theme 5 -- The decision-makers are aware that warnings are voluntary but may not be aware of their responsibility and the societal opportunity to save lives and protect property.

Theme 6 -- When problems in warning efficiency occur, blame is easy but there is no one to blame because there are no requirements.

Theme 7 -- Requirements for training and criteria building would help decision makers and “box” programmers to improve efficiency.

Theme 8 -- A nation-wide plan with guiding criteria could improve the voluntary relay efficiency.

Theme 9 -- Mandatory relay would certainly improve efficiency.

Theme 10 -- Multiple system relay could improve efficiency.

Theme 11 -- Technological processes with pull and push technologies could improve efficiency.

Pull technologies are those that allow individuals to take action to retrieve information. *Push* technologies are those that self-activate, such as NOAA weather radio and subscription alert systems, which come to individual computers, phones, cell phones, iPods, social

networking sites or other technological equipment when activated at another source. An example might be Google Alerts, a computer software program which provides a self-selected option to have the computer search engine Google scan the Internet for key words or key events then automatically notify the selector when those parameters are found.

These 11 themes were re-related and regrouped using the lens of Kantian Capitalism. Next, groupings were expressed with simple color-coding, which helped make visible several key issues, including mandatory vs. voluntary, airtime and other costs, responsibility/decision making, and technology. The **green** group includes themes that ultimately have to do with costs to broadcasters. The **purple** group includes themes of responsibility. The **turquoise** themes have to do with technology, which arguably could also be colored green for having costs, but those costs may not fall to broadcasters.

The color-coded regrouping is as follows.

Theme 1 -- There is no legal requirement for either the warnings or the process for deciding whether or not to voluntarily relay warnings.

Theme 2 -- Warnings are voluntary so they can be scheduled and not use valuable airtime displacing advertising or entertainment.

Theme 3 -- There is no requirement to displace advertising or entertainment at any time.

Theme 7 -- Requirements for training and criteria building would help decision makers and box programmers and improve efficiency.

Theme 8 -- A nation-wide plan with guiding criteria would improve relay efficiency, even if voluntary.

Theme 9 -- Mandatory relay would improve efficiency.

Theme 4 -- The people who program the boxes to use airtime are not the people responsible for the decision-making.

Theme 5 -- The individual decision makers are aware that warnings are voluntary but may not be aware of their responsibility and their societal opportunity to save lives and protect property.

Theme 6 -- When problems in warning efficiency occur, blame might be appropriate but there is no one to blame because there are no requirements.

Theme 10 -- Multiple system relay using new technology (cell phones, iPods, social networks, computers etc) would improve efficiency.

Theme 11 -- Technological processes with pull and push technologies would improve efficiency.

These 11 minor themes then become three major themes: *costs to broadcasters*, *responsibility*, and *technology*. These are shown in Table 6.

Table 6.

Major Themes Derived from Sub-Themes

Costs to broadcasters	Responsibility	Technology
There is no legal requirement for either the warnings or the process for deciding whether or not to voluntarily relay warnings.	The people who program the boxes to use airtime are not the people responsible for the decision-making.	Multiple system relay could improve efficiency.
Warnings are voluntary so they can be scheduled and not use valuable airtime displacing advertising or entertainment.	The decision makers are aware that warnings are voluntary but may not be aware of their social responsibility and the societal opportunity to save lives and protect property.	Technological processes with pull and push technologies could improve efficiency.
There is no requirement to displace advertising or entertainment at any time.	When problems in warning efficiency occur, there is no one to blame because there are no requirements.	
Requirements for training and criteria building would help decision makers and “box” programmers to improve efficiency.		
A nation-wide plan with guiding criteria could improve the voluntary relay efficiency.		
Mandatory relay would certainly improve efficiency.		
Criteria are essential.		

1. The predominant finding and fact is that the EAS is an inefficient warning system because it is voluntary. The resulting predominant theme is that a mandatory system would provide efficiency but demand expensive, uncontrollable, airtime usage. Criteria would minimize uncontrolled airtime costs.
2. The lack of understanding of the system decreases efficiency and is associated with a lack of responsibility. This lack of understanding refers to training in how to use EAS for saving

lives and protecting property. Informative handbooks are readily available and posted on the Web; however, there is no identified agency, organization, or individual with a defined responsibility or requirement to access the information or any optional training. Training is indicated by participants and documents to be expensive and therefore also voluntary under the regulations. When no one person or group in an organization is trained in the decision-making (regarding when to spend airtime to relay a particular warning, or warning type), the technological and human default is no warning relay. Participants indicate that there is no systematic training for Emergency Managers, broadcasters or the expectant public in the use of EAS.

a. This theme has an implied criteria sub-theme. There are no formal criteria for use of EAS. Before training could begin, criteria need to be established.

3. New technology may be used to provide warning relay that is repetitive/redundant to and/or a replacement for EAS. On September 30, 2010, FEMA approved a new CAP system to help with standardization of electronic relays on many types of electronic devices (Holland, 2010). This third theme has aspects of themes one and two (cost and training) but differs in that equipment and standardization of equipment and software for EAS must be viewed as a separate component from the human behaviors. This concept derived from the data is insightful – EAS has two parts, one is people, the other is equipment. See the conditional relationship guide (Table 4). New technology requires active acquisition of new equipment or services for many publics (broadcasters, EMs, multiple language users, the deaf, blind, or otherwise challenged) and each group will need training for use in new technology. New equipment and services are also expensive. Some is unavailable to some publics. The new

standards of 2010 demand some equipment changes. Other equipment and devices may not yet be invented. However, radio and television are still widely available.

Participant Data

Some of the key concept quotations related to the finding that *warnings are voluntary* follow. They are coded referring to the original order of the transcripts and the participant table as noted in the methods section Table 3. For example, 1PC2 means first participant interviewed and participant category 2, which is system planner.

The one piece of information that seems to generate most reaction from people, both within this study and members of the public with whom this researcher has interacted, is the fact that warnings are voluntary. Media officials take pride in their general volunteer work to include running EAS equipment tests. But many researchers, some practitioners, and members of the public simply did not believe that actual messages are not required to be relayed and sometimes are not relayed. Yet, participants, all EAS insiders, were clear that many warnings remain unrelayed and will continue to be unrelayed. Selected participant comments show this finding and the major themes. More lengthy participant comments can be found in Appendix A.

Theme 1 – System is Voluntary which Minimizes Costs to Broadcasters

11 PC6: Well, I would hope that it [profit motive] wouldn't lead to a decision on whether or not to put out a message, but I could see that it potentially could delay a message because they're in the business to make money. And if their only segment is being tied up, putting out an EAS, they don't think is very important and they could potentially lose a \$1 million spot. I'd say yes, I think there's potential.

1PC2: ...the system is voluntary on the part of the individual broadcast stations.

3PC1: ...all voluntary -- meaning that a broadcast or cable system can choose to either broadcast emergency life-saving information or to pass...

4PC1: As far as local and state messages are concerned, it is 100% voluntary...

8PC6: They get the alert and they choose, to broadcast or not to broadcast it. If they choose not to broadcast, then there's not a hell of a lot we can do about it.

9PC6: It's only mandatory, as you probably know from doing your research, that they own operate and maintain the equipment. But it's not actually mandatory that they do broadcast messages.

However, many EAS messages are relayed. Participants confirm that fact as well.

11PC6: Now some stations-- in fact many stations--have programmed their equipment to automatically interrupt their programming for some event codes,

The last participant comment moves us to the next important theme – responsibility and training for the decisions on programming the codes in the EAS boxes. If warnings are relayed based on how the EAS warning equipment is programmed then someone has the responsibility to program the equipment and one would assume that a process with high standards would define programming procedures. However, that is not the case. The EAS reality is that in many cases no one knows who is responsible for learning how to make the decisions about programming and the use of the EAS equipment.

Theme 2 Responsibility and Training

Participants offered these observations.

2PC4: In no way are there any requirements for training. The FCC did not mandate training for either broadcasters or emergency managers. They left it up to the individual states, individual stations, and individual EAS Committees.

One participant responded to the question regarding understanding the responsibility of relaying warnings with a comment that it is like a movie where the audience sees:

4PC1:... an Army platoon sergeant who dies in a training accident and they wind up training themselves.

4PC1: added: The Society of Broadcast Engineers and other people like myself who were close to this say if you're going to have a national system you have to have training at all levels for emergency managers, broadcasters to an extent, and for the public to understand what they're going to be getting out of this and then you have to make sure that they get it.

9PC6: I understand that the station manager is responsible at the primary stations.

4PC1: There are a lot of cases where the people responsible to put the warnings out never put them out. Or they didn't do it properly.

In the document review, it was revealed that the FCC EAS section 11 (FCC, 2010c) does *not* actually specify who is responsible and a word search fails to find the term station owner or manager. The language in the rules refers to stations and systems, not individuals. Broadcast stations and cable systems and wireless cable systems are responsible for ensuring that EAS Encoders, EAS Decoders and Attention Signal generating and receiving equipment used as part of the EAS are installed. However, section 11.15 refers to individual “operators” who take actions that relate to warnings.

11.15: EAS Operating Handbook. The EAS Operating Handbook states in summary form the actions to be taken by personnel at broadcast stations, cable systems and wireless cable systems, and other participating entities upon receipt of an EAN, an EAT, tests, or State and Local Area alerts. It is issued by the FCC and contains instructions for the

above situations. A copy of the Handbook must be located at normal duty positions or EAS equipment locations when an operator is required to be on duty and be immediately available to staff responsible for authenticating messages and initiating actions. (GPO, 2010), subpart A 11.15.

EAS Handbooks which are to be posted at operator stations (no requirement to read them) are readily available on line at <http://www.fcc.gov/pshs/services/eas/handbooks.html> (FCC, 2010a). The FCC Website also lists numerous rule violations including failure to install equipment and relay warnings and the language of the notices uses the term “station owner” indicating that is who is considered the responsible party (FCC, 2010c).

It seems that another explanation for some failure to relay might reside in the fact that stations and systems are not educating the operators of the equipment but rather just supplying the appropriate duty position with the handbook, but no designated time or requirement to read it. In today’s corporate media conglomerates, many duty stations are no longer staffed at all. It is interesting that these two concepts were of the earliest themes to appear after the systematic review of the coded concept data -- station managers do not make decisions about warnings and there is no systematic training for such decision making for whoever does the programming of the boxes.

