CRISIS AND DISASTER MANAGEMENT IN THE UNITED STATES:

Research, Methods, Analysis, and Findings

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Finally, original source materials and portions of each case were collected and produced by eight graduate students as part of the transboundary crisis management research project at the Moynihan Institute of Syracuse University. They include: Kathy Allison, Cecile Batchelor, Chiara Cruciano, Chris DeMure, Ruthanna Hawkins, Michelle Hill, Steve March, and Jessica Tevebaugh. We thank these individuals for their hard work and insights.

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An Introduction to Crisis Management and the Case Study Methodology

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This book introduces the reader to a new kind of case study methodology currently being used to investigate crisis and disaster management in the United States. We have found that this methodology can help academics and public officials to better understand: 1) the dynamics and processes (individual, group, institutional / bureaucratic / psychological) that impact decision making in times of crisis; 2) the patterns of organizational management that appear to be particularly effective or ineffective in forecasting, preparing for, managing, communicating about, and learning from crises; 3) the difficulties that all decision makers must confront as they navigate crisis situations.

The book contains eight cases of crisis management in the United States: an accident at a nuclear facility; a forest fire at a national park; an earthquake; a strike by transportation workers in New York city; the failure of an electricity grid in California; the outbreak of an infectious disease through the contamination of a municipal water system; an investigation of mysterious deaths caused by the purposeful contamination of a consumer product; and a major oil spill. Taken together, these cases illustrate how crises can come in many forms and force people and organizations that have never worked together before to jointly address an issue of critical importance. We also included in this book an appendix which contains the case writing manual used by authors to research and write their cases. This manual was developed at the Moynihan Institute at Syracuse University's Maxwell School by Margaret Hermann, Bruce W. Dayton and Lina Svedin. It has been used to generate well over three-hundred case studies to date and follows a structured, focused comparison methodology. Readers will note, therefore, that each case study is structured in the exact same way and contains information on a common set of core themes in crisis management.

In this introductory chapter, I briefly discuss what crisis management is and review the impacts that crises have on public leaders and public institutions. I then provide an overview of our case study methodology and offer a preliminary set of lessons learned that are drawn from our cases. This introductory chapter is followed by individual chapters on eight cases of crises in the United States. These cases were originally written by graduate student at the Maxwell School but have been updated with additional research and re-written by the editors of this book. The names of each of the original case authors appear as a footnote at the start of each case. Finally, as noted above, the manual used to write each case is included at the end of the book.

What is Crisis Management?

Crisis management refers to the set of decisions made and actions taken by decision makers to assess, mitigate, prepare for, respond to, recover from, and learn from crisis situations.

Such situations challenge public officials at all levels of government (from local to international), can emerge across any issue area (e.g., health, environment, natural disaster, civil unrest), and are triggered by both natural and human-caused events. Accordingly, crisis situations vary in a number of important ways. Some crises last only a short period of time, such as a transportation accident. Other crises can last weeks, such as an industrial accident and its aftermath. Still other crises, often called 'creeping crises', can for last years, such as the global climate crisis.

All crises have three elements in common. First, each threatens core societal values. These might include, for example, human life, organizational survival, environmental security, or political reputation. Second, crisis situations are urgent; when confronting them, decision makers usually have a short period of time in which to make critical decisions. Third, crises are surprises and, therefore, contain a high degree of uncertainty about 'what's going on'.

A combination of high threat, urgency, and surprise makes crises one of the most challenging situations that government officials and political leaders will ever face. Managing problems that present a threat to core values increases the complexity of the decision-making process and can create a decision-making vacuum as different stakeholders argue over the importance of one critical value verses another. High threat also creates conflict between crisis managers as different organizations or institutions with different interests try to achieve their goals simultaneously. Finally, because the threat is so high, the public will pay close attention to everything that public officials are doing throughout the crisis.

Urgency increases the likelihood that public officials will make fast and ill-informed decisions. Often urgent situations result in officials overlooking critical aspects of the situation as they struggle to make sense of what is going on and manage stress. Urgency also can cause a 'contraction of authority' whereby mid or low-level managers are pushed aside as more senior officials step in. Often these senior officials have less knowledge about the realities of the situation or the barriers to effective response at the local level.

Finally, surprise means that officials are faced with great uncertainty about what is going on and often lack a response blueprint. As a result, different officials will often 'frame' and define 'what is going on' in vastly different ways.

Impacts

Crises have the potential to transform politics, economics, and social relations. The successful management of crisis situations helps to build public trust in government institutions. Failures in crisis management can result in organizational decline, political instability, and even leadership change. Such dramatic impacts are of particular concern to public officials because many researchers now argue that crises are likely to increase in intensity in the years to come. This is because societies are increasingly inter-dependent and rely on a complex and highly technical infrastructure. Interdependency and complexity can cause dramatic 'ripple effects' when crises do occur. Specifically, when one part of the system fails, others follow, much like the outward rippling of water when a stone is thrown into a pond. In addition, researchers argue that modern crises cross multiple jurisdictional boundaries. These include organizational boundaries, national boundaries, and even international boundaries. This cross-jurisdictional

character of crises—evident with such challenges as global climate change, economic depression, and health pandemics such as SARS—makes it essential that organizations with little experience working together can cooperate effectively.

Crisis Management Research and the Case Writing Method

Research conducted on crisis management in the United States is currently being done across a number of academic disciplines. These include public administration, public communication, psychology, and foreign policy decision making. Each of these disciplines has a unique research outlook. However, studies of crisis management tend to focus on one question: what factors best explain success or failure as decision makers try to prepare for, respond to and recover from crises?

To answer this question, we focus on a distinct collection of social-psychological, bureaucratic and organizational variables that appear to make the difference between success and failure in times of crisis. Each of the cases in this book look at each of these variables, which include problem framing, preparedness, the management of information and the media, and the formation of a decision unit. Our case research methodology is often called the 'structured-focused comparison methodology'. It is 'structured' because each case asks the same set of questions. It is 'focused' because each of the questions is drawn directly from ideas and theories that come out of current academic research. It is 'comparative' because generalizations about crisis behavior can be drawn by comparing across all cases. Finally, 'case study' simply means that the researcher can choose different kinds of crises, disasters, and emergencies to compare. In short, the comparative case study methodology allows the researcher to:

(1) be systematic
(2) generalize across cases
(3) examine where phenomenon is present and absent
(4) consider causality
(5) build theory

Lessons Learned

The cases in this book allow us to make a number of generalizations about what dangers face public officials as they confront a crisis situation and what processes tend to facilitate effective crisis management. Lessons learned from the book include the following:

(1) Crises never happen in exactly the same way twice. However, organizational leaders often use the most recent crisis that they experiences as a guide for preparing for the next one. This can lead to faulty logic and the development of a frame of understanding that is inappropriate for the new situation.

(2) The first step in effective crisis management is to accurately assess risks across all areas where a potential crisis can occur. However, those doing risk analysis often have a political stake in the outcome of that assessment. For instance, a local police department may overestimate the danger of civil unrest in order to gain additional funding for the department. This political bias sends inaccurate signals to centralized government

officials about what risks are actually most pressing and, thus, distorts a rational allocation of resources. One solution to this problem is to appoint a risk assessment team without a political stake in the risk assessment outcome.

(3) Preparedness plans are useful, but should not be exclusively relied on to manage a crisis. This is because unusual and unanticipated combinations of system failures are normal in crisis situations, making standard operating procedures, protocols, and pre-established management plans of limited use.

(4) At the same time, the preparedness process is highly useful in helping different organizations to learn how to effectively work together. Working together on a plan helps to facilitate inter-organizational familiarity and the development of 'social capital' across organizations. This, in turn, facilitates positive interpersonal relations, effective communication, and effective problem solving.

(5) Effective crises planning centers on both prevention (activities designed to keep a crisis from happening in the first place) and on resilience (efforts, ideas, and information that help communities bounce back once inevitable crises do occur).

(6) Effective crisis management requires the capacity to act at the grassroots or local level. Citizens and local officials benefit from a capacity to react and respond to crisis situations in the event that centralized authorities are unable to act. The failure of crisis management often occurs because management efforts are overly hierarchical.

(7) Sometimes poor decision making by public officials during a crisis occurs because they act before all information is known. We have found that in the rush to act, officials may come together around one plan of action without considering other plans. One effective response to this danger is to make sure that it is the role of someone on the management team to express a contrary viewpoint and to push the group to consider options that have not been expressed.

(8) Crisis management simulations are often highly effective ways to discover weaknesses in the crisis management design.

(9) Good crisis management includes efforts to 'learn' while the crisis is occurring. Crisis management planning, therefore, should include a discussion of how to collect information about what is going right and what is going wrong as the crisis is taking place. Only through learning do public officials ensure that they don't repeat their mistakes when the next crisis happens.

Conclusion

History contains thousands of examples of public officials who misunderstood what was happening during crisis situations and/or were prevented from acting effectively because of organizational, bureaucratic, or psychological barriers. A systematic study of crisis management is, therefore, needed to better understand what exactly contributes to successful or unsuccessful

crisis outcomes. Research using the case writing methodology helps us to draw broad conclusions about the kinds of situations and institutional arrangements that facilitate effective crisis management. We hope that practitioners that read this book will find valuable insights about the many factors that facilitate or hinder effective crisis decision making. For the researcher, both in the United States and abroad, we hope that the book will be used as a model for how crisis management case studies can be systematically investigated and comparatively analyzed.

1993 Cryptosporidiosis Outbreak – Milwaukee, Wisconsin[1]

I. Introduction

Description and Significance of Case

The subject of this case study is the 1993 outbreak of *cryptosporidiosis* in Milwaukee, Wisconsin. During March and April of 1993, an estimated 400,000 individuals in the five-county greater Milwaukee area developed *cryptosporidiosis* after drinking contaminated municipal water. It is estimated that more than 100 persons in the Milwaukee area with compromised immune systems died prematurely after being infected with *cryptosporidium*. The Milwaukee *cryptosporidiosis* outbreak was the largest outbreak of waterborne disease ever reported in the United States.