Another (perhaps subsequently) prominent theme which is part of the lack of training theme is that there are no agreed upon criteria for relaying warnings. Some of the questions in the protocol directly related to criteria. Those data were first grouped simply as responses but not themes. Only the systematic review as described above, forced criteria to the prominence of a sub-theme under training. Lack of formal criteria provides another insight, which assists in

answering the research question and providing guidance towards theory building. Below are some participant observations regarding criteria that might explain failures to warn.

1PC2: I think it's ultimately a business decision and a number of things factor into that.

For example, on stations that carry certain syndicated talk shows they frequently indicate a high degree of reluctance to interrupt those talk shows for anything from the government other than the direst warnings.

2PC4: In state XXX it's generally -- criteria is pretty much -- if it is one of those stormy afternoons and you're getting five or six or seven or eight EAS activations for weather problems -- we won't carry them.

6PC5: ...and sometimes the criteria to be used is not the kind of criteria that someone who's interested in saving lives would use or an emergency manager would use or law enforcement would use or a fire department.

4PC1: You would really have to go into each station and ask them what the criteria is and you will probably find out that they haven't given it much thought. Or the people that originally were trained to do it aren't there anymore...

9PC6: I don't believe they have any specific criteria to broadcast stations.

The participant data clearly describe the issue that motivated this study. The participants acknowledged and understood that warnings issued by emergency specialists (including NOAA weather) are often not relayed from the broadcasters to the expectant public. The EAS warning system is inefficient and unreliable. The participants also articulated suggested improvements, which might assist in improving efficiency of delivery. Data from the participants suggests that technology has a place in improving the system.

Theme 3 Technology

5PC3: Well, one of the things about alerts is that you should target multiple systems: cell phones, pagers, e-mail, telephones, car radios, AM/FM, all the bands. You should have a multi-layered approach. Instead of just oh, I think we just put it through the radio network. People just may have their cell phone on, not listening to the radio.

8PC6: There's been a lot of talk about folks wanting the DEM to implement reverse 911, which is not a functioning system for us.

1PC2: There's a fundamental distinction to be drawn between "opt in" systems that only reach people who subscribe and systems that try to reach everybody in the target area regardless. Opt-in systems are easier to implement, 'cause they're driven by a database of subscribers.

13PC6: Yes, we see a great need for multilayered warning system. You cannot depend on one system.

These participants focused primarily on effectiveness, yet these data also display the concept that multiple system relay improves efficiency. If one system breaks down for any reason, another system (for example, NOAA weather radios) might still forward the warning message from the EM to the public at risk. Multiple systems, in addition to the EAS boxes, would improve efficiency.

Supporting Documentation

The somewhat incredible primary finding that life and death public service warnings are no longer mandated under FCC regulation required verification in documents outside of the participant data. Fortunately the EAS section 11 regulation is easy to find on-line at the FCC Web site (FCC, 2010c). That simple confirmation of this essential fact was important in this

multi-method study. Analysis of these and other related documents adds strength to other participant observations. Using the lens of Kantian Capitalism which implies that the good-for-people warnings will be relayed, in spite of lack of requirement, indicates that Kantian Capitalism inspired regulations may not be sufficient or appropriate for essential public safety warnings. The facts and behaviors as described by EAS participants in this study prove that Americans should not rely on broadcaster messages.

Changes in the Warning System: Review of the History of the FCC

The decade of the 1930s is often cited as a period of heightened interest in social responsibility. The era of the great depression resulted in new corporate social responsibility and well-known public policy (DiNitto & Cummins, 2006). One such policy was the Communication Act of 1934, which established what we now call the Federal Communications Commission or FCC. In the opening section (SEC. 1. 47 U.S.C. 151), the purpose of the act was stated as follows

For the purpose of regulating interstate and foreign commerce in communication by wire and radio so as to make available, so far as possible, to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex, a rapid, efficient, Nationwide, and world-wide wire and radio communication service with adequate facilities at reasonable charges, for the purpose of the national defense, for the purpose of promoting safety of life and property.

The United States commercial broadcast system was thus originally designed with an acknowledgement of costs to create adequate facilities and a strong public service intention to transmit essential information in keeping with a political philosophy of individual duty to others

in society. This is further reflected in the text of the legislation, which notes in SEC. 202. 47 U.S.C. 202 (a)

It shall be unlawful for any common carrier to make any unjust or unreasonable discrimination in charges, practices, classifications, regulations, facilities, or services for or in connection with like communication service, directly or indirectly, by any means or device, or to make or give any undue or unreasonable preference or advantage to any particular person, class of persons, or locality, or to subject any particular person, class of persons, or locality to any undue or unreasonable prejudice or disadvantage.

In the final bill a stated purpose of the FCC was “to make available, so far as possible, to all the people of the United States a rapid, efficient, nation-wide, and world-wide wire and radio communication service” (Congress, 1934). Political scientists and economists might include emergency warnings as a public service. Traditional government services, such as defense and the maintenance of law and order, are also in this category. However, in our current economic situation of 2010, there is continuing controversy over costs that tend to fall into a dichotomy of libertarian Capitalism or social responsibility political positions.

Capitalistic economic theory tells us that a public service, such as the no-cost emergency warning broadcasts, will *not* successfully be provided by profit-oriented private suppliers. The 1934 FCC regulation acknowledged the issue of financial motivation and set some payments from the general fund for costs of facilities but regarded the “airwaves” as belonging to the public and required that the broadcasters pay fees for licenses in order to use part of those airwaves for constructing profit oriented businesses. The fees included public service. The remainder of airtime could be used to make a profit. This is the often-quoted language: “The Commission, if public convenience, interest, or necessity will be served thereby, subject to the

limitations of this Act, shall grant to any applicant therefore a station license provided for by this Act” (Congress, 1934), § 307 [a]).

As described earlier, prior to 1951, the U.S. government had no mandated method to broadcast warnings to citizens in the event of an emergency (Paglin, 1989). However, radio stations and networks acting in the public interest interrupted normal programming to issue bulletins whenever there was an emergency. In 1951 CONELRAD was mandated by regulation in order to keep stations from becoming military targets and to provide Cold War warnings to the public, implying that the optional ethical behavior of the stations prior to 1951 was insufficient for times of major national crisis (Truman, 1951).

The Emergency Broadcast System (EBS) replaced CONELRAD in August of 1963 and was expanded for peacetime broadcast of emergency messages by state and local officials. As stated in the introduction to this study, EBS was activated more than 20,000 times for local and state warning messages between 1976 and 1996 living up to its name as “The Lifesaving Public Service Program.” It now appears that all such messages were relayed under the *mandatory public service time* required for licensing.

According to an essay by C. H. Sterling, minimization of FCC regulations (also called deregulation) began in the 1970s. That deregulation has impacted public warnings. Redd (1991) noted that changes in the 1980s removed stringent requirements for assessing the public need and documenting public service announcement time. According to Redd,

Prior to deregulation, commercial radio stations (AM and FM) had specific requirements in nonentertainment programming. AM stations were required to devote 8% of their airtime to nonentertainment: public affairs programs, news, religious programs, and PSAs. FM stations were required to devote 6% of operating time to non-entertainment.

Under deregulation, stations are no longer required to provide any fixed amount of minimal time to nonentertainment programming. (Redd, 1991, p. 223)

The type of nonentertainment radio programming that concerns nonprofit and government social agencies is public service announcements (PSAs). With the removal of the nonentertainment requirement, commercial radio stations are no longer legally compelled to air any agency's public service spots not even life saving warnings. In order for social service agencies to obtain public interest airtime, they must depend upon the goodwill and grace of broadcasters (Redd, 1991, p. 223). Also according to Redd, the changes made it "nearly impossible for researchers" to monitor what, if any, public service was provided.

Subsequent case law rulings strengthened the FCC discretion in defining public interest and in determining the requirements and procedures to assure protection of public interest. For example, 1987 legal arguments presented in court during the proceeding *Black Citizens for a Fair Media et al. v. Federal Communications Commission* supported the legal right of the FCC to redefine public service to include paid air time. In other cases, *Columbia Broadcasting System, Inc. v. Democratic National Committee*; *Federal Communications Commission et al. v. Business Executives & Move for Vietnam Peace et al.*; *Post-Newsweek Stations, Capital Area, Inc. v. Business Executives & Move for Vietnam Peace*; *American Broadcasting Companies, Inc., v. Democratic National Committee*, the judge ruled that some fully paid air-time messages that would be considered by some to be covering a public information topic could also be denied, at the discretion of broadcast stations. In the 1973 Supreme Court case

The FCC rejected the Fairness Doctrine challenge and ruled that a broadcaster was not prohibited from having a policy of refusing to accept paid editorial advertisements by individuals and organizations like respondents. The Court of Appeals reversed, holding

that “a flat ban on paid public issue announcements is in violation of the First Amendment, at least when other sorts of paid announcements are accepted,” and remanded the causes to the FCC to develop regulations governing which, and how many, editorial announcements would be aired. Held: Neither the Communications Act nor the First Amendment requires broadcasters to accept paid editorial advertisements.

(“*Columbia Broadcasting v. Democratic Comm.*, 412 U.S. 94 *Columbia Broadcasting System Inc. v Democratic National Committee Certiorari to the United States Court of Appeals for the District of Columbia Circuit No. 71-863.*,” 1973).

As noted earlier, in 1994, the Emergency Alert System replaced the Emergency Broadcast System and was introduced as an advance in technology, which would take over the EBS functions. However, while the EBS included routine delivery of local and State messages, the newer EAS had only the function of providing the president of the United States the opportunity to speak to the public. The local and state messages became voluntary at that time – *after* the FCC rules were changed removing the requirement for public service time. Currently, the FCC’s role includes prescribing rules that establish technical standards for EAS, procedures for EAS participants to follow in the event EAS is activated, and EAS testing protocols. Additionally, the FCC ensures that EAS state and local plans developed by industry conform to the FCC EAS rules and regulations. The FCC continues to implement its EAS responsibilities in an on-going rulemaking proceeding. In its July 12, 2007 Second Report and Order and Further Notice of Proposed Rulemaking issued in EB Docket 04-296, the FCC addressed various aspects of the current EAS and also explored necessary steps to advance the so-called “Next Generation EAS. The Commission reiterated that a reliable wide-reaching public alert and warning system remains essential for continuing public safety and that the EAS network should allow officials at

the national, state and local levels to reach affected citizens in the most effective and efficient manner possible (FCC, 2004). In response to the proposed rule making the NAB quoted a member state association saying that the “highest and best use of an FCC broadcast license is the protection of the lives and property of all who live, work and travel within the range of a radio or television station’s signal.”(NAB, 2010, p. 1)

The FCC recently passed responsibility of the emergency warning system to the Public Safety and Homeland Security Bureau which as of June 15, 2010 describes the role and functions on the EAS Web page thusly.

The Emergency Alert System (EAS) is a national public warning system that requires broadcasters, cable television systems, wireless cable systems, satellite digital audio radio service (SDARS) providers and, direct broadcast satellite (DBS) service providers to provide the communications capability to the President to address the American public during a National emergency. The system also *may* (italics added) be used by state and local authorities to deliver important emergency information such as AMBER alerts and weather information targeted to a specific area. (FCC, 2009a, p. 1)

The FCC, in conjunction with Federal Emergency Management Agency (FEMA) and the National Oceanic and Atmospheric Administration's National Weather Service (NWS), implement EAS at the federal level. The NWS develops emergency weather information to alert the public of imminent dangerous weather conditions The President has sole responsibility for determining when the EAS will be activated at the national level, and has delegated this authority to the director of FEMA. The director of FEMA is responsible for implementation of the national-level activation of EAS, tests, and exercises and overseeing the Integrated Public Alert and Warning System (FEMA, 2010). Some would argue that the term “national” is misleading to

the general public in that the EAS and newer DEAS was officially designed only to enable the President of the United States to be able to speak to people in the United States within 10 minutes. Other warnings have been dropped although awareness regarding missed relays is growing (Moore, 2009). The IPAWS effort intends to coordinate different warning systems and technologies and to create standards that will improve efficiency of EAS by increasing redundancy and access to computers, mobile devices such as cell phones and other popular hand-held electronic devices.

Between 1994, when EAS was first implemented, and today FCC regulations appear to reflect a Kantian Capitalism in that there is great latitude regarding creative profit-making opportunities along with an apparent expectation that decisions that are good for the broadcasters regarding delivery of warnings would also be good for the general public. Additionally there appears to be a lack of acceptance of responsibility for any non-intended consequences of broadcaster behavior, similar to the classic Kantian story relayed earlier. For example, the fact that the FCC continues to require stations to have EAS equipment and to test the warning system at regular intervals in order to prepare for the possibility of a presidential activation of the system, but does not require interrupting profit-making time for unscheduled events. However, the regulators apparently assume that actual life-saving warnings, which up to today have always been issued from the local or state officials, will be relayed and therefore there remains no mandate to relay actual messages. If occasional lack of message delivery results in deaths or property damage that is not a broadcaster problem because the broadcasters are complying with the law. However, continuing congressional, emergency management and special populations pressure (primarily the deaf community) continue to recognize many warnings are not being received by needy populations and that recognition has resulted in a new effort to encourage

more efficient relay of certain state messages. A complex set of guidelines requires state plans, which are to include a methodology for determining which messages issued from a governor of a state might also become mandatory. The language of the process as of June 22, 2010 is “upon approval by the Commission of an applicable state plan providing for delivery of such alerts no sooner than 180 days after adoption of CAP by FEMA” (FCC, 2010b, p. 11.55 (a)). Even though the CAP was approved September 30, 2010, study participants indicated this process is likely to take years to complete. The plans are also to address special needs populations such as the deaf, blind and those who speak other languages and those who may not ever use new technology. While the existence of a process is encouraging, message relay continues to be the discretion of station manager requirements, not according to the needs of the EMs or the public that might receive the messages. The continuing lack of regulatory requirement satisfies Kantian Capitalism with the continuing emphasis on voluntarily selected, mostly sponsored, community service. It appears that technology has changed faster than anticipated and congressional officials are attempting to “treat the symptoms” of the warning communication problems and do not yet understand and are not addressing the underlying problems which are the focus of this study.

Community Service and the National Association of Broadcasters

In the 1990s, the National Association of Broadcasters (NAB) printed reports regarding community service were circulated freely to interested parties and by the mid 2000s, an email newsletter was made available to requesting parties. Public service information reports and statistics are now on the Internet available 24 hours a day to computer users. NAB sends representatives to national EAS workshops. As recent example, Kelly T. Williams, Senior Director for Engineering and Technology Policy from NAB personally attended the June 10, 2010 EAS technology workshop held in WA DC (FCC, 2010d).

NAB also provides annual service to America awards (NABEF, 2010). Examples of community service of the sponsored type include fund raisers for various charities, “on your side” programs that assist people with consumer issues, traffic and daily weather reports and the 2009 digital television transition campaign to educate consumers about the need to purchase conversion boxes, cable service or satellite TV service (National Association of Broadcasters, 2009). All of these examples are sponsored. They are paid for by advertisers who thereby contribute to corporate profits while doing good. They are classic exemplars of Kantian Capitalism.

It could be argued that these examples confirm that stations can clearly provide service to their communities while managing, and perhaps improving, corporate profit. The mandatory EAS component of the regulations singularly requires the regular “tests” of the system to assure that it would function if the president needed it. This component appears to be the remainder of the original “requirement” to communicate with the public for national catastrophic situations—as earlier envisioned during the cold war political eras. Yet ironically, no president has ever used this system. Previous warnings throughout the history of the warning system have been issued by state and primarily by local officials. The many community service efforts of NAB have not yet succeeded in improving the efficiency of the warning system, likely because, as the data indicates they believe news is sufficient and do not understand the need for efficiency or how to accomplish efficiency in EAS. As noted by 9PC6, successful warnings have multiple components and one of those is the “attention getting” as was explained by one participant.

9PC6: Well, we’re all competing for attention. Warning is attention management and a good public warning has a number of different elements to it. It has the alerting piece and also an information piece. Neither one works very well on its own. EAS does a very good

job of alerting. For many, the TV is just running in the background. They may even be in different room than the TV. A station could decide not activate the EAS but to start running the story and is just running in the background trying to compete for that person's attention with crying babies and cooking the dinner or homework or what have you. After the EAS is activated, then the station can provide all the information that you need to know to evacuate or shelter in place or whatever. But it is EAS that will get your attention because it has this awful tone.

The on-going effort to create a mandatory governor activation mechanism may improve efficiency for state level warnings, but most warnings are local and this study indicates that the issues of cost, criteria and training must also be addressed.

Summary

This chapter reviewed the analysis of the collected data for this study. The detailed description of the preliminary coding was followed by the grouping and systematic re-grouping of collected data using a conditional relationship guide as shown in Table 4 and a reflective coding matrix as seen in table 5 to reveal three main themes. 1- Making dire warnings mandatory would improve efficiency. 2- Required training and agreed upon criteria could improve efficiency. 3- New technology with common protocol can improve efficiency for some. Selections from participant transcripts were offered to support the themes. Additional documental evidence was provided to support participant observations and facts.

A multi-tiered analysis of participant data buttressed by document confirmation reveals that the superficial answer to the research question is that broadcasters do not relay some warning messages because they do not have to. There is no legal requirement to relay state and local warnings – the only warnings ever issued. The deeper answers to the question are

embedded in interpretation of the collected data. Using structured, tested methods of a conditional relationship guide and a reflective coding matrix this study reveals that there are two parts to the EAS – the equipment and the people.

Obviously, any piece of equipment can fail and while that does happen this was not a significant finding. Two participants mentioned equipment failure such as phone lines or towers flooded out. That can explain the lack of receipt of a given attempt at relay – but does not specifically address the issue of whether or not the relay was accomplished. The analysis shows that when new equipment arrives at a broadcast station it arrives pre-programmed in ways that may or may not be suitable for local conditions. Without guided action, the equipment runs on default. The “people” (station owners, engineers, reporters) have no formal criteria for programming equipment and no systematic training in either decision-making or equipment usage. The primary defaults for decision-making are that warnings interrupt broadcasts, can be expensive, and are not required. The primary default position for the equipment is to refrain from interrupting regular broadcasts.

Data suggest that participants are involved in creating multi-layered warning systems and in the use of additional and newer equipment to improve warning efficiency. Legislators are involved in a process for creating plans which if implemented could mandate some State level warnings. This is a step toward the right direction, however almost half of all warnings, historically, have been issued at the local level (Partnership for Public Warning, 2004, p. 51). Unfortunately, there is a lack of strong leadership at the national, state, and local government levels and that leadership has been challenged by constitutional issues and the strength of the broadcast corporations in defining a U.S. public warning system that they may not understand.

CHAPTER FIVE

DISCUSSION AND CONCLUSIONS

This chapter includes discussion, conclusions, limitations, and suggestions for future study. Patterns have emerged that come from the words of the participants and supporting documents. These themes and patterns suggest multiple answers to the research question, along with multiple potential solutions to improve efficiency of the current EAS system. The data also point towards new communication models and raise philosophical questions about financing social responsibility in a capitalistic society.

Discussion

The research question was, "Why do broadcast stations, performing under current broadcast regulations, sometimes fail to relay/rebroadcast emergency warning messages?" This research subscribed to an epistemology using critical argument within the qualitative condition of emergence. Qualitative research must be ontologically, epistemologically, and methodologically coherent. By analyzing the observations of some of the people who use the warning system regularly along with multiple types of documents and discourse, this researcher like other qualitative researchers has attempted sense-making. Here I offer some analytical but critical observations that may be used to improve the efficiency of EAS warnings to the public.

The decades of changes in legislation intended to provide broadcasters with greater flexibility have succeeded in modifying the use of public service time so that very little to no time remains available for warnings. Fairchild (1999) argued that the public permanently lost the option for defining public interest with the Telecommunications Act of 1996 noting that "neither the government or the public have any levers of power with which they can influence

broadcasters (p. 559)” or in other words there has been a total removal of public interest regulations. In depth, analysis of the act and amendments clarifies that such changes have had impact on the relay of essential warning messages such as those issued by EAS specialists at the local and state levels. The Basic Communication Model (Shannon & Weaver, 1949) along with a Kantian Capitalism lens helped to focus this study. Legislators and broadcasters may believe the broadcasters are communicating warnings efficiently and doing public service. In fact, broadcast station managers actively publicize the accomplishment of a great deal of community service. However, the participants who actively use EAS are clear that those expectations and behaviors are not translating into efficient public warnings. Without any legal mandate to understand the technical details of the system, the people tasked to activate the system cannot use a moral compass to decide which messages should or could displace paid time for unscheduled and unpaid warnings. Most often, these people were not even part of any decision-making process to determine whether or not to relay warning messages. Therefore Kantian Capitalism, while well intended, has failed to sustain a simple communication model for an efficient warning system in the United States.