This case is significant for several reasons. First, the outbreak represented a serious threat to public health, first in the Milwaukee area, but to other communities throughout the country as the infection was transmitted by travelers passing through the area. While typically not fatal to the majority of individuals, the infection hastens morbidity in individuals who may already be vulnerable due to pre-existing health conditions or compromised immune systems. Secondly, the economic impact of the outbreak was high for the city of Milwaukee. In 2003, the Centers for Disease Control (CDC) published a cost-of-illness analysis using data collected during the outbreak. The CDC estimated that the total cost of medical treatment and productivity loss during the incident was approximately $96.7 million. This figure does not include the heavy financial investment subsequently required of the Milwaukee community to fund upgrades of the Milwaukee water infrastructure. Besides the loss of labor due to illness-related absenteeism, businesses were also required to undertake expensive measures to address the water contamination.

The Milwaukee outbreak has also resulted in many significant impacts for public health officials worldwide, as it advanced the body of scientific knowledge about *cryptosporidium*. The incident highlighted the need for coordinated efforts among the diverse bodies that have a vital interest in drinking water safety, including public health, environmental protection, and water treatment agencies. It focused the attention of national environmental regulators on the importance of improved watershed protection, as well as drinking water standards. It also resulted in the development of important innovations in the technology needed to monitor and treat water.

While numerous relevant actors were involved in this incident, including representatives from organizations on a local, state and national level, the *cryptosporidiosis* outbreak will be considered from the perspective of Milwaukee Mayor John Norquist. The case study encompasses the period beginning on April 5, 1993, when Milwaukee Health Department officials first received information about a widespread gastrointestinal illness and ending April 14, when the water-boil advisory was lifted. Although only 155 laboratory-confirmed cases of

[1] This chapter was originally research and written by Cecile Batchelor. Additional research, editing, and writing was conducted by the editors.

cryptosporidium infection were recorded during this 10-day period, it is estimated that approximately 403,000 people (about 40 percent of the population) had diarrhea that could be attributed to this outbreak. (Blair, 1995)

The nature of the situation--a response to a natural disaster--and the issues involved in the case fulfill the three requirements that Eric Stern suggests are necessary for a situation to be considered a crisis (Stern, 2002). The situation *posed a threat to a number of basic values*. These included the obvious threats to the health and well-being of the citizens and visitors of Milwaukee, as the result of the contamination of the public water supply. The economic interests of residents and business owners in the region were also at risk. Clearly, the second requirement of *urgency* was met in this incident. As much as 40 percent of the population of the Milwaukee region was sickened by *cryptosporidiosis*, and the infection was particularly dangerous to vulnerable groups, such as immune-suppressed individuals, the elderly and the very young. Finally, *a high level of uncertainty was present during the crisis*. The outbreak was unexpected, and initially was not definitively identified, as there was very little prior research available on the *cryptosporidium* infection. Once identified, researchers were unsure of the source of the infection, a critical piece of information necessary to effective response.

Context of the Case

Cryptosporidium is a microscopic parasite that causes the diarrheal disease *cryptosporidiosis*. There are many species of *cryptosporidium* that infect humans and animals. The parasite is protected by an outer shell that allows it to survive outside the body for long periods of time and renders it highly resistant to chlorine disinfection. While this parasite can be spread in several different ways, water (both drinking water and recreational water) is the most common method of transmission. *Cryptosporidium* is one of the most frequent causes of waterborne disease among humans in the United States. (EPA, 1997) In the 1980s, scientists were witnessing a resurgence of microbial diseases, such as tuberculosis, that had been thought to have disappeared and the emergence of new strains of disease that had not previously been witnessed in humans. (CDC, 1995)

A number of factors rendered Milwaukee particularly vulnerable to an outbreak of *cryptosporidiosis* or other waterborne illnesses. Milwaukee, unlike most coastal towns, uses surface water from Lake Michigan instead of ground water for its public water supply. The area is home to dairy and cattle industry facilities, wildlife regions and human sewage treatment plants, all of which could potentially contribute to the contamination of drinking water through run-off. A rapid spring thaw in the spring of 1993 had resulted in a heavy influx of water into Lake Michigan. Most importantly, a new filtering process and water intake system had recently been installed for the water treatment plant servicing the south side of the city. After the incident, it was determined that the intake system was placed too close to the sewage treatment facility, and that the filtering process was not functioning at full efficiency. It should be noted that all applicable water quality standards were met by the city's treatment plants throughout the outbreak. (Blair, 1995)

In 1991, Milwaukee had already documented a high incidence of *cryptosporidiosis* in HIV/AIDS patients, a community particularly vulnerable to the dangers of this infection. Indeed, Milwaukee had received the dubious distinction of having the highest rate of the disease of any

city in the U.S. This serious problem had led to rancor between the MHD and the AIDS community, but no evidence exists that any link between the illness and the water supply was ever considered.

On Monday, April 5, 1993, the Milwaukee Health Department received calls from several sources reporting high incidences of absenteeism in schools and workplaces due to a widespread gastrointestinal illness. The evening before, the local news station had aired a story about the run on anti-diarrheal drugs at local pharmacies, including footage showing the empty store shelves where these should have been stocked. Over the course of the day, it became clear to public health officials in Milwaukee that there was a serious outbreak of illness.

II. CHRONOLOGY

April 5, 1993

Dr. Gerald Sedmak, Milwaukee Health Department (MHD) begins receiving calls reporting widespread stomach illness.

MHD labs request specimens from six local laboratories for further examination, as well as daily water testing reports from the Milwaukee Water Department.

April 6

Dr. Stephen Gradus (MHD) reviews water testing data; observes turbidity in effluent from the Howard Avenue plant (servicing the south side of Milwaukee).

Dr. Jeff Davis, Chief Medical Officer, Wisconsin Department of Health (WDH) is informed of the turbidity readings and agrees to come to Milwaukee the next day.

MHD receives viral isolates from six labs across the city and prepares fast acid smears on samples received.

Staff meeting of MHD: Preliminary review of water data reveals increase in coliform counts that correlate with heavy rainfall. *E coli* counts are all within Department of Natural Resources standards following treatment.

Laboratory results reviewed by MHD laboratory reveal that E coli bacteria are not the cause of the outbreak.

April 7
Morning

Crisis Team Meeting: Dr. Jeff Davis (WDH), other WDH officials, and MHD officials. Department of Public Works (DPW) and the Metropolitan Milwaukee Sewerage District are represented. State team housed in the Public Health Services Bureau offices and additional phones installed.

Historical documentation of gastrointestinal illnesses since March 1 is solicited from local medical facilities in order to define outbreak and case definition.

CDC (Atlanta) is contacted and agrees to provide comprehensive laboratory testing, not available at the state or local level, on selected stool and blood specimens.

WDH reviews water test results, finding high levels of turbidity that are still within Wisconsin Department of Natural Resources (DNR) standards. A literature search on significance of turbidity in treated water is initiated.

Dr. Davis requested four years of detailed daily water test results.

First report of a positive test for *cryptosporidium* in a patient's stool sample. Dr. Gradus suggests *cryptosporidium* as a possible causal agent.

Late afternoon Crisis Team meeting (WHD, MDH, DPW, Mayor's Office): Group decides that one isolated case of *cryptosporidium* is insufficient information from which to generalize about the outbreak. Additional test results deemed necessary.

Press conference held to update the community on the situation and the investigatory process.

MHD and WDH staff members conduct phone interviews with patients, and continue analysis of laboratory data. Confirmed number of cases increases to 8. Speculation regarding the source of infection centers on the city's water supply.

8:00 p.m. Crisis Team meets with Milwaukee Mayor John Norquist. After contentious discussion with experts about the implications and limits of current information, the Mayor decides to issue a boil-water advisory to the public, in effect until further information is available.

9:00 p.m. Mayor addresses the community from City Hall, issuing the boil-water advisory.

Eight confirmed cases of *cryptosporidiosis.*

April 8 Extra staff is designated to respond to increased call volume created by public concerns following the boil-water announcement.

Filters from the two Milwaukee Water Works filtration plants sent for analysis to one of three national labs with testing capability.

Based on experts' opinion that illness is concentrated on the south side, and the continuing possibility of water quality problems, the Mayor decides to close the Howard Avenue plant. Linnwood Plant must provide all city water.

Late afternoon	Press conference: The Mayor announces the closure of the Howard Avenue plant.
	Thirty-five confirmed cases of *cryptosporidiosis*.
April 9	The Howard Avenue plant is officially closed at 8:30 a.m., after completion of water sampling.
	Studies continue to monitor the outbreak. The U.S. Environmental Protection Agency is contacted for assistance in the ongoing investigation into source of the contamination.
2:45 p.m.	Crisis Team meets with Mayor Norquist.
3:30 p.m.	Mayor Norquist holds a press conference, updating public on Howard Avenue Plant closure, the continuing investigation and its consequences, and opens a conversation regarding strategies for prevention of future outbreaks.
	Forty-two confirmed cases of *cryptosporidiosis*.
April 10	Extra public health nurses, environmental health specialists and clerical staff join managers and others to answer questions phoned in by the public and press and to staff the investigation.
3:00 p.m.	Crisis Team meets with officials from critical city departments, Mayor Norquist, Secretary Gerald Whitburn of the Wisconsin Department of Health and Social Services, and State Senator Brian Burke. *Cryptosporidium* is confirmed as cause of outbreak. Group decides that the risk of secondary infection is a critical issue. They agree that media coverage is required to provide guidance to the public in order to reduce perpetuation of the disease.
3:30 p.m.	The Mayor holds a press conference to update the public on the outbreak situation and the status of the investigation. He announces that the health department will investigate the death (possibly attributable to *cryptosporidium*) of a patient who was receiving chemotherapy.
	Sixty-two confirmed cases of *cryptosporidiosis.* One possible death.
April 11	Easter Sunday, a limited number of working staff continue to respond to public phone requests for information, and prepare for the arrival of national experts

April 12

Nine teams are established to respond to the outbreak and to conduct studies to determine cause, spread and impact of illness:

1. ***Environmental****: to research sources of contamination.*
2. ***Nursing Home Study****: to examine vulnerability of the elderly.*
3. ***School Data****: to analyze school absentee rates*
4. ***Random Digit Dialing Telephone Survey****: to determine spread of disease and knowledge of/compliance with boil-water advisory*
5. ***Emergency Room Follow-up Study***
6. ***Water Filter Study****: to analyze use of home water filters, soda dispensers, vending machines, and hospital ice machines.*
7. ***Laboratory Projects/Case Confirmations****: to collect of specimen packs for the CDC. Positive* ***cryptosporidium*** *results are fed back to the case investigation team.*
8. ***Confirmed Case Investigations****: to conduct patient interviews.*

The next one has no task, unlike the others

9. ***Public Response Team****: To develop response plans. Team is comprised of nurses and environmental health staff.*

3:30 pm

Daily press conference is held to update public on the outbreak and status of the investigation. Findings are reported, indicating the concentration of the illness on the south side. The source of the contamination has not yet been determined. Public is reminded of proper practices to avoid secondary contamination.

Sixty-two confirmed cases of *cryptosporidiosis.*

April 13

The MHD distributes information regarding the outbreak to local hospitals and physicians.

2:30 p.m.

Crisis Team meeting is held. It is reported that water samples drawn on April 9 from both the Linnwood and Howard plants have tested clean. (Additional source water samples were drawn on April 13 and flown to the lab for analysis.) The Mayor raises concerns about food recalls potentially damaging the financial situation and reputations of products made in Milwaukee. The team discusses the needs of immune-compromised and other at-risk individuals.

Further discussion deals with testing and related safety standards:

- The team asks for clarification about disinfection guidelines and whether ice machines are safe to use.
- The EPA representative raises concerns about the ineffectiveness of the methods being employed to detect rapid changes in the effluent.

- The team requests guidance and specific advice for the public on the issue of water filter use, as no approved filters for cryptosporidium exist.
- The Mayor asks for specification of the standards necessary to lift the boil-water advisory. Dr. Davis and staff from the Department of Natural Resources state that all water in the system should test free from cryptosporidium.
- The Mayor insists that more stringent water quality standards be established for Milwaukee, regardless of standards set by the DNR and EPA.

3:30 p.m. Mayor Norquist holds daily press conference to update the public on the outbreak situation and the status of the investigation. The public is reminded that the boil-water advisory is still in effect. The encouraging results of water testing, as well as the plan to continue water monitoring, are announced.

5:30 p.m. The Crisis Team and related experts meet to discuss the details of the lifting of the boil-water advisory, and the need to prepare written public information on a variety of specific topics.

One hundred fifty-five confirmed cases of *cryptosporidiosis.*

April 14 The expanded Crisis Team meets to discuss the details of water sampling.
Morning This group reconvenes at 2:15 to discuss a number of critical issues, including recalled food products and additional demand on the water system once the advisory is lifted, water test results and the reporting of test results to the public, conclusions drawn from the evidence pointing to the Howard plant as the origin of the outbreak, the consequences of discontinuing the boil-water advisory, and details of the flushing of the water system.

9:00 p.m. Mayor Norquist holds a press conference, announcing the lifting of the boil-water advisory. The public is updated on the situation and test results.

** The above chronology is based on documentation in Miller, 1993.*

III OCCASION FOR DECISION

On the evening of April 7, two days after the initial reports of high rates of gastrointestinal illness were made to the MHD, discovery of the presence of ***cryptosporidium*** *in eight stool samples led experts to suspect this microbial pathogen as the probable cause of the outbreak. Known to be primarily a waterborne parasite, the implications suggested possible contamination*

within the city's water supply system. What action should be advised to protect the public from further infection?

For the purposes of this analysis, the occasion for decision chosen involves the question addressed by the Crisis Team on whether to issue a public boil-water advisory, a standard procedure in dealing with serious water contamination events. As a rapid response is essential to the containment of an outbreak of waterborne illnesses, decisions to initiate boil-water procedures must often be made with incomplete or unconfirmed information; however, they are not taken lightly. The implications for a community of such a decision are serious and costly, with the subsequent required monitoring, treatment, information distribution and additional interventions triggered by the issuance of such a status costing millions of dollars. Given the lag time between the beginning of the outbreak and the identification and implication of *cryptosporidium* as the culprit in Milwaukee, differences existed between stakeholders regarding the necessity for such an action. The MHD, contending that a serious public health risk still existed, supported the boil-water advisory. Officials of the Milwaukee water department were unwilling to fully accept the possibility that public water had been contaminated, or that such a contamination had not been detected by their monitoring process. They argued that the standard indicators of contamination (which had never surpassed clean water parameters) had already returned to normal levels, obviating the need for such actions. This decision process unfolded during the afternoon and evening hours of April 7.

Decision Unit

The decision unit for this occasion for decision was Milwaukee Mayor John Norquist, acting as a *predominant leader*. This is confirmed in an analysis based on the decision tree for determining decision units presented by Hermann and Hermann. In responding to the questions posed in this theoretical construct, it is clear that: 1) Norquist was legally empowered to make the policy decision to institute a boil-water advisory, and to commit/withhold the city's resources in an emergency situation, regardless of opposition; 2) Norquist, as a fairly well-known urban theorist (a 'New Urbanist'), had long indicated interest in quality of life issues within urban areas, which would reasonably translate into interest in the issue of water quality; 3) Norquist was convinced that the implementation of a water-boil advisory was critical to the well-being of the Milwaukee community; 4) Norquist would have a personal interest in this issue, as he viewed water quality as important to urban quality of life; 5) Norquist actively participated in the decision process throughout the duration of the crisis; and 6) while Norquist solicited the views of the various stakeholders in the decision process, there is no indication that 'veto' power was granted to any of these advisors. The situational challenge for Mayor Norquist was to protect the health of the citizens of Milwaukee, without committing city resources to unnecessary and costly measures in the process.

Policy Decision

Upon recognition that Milwaukee was experiencing a serious outbreak of gastrointestinal illness, MHD staff began to gather data (including historical information) in order to understand the nature and extent of the situation. The epidemiological team initially suspected either an airborne or waterborne pathogen. According to customary procedure, they began to map out the

prevalence of reported cases of diarrheal illness, from which a pattern began to emerge, indicating a heavily infected area on the south side of the city. The incident dispersal pattern suggested that the most likely source of the outbreak was water. In Milwaukee, the north side of the city is serviced by the Linnwood treatment plant and the south side by the Howard Avenue plant. Investigations commenced at both of these facilities.

Additional findings supported the idea that the incident was based on a waterborne illness. On the morning of April 7, the first confirmed case of *cryptosporidium* in a patient stool sample was reported to the MHD. By the end of the same day, seven more confirmed cases were reported, bringing the total to eight. *Cryptosporidium* is a waterborne microbe that is highly resistant to conventional water treatment processes and monitoring procedures, including the measurement of turbidity or water cloudiness.

Data received from the Water Department for the two Milwaukee water plants showed increased turbidity readings of untreated intake water and treated water that was outgoing to customers from the southern plant, beginning on approximately March 21, with unprecedented levels of turbidity from March 25 through April 5. All of these readings were, however, within EPA and Wisconsin Department of Natural Resources standards. By April 7, turbidity readings had returned to normal. (MacKenzie, *et. al.,* 1994)

Based on these various pieces of information, by the early evening of April 7, officials at the MHD were certain that the source of the outbreak was *cryptosporidium* that had been transmitted via the drinking water distribution system, most likely from the southern plant on Howard Avenue. At a Crisis Team meeting early in the day, when only one case of *cryptosporidiosis* had been confirmed, their recommendation of the implementation of a boil-water advisory had been rejected as based on too little information. By 8:00 p.m., armed with the confirmation of eight cases and the expectation of many more, the MHD team once again raised the issue. Members of the Crisis Team representing the Milwaukee DPW expressed considerable resistance to this interpretation of the data implicating the water supply, and to the idea of instituting a boil-water advisory, especially as the current readings of turbidity indicated normal levels.

Given the conflicting findings and opinions of the two principle agencies responsible for advising him on appropriate measures to undertake in response to the crisis, the Mayor turned to the expertise of a third party, Wisconsin Department of Health Chief Medical Officer, Dr. Jeff Davis. Davis had arrived from Madison that morning and had joined the Crisis Team. It is reported that, after hearing the positions of the MHD and MDPW, Mayor Norquist poured a glass of city water and placed the glass in front of Dr. Davis, asking, "Would you drink this glass of water right now?" When Dr. Davis responded that he would not, Norquist asked, "If you are not going to drink it, then why should the people of Milwaukee?"(*Journal*, April 8, 1993) At 9:00 p.m., the Mayor held a press conference announcing the implementation of a citywide boil-water advisory, to remain in effect until the situation was resolved.

Decision Dynamic

Decision-making during the *cryptosporidiosis* outbreak of 1993 was rendered complex for a number of reasons. Critical among these was the relative lack of information available on the issue of microbial health threats in 1993. Scientists had noted that such threats were on the rise, involving the resurgence of known diseases such as tuberculosis, but also the emergence of previously unknown illnesses such as *cryptosporidiosis*. While ultimately this incident played a significant role in advancing the body of knowledge concerning *cryptosporidium* and public health, during the period in question much of this information was yet unknown, leading experts to make recommendations on the basis of 'best guesses'.

A second challenge to decision making arose around the lack of communication and cooperation between city agencies involved in advising the process. The MHD and the DPW had not faced an incident of waterborne illness and had no interagency infrastructure upon which to build cooperative procedures. Although no accusations of malpractice were being aimed at the Water Department, this department nonetheless responded from a highly defensive position and was reticent to accept increasingly strong indications that the water supply was contaminated.

In his role as Mayor of Milwaukee, John Norquist participated as a mediator in the discussions between these agencies, encouraging the expression of differing positions. He then exercised his authority to impose decisions on the multiple stakeholders in determining the ultimate policy response, thus acting as a *predominant leader*.