Conclusions

New Models and Insights into Warning Communication

The old basic communication model, which describes how most people assume they will receive warnings and other crisis information, appears to be incorrect. The old model of source, channel, and destination is shown as figure 5.

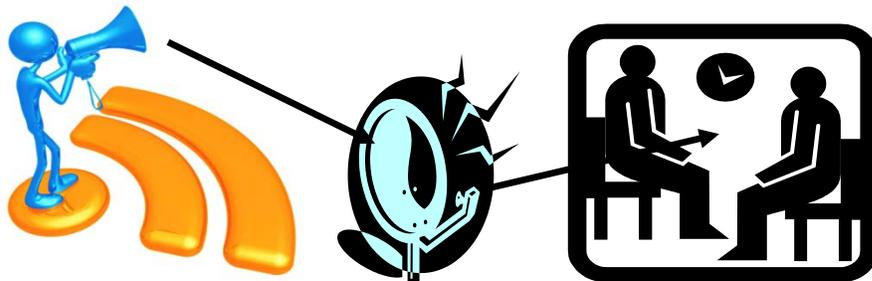


Figure 5. Old model. ¹

Source (Emergency professional) to channel (broadcasters) to destination (people at risk).

Figure 6 depicts the result of this study and is offered as the current model. This model shows source, channel, and no relay to destination.

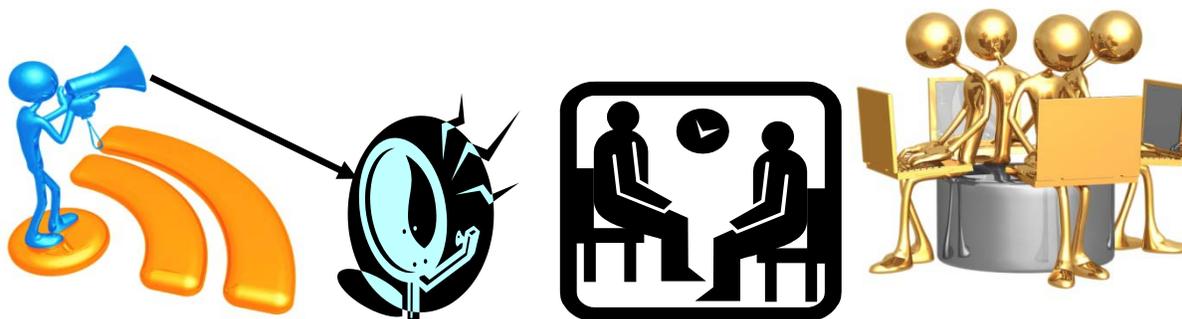


Figure 6. Current model.

Source (Emergency professional) to channel (broadcasters) no relay to destination.

Figure 7 is offered as a potential for the future – a model which might significantly improve efficiency as well as the effectiveness that is so important to disaster manages. This model shows multiple sources sending to multiple channels. The information can be accessed by

¹ Clip art objects for figures 5-8 are from Microsoft open-source.

the “destination” (public audiences) only if an effort is made to access a channel in order to collect information.

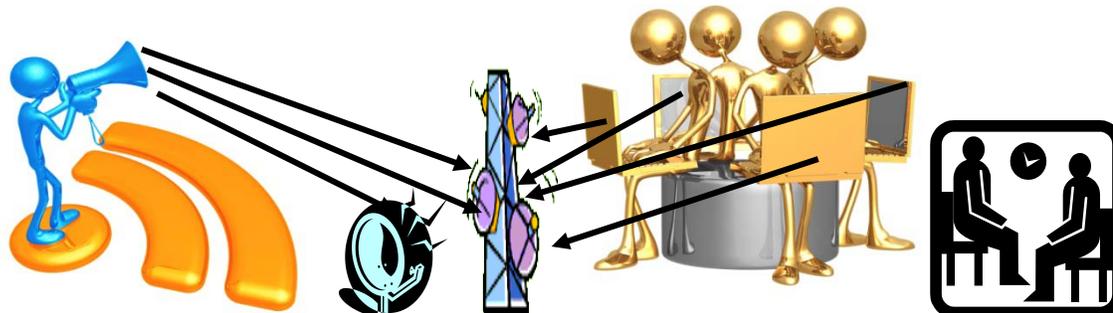


Figure 7. Improved model.

Source (Emergency professionals) to channel (broadcasters) to destination (some broadcasters plus some new technology) to destination (some people at risk who actively access warnings).

Figure 8 depicts a future model where multiple sending sources have the ability to use a variety of channels to both send and receive information, while at the same time multiple audiences have ability to send and receive information. This model is essential for crisis communication where fast moving events demand the ability to provide information to the public and for the public to confirm receipt and communicate needs, ask questions and offer solutions. If most warnings are local, then most warnings will benefit from local solutions.

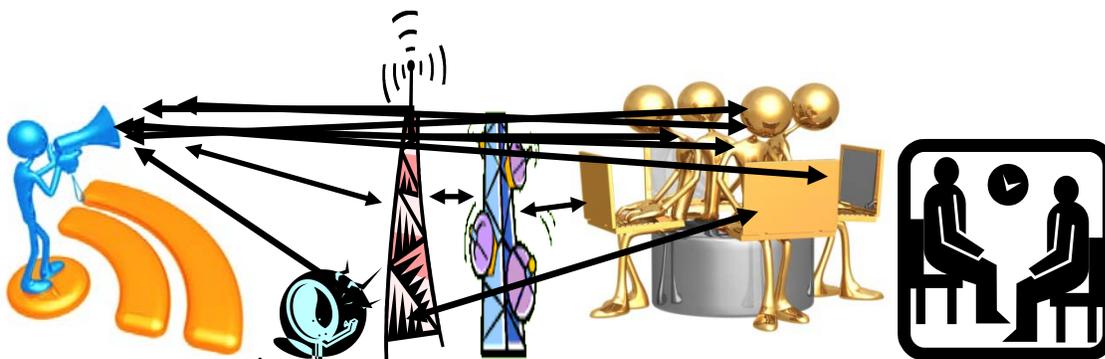


Figure 8. Future model.

Source (emergency professionals) to channel (maximal broadcasters and maximal alternative technology) to destination (maximal people at risk -- but not all -- some using push and pull technology).

One option that might be rediscovered is that which was used in Oklahoma City in May of 1999. As a disaster responder following a tornado response, this researcher had opportunity to informally interview media officials and assess their involvement in relaying warnings for the May 3, 1999 series of tornadoes that had the strongest ever-measured winds of 302 miles per hour. The event destroyed or damaged 11,000 buildings but the death toll was a remarkable 37 (not the potential 11,000 to 22,000). By all accounts, tens of thousands of lives were saved because, in part, Oklahoma City radio and television stations dropped all scheduled broadcasts to provide warnings. Actual recordings of that day, which this researcher listened to, provide documentation that broadcasters literally screamed into the microphones telling people to take cover immediately, even ordering people to turn off the radio or television and take shelter *now*. The warning communication structure that included active media participation in Oklahoma still exists and might be useful in many other parts of the United States. However, the media participation in the structure and use of the mesonet in Oklahoma (a collection of weather instruments) has declined from a peak in the late 1990s and early 2000s when major funding was available from a federal grant (OK First, 2010).

These new communication models may provide a better understanding of the past and present communication chaos associated with disasters. This study clarifies that one major contribution to the chaos in crisis communication, most specifically disaster warnings, is the inability of disaster assistance officials to communicate directly to the people who are in greatest need of the warning information. Theorists may wish to refocus disaster communication studies

with a realization the Kantian Capitalism may have limits. Researchers may find the results of this study give rise to new questions to pursue. The concept of communication between emergency officials and the public at risk should be added to issues such as interoperability of equipment and failure of the public to respond appropriately. This study also reveals that impact on profit and lack of understanding of the essential warning system may be under-investigated.

Emergency management practitioners may wish to re-evaluate use of EAS for any attempted local or state use.

Moreover, study results may motivate broadcasters by helping them develop awareness of reasons why emergency messages may not be appropriately relayed. This data and these results may encourage them to monitor areas of inefficiency and contribute to reducing the number of situations of failure to act in the public interest.

Kantian Capitalism

Social Policy on the Broadcast of Emergency Warnings

It appears in retrospect that the Kantian Capitalism political perspective was applied to new policy and new technology for emergency warnings. Hendry (2001) argues that in the 1990s there was great debate about how social duty or business ethics could or should intuitively go beyond providing the greatest profit for the invested stakeholders and look to other aspects of providing for all stakeholders. Hendry uses the terms stakeholder theory and normative stakeholder theory to discuss Kantian Capitalism and how policy, philosophy and profits relate and sometimes conflict. In the 1930s there was also strong philosophically libertarian awareness that the new medium (radio at the time) provided an opportunity to earn profits in the blossoming capitalistic society (Strossen, 2005). It seems that the 1930s understanding of the limits of financial motivation induced the early mandates.

The compromise apparently struck by early legislators was to make radio licenses contingent on a certain amount of public service airtime and to collect fines for non-compliance of FCC regulations. Popular public perception is that the public could own the airwaves for the betterment of society but sell part of the broadcast time so station owners could cover costs and make a profit by selling commercials. Whether a part of the intention of the legislation or not, public service air time originally included the daily news, without commercials, a large variety of public information and educational messages such as local documentaries, public service announcements for small, local, non-profit organizations and emergency warning messages (Paglin, 1989). This current era of deregulation emphasizes Kantian Capitalism implying that financial motivation now suffices to provide efficiency in the warning system. Recent catastrophic events in the U.S. and around the world may be forcing a review of such assumptions and motivating a fresh look at various regulations.

The evidence collected by Redd (1991) indicates that the changes of 1981 allowing for freedom and creativity in entertainment programming also abolished guidelines for amounts of non-entertainment minutes encouraged a type of creative capitalism (FCC, 1981). Broadcaster reports indicate that the stations now use non-entertainment minutes to offer community service such as medical tips or fundraisers for breast cancer research and these messages can be underwritten by sponsors such as pharmaceutical companies. This Kantian Capitalist community service may successfully provide the local community with more information about some health issues like cancer testing and treatment (fulfilling one type of social and political duty). The drug companies earn sales (profit) as a result of their subtle, paid advertising, and the stations can earn profit while fulfilling the newer version of licensing requirements. One creative example from the 2004 NAB report explains that special Christmas ornaments were supplied to area stores to

be sold for \$5 to raise money for winter coats for kids. The participating stores, the broadcast stations—and the kids all benefited (NAB staff, 2004). A Kaiser report in 2008 clarifies that unpaid service time in the form of PSAs has declined dramatically, and this investigation indicates that much community service is in the form of sponsored time similar to the “coats for kids” example instead of the unpaid public service time of earlier days.