In the case of decision-making by a predominant leader, the key contingency or dynamic is associated with the leader's sensitivity to information from the political or situational context. In evaluating the level of sensitivity, measurement is based on an evaluation of the flexibility the leader exhibits in his pursuit of goals and choice of means to attain those goals. In choosing to implement the boil-water advisory, Norquist was operating with a clear goal of mitigating the impact of the *cryptosporidiosis* outbreak on the citizens of Milwaukee. The means to accomplish this goal were flexible, based on the input that he received from responsible agencies within the local Milwaukee government, as well as on advice from external experts. Mayor Norquist was very interested in the outbreak and its management—he perceived it as a crisis. He met with the crisis management team many times in the first few days and remained open to their needs and to their input. His reported willingness to consider both concurring and dissenting opinions suggests sensitivity to contextual information, although this information was interpreted within the context of the relatively inflexible, problem-focused goal. Ultimately, in the face of a deadlocked conflict between the two camps in the Crisis Team, Norquist accepted that consensus would not be reached and made the policy decision based on the best information available to him at the moment. Such characteristics would categorize Norquist as exercising the style of *strategic leadership* with respect to this decision.

IV THEMATIC ANALYSIS

Definition of the Situation and Framing

In the case of the *cryptosporidiosis* crisis, the press and members of the public health community simultaneously noticed the high incidence of absenteeism from schools and

workplaces, as well as the high demand on anti-diarrheal medications that had resulted in shortages in the city pharmacies. While these groups were responsible for identifying the *existence* of a problem of widespread illness, it was among the first order of business for the incident Crisis Team to frame the *nature* of the problem.

The Crisis Team was faced with choosing among several possible framing options, each resulting in different implications for a number of important issues, such as the determination of which agency would take the lead in the response, and the various methods that would be available to the response effort. The most important framing options included a public health framework, a water contamination framework, and a political framework. Even at these early stages, members of the MHD perceived that the outbreak would emerge as a significant public health issue, and that the MHD should take the lead. Other stakeholders supported the framing of the problem as a water quality issue (offering a clear scapegoat) or as a political issue (due to the perception of the potential magnitude of the problem and its solutions.) Mayor Norquist was persuaded that the issue was properly framed as a public health problem, and then set clear parameters for other responsible agencies to cooperate with the efforts of the MHD.

In framing the issue as one of public health, the health department was able to influence the nature of the interaction with the public, focusing on measures to deal with the health impacts of the disease and avoiding the expenditure of energy on finding a target for blame. This framing provided the best options for responding to the fear that began to spread in the face of the growing awareness of the illness. The focus on health-oriented responses gave officials a window of opportunity to explore more carefully the difficult issues surrounding the source of the outbreak. Once this was determined with some confidence, a second frame was presented by the Crisis Team, which focused on the restoration of water quality, enabling city officials to make clear that the crisis was not due to malpractice on the part of the water department.

Finally, as the outbreak abated, longer-term issues came to the fore, and the framing of the incident gained a political component. Mayor Norquist, a self-described 'conservative Socialist', had long been interested in issues surrounding the effective delivery of high-quality public services (and the discontinuation of low-quality or low-impact services.) At this point, Norquist framed the issue in the context of this political perspective, supporting the imposition of higher standards of water quality and the implementation of extensive (and expensive) upgrades to Milwaukee's water system infrastructure.

Preparedness for Dealing with the Outbreak

Although the *cryptosporidium* incident in Milwaukee remains the largest documented waterborne disease outbreak in U.S. history, the Milwaukee Public Health Department was prepared in many ways to deal with the crisis. Experience with an outbreak of measles in 1989-1990 and an outbreak of Hepatitis A in 1990 had led to the development of a number of standard epidemiological crisis procedures within the MHD that were initiated immediately. This organizational experience extended to the level of individual experience, as many members of the staff at MHD had participated in the management of the previous two outbreaks. *Cryptosporidium* was an emergent microbial pathogen about which little was known. However, Dr. J. Gradus, an official within the MHD, had focused his microbiology post-doctoral work on

c*ryptosporidium*, which included a study of a previous outbreak, so coincidentally a resident expert was a member of the team. The Milwaukee team consulted academics and experts from organizations across the state and nation, including the Centers for Disease Control and the Environmental Protection Agency, and recruited many retired public health nurses to conduct surveys, prepare fact sheets, and answer calls from the public. The concentration of expertise and the rapid employment of standard operating procedures allowed the MHD to recognize critical patterns and diagnose the nature and source of the outbreak within 60 hours.

The outbreak of a waterborne illness in Milwaukee was certainly unexpected, especially one as extensive as this incident, as it had not been preceded by any events often associated with the contamination of water supply, such as a natural disaster in the area. The magnitude of the incident required interagency coordination within the city. This was difficult to achieve in the early stages of the crisis, due to a lack of prior cooperation and communication between the MHD and the DPW, and the reticence of the Water Department to accept the findings and conclusions being proposed by the Health Department. The Mayor was prepared to exercise his authority in defining expectations for cooperation, but also in facilitating the establishment of relations between the two agencies.

Interactions with the media were carefully planned and coordinated, following a clear policy of releasing only scientifically verified information to the public. The team was also prepared to use the press to disseminate critical guidance to the public for dealing with the outbreak.

Value Complexity

Value conflicts played a limited role in the immediate response to this crisis, in large part due to early decisions regarding the framing of the situation and the leadership of Mayor Norquist. In determining to frame the outbreak as a public health issue, the key value was defined: the protection of the health of the Milwaukee community. The early conflict between the health and water departments, driven by concerns on the part of the DPW that blame for the incident would fall on the Water Department, were quickly resolved. The economic repercussions of the response were also tabled until the health crisis was resolved, although there was attention throughout the incident to the impact of the boil-water advisory and the perceptions of water safety in Milwaukee on local businesses with a national market. These included the breweries, the dairy industry and concentrated animal feeding operations, which represent a large proportion of the economic health of Milwaukee and the State of Wisconsin.

Mayor Norquist was a leader whose complex positions on the delivery of quality public services to urban populations without excessive or wasteful expenditure were being considered by urban theorists on a national level. Norquist grappled often with the value conflicts that his convictions inherently contained when considering policymaking regarding public services. In the early stages of the crisis, when the goal of the city response was clearly defined as the protection of the health of the community, he did not appear to be influenced by his concerns over the fiscal impact of the response. At later stages of the crisis, when decisions regarding the upgrading of the water delivery system in Milwaukee were under consideration, Norquist was

required to balance the two deeply held values of high-quality urban services and fiscal conservatism – often a difficult pair of values to reconcile.

Patterns of Leadership

Experience with widespread crises endangering public health and well-being in U.S. cities have led to the evolution of a pattern of leadership that seems to have become a standard in crisis management in major urban areas. Local authorities are expected to take a lead in the preparation and implementation of emergency measures, and the highest ranking official (the Mayor) is expected to be visible on the front lines and responsible to his constituents. Mayor Norquist's actions were well within the expectations of his job description in overseeing the evaluation of the *cryptosporidium* crisis, as well as the development and implementation of a crisis response. As the understanding of the problem required highly scientific background, Norquist was obligated to rely on the advice of the members of his crisis team in making decisions. However, when faced with conflicting opinions within this team, he understood the need for decisive action and used his authority to impose a plan of action. Norquist also held daily press conferences to keep the public informed, beginning with the initiation of the boil-water advisory until it was lifted.

Organizationally, Norquist had a highly competent team for dealing with a public health emergency, consisting of the heads of the various responsible agencies, as well as a number of outside experts (including officials from national regulatory agencies such as the CDC.) While he did seek information from this team, there is no indication that he relinquished any part of his decision-making prerogative to the agencies represented in the crisis team.

Information Management

Search for Additional Information

During the approximately sixty hours that elapsed between the recognition by public health officials that a crisis situation was unfolding, and the determination of the source of the crisis, the MHD and Milwaukee DPW dedicated significant resources to gathering information that would enable them to understand and respond to the crisis. This involved a high level of openness to information, exemplified by the Mayor and the MHD. Although the DPW was reticent initially, this organization eventually became more open to information as its leadership realized that the purpose of the information was not to direct blame in their direction. This openness to information allowed for a high level of creative thinking with respect to the design of studies and theory-building, which contributed greatly to the rapid identification of the problem and the determination of an effective response. Despite the rising public fears, the Crisis Team was not pressured into 'doing something now', and maintained the policy of decision-making only when reasonably confirmed (not speculative) information was available. Open lines of communication between agencies and the Mayor's office, as well as frequent meetings of the Crisis Team, were critical to this effort as well.

Interaction with Media

During the *cryptosporidiosis* crisis, interactions between decision-makers and the media are generally acknowledged to have been well handled. The press had been among the first to notice the unusual circumstances indicating a problem, and the MHD responded immediately to the questions that were being raised by the media outlets. A number of important policies governed these interactions. First, the Crisis Team maintained regular and open communications with the press. The Mayor and his office organized daily formal press conferences, and Dr. Paul Nannis, Milwaukee's Commissioner of Public Health, became the primary designated spokesman for the Crisis Team. During the crisis, Dr. Nannis made himself highly accessible to the local and national press. Secondly, the Crisis Team resolved to release only confirmed (not speculative) information to the press. This would help the team to gather information effectively and to avoid a public panic. Thirdly, the Crisis Team understood the critical role of the press in disseminating information to the public. Open and positive communications were essential to advise the public on recommended measures for dealing with illness, as well as with water quality until the city could confirm that the drinking water was safe. As the realization evolved that other communities nationwide could be affected by the transfer of *cryptosporidium* by travelers, the press also played an important role in making information available on a national scale. To this end, Nannis participated in national television network interviews and was featured in front-page stories in a number of national news publications.

Interaction with Affected Stakeholders

Clearly the citizens of Milwaukee represented a key group of stakeholders during the *cryptosporidiosis* outbreak, as they faced the immediate threat of illness and, in some situations, death, from the disease. Interaction with the public was extremely successful. The press was utilized to disseminate information widely to this group, and an extensive system of phone lines were installed and manned through the MHD to assist individuals with questions. Within this stakeholder group, the AIDS community represented a subgroup with special concerns. Since 1976, when it was first discovered in human patients, *cryptosporidiosis* was considered an AIDS-defining illness, and was recognized as a particular risk to immuno-suppressed individuals. As such, the HIV-positive community within the Milwaukee population was a special stakeholder in the crisis. Milwaukee had been identified in 1991 as the U.S. city having the highest rate of cryptosporidiosis among AIDS patients, and strained relations between the AIDS community and the MHD had been in the public eye. (*Sentinel*; June 3, 1993) During the 1993 outbreak, the Crisis Team maintained a special liaison with the AIDS community leaders, often releasing information to them before it was released to the general public. Finally, as the possibility of the spread of the contamination to other communities nationwide was recognized, the Crisis Team participated in nationwide dissemination of information through the national press.

Politico-Bureaucratic Cooperation and Conflict

In the early stages of the crisis, the process of framing the situation was a critical component of the effective response. The MHD clearly advocated framing the problem as a public health issue. The DPW was wary of full cooperation with the MHD, a reticence that had

its source in mistrust of an organization with which it had never worked in the past and concerns that the framing would, in reality, focus on water contamination (i.e., on blaming the Water Department for the situation.) As the Mayor had built his reputation in large part on taking strong--and sometimes controversial--positions on issues surrounding public services, some in his Office advocated a political frame for the incident. Ultimately, as a result of the Mayor's decision to support the MHD position, the outbreak was framed as a public health problem. Coordination and cooperation were difficult between the two major agencies responsible for the response efforts, but the Mayor again intervened to establish expectations for these interactions. This intervention was necessary in the short term. However, over the duration of the crisis, improved communications and trust between the MHD and the DPW led to greatly improved cooperation. Other factors influenced this overall tendency towards cooperation. The urgency of the situation and the serious risk to the public created conditions that favored cooperation. The Crisis Team consisted of a relatively small group of individuals representing a limited number of organizations, facilitating cooperative behavior. The important dynamic of *leader attentiveness* was also clearly important in the case of Mayor Norquist, who was personally committed to the effective resolution of the crisis.

Transboundary Coordination and Crisis Internationalization

As the MHD team gathered evidence linking the outbreak of the gastrointestinal disease to the presence of *cryptosporidium* in the water supply, it became clear that a solution to the problem would require the coordinated efforts of health officials and the DPW. Such efforts would require unprecedented cooperation that crossed jurisdictional boundaries, and for which there was no established communications infrastructure or history. A cooperative relationship was difficult to establish at first, as the Water Department officials responded to the findings as a threat to their reputation and an imputation of responsibility for the outbreak. As the predominant leader, Mayor Norquist imposed the decision on the group, forcing the DPW to work cooperatively with the MHD. However the initial framing of the problem had focused on the outbreak as a public health issue, minimizing the efforts focused on assigning blame. As trust grew between the members of the Crisis Team, cooperation and coordination became significantly easier, and the reticence of the DPW decreased. Media reports at the time do not suggest that there was any significant dissent with respect to the measures proposed for dealing with the crisis, including both the immediate provisional actions, such as the boil-water advisory and the decontamination of the water system, but also with the longer term solution of upgrading the city's water system.

The impact of the crisis did potentially cross sovereign boundaries, as travelers were able to spread the *cryptosporidium* infection. Decision-making authority was not transferred as a result of this fact. However, the effort made by Milwaukee officials to inform impacted communities allowed for responsible officials to make more effective decisions.

Sequencing and Synchronicity

During the first 60 hours of the incident, the Crisis Team engaged primarily in information gathering. The decision to defer proposing a definitive response to the crisis (a decision 'not to decide') was a provisional action, described by Hermann as being limited in

scope and involving an expectation that further information would be available, allowing for more definitive decision-making. The result of this action was the confirmation of the source of the contamination and a second provisional decision to institute a boil-water advisory. Invoking the advisory required additional decision-making, including the determination of the standards required in order to revoke the policy. In addition, this provisional decision did not obviate the need to deal with the true source of the problem, which was the contamination of the water system.

These provisional decisions provoked different types of feedback. The first type of 'feedback' was informational in nature – the information gathering methods employed in the early stages of the crisis required interaction with the public in order to understand the nature of the crisis. This led to the identification of the specific illness and its source, allowing for subsequent decision-making to be effective. The second type of feedback was emotional in nature – the Crisis Team was aware of the rising fear among the public. The decision to initiate the boil-water advisory, despite the hardship that it involved, helped the team to manage these fears successfully, keeping the focus on the public health issue framework and offering citizens the means of participating in the response.

The widespread impact of water contamination in an important urban hub meant that the Milwaukee Crisis Team was required to manage issues on a number of fronts. The economy of the Milwaukee area is highly dependent on the production of nationally distributed food and dairy products, animal nutrition products and beverages (primarily beer). The Team made every effort possible to minimize the disruptive impact of the crisis on these industries while ensuring public safety. In addition, Milwaukee is an important national center, hosting sports events, conferences, and international travel facilities. Several such events were scheduled to take place during the crisis period, and, again, the Crisis Team and the Mayor's office had to take into account the impact of the outbreak on these events.

Culture

Grid-Group cultural theory as presented by Thompson, *et. al.*, proposes a framework of four typologies for understanding the cultural influences at work within an organization, providing insight into decision-making behaviors exhibited by that organization. In the case of the decision to initiate a water-boil advisory, the *hierarchical* approach to decision-making was employed. This paradigm does suggest the existence of well-defined rules and procedures, which may not have been formally expressed, but which seemed to be recognized and accepted by the various actors in the policy-making process. Mayor Norquist, though open to the information being presented by his team of experts, retained the decision-making authority, and established clear expectations regarding the implementation of his decisions. Although the dissenting opinions of the DPW had been accepted at the discussion, once the decision was made, this agency accepted the decision and cooperated.

In other examples of decision-making during the crisis, it is interesting to note that there were other organizational cultures at work. Within the MHD, for example, the predominant influence on the organizational culture seemed to be egalitarianism, not uncommon in an entity based on scientific research and policy-making. Paul Nannis, Milwaukee City Health

Commissioner, was known for his inclusive attitude and preference for consensus in decision-making within the MHD. His pursuit of assistance from external state and federal experts, academics, and retired health workers in the face of the *cryptosporidiosis* crisis, was indicative of this approach.

Lessons Learned

While Milwaukee's *cryptosporidiosis* crisis was the largest outbreak of waterborne illness recorded in U.S. history, and was thus to some extent unprecedented, the MHD had dealt with at least two significant disease outbreaks in the recent past. The Crisis Team employed their experience in developing effective and creative ways to analyze and respond to the problem. A number of other critical lessons were identified following the incident.

1. *In responding to public health crises, a complex network of established relationships is essential for effective action. Necessary partners include all potentially responsible agencies, the medical community, the press, the public, and any groups that may be at special risk during an outbreak.*
2. *Technology is a critical component of communications.*
3. *Local laboratory facilities are essential for the rapid analysis of potential health risks.*
4. *Public confidence is critical in managing a public health crisis.*
5. *Public confidence can best be maintained if care is taken to release only confirmed (not speculative) information, and interactions with the press and the public are handled by designated spokespersons who offer a clear and consistent message.*
6. *Public confidence can also be built by systematic interaction with the citizenry, even during times when no crisis is at hand.*
7. *Regular interagency consultation on major city projects can lead to better decision-making and crisis prevention.*
8. *The media plays a critical role in the rapid dissemination of information to the public.*

Aftermath

The aftermath of the *cryptosporidiosis* outbreak in Milwaukee certainly had an enormous impact on the city of Milwaukee, but also served as a wake-up call for the nation, especially for those policymakers interested in watershed protection, safe drinking water standards, and public health. The outbreak resulted in a number of important developments. The body of scientific knowledge about *cryptosporidium* as a new microbial health threat and its potential severe impact on human health has advanced significantly. The Centers for Disease Control and Prevention (CDC) and the U.S. Environmental Protection Agency have subsequently issued guidance to people with severely weakened immune systems containing measures to reduce the risk of infection with *cryptosporidium* in drinking water. Regulatory agencies and individuals committed to the improvement of watershed protection and drinking water standards have used the incident as a critical example supporting their cause, as have members of the AIDS community, who wish to focus national attention on the vulnerability of immuno-compromised

persons to this organism. The state of Wisconsin, and many others have begun to conduct more regular and extensive testing of water quality, and the incident has spurred research into improved methods and equipment for facilitating this process.

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1988 - THE YELLOWSTONE FOREST FIRES[2]

I. INTRODUCTION

Description and Significance of Case

The subject of this case study is the response to the 1988 Yellowstone Fires, which burned more than one million acres in the Greater Yellowstone Area (GYA) between June and October of 1988. On June 14, a lightning strike ignited a fire in the Custer National Forest, near the entrance to the northeastern corner of Yellowstone National Park. Over the next three weeks, seven more significant fires were ignited in the 12-million acre GYA, a region that includes two national parks, three national wildlife refuges, and seven multiple-use national forests, located in three states (Wyoming, Montana and Idaho.) Forest fires are a natural part of the yearly cycle in the GYA. However, exceptional weather conditions led to the merging and intensification of the effects of the 1988 fires, which defied all efforts at suppression by standard firefighting methods.

The case is significant for several reasons. The physical impact of the fires, while not limited to the Yellowstone National Park proper, did represent the most extensive wildfire that had occurred in the recorded history of the park. While fire had been an accepted component of the rejuvenation of natural environments (and thus was utilized as a management tool), the extensive impact of the 1988 fires was widely perceived as 'destruction', and its magnitude caused anxiety among many important stakeholders.

The case is also important because it raised questions regarding the effectiveness of standard firefighting prediction and response techniques, which had limited success in accurately forecasting the progress of the fires. The issues of preparedness and planning in the face of such powerful natural forces were fundamental to these concerns. A third important aspect of this case involved interagency cooperation and coordination. Transboundary considerations highlighted the differences between competing fire management policies among the various agencies responsible for the maintenance of America's parks and forest lands. Given the unwillingness of fire to respect the physical boundaries observed by these agencies, such cooperation was an essential component to successfully managing the fires. Finally, the 1988 Yellowstone Fires incident negatively influenced the public's perception of the National Park Service and its handling of the resources of the nation's parks. This was the result of a number of factors: 1) lack of public knowledge about park management philosophies and techniques, 2) inaccurate and sensational press reporting, and 3) the manipulation of the situation to further the political ends of stakeholders with broader agendas.