Under deregulation, most public service time is sponsored and clearly that is problematic for certain categories of public service like emergency warnings. Some public messages cannot easily find sponsors. And some public messages, such as warnings for imminent events cannot be tightly scheduled into or around primetime advertising slots, even if sponsors could be instantly arranged.

Currently, when a specific warning enters the EAS from the trained Emergency Management professionals, it is up to the judgment of untrained people on duty at the broadcast stations whether to relay or not. However, the judgment process is not clear. If the employees understand the urgency of the message and relay the message, the station continues to fulfill a social duty. This study shows it is unlikely that will happen because there is no requirement for station management or employees to have a judgment process or any type of training in emergency message use or transmission.

Fiduciary Policy and Broadcasters

Funding for message time and the EBS was previously part of the cost of licensing. There is no specified new taxpayer funding to buy or maintain the new equipment. In qualitative research, the absence of data can be significant. Related to this theme of costs, none of the participants mentioned that the public airwaves belonged to the people and that the media organizations paid for licenses, in part, with public service in order to be able to use the airwaves

for profit. The participants all expected that the taxpayers should pay the station management for the expense of delivering warning messages. This seems to reverse the popularly held notion that the airways are public and the stations pay the people to use them. This perception and the implications may relate to policy change opportunities. Further research might clarify this point.

The emergency warning system was originally designed for a U.S. president to communicate with the U.S. people and then expanded for local and state use. However, the records show that warnings and other unpaid public service messages were replaced by paid community service messages after regulatory change. Later, EAS was modified to make the presidential messages mandatory and all other warnings voluntary. The data indicate that broadcasters and politicians likely assumed that the “do well by doing good” aspect of Kantian Capitalism would assure delivery of the voluntary life saving messages at the state and local level. We now know state and local warnings are rarely consistent and that no mandatory EAS messages have *ever* been relayed – for one clear reason. The president has never activated EAS, not for Hurricane Katrina nor the 911 World Trade Center bombing (O'Meara, 2001) . It appears that Kantian Capitalism ideals simply are inefficient and insufficient for delivery of important emergency warnings.

Since no president has ever activated EAS that means state and local messages constitute 100% of the intended warnings. Yet *federal* tests continue to be mandatory, potentially confusing state and local viewers/listeners. One purpose of the old EBS was to train the public to respond to civil defense threats. If the tests are mandatory for the newer EAS but no president has ever activated the EAS, one might critically ask what is the actual purpose of the EAS.

U.S. Government and other research documents revealed and repeated that a broadcast station is *not* required to “hand over” the drum and sometimes does not. The Federal

Communication Commission (FCC, 2005) says the system is voluntary. The July 17, 2006 Congressional Research Service Report for Congress (Order Code RL32527) clarified that, “The participation...is voluntary.” Redd (1991) cites FCC, 84 U.S. 977 (1981), which revealed that the old public service announcement (PSA) requirement where EBS messages historically were counted as service time was eliminated. There is no longer a requirement for a set amount of public service time (Redd, 1991). The Kaiser report indicated there are now 17 seconds of public service time per day where by contrast there were previously up to 6 hours. Nearly half of the 17 seconds includes messages aired after midnight (Kaiser Foundation, 2008; Teinowitz, 2002). This research study described EAS messages that are not efficiently relayed *to* people in disaster areas, and that some people may die and others can be confused by lack of information (Beebe, 2004; Klinenberg, 2007; Mitchell, et al., 2005; Sorensen, 2005). A study by Beebe (2004), another by Mitchell et al. (2005), and a Virginia Governor’s report (VA, 2003) revealed that station personnel sometimes have not relayed life-saving messages. The term voluntary implies a responsibility to make a voluntary decision. Yet lack of relay of some messages implies that there is a responsibility gap.

Is it true that computers, not people, make the decisions? In fact, people program the computers. Clearly improved technology has the potential to solve the problems raised in this study. For example, redundancy in messaging using computers, phone, reverse 911, cell phones etc. may be useful. However, Section 11 of the FCC regulations regarding EAS says that the broadcast station owners are responsible for relaying messages – not the EAS boxes. As one participant noted the actual owner is the operator of the EAS box:

1PC2: Exactly. The basic principle is that the licensee of the radio station is the owner of the radio station and has what they would describe as a First Amendment right to either carry or not carry a government broadcast message, at their discretion.

People program the machines, make decisions and can make mistakes. In another qualitative study by Kepner (2010) one participant specifically said that he made a mistake when a warning was not relayed to a population at risk and that he, “learned a lesson.” That particular station employee will relay similar future warnings – but it was the technical engineer taking the responsibility and making that decision. Nothing in the interview implied that the station manager would be or should be consulted even though legally that is the person the FCC would question.

One concept not raised in this study, but prominent in another study by this researcher has to do with fiscal liability for using warning messages (Kepner, 2010). In some states, there is no Good Samaritan law that would protect broadcast stations so it is reasonable for broadcaster’s lawyers to be wary. If EAS broadcasts result in injuries, people might sue the stations. Because all local and state EAS broadcasts are voluntary, it is legal and fiscally prudent to avoid those messages and avoid potential financial liability. There is no legal or financial liability for broadcaster silence. One participant gave an example:

3PC1: We have a major, major, event going on here with perhaps a significant loss of life, huge damage to property, and great deal of panic. You try to use the telephone. You can't. It doesn't work. You try to use your cellular telephone to contact your friends or neighbors. It does not work and people are in a panic. So what they're going to be doing is they're going to be fishing around probably on their AM radios to try to find out what's going on.

Now there's only one a.m. radio station in this market that specializes in news 24 seven and that is XXXX. And suppose that one station is not on the air. Where will you get the information? There is no responsibility other than a moral responsibility for any of the other local radio and television stations to interrupt the programming and carry this information.

Social Responsibility

It would be reasonable for some to argue that social responsibility is not an integral part of U.S. capitalism. Indeed, many critics of capitalism insist that capitalism is the antithesis of social responsibility. For example, Johnson (2003), in a review of Besser (2002), notes that the assumption that underlies any business study is the concept that business decisions must be motivated by the drive to maximize profits.

U.S. public policy consistently supports free enterprise capitalism and by imputation a lack of social responsibility. Indeed, some researchers insist the Constitution does not contain the specific term *social responsibility* (and a document word search confirms that fact) but does allow for use of some tax dollars for benefit of communities. With roots in ICC, perhaps acting in the role of “fourth branch,” the Communication Act of 1934 § 307 (a) says that “The Commission, if public convenience, interest, or necessity will be served thereby, subject to the limitations of this Act, shall grant to any applicant therefore a station license provided for by this Act.” This is a clear reference to social benefit that was intended to be connected to licensing requirements. Although the Communications Act of 1934 as amended allows for Congress to pay for certain costs for messages to the people, this document also sets a structure for the broadcasters to pay to use the public airwaves to avoid new taxes and receive a public service in trade for the profitable use of the public airwaves. Indeed the 2007 unsuccessful attempt by the

FCC to sell a block of radio spectrum for first use responder disaster communication is one example. In September of 2008, the FCC announced another attempt at such a commercial sale. In 2009, the FCC posted on the Website that a strategic goal was for EAS to be a reliable infrastructure for essential communication. The requested public input to the strategic plan may guide future decisions to move towards a mandatory state level warning system (FCC, 2009a). One participant suggested that, given all the subtleties, one solution might be to level the playing field.

3PC1: ...let's just have an example. You have two radio stations and they're both playing country music in a particular area. One country music station decides to start rebroadcasting all the emergency alert system messages that they receive and the other one does not. People are going to hear the blat, blat, blat on the first radio station. Listeners are going to push the button and go to their competitor. And this is a fiercely competitive industry. Now if both stations were to run the information then we'd have a level playing field. If only one does and the other one does not -- most people are interested in entertainment and not interested in being warned.

Clearly between 1934 and 2009, the mandatory social responsibility component was modified and the current FCC Web site information indicates a voluntary, not mandatory, relay of warning messages (FCC, 2009a). The LaMay (2002) report implies that the members of the general public and individual private non-profit organizations are paying for public service announcements directly through normal business contracts with the stations or indirectly through purchase of products sold during the "community service" messages.

The Contemporary Warning Story

The intention of qualitative study is not to prove or to disprove a theory. Rather qualitative research helps discover the story behind answers to the research questions. For this study, the story goes something like this. We can imagine that a risk exists for a massive tsunami in a coastal community. There is a barely felt tremor, but a local emergency official has access to seismic readings indicating a large off-shore earthquake. She activates the EAS box at her work site and the message goes to the connected EAS receivers. The box at the inland broadcast stations has not been programmed to relay tsunami warnings – because the station manager did not tell the engineer to do it.

The station owner guidelines (if any) that were passed to the manager were likely sent to the engineer sounding something like, “If a warning is important go ahead and relay it but make sure it is important before you interrupt programs or commercials.” The engineer receives no further guidance or any criteria for *important* but knows her job could be at risk. The EAS equipment is only a small part of her job and after the initial programming, her obligation is to check the box only if there is a functional problem. The engineer programs it to send everything to the newsroom where someone is usually on duty and can make a decision.

However, no one told the news staff the reason they were getting the EAS messages was to use the tone to alert people and call public attention to a life-threatening event. The assignment editor used the warning as a news tip to schedule reporters to go out to the coast to cover any coastal damage or loss of life. Meanwhile, a few people in the tsunami zone were able to run for higher ground in time because the town siren was successfully triggered by the EM activation.

Many people indoors were watching TV or listening to the radio and did not hear the siren and were trapped by the tsunami. A few families with NOAA all-hazard warning systems received the warnings and passed the word to some neighbors who also ran to higher ground. The broadcasters got great ratings for the quick coverage of the destroyed town and when the reporters interviewed survivors, most of the survivors shared that they heard warnings. Many people privately congratulated themselves and each other for helping to save lives – including the EMs who sent out the EAS warnings and the broadcast station managers who assumed it was their warnings that mattered. There is not any easy way for anyone to know that the survivors only got information from other sources, and that many of the people caught indoors without any warning might have survived if the broadcast stations had automatically toned out the alert.