This case will be studied as an example of decision making by a coalition of autonomous actors, in this case including the National Parks Service (NPS) and the U.S. Forest Service (USFS), two of several federal agencies responsible for the management of public lands in the United States. Representing these two agencies in this coalition were the individuals holding

[2] Portions of this chapter were originally research and written by Ruthanna Hawkins. Additional research, editing, and writing was conducted by the editors.

positions of highest authority in the various federal land entities. In particular, these included Yellowstone Park Superintendent Robert Barbee (NPS), and U.S. Forest Service (USFS) Supervisors John Burns (Targhee National Forest) and Stephen Mealey (Shoshone National Forest). The crisis is bounded temporally as beginning on June 14, 1988, when a single lightning strike ignited the first fire, and ending in early November, when rain and snow begin to fall, effectively extinguishing the fires.

The nature of the situation (response to a natural disaster) and the issues involved in the case of the 1988 Yellowstone Fires fulfill the three requirements that Eric Stern suggests are necessary for a situation to be considered a crisis (Stern, 2002). The situation posed a *threat to a number of basic values*. These included the obvious threats to the lives and property of residents of the GYA and firefighting personnel, to unique natural phenomena and species in the region, and to resources used for economic and public purposes, primary among these being timber. Also at stake was the preservation of a non-interventionist approach to the management of wild lands within the park boundaries, the fundamental guiding principle of the NPS. The appropriate allocation of resources (and the effective use of these resources) was another important value in question. Clearly, the second requirement of *urgency* was met in this incident. With the rapid proliferation and expansion of the fires, decisions had to be made quickly in order to mitigate the threat. Finally, *a high level of uncertainty* was present throughout the period of this crisis. A number of factors contributed to the inability of fire management experts to accurately predict the behavior of the 1988 Yellowstone Fires. Most critical among these was the role of weather – specifically the dry conditions and high winds that prevailed during the summer months of 1988. These natural phenomena are inherently difficult to predict. Another contributing factor to this constant state of uncertainty was the ineffectiveness of widely accepted firefighting techniques in managing the Yellowstone Fires.

Context of the Case

The history and evolution of fire management policy in the United States is of critical interest in establishing the context of this case, as precedent dictated many of the early decisions, which had the ultimate impact on the fires. Plant ecologists have long demonstrated the important role of fire in maintaining diversity of habitat for plants and animals. However, during the first 100 years that Yellowstone Park was managed and operated as a national entity (1872 – 1972), the fire policy was to suppress all fires for they were deemed dangerous and destructive, regardless of their origins or magnitude.

In the early 1970s, with the emerging understanding that fire has a critical role to play in wilderness regeneration (clearing dead underbrush and creating nutrients essential for growth in a forest ecosystem) the principle agencies responsible for managing federal lands began to change longstanding negative attitudes towards fire. The USFS began to employ purposefully set 'prescribed' burns, and to allow some natural fires to burn in order to accomplish the removal of low value growth, thus enhancing the environment for timber production. As its mandate was to maintain authentic wilderness environments, the NPS allowed naturally ignited fire to play an even more aggressive role in its jurisdictions, generally allowing naturally occurring fires to run their course in designated areas.

When fires were to be suppressed, the two agencies employed different methods. The NPS fought fires with a "light hand", an approach that did not employ heavy machinery that could scar the landscape indefinitely, while the USFS fought fires more vigorously. Most national parks ultimately adopted relatively sophisticated fire plans that moved beyond a philosophical statement regarding the importance of fire in an ecosystem, and systematically combined the use of prescribed fires, natural fires and some level of suppression. The YNP had drafted a more detailed plan, but it had not been finalized (nor implemented) and thus the official natural burn policy of the YNP retained a more purist and abstract approach. Under this policy, the NPS did not fight naturally occurring fires in Yellowstone unless they threatened human lives, property, endangered species or natural features within the park.

In 1988, it is estimated that approximately one-third of Yellowstone's forests were more than 250 years old, the stage at which they are considered to be the most flammable. Environmental research indicates that widespread fires of magnitudes comparable to that of 1988 have been systematic events in the region, occurring every 150 to 300 years, the last one having occurred in the mid-1700s. Although there had been higher than average rainfall in the spring of 1988, the summer was the driest that had been recorded at YNP, and daily monitoring was undertaken to keep close track of the changing circumstances. Fuel loads, an important measure of the materials available for fire to burn, had been lowered with previous burns (both prescribed and natural), programs promoting interagency cooperation in responding to fire had been introduced, and the NPS and USFS were confident that, even in the face of limited resources, the fire management system was sound. The June 14 Storm Creek Fire was the first of a rapid succession of fires that were ignited in the area and which, as a result of extremely unusual conditions, over the next weeks expanded and combined with each other to create a wildfire that was far more extensive than anything that firefighting experts had ever managed to suppress.

Although the NPS and the USFS share an understanding of the importance of fire in an ecosystem, the missions guiding the actions of these organizations lead them to have different levels of tolerance for fire. The NPS is guided by the vision of maintaining a wild environment, left to function naturally without extensive intervention by human management. The NPS is highly tolerant of fires that begin naturally, such as those resulting from lightning strikes, and prefers to eschew suppression of such fires. The USFS is mandated to maintain forested areas that are available for human activities, including timber harvesting – an important economic activity in many national forest regions. In national forests, tolerance for fire is determined by its overall impact on timber and other resources. The NPS national park areas and the USFS national forest land have many shared boundaries. Despite their differing positions, when fires cross boundaries between the NPS and USFS jurisdictions, these two organizations are forced to respond jointly.

The political context of the incident under consideration was also influenced by the fact that 1988 was a U.S. Presidential election year. The media began to cover the fires extensively, bringing dramatic images to the public, which responded with horror at what it perceived to be mismanagement on the part of the NPS. Vice President (and Presidential candidate) George H. W. Bush, visited the park, perhaps contributing to tension and communication issues between the NPS and the USFS in mid-July, and Michael Dukakis, the Democratic candidate, visited in September. State government interests were also a feature of the political context. Tourism to

the park and national forests was a significant source of revenue for several states in the region. The Yellowstone Fires had a significant impact on tourism (and consequently, on state revenues) in 1988, but was predicted to continue to have a serious negative impact for years to come. Organizations that supported the transfer of ownership of federal park and forest lands to the respective states in which they were located also took advantage of the crisis to publicly attack the competence of the NPS and USFS.

II. CHRONOLOGY

June 14, 1988 A lightning strike ignites a stand of lodgepole pine in the Custer National Forest in the vicinity of Storm Creek, fifteen miles north of Yellowstone Park, marking the official start to the 1988 fire season in the GYA.

The USFS allowed the fire to burn following current fire management policy.

June 19 ***Storm Creek Fire*** spotted and reported.

Storm Creek Fire estimated to cover 10 acres; USFS officials estimate the fire could burn from 600 acres (under favorable conditions) to 2,200 acres (under severe conditions).

June 23 ***Shoshone Fire*** starts in the southern section of the YNP proper.

June 25 ***Fan Fire*** begins in NW corner of the YNP proper.

July 1 ***Red Fire*** begins at southern entrance to YNP proper.

July 4 Storm Creek Fire estimated to have consumed 3,000 acres; USFS calls in national Type I fire management teams.

July 5 ***Snake Fire*** ignited in YNP proper.

July 9 ***Mist Fire*** starts in eastern section of YNP.

July 11 ***Clover Fire*** starts in eastern section of YNP.

Mink Fire spotted in Bridger-Teton National Forest.

July 12 Clover Fire estimated to cover 150 acres: FSA (Fire Situation Analysis) prepared. Fire is predicted to expand to as many as 25,000 acres.

Three suppression approaches outlined in FSA:

A – Allow fire to burn w/careful monitoring from air and ground. Cost: $52,000 with 60% chance of success

B – Fight fire with (2) 22-person teams and helicopter support for one week, then follow-up with (1) crew 'mop-up' for 2 weeks. Cost: $367,000 + $10,000 rehabilitation costs with 80% chance of success

C – Hit fire hard with top national crew (Type I crew). Cost: $2,000,000 + $50,000 rehabilitation with 90% chance of success

Option A is chosen.

Falls Fire spotted.

July 13 *USFS Targhee National Forest Supervisor John Burns informs YNP Superintendent Robert Barbee (NPS) that no fires will be accepted into USFS forest lands from across the YNP borders.*

July 14 Preparation for arrival of Vice-President Bush – NPS Chief Ranger Sholly meets with Secret Service.

Clover and Mist Fires deemed burning "under control". (Mist Fire is small but located close to trails and campsites) NPS generates an FSA.

Later in day, Clover Fire deemed out of control by Ranger Sholly. NPS Fire Committee decides to let both Clover and Mist fires burn.

NPS officials *mistakenly* understand that Shoshone National Forest USFS Management has agreed to 'accept' both the Clover and Mist Fires.

Chief Ranger Sholly creates Incident Command Team within NPS.

NPS Fire Committee decides to meet twice daily until fire season under control.

July 15 Early morning aerial assessment reveals that the Mink Fire has expanded, covering over 6,000 acres (By midnight: 9,000 acres.)
Red Fire has expanded to 690 acres.
Shoshone Fire has expanded to 70 acres.
Type I firefighting teams summoned.

Eight smokejumpers dispatched to extinguish a fire west of Shoshone Lake.

NPS issues the first fire map.

YNP Superintendent Robert Barbee announces that the park will allow no new fires to burn, regardless of origin.

July 16 Boise Inter-Agency Fire Center (BIFC) dispatches infrared flight over the Mink Creek Fire at midnight: fire covers 12,000 acres.

July 17 Fire suppression tactics initiated in Yellowstone National Park. Crews sent to Shoshone and Falls Fires.

July 18 Mink Fire estimated at 14,000 acres, threatening private lands.

July 19 USFS initiates a full containment strategy on the Mink Fire.

USFS announces intention to fight all fires in Bridger-Teton National Forest.

July 20 Mink Fire diverted from private lands with a successful burnout tactic.

July 21 *Shoshone Forest Supervisor Stephen Mealey refuses to "accept" Clover Fire from YNP.*

YNP Superintendent, Robert Barbee, contacts NPS regional authority, Rocky Mountain Regional Director Lorraine Mintzmyer, to express frustration with lack of interagency coordination and cooperation, particularly on the part of USFS.

Subsequent to discussion with Mintzmyer, Barbee announces that all fires in the Yellowstone National Park are to be suppressed.

NPS and USFS officially join forces to fight all fires, new and existing.

July 22 Clover and Mist Fires burn together – renamed Clover-Mist Fire.

North Fork Fire ignited in Caribou-Targhee National Forest (by cigarette)

July 23 NPS Regional Director – Rocky Mountain, Lorraine Mintzmyer and USFS Chief Forester – Rocky Mountain, Gary Cargill establish ***Area Command***, a joint command entity made up of NPS, USFS, and Greater Yellowstone Coordinating Committee (GYCC)

Shoshone Fire moves within two miles of Grant Village.

Grant Village evacuated.

July 25	North Fork and Mink Fires enter YNP.
	First national media interest. GYA fire story reported in the New York Times and on NBC.
July 27	Interior Secretary Donald Hodel arrives to tour YNP.
August 6	Several days of thunderstorms and high winds begin, igniting more fires in the GYA.
August 15	Serious high wind event exacerbates North Fork and other fires.
	Hellroaring Fire ignited in Gallatin National Forest.
August 16-18	All fires expand. Silver Gate and Cooke City are threatened.
August 19	No more trained firefighting crews available: resources limited for all firefighting crews.
	*NPS officials announce willingness to employ **bulldozers** in fighting Clover-Mist Fire, which is threatening Silver Gate and Cooke City*.
August 20	**Black Saturday:** Over 160,000 acres in the GYA burn in this single day. The total fire perimeter is 460,000 acres.
	Bulldozers arrive at Cache Creek to fight the Clover-Mist Fire.
	Interagency meeting called to discuss closure of YNP to visitors. Decision: West Yellowstone to remain open for visitors.
August 26	***Area Command*** & GYCC meet regarding dwindling firefighting resources. Decision: no new fire lines. Hold only existing lines, or any threatening life or private property.
August 31	High winds push Storm Creek Fire over YNP borders. Silver Tip community is threatened.
	Area Command declares Storm Creek a priority fire.
September 1	As all fires expand, *Old Faithful*, *West Yellowstone*, *Mammoth Hot Springs*, and *Canyon Ranch* are threatened.
September 4	***Area Command*** meets in Bozeman, MT. New policy decision: Protect only inhabited areas (Cooke City, Silver Gate, West Yellowstone, Island Park, Old Faithful and Canyon Village.)

September 6	Greater Yellowstone Area fires cover over 1,000,000 acres.
September 7	Old Faithful is threatened, surrounded by fire.
	Clover-Mist Fire approaching 300,000 acres.
September 11	Fire perimeter covers 1.2 million acres.
Mid-September to Late October	Snow and rain begin. Yellowstone Fires extinguished by nature.

III. OCCASION FOR DECISION

On July 21, the NPS is faced with the continuing outbreak of new fires throughout the region, their rapid expansion due to dry and windy weather conditions, and the refusal by the USFS to accept fires originating in the YNP into their jurisdiction. YNP Superintendent Robert Barbee must decide whether to continue to apply natural burn policies with respect to YNP fires, or to modify the policy under the extreme circumstances. What approach should be adopted in dealing with fires as the fire season continues?

Given the rapidity and magnitude of the spread of the numerous fires that ignited during the 1988 Yellowstone fires, it is clear that critical decisions were a daily reality throughout the incident. For the purposes of this analysis, the occasion for decision chosen involves the response of the NPS and USFS to the increasingly threatening and complex situation as it had evolved by mid-July. The resolution of the debate between responsible agencies in the Greater Yellowstone Region was critical in determining the approach that these agencies would employ in dealing with the fires of 1988, but were also fundamental to the subsequent re-evaluation of the natural burn policy that had influenced firefighting on federal lands since the early 1970s.

Decision Unit

Although the decision was officially presented as NPS policy by the NPS Superintendent, Robert Barbee, to conclude from this framing that it was made by a single group (the NPS) would be misleading. The decision unit for this occasion was a coalition of multiple autonomous actors, consisting primarily of the National Park Service and the United States Forest Service. It is interesting to note that it was not until two days after the announcement, on July 23, that an official organization that embodied the coalition (the *Area Command*) was established. An analysis based on the decision tree for determining decision units presented by Hermann and Hermann confirms the designation of the decision unit as a coalition. In responding to the questions posed in this theoretical construct, it is clear that: 1) no single individual with the exclusive power/authority to control resources existed; 2) the problem fell within the decision domain of more than one policy group (including the NPS and the USFS); 3) the various policy groups were not related to each other in a hierarchical chain of command, 4) in the decision under consideration, the NPS and the USFS did not combine into a single decision unit, and 5)

the commitment of overall resources required the concurrence/coordination of both of these actors. The challenge facing the responsible agencies was to determine whether the situation would allow the NPS to maintain a policy of allowing natural burns to proceed without intervention, or whether a point had been reached when fire suppression tactics needed to be employed against all fires. The two agencies had adopted fire management policies that were well aligned under typical conditions, but whose differences were exacerbated when exceptional circumstances arose.

Policy Decision

In early June of 1988, fire managers in the YNP and in USFS federal lands began the vigilant process of monitoring the outbreak of fires that is a typical component of managing the summer fire season. The summer of 1988 was predicted to be quite dry, but the wet spring that had preceded it led fire managers from both agencies to believe that naturally occurring fires could be allowed to burn according to the natural burn policy. The previous three years had witnessed record levels of fire in the GYA that the agencies had successfully managed, and the fire managers at the NPS and USFS had a high level of confidence that the fire situation in the area could be controlled. The successes of the previous summers were perceived to be the result of increased cooperation between agencies, improved training, efficient planning and deployment of firefighting resources, and the leadership of experienced fire managers throughout the system. In addition, it was believed that the prescribed burning methods employed in some areas (particularly within the park boundaries) had reduced the fuel loads in those areas, increasing the manageability of fire.

Between June 14 and July 21, lightning strikes caused the outbreak of numerous major fires that expanded rapidly due to dry conditions and weather. Data for that period indicate that average rainfall in both June and July was well below average (in June, the region received only 20 percent of its average rainfall for the month). Measures of *fuel moisture*, indicating volatility in a variety of fire fuel sources such as grasses, dead trees and timber, were also found to be well below the minimum 15 percent level that was considered dangerous. In addition to these developments, a proliferation of lightning storms and unusually high winds occurred throughout the summer season, rendering the situation particularly precarious. As the fires increased in intensity and high winds continued to plague the region, the phenomenon called 'spotting' (the ignition by windblown embers of trees far ahead of the fire) rendered traditional firefighting techniques ineffectual, adding to the urgency and risk of the crisis.

The NPS, guided primarily by philosophical positions concerning fire policy that had been established in the 1970s, was mandated (and philosophically inclined) to allow as many naturally occurring fires to burn as possible. For the NPS, the employment of fire suppression techniques was limited to cases involving threats to human life and property, endangered species, historical and cultural sites, and unique natural features. This approach had proven successful to date, and the NPS was predisposed to follow it in the summer of 1988. However, the magnitude of the fire event in this period was far beyond any the NPS had faced, and issues over resources and jurisdictional policies rapidly became critical factors in its decision-making process.

The USFS, responsible for vast tracts of federal land bordering the YNP, had also embraced prescribed burning techniques and natural burn polices, but not as extensively (or enthusiastically) as the NPS. Concern over the destruction of resources led the USFS to be less tolerant of the extreme fire situation that arose during the incident, and the agency used its ability to dictate terms and manage resources within its own jurisdiction to influence the actions of the NPS.

The first of these interactions unfolded on July 13, when USFS Targhee National Forest Supervisor John Burns informed YNP Superintendent Robert Barbee (NPS) that no fires would be accepted into the Targhee National Forest (TNF) from across the YNP borders. Interagency agreements and federal policy then required Barbee to initiate suppression efforts against the fires threatening to cross the border with the TNF. On July 21, Shoshone National Forest Supervisor Stephen Mealey refused to "accept" the Clover Fire from YNP into his federal jurisdiction, again forcing Barbee to initiate suppression efforts. Costly and scarce resources are required for large-scale suppression efforts, and these resources are typically shared across fire management agencies and jurisdictional boundaries. In addition to efforts to force Barbee's hand, the various USFS Superintendents also expressed unwillingness to share their firefighting resources with the NPS during this fire season.

On July 21, Barbee consulted with the regional NPS official, Lorraine Mintzmyer, expressing frustration over what he perceived to be a lack of interagency coordination and cooperation. Following this conversation, *Barbee announced that all fires in the Yellowstone National Park would be suppressed, representing a major policy change for the NPS*. In addition, he announced that the NPS and USFS would officially join forces in suppression efforts, a collaboration that was formally embodied two days later with the establishment of the Area Command, an interagency command and control center. As a result, the two agencies engaged in a full fire suppression effort, which continued unsuccessfully until the determination by the Area Command in late August that the fire situation was beyond suppression. They changed their tactics to include only efforts to protect human lives and property.

Decision Dynamic

Decision making during the 1988 Yellowstone Fires was rendered particularly challenging by a number of factors, some of which are inherent in crisis situations involving natural disasters. The first involved issues of experience. While the NPS and the USFS had significant experience fighting fires and had developed a repertoire of efficient suppression techniques, the magnitude of the 1988 Yellowstone Fires surpassed any experience that either agency had encountered. The extreme temperatures associated with these fires and the unusual weather conditions (especially high winds) rendered many of these techniques ineffective, leaving firefighters with few options. A high level of uncertainty with respect to the evolution of the crisis was a second challenge facing decision-makers. The source of much of this uncertainty was again the unpredictable and volatile weather conditions throughout the summer months.