As noted earlier, contemporary social responsibility is philosophically rooted in teleology and holds that we should focus on developing a good society where we care for one another and politically that means taxpayer support for social programs. Taking care of only ourselves is not enough because that behavior may harm others. The 2010 debates regarding passage of the U.S. health care program and regulation of the oil industry after the unprecedented British Petroleum oil spill in the Gulf of Mexico serve as examples of the dichotomy. In the health care debate one side insisted there is a need for health care for all (social responsibility), and the other side asked who is to pay for those who cannot pay for themselves (libertarianism). In the oil spill debate, one side asks for regulation of oil company activities (social responsibility) and the other side insists that no one has the right to curb oil company profits (libertarianism). Generally, in terms of political stances, social responsibility focuses on the group well-being which might infringe on personal well-being and profit while libertarianism focuses on maximizing personal well-being to include personal profit. The dichotomy might be phrased this way; life (of the human

group or the earth) has more value than individual resources (money) versus without resources there will be no human life on earth.

Politicians and philosophers struggle with the argument, and some struggle for a middle ground. Some insist there is no middle ground. Although, during the last few decades, some have experimented with what sounded like a middle ground. It is the theory being used in this study as the lens for analysis – Kantian Capitalism. This political and economic philosophy insists one can do good and also maximize profits. Politicians and regulators attempted that middle ground by deleting the mandates from the EBS and inserting the voluntary aspects of EAS warnings. That de-regulation seems appropriate to the Kantian Capitalism philosophy, which in retrospect has been the regulatory position since the 1980s. If broadcasters have the flexibility to work with and around commercials and pre-set programming they will certainly relay important warnings. Yet this study confirms many warning messages are not relayed by broadcasters even when there is clear potential for loss of life and damage to property.

Results of this study provide further opportunity for a new examination of the dichotomy of deontological and teleological theory that was described in the introduction to this study. When narrowed to the specific action of voluntarily relaying a life saving warning such as “run now tsunami coming” it appears that U.S. regulators and broadcasters have, over time, selected the side of the dichotomy that says money comes first, then life. The decisions may have been thinly veiled with the popular ideas of Kantian Capitalism which were supported by many during the 1980s until today.

Indeed, over the recent decades officials have modified the Federal Communication Commission regulations that control the emergency broadcast warning system. As this study reveals, today broadcasts of tests are required, but actual emergency messages are voluntary and

often not relayed. (Government Accountability Office, 2007; Moore, 2008, 2009, 2007; O'Meara, 2001). Unfortunately, because many residents hear their local broadcast station's regular "tests" of the emergency alert system it reinforces the idea that emergency messages *will* be available via the broadcast system.

Yet, there are other explanations beyond worldview for the documented lack of relay. Simple lack of understanding of the life-saving importance of the warnings or of how the system works seem to be a major contributors to relay failure. According to the participants in this study, there are station owners who believe they have a constitutional right to not relay warnings. Others believe their primary financial obligation is to shareholders. There are broadcast reporters who believe that EAS is a mechanism for news tips and Emergency Managers who agree. There are engineers who do not know that a box has to be programmed for local conditions. If individuals are unaware of a responsibility, is that sufficient justification and explanation for why some warnings are not relayed? On the other hand, does the absence of legal consequence motivate failure to warn?

Social Duty to Warn

If we accept the language posted on the current FCC Website, the current regulations specifically do *not* legally obligate warnings. If warnings are not at this time required by regulation then one might ask if warnings are required by a social duty. Should social duty come into play when laws are insufficient or unclear? For example, one unpublished study described an EAS tsunami warning issued from the Emergency Management Division of one state in 2005 that went undelivered while media professionals waited to see how bad it would be before interrupting regular programming (County Emergency Official, 2006). There were very few of their listeners in those tiny coastal towns, and probably few if any advertisers. It clearly was

legal for the media professionals to wait before relaying the EAS warning but they may have abrogated their social duty to relay such a potentially lifesaving message. Fortunately, that specific tsunami turned out to be minor. Had it been major, many people in small coastal towns could have died.

This study has clarified some of the explanations for why the broadcaster professionals waited to relay the warning. There appears to be a conflict between what is good for the short-term financial benefit of the broadcasters and the long-term benefit of a community. Neither Capitalism nor Kantian Capitalism have worked to insure a high level of efficiency in public safety warnings.

One participant explained.

1PC2 Economic factors ultimately rule at the policy level but stations make a great point particularly when they're lobbying about all the valuable public service they provide in exchange for their use of the airwaves, and so they tend to in general be really vociferous in their support for EAS in general, but when it comes down to individual instances of interrupting their programming sometimes things aren't quite as rosy, and those problems tend to be more localized and usually are not as visible.

Neither capitalism nor Kantian Capitalism have worked to endure a high level of efficiency in public safety warnings

Social/Community Action

Within the concept of social duty, some literature argues there is an expectation of social action (Haakonsen, 1996; Habermas, 1987; Klinenberg, 2007). Some of that action in terms of government regulation has to do with emergency specialists lobbying the FCC to improve the emergency alert system or vendors lobbying to allow an alternative for-profit system. There is

social action in the business world, outside the direct purview of the FCC, intending to provide additional or alternative and commercially profitable warning systems (Besser, 2002; National Association of Broadcasters, 2009). A quick Internet search offers dozens of products and services from would-be corporations and small startup companies. These organizations may be functioning under simple capitalistic motives or the more complex Kantian Capitalism motives. In general, these organizations offer newer technology to help connect people to the source messages of the trained state, local and national emergency specialists who originate such messages. For example one Website that markets to universities and other organizations notes, “Amtelco’s Red Alert Emergency Notification System is designed to save time, reduce errors, and speed your overall response time”(Red Alert, 2009, p. 1). Another commercial warning system’s pricing page offers their service to organizations for \$495 per month on a “dedicated server” (Notify Staff, 2009). The Alert Find promises “AlertFind sends email, two-way SMS messages, and makes voice calls to find people regardless of location, at any time and on any device” (Dell, 2009, p. 1). A fourth company markets to emergency officials.

Emergency Warning, L.L.C. is a company whose sole purpose is to serve Federal, State and Local Government Agencies and Authorities by providing high-speed emergency voice broadcast messaging to communities before or after disastrous or catastrophic events ... We have the technology and infrastructure to help you develop and deploy an emergency warning initiative that will effectively communicate a detailed voice broadcast message by telephone to those who are threatened by disaster ... Contact us today. (Emergency Warnings, 2009, p. 1)

These alternate relay systems could benefit some consumers who have the money and an understanding of the need to purchase new equipment to receive warnings. However, the

opportunity to support new businesses and purchase one of many choices in alternative equipment may not be securing efficiency for a larger general public and these solutions may not be appropriate for some of the most vulnerable – the elderly, disabled, infirm, non-English speakers, low income etc. .

Social Pressure on Regulators

In the United States, consumers regularly pressure regulators of social policy. Examples include: (a) food consumers insisted on better agricultural screening after reports of mad cow disease, (b) electrical consumers often become active following windstorm generated power outages and pressure for greater power grid reliability, and (c) survivors of major floods often lobby for new flood control projects. Following recent catastrophic events (such as the September 11 attack, the Southeast Asian tsunami or Hurricane Katrina) social policy researchers documented regular policy changes after each catastrophic event (Birkland, 2004). The high visibility and horrific results of such events inspire a desire to learn lessons from the disaster, and social activists' pressure for legislative changes including changes in how warnings are relayed (Birkland, 2006).

Almost inevitably, policy changes as result of public pressure after catastrophic events. However according to some researchers the policy changes are not often the changes for which experts had lobbied. Budgets and funding often negatively impact programs that were intended to be improved (Birkland, 2004). This seems particularly true for activities designed to prevent or mitigate harm to people and property. For example, additional or improved weather satellites may be desired by activists and some politicians yet remain unfunded. Indeed one researcher found that the high level of social pressure may have resulted in simply reconfiguring previously preferred policy options (Birkland, 2006). Studies indicate that dominant issues of high visibility

events generated visible activities in Congress, but the activities and the resultant regulations did not match the real problems.

An example from the Tsunami Act of 2006 would be the social pressure, then congressional push, to assure that EAS messages are available to everyone including certain disabled populations, such as the hearing disabled. In the 109th congressional session of 2006, passed legislation intended to help refine emergency warnings. Called the Tsunami Warning and Education Act (PL 109-434), the act mandated better collection of data in the oceans and the inclusion of captions with audio warnings on television. This change displays a Kantian duty concern for the disabled. However, the regulators went on to clarify and emphasize that actual warning messages must remain voluntary (Congress, 2006), underlining the support of capitalism but not securing efficiency for the disabled or anyone else. Research continues on why lessons are learned but not fully applied (Birkland, 2004, 2006).

Other research indicates that special interest groups influence disaster policy immediately after major events but only technical experts or legislative specialists pay attention between events (Birkland, 2006; Grossman & Helpman, 2002; Kroszner & Stratmann, 1998). This uneven attention is equally true for the details of a disaster warning system as it is for the bigger picture of disaster policy as a whole. However, warning messages may have a unique problem in generating needed social pressure for policy improvement. Most people regularly see and hear the test message that is mandated by the EAS regulation. Unless they have personally experienced a specific situation where an event occurred but no warnings were relayed, most people are unlikely to even be aware of any need for social pressure to improve efficiency in the relay of warnings. More likely, people hearing the test may assume that the system will be used in emergency situations. Indeed, many people even in catastrophic situations see disaster news

coverage which enhances belief in a warning system even while life saving information may be masked or withheld.

If the vast general public thinks the EAS tests indicate that any needed warning will be available via broadcast channels then, for example they may also think it is *not* necessary to purchase a NOAA weather radio -- even though the vast majority of state and local warnings are weather related. Others, will go ahead and subscribe to warning systems for their electronic hand held devices. Many remain, who are regularly reinforced with test messages, who think they will be able to get warnings by tuning into broadcast media.

The Ethics

Ethically that seems problematic. Haiman, (1993) a scholar of the U.S. First Amendment in communication ethics emphasizes that communication should be protected, not limited. Later, Johannesen (2002) in his comprehensive review of communication ethics emphasized his own views by quoting Haiman's proposed criteria for drawing "the line against writing morality into law" (p. 98). The first criterion is that a "'moral standard concerning a particular behavior, "should be codified in legislation only when there is a "near unanimous consensus in society, that the conduct in question is immoral (p. 98). " Johannesen says, "...laws that codified ethical standards must embody credibility and fairness by being realistically enforceable and by not being subject to capricious or unequal enforcement" (p. 98). He quotes Haiman again "...free society will always draw the line between what it considers immoral and what makes it illegal as close as possible to the more serious, direct, immediate, and physical of the harms, and it will leave to the operations of social pressure, education, and self-restraint the control of behaviors whose harm to others is less serious, less direct, less immediate, and less physical" (p. 98-99).