A third challenge facing decision-makers in this case arose from the complex interaction of decision-making structures required when fire (very literally) crosses jurisdictional boundaries. The NPS and the USFS have the authority to act as a single group when fire is

contained entirely within those areas designated as being under their respective management jurisdictions. Once fire crosses the boundaries between them, however, decisions regarding the response to fire have to be negotiated. In such a situation, the two independent agencies are forced to operate as a coalition of autonomous actors. Clear differences in mandates and independent control over resource allocation are potential sources of contestation between these agencies. Collaboration had historically been relatively successful in the face of the typical fire situations the NPS and USFS had faced in the region prior to 1988, allowing both agencies to manage fires while satisfactorily fulfilling their mandates. The magnitude of the Yellowstone fires of that summer exceeded the situations that had required negotiations in the past, threatening the guiding mission of the USFS to protect timberland, and raising serious challenges to fundamental natural burn policy positions of the NPS, thus placing the two agencies in adversarial bargaining positions.

In the case of decision making by a coalition, the key contingency or dynamic is associated with the nature of the rules or norms that guide interactions. In evaluating the nature of these rules, the principle measure used to determine which of three models are employed within the coalition is the 'degree to which procedures and norms for decision making are well-established and institutionalized.' (Hermann, 2001) In the case of the decision under consideration, a number of interesting factors are salient. The nature of the crisis (widespread forest fires) logically meant that, once it became a situation crossing jurisdictional boundaries, an effective response had to be the result of consensus between the agencies, even if one of the entities was reticent. Standing interagency agreements allowed the USFS to force consensus by refusing to accept fires into land under its jurisdiction. The USFS was also able to threaten the withholding of resources until the NPS committed to engaging in fire suppression, at which point the Area Command structure was established to allow the two agencies to collaborate on the allocation of their combined resources. These factors seem to indicate that the decision making favored *unanimity rule*, with one member able to exercise a form of 'unit veto' in order to influence the decision making. However, it is not clear that these rules for decision making were well-established, nor was there any formal mechanism through which decisions were systematically made. This exercise of decision-making 'rules and norms' evolved in a somewhat *ad hoc* manner, with the USFS exercising its prerogative to 'close' its borders and retain its own resources, and with the NPS unsuccessfully attempting to renegotiate the arrangements. Thus, there is a certain level of *anarchy* also inherent in these interactions. It must be noted that the bi-polar nature of the coalition is a complicating factor in evaluating the decision dynamics. There were regional and local organizations associated with the fire management efforts, and most were members of the Area Command structure. There is no indication in the literature, however, that these organizations played any significant role in the negotiation of the decisions surrounding the appropriate response to the fires.

IV. THEMATIC ANALYSIS

Definition of the Situation and Framing

Although the first of the 1988 Yellowstone Fires was ignited on June 14, the situation was not framed as a problem until July 13, when the USFS refused to 'accept' fire from the NPS

jurisdiction into Targhee National Forest. With this refusal was the clear message that the USFS was defining the ever-growing number of fires as problematic, and that their policy preference was to employ a broad range of tactics to suppress them, without distinction on the basis of origin. The USFS perceived the fire situation as a problem for two primary reasons. First, the extensive burning of federal lands under USFS management threatened a level of destruction of resources that was beyond the tolerance threshold for the agency. Secondly, concerns over the sufficiency of the firefighting resources available to the agency should the fires continue to spread were growing.

This aggressive initial framing of the situation by the USFS, defining the forest fires as problematic early in the fire season, influenced the subsequent decisions in both the USFS and the NPS. The refusal to accept fire from the park region activated conditional interagency agreements that forced the NPS to initiate fire suppression against this fire. The NPS was thus required to act contrary to its standing internal policy of allowing natural fires to burn. Tensions were created between the two entities that continued and were exacerbated as the overall fire situation in the GYA became more dire. Ultimately, the worsening of the fire situation resulted in a change in the framing, in particular on the part of the NPS. As the fires expanded, threatening numerous towns and important natural sites, the NPS began to shift its perception of the situation from being within the bounds of a 'normal' fire season to that of a problematic, and possibly uncontrollable, fire management problem. This realignment of framing did not resolve all of the difficulties between the agencies, however, as the two then had policy differences with respect to the appropriate methods for managing the fires. The USFS was willing to engage in more extreme measures (such as bulldozing) that the NPS perceived as permanently destructive to the natural landscape and was unwilling to allow on NPS lands. Another shift in framing occurred within both agencies in August when it became clear that even their combined resources were proving ineffective in managing the fire situation. As a result of this realization, the problem was reframed as being unmanageable, and the response was limited to the protection of human lives and property.

Preparedness for Dealing with the Crisis

Fires are an important and consistent component of the natural cycle in wilderness areas, and both the NPS and the USFS were prepared for a normal firefighting season in 1988. The natural burn policies that guided fire response had been in place since the early 1970s, and the two principle agencies had successfully dealt with three consecutive fire seasons in the 1980s that involved above average levels of fire. Collaborative relationships between the NPS and USFS had been established during these years, and progressive firefighting techniques had been refined. Intentional natural burns had been employed by both agencies in an effort to reduce the level of fuel load and increase the manageability of fires, and the quality of the firefighting crews and managers was considered to be of the highest quality.

Despite these preparations, neither the NPS nor the USFS were prepared for the crisis that arose in the summer of 1988. A number of factors contributed to this lack of preparedness. The volatility and unpredictability of the weather during the summer months not only led to the igniting of numerous large-scale fires (through lightning strikes) but also to their expansion and

intensification (as a result of high winds and low levels of precipitation.) Initial assessment of the fire risk as within normal parameters and the prevalence of non-interventionist attitudes resulted in a lack of early action to suppress the fires. Once suppression became the policy approach, resources had to be thinly spread to fight the fires on numerous fronts. Finally, the intensity of the fires defied the suppression techniques that were in the fire management arsenal, rendering their efforts ineffective. It is of interest to note that fires of this magnitude are also a regular occurrence in the history of the region, with studies indicating that they occur consistently every few hundred years. The region was due for such an event, yet no preparations had been specifically made for its occurrence.

Also contributing to issues of preparedness was the lack of provision for an organizational mechanism to provide structure for collaborative decision making or coordinated efforts to fight extreme or cross-jurisdictional fires. Such arrangements seem to have been made in an *ad hoc* manner, which may be sufficient under normal circumstances but inadequate in crisis.

Value Complexity

At the heart of the challenges faced during the Yellowstone fires was the issue of value complexity. The mandates of the NPS and the USFS involve objectives that are the result of different normative frameworks. Fundamentally, the NPS works to protect wilderness lands and the natural processes that unfold within them, while the goal of the USFS is to protect the resources contained in the federal lands under its jurisdiction. The values represented by these objectives have the potential to be in conflict, a state that arose during the 1988 fire season. The NPS maintained its conviction that fires are a natural process of the region's lifecycle, contributing to its rejuvenation, and that, except in a limited number of very specific circumstances, little should be done to interfere with this process. Concerns over the impact of human action on natural landscapes extend to a general rejection of some firefighting tactics that are regularly employed by the USFS (specifically, the use of bulldozers to create firelines) because of the resultant long term 'scarring' of the landscape. The USFS is less tolerant of fire, identifying it as a threat to the resources it is required to protect. Most important among these is timber, but also includes the infrastructure that facilitates tourism. Both are essential to the economies of the states represented in the GYA. In this effort, extreme firefighting tactics and early suppression are essential, preventing fires from damaging excessive numbers of trees or structures. These differences in normative frameworks also reflect a difference in emphasis between long-term (the natural evolution of wilderness areas) and short-term (the maintenance of economic and touristic resources) interests.

During the years after the adoption of the natural burn policy (which was widely perceived as an NPS victory), the fire situations had never expanded to a point at which the value conflict inherent in these two mandates forced a clear choice between the two. However, during the Yellowstone Fires crisis, the problems associated with this fundamental value complexity came to the forefront. The USFS initially forced the hand of the NPS through the promulgation of internal policies that required response from the NPS, and then through its control of resources. The NPS was required to first concede its preference to allow the fires to burn

naturally, and then later to allow the more extreme firefighting tactics to be utilized on NPS lands.

Despite these concessions, and the establishment of the Area Command unit designed to create a forum within which differences could be effectively resolved and resources delegated, value conflicts continued to be critical to decision making throughout the crisis. NPS officials were in constant conversation with their counterparts at USFS negotiating the timing and tactics of the fire suppression efforts, and attempting to maintain some normative influence over the process. Ultimately, the values of both agencies were jeopardized when the resources were withdrawn and efforts had to be limited to the protection of inhabited areas. (At this point, Old Faithful was at risk – a situation which that have triggered even NPS intervention.)

As the press and public became more aware of the situation unfolding in the GYA, the NPS was faced with another form of value complexity, involving the question of maintaining its principled position at the expense of losing its extremely positive reputation among the public. The press presented the fire situation in the GYA as a management fiasco resulting from hesitation to act on the part of the NPS. Much of the reporting was inaccurate or unfair in its attribution of blame. Nonetheless, it is widely asserted that this framing of the incident by the press during the summer of 1988 cost the NPS a significant amount of the public support that it had long enjoyed.

Leadership

The Yellowstone Fires incident illustrates an interesting pattern of leadership that can arise during crises that cross traditional jurisdictional boundaries. Fire management organizations typically involve a highly hierarchical decision making and command structure. In crisis situations, while perhaps willing to engage in consultation with subordinates or experts, the leaders of these organizations are expected to make decisive and rapid decisions. These organizations operate primarily within the paradigm of a predominant leader model. This was certainly true within the individual structures of both the NPS and the USFS, both of which were led by experienced predominant leaders who were committed to the mandates and policies of their respective organizations. Despite previous experiences in cooperative fire management, the collaborative decision unit between the NPS and the USFS that evolved to respond to the crisis of the summer of 1988 suffered from the tensions created by conflicting missions and values. These predominant leaders who were forced