Johannesen (2002) asks us to consider what communication is unethical and thus should be regulated by law. It seems appropriate to ask the question in this way. What type of communication that is *not delivered* would be unethical and should be regulated by law? In other words, when would it be considered unethical to withhold information? Should law regulate such instances? EAS messages are a form of communication that can contribute to reducing the serious, direct, immediate, and physical harm. Using the Johannesen and Haiman criteria, perhaps we *should* use the law and reinstitute a structure for mandatory warning delivery, similar to the older EBS. At the very least, broadcasters and emergency managers might meet and create memorandums of understanding about which warnings are most urgent and should be relayed in a timely manner.

Some of the issues around *should* might actually be resolved if participants better understood their respective roles in the warning system. There is no mention of training in the FCC regulations regarding EAS. This lack of training and understanding may be creating a major gap between what the majority of people expect and what may be the current situation in most media markets. A CRS report of January 30, 2007 suggests that the 110th Congress should review the issue of state and local access to the new emergency alert networks or possibly “reconsider” the federal role in a fully-developed national network (Moore, 2007). The 110th Congress made no progress with this issue.

As of June of 2010, that advice to Congress (now the 111th Congress) to take corrective action remains unfulfilled. Perhaps the current 111th Congress will be more successful in understanding the true requirements of a warning system and take action that actually addresses those needs. Unintended consequences of decades of political deregulation which encourages voluntary compliance might be addressed with new political action. If these efforts are too

complex or too costly, at the very least, officials can rewrite the current EAS test message so that it is more accurate and clearly reflects the status of the contemporary “village drum.” A corrected message might state, “This is a test of the ability of the EAS system to relay a message from the president of the United States. This station may or may not be available to relay warnings to you from local and state emergency officials. For your own safety, you should purchase additional equipment and/or acquire subscriptions to commercial alert systems.” Such a more complete and accurate message might provide a better national understanding, inspire constructive dialogue and motivate all parties to consider a better village drum.

Limits and Strengths of This Study

Qualitative studies contribute to conceptual understanding of ideas and behaviors, yet because of the small size of the sample, generalization is not always possible. The participants, without exception, noted that each local area has different plans and different challenges for the use of EAS. Yet common denominators of essential behaviors and acceptance of responsibility are evident. For example, it is difficult for a broadcast station owner to take action to relay an EAS warning if that owner sees it as an engineering task. It is equally difficult for broadcast engineers to program an EAS box if they are unaware that the box requires programming and if they are aware, they were not given any criteria for programming.

This is a limited qualitative study with only 13 participants. The primary strength of qualitative research is the deep exploration of discourse of carefully selected participants, informants, and documents can offer insight into processes and meaning of events not otherwise obvious. In this study, all participants were in comfortable environments which provided them with ready reminders of the obstacles and motivations for choices regarding use of EAS disaster communication and warnings. The nature of the thick, rich, actual description of these carefully

selected participants provided revealing answers to the research question: “Why do broadcast stations performing under current broadcast regulations sometimes fail to relay/rebroadcast emergency warning messages?” One politically appropriate way to answer that question is that the EAS is inefficient. A more straightforward answer seems to be that broadcasters make more money by not relaying life saving messages. That harsh answer may not reflect the good intentions of either politicians or broadcasters, but it does accurately describe the resulting situation. It is classic Kantian Capitalism where good intentions matter more than unintended consequences. If broadcasters maintain their duty to their shareholders, FCC maintains their duty to the letter of the law and politicians honor a duty to broadcaster need to maintain profits then any unintended consequences are the “fault” of someone else. For most disasters that would be the weather, or God, depending on your belief system.

New Communication Models

This study has helped to reveal new models of basic communication – models that to some degree are the direct result of the unintended consequences. The old model is the basic communication model as seen in figure 4. There is a source, channel and destination. The current model (figure 7) is an example of no relay with a source, channel but no destination. Figure 8, the newer model, depicts the source (emergency official) at left sending warnings to multiple media channels and some members of the the public actively collecting the warnings using new technology. The future model (figure 9) depicts a system where disaster warnings are available for the public using new technology. In the new model, some members of the public can access to targetted warnings, but actively and passivley and can also acknowlege receipt and provide specific and needed information to emergency officials. Two way targetted communication could

drastically minimize disaster communication failures in the future. The future looks promising but we have a long *meanwhile* of some 5 to 10 years according to the participants in this study:

1PC2 And one of the things that we will have the ability to do is to not necessarily interrupt the programs for everyone but merely to interrupt just for people who are actually in the hazard area. So we will be able to begin to address that target-ability, a shortcoming of EAS which we've never been able to address before. This is I would say, that's going to be the work of the next 5 to 10 years really to work through all that.

This researcher is hopeful that needs will be addressed sooner rather than later.

This brings us to some of the broader questions posed earlier. Do broadcasters have a responsibility or duty to warn the public if the warning could harm their shareholders? Is it the duty of a broadcaster to protect individual listeners and thus act for the civic good or is there a greater responsibility to a fiscal capitalist orientation? What are appropriate actions when duties collide? Are people motivated by concepts other than the common good and duty to one another? This study suggests multiple reasons why intended warnings are not always relayed to the U.S. public and begins to open insight into how Kantian Capitalism has been used in an attempt to address these conflicting duties. If broadcasters are not legally responsible for warnings then the duty clearly lies with protecting profit for the corporation (traditional Capitalism). There is no conflict. If people are harmed by the lack of warning delivery, the (Kantian Capitalism) responsibility lies with the entity doing the harm such as the tsunami or the terrorist. And finally, some questions never reach the conscience of many broadcasters who remain blissfully unaware that they have a major role (duty) in the common good of warning the public in the event of a disaster. These results and observations regarding unintended impacts of changes to regulations

for warnings have some parallel to impacts of regulatory changes in the U.S. banking system, oil company safety, pharmaceutical safety, food safety, and other governmental efforts.

Future Study

Clearly this study has raised many additional questions. The facts show that some warnings are not relayed, but do not indicate how serious the problem is in terms of numbers. Yet, for example, only one missed lahar warning near a volcano like Mount Rainier could be devastating to tens of thousand of people who live in the cities near the greater Seattle/Tacoma metropolitan areas. Nevertheless, quantitative study might shed light on the percentage of warnings that are not relayed. More technology study is essential even while attempting more technological solutions. For a simple example, many of the most critical buildings such as emergency shelters, police bunkers, schools and hospitals have structures that shield satellite signals. Rural areas are already underserved for high-speed Internet and cell phone towers. Further research may indicate if relying on more technology means devaluing our rural population and the sub-populations that live outside of metropolitan areas. Continuing costs of power and the already unreliable electrical grid and satellite system may impact many of the high tech solutions. New research may indicate whether the new alternative energy proposals might be more reliable and potentially be tied to a new warning system.

One larger opportunity for research lies in issues related to a reference from one participant to the Constitution and the use of a U.S. Constitutional right to personal freedom of speech as a corporate right to avoid airing warnings.

1PC2: Exactly. The basic principle is that the licensee of the radio station is the owner of the radio station and has what they would describe as a First Amendment right to either carry or not carry a government broadcast message, at their discretion

The U.S. Constitution is famed for its balance of powers between the people and their government. Prior to the writing of the U.S. Constitution, the closest thing to a *big business* was a government – the British Empire, France or Spain. The Constitution wisely attempts to balance such powers. But today, corporations are a third power and there is little or no language in the Constitution to address this outside power. Corporations are attempting to take on the persona of an individual person in the law. Other researchers may wish to delve into how this helps or hinders the delivery of warnings.

Summary

Many people hold a flawed assumption that the U.S. has at least one system that can provide nationwide public warning. This study provides evidence that the federally regulated EAS is inefficient and that the warning system will remain inefficient in spite of ongoing complex Kantian Capitalistic efforts now underway at the FCC and in Congress. New technology may improve warning efficiency, but requires a national understanding in which individuals know to buy proper equipment or subscriptions, incurring specific financial costs. The organizational structure of OKFirst in the State of Oklahoma provides one example of a local structure that, in the past assisted, in improving both warning efficiency and the elusive effectiveness. Under that structure, local professionals in emergency management, weather forecasting and media broadcasting participated in meetings, trainings and agreements to relay urgent warnings. Members of the now defunct Partnership for Public Warning gathered substantial data (much of it referred to in this study) in an effort to influence improving the public warning system. Posted on the PPW Website is this comment by Rudman, “It worked once. It might work again,” (Partnership for Public Warning, 2008).

Strong leadership might improve efficiency by making dire warnings mandatory. But research by Birkland (2006) and results of this study indicate that Congress is not likely to pass legislation that conflicts with the first amendment and corporate law (Oxenford, 2010).

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APPENDIX A.

ADDITIONAL PARTICIPANT COMMENTS

Theme 1: EAS is voluntary to minimize costs to broadcasters

3PC1: The emergency management side would love to have EAS be more viable but they understand that it is a presidential message dissemination system, which broadcasters have to relay. There is no choice there. Nevertheless, everything else is voluntary. And who is going to broadcast that information is dependent upon a number of variables. Some of them of course are political. Some are economics. As I said the other messages, namely the weather messages and other messages coming from state regional or local governments may be broadcast by some broadcast the stations and not rebroadcast by others and that is a matter of whether or not the broadcaster elects to participate to rebroadcast of these messages.

4PC1: The burden of stations, as far as FCC rules are concerned, is they have to have EAS equipment installed. They have to maintain it. They have to test it, according to part 11 of the FCC rules and they have to keep a log of the results of their testing. As far as local and state messages are concerned, it is 100% voluntary...First of all you have to realize that for local and state it's all voluntary. So as long as people do the tests, as long as they log the results of the tests, even if the tests fail, they are off the hook as far as FCC rules are concerned.... It depends how busy the station is. A lot of times, the TV stations and radio stations don't want to interrupt their cash cow programs. Some radio stations don't want to interrupt Rush Limbaugh for a warning. For some stations that might be a decision that could hold up the warning. TV stations, you see this happening all the time, where they don't want to interrupt soap operas for news.

This idea was repeated by others.

8PC6: Some smaller stations just preprogram things and they don't have anyone at the station on a regular basis. That is number one. Number two. They might not be able to fit it in with their paid programming or to run their ads. And number three is that it is a matter of opinion of the person sitting in front of the microphone.

And yet, most seemed assured that most of the time media was doing the right thing – and that, most of the time, that had to suffice. For example

8PC6: I think most of them are pretty good about it.

11 PC6: Well, I would hope that it [profit motive] wouldn't lead to a decision on whether or not to put out a message, but I could see that it potentially could delay a message because they're in the business to make money. And if their only segment is being tied up, putting out an EAS, they don't think is very important and they could potentially lose a \$1 million spot. I'd say yes, I think there's potential. I just don't think it would be the driving force. I think the human factor would come in first.

9 PC6: I really think -- they would probably -- they would rather err on the side of good PR in relaying the message for just the 90 seconds that it might take away from the programming.... I don't think the public does differentiate between public warnings versus public information. You know we are just in that public warning business and we take the heat if they don't get a phone call or if they have a weather radios set up that didn't activate or whatever. There's expectation that's been set up that they're gonna receive a warning from our office and is if they don't and they turn on the TV and they see it being covered by media not necessarily an EAS warning but this station covering the story. Yes, I think that they could very well be satisfied. And there's always some

small segment of the population that may be a little bit more savvy and to those differentiations. "Hey, why didn't I get the EAS warning?" -- that type of thing, but I think it's probably a very small slice of the population that would make that differentiation between not getting an EAS warning versus getting a story through media coverage.

9PC6: I don't think any of them would want to be put in the spotlight afterwards being asked why they didn't do it. But it is completely voluntary. And they have policy and legislative legislation backing them in the decision to not do it.

11PC6: So with the true meaning to get mass notification out there should be a requirement that the alerts go out on all stations and all channels, not just a voluntary method. There is one exception, which is the presidential message, but we've never had one of those. For all other messages, participation in the system is voluntary on the part of the individual broadcast stations.

Theme 2: Responsibility not defined in regulation or with training

12PC6: They [broadcasters] are in entertainment or other commercial business. EAS and EBS before that was a government requirement for them to participate in. So they don't always have the proper training at their stations. Where they become automated, they don't set up their operations, such that the public information statements will be able to get out to the public via their station. And sometimes it's just that -- I think they don't instill in their employees the importance of it.

12PC6: When they go into that business, I don't think public service and public transmission of public safety messages are at the forefront of what they're told that they

will be responsible for. I'm not at the right level to know exactly how strongly those folks are informed or told of this responsibility.

10PC6: The example that comes to mind is the E. coli contamination of the water. We had a situation last August where the XXX water district had tested positive for E. coli and they tried to do some notifications, which they're required to do by the health department. They are required to do public notifications through the media, but they couldn't get the media to forward the message. They notified them, which is what they're required to do by law, and they notified the health department, which they're required to do by law. But it is up to the media to decide whether or not to broadcast the information. So because that was not an effective way for them to notify people that came to us and we're working out some details for utilizing this other notification system for that type of event.

9PC6: Yeah, we actually did have a tsunami warning. It turned out to not really be a major thing. But we did use a tsunami warning a couple of months back because of the various earthquakes that happened across the globe. And all of the X State emergency managers got together on a conference call and determined that yes, there would in fact be a tsunami -- certainly not the big giant waves that people envision -- but they did advise people to take protective action. They advised people to get out of the water and stay out of the water -- not because of big waves --not here anyway, but because of the strange unpredictability of the undertows and the tides and the sudden shifting in water levels. So there was a protective action associated with that and we put it out.

Can I assume the radio and TV people assisted? [researcher follow-up question]

Oh yes, they grabbed onto it, definitely they sent a couple of camera crews out to the shore to see that nothing was going on, but people were advised to stay out of the water.

Sub theme criteria:

9PC6: I think that broadcasters in general like being, in general like to style themselves as the bulwark of American public warnings, but they would prefer that they didn't have to interrupt their programming to do that... Again, what their criteria are dependent among other things on what their programming format is. I'll give you one example. A broadcast station that is an all news format may hesitate to interrupt their programming in order to issue an EAS alert on a story that they are already carrying. This becomes particularly acute if they are what's called a local primary station and they are one of the stations that other stations monitor for their EAS alerts. Then they say, "Why should we interrupt our programming to carry a story we are already carrying for the benefit of other broadcasters when news is their stock in trade?"

6PC5: It varies. It varies. Some broadcasters simply do not want to know very much about it. I've run across some that will say, "I leave it up to my engineer" or, "I leave that up to my operations manager." They just don't want to be involved. Some say, "Tell me more." How does this really work? It varies. It's everything from full participation, conscientious caring, to hey –We're here to make money not run noises... It is the criteria that are based upon the fact that the manager in the broadcast station is running a business.

4PC1: First of all, whenever anyone has to decide to issue a warning or relay it, they are thinking about am I going to get fired over this. That's probably the most basic, basic thing you know, what if I make a mistake... There may be economic considerations, if

it's a very large market. In a smaller market, it may be an easier economic decision. Small areas, some of the cooperation between emergency management and broadcasters comes about because everybody knows everybody because it's a small town.

6PC5: You've got the people that are involved and have taken the time to buy in to the full philosophy of the system. Then there are plenty of people who have a negative attitude. The system is broke.

4PC1: The broadcasters are out there to make money from what I've seen. They are concerned about bad alerts, timing of alerts, and everything else. They say if there's an actual event going on, say if there's been child abduction or something like that, they say that they don't then have a problem interrupting the Super Bowl. But until that actually happens, I guess we won't know.

7PC6: Again, each individual station, I assume, that would be the editor at the time. It is their decision to make. I don't know if they have policies and procedures that drive it or not.

9PC6: I'd have to guess a little bit in that they are weighing the importance of this message versus the effect it will have on their ratings. I mean do they not use that to measure all the things that they put across the airwaves?

12PC6: What I believe to be true in this is that we have some broadcast stations that don't really buy into their role as transmitter of public warnings and information. That's not their business. They are in entertainment or other commercial business, and yet EAS and EBS before that was a government requirement for them to participate in. So they don't always have the proper training at their stations. Where they become automated, they don't set up their operations, such that the public information statements still will be able

to get out to the public via their station. And sometimes it's just that I think they don't instill in their employees the importance of it.

6PC5: I tend to think that a decision is usually made by the engineering department.

That's my observation. I don't think it comes to management. It may in large television station markets... My experience in radio broadcasting is nobody sits around and makes those decisions, really. I'm sure if you talk around the country you're probably going to find an outcast here or there that says they don't do EAS much or I've decided to turn it off and not accept it at all.

Theme 3 Technology:

8PC6: Today with people using cell phones, I'm sure you know how that works. XXX [brand] is a free service offered by the company that owns it. You have to have the messages come from a government agency. John Doe can't get on there issuing an alarm. We are in control of the message. We send it out and people can subscribe at no charge other than what you're paying for your cell phone. We are just at the beginning of initiating this process.

1PC2: That works well for what I call "role based" alerting... alerting folks because they're officials, parents or have some other attribute that makes the alerts relevant to them. But those systems miss folks who don't choose to register ahead of time, and there's always some percentage of simple database error involved. Also, the target audiences tend to be smaller, and may not be as concentrated geographically, both of which reduce the risk of network saturation effects. EAS attempts to reach everybody, no database or pre-registration required. And since the technology is broadcast, alerting

millions is no more expensive, network wise, than alerting one. OTOH, [technologist shorthand for on the other hand] broadcast alerts have no way of personalizing for location (or language, or sensory disability) and so the relevance for many recipients may be reduced. And turning on the radio or TV is arguably a form of "opt in" in its own right. Bottom line... commercial list-driven systems, especially commercial ones, tend to cherry-pick the easier alerting problems. That's fine, but there's a risk that they'll create a sense of complaisance that the harder ones are being addressed as well.

13PC6: From our perspective, we use social media. We use local fire departments and partner with them. Those who do use the radio have good relationships with the local radio stations. We do our best. But that's mostly by press release and personal phone calls and not by the use of EAS machine...

13PC6: It just not gonna happen that way...So what we've tried to develop this multilayered warning system. Oh yes, and we have NOAA weather radio. I don't want to leave that out this. We encourage people to have NOAA weather radio. We recognize the sirens will only be heard outside. We recognize that not everybody will be listening to commercial radio or the television. A telephone call may or may not reach everybody. In terms of delivering a warning message, you can't have enough methods I guess.

The station owner described just one of many potential breakdowns.

6PC5: One of the challenges with the equipment is that if you do have a live body someone could be out of the room. They could miss the fact that an activation happened, that there is this whole warning going on, but they just go about their shift. They might've been in the bathroom and their programming was totally interrupted and they missed it.

So that's how it functions for us here, quite frankly pretty good, but I also have an engineering department that's really on top of it.

This station owner took responsibility to install some other equipment.

6PC5: Here is my control room we have scrolling signs. We'll we go down to Costco and buy those little scrolling signs that have the letters that just scroll across. Small retailers use those to say 'open tonight'. It just scrolls letters across. We have one of those in each of the six control rooms and the newsroom. The call that comes out of the ENDEC [the EAS box], that call information, goes crawling across the screen right in front of each DJ. So if he happens to have missed that required monthly test or any activation, he would walk in, and it would normally display the time and date in yellow, but it would go to all red and it would say there were required monthly tests in whole the of State X, and it would crawl the entire time that it's in effect. That's one of the things we do that we think is pretty unique to us. It was very inexpensive. About \$125 investment to do that.

In other states and other local communities, there are other options.

10PC6: Well, we do have a community notification system, which we refer to as a reverse 911-type system, because there's actually proprietary software called reverse 911. We do have that kind of system and we've had it for several years now. Basically, it's a geographically-based system by which you can go online on the Internet and bring up a map of XXX County draw a shape around a targeted area. The shape can be a square, polygon, circle or an oval -- whatever is appropriate to select the people within that radius to notify them of something. We can use it for anything from an evacuation to a shelter in place, because we've had a hazardous material spill. Perhaps we want to let them know that there is a lost child or lost elderly confused person, for example, we might like them

to know if this person is out in their area -- to watch out for this person. We've used it on a few occasions for that. And we've exercised it. We practice it on a regular basis. And that system can be activated by anyone within the emergency management department or within the 911 center. It can also be activated at the request of any law enforcement or fire agency within XXX County. More recently, we've had discussions with XXX Gas and Electric Company, and we're working out some details with them and one of our water districts to do notifications on their behalf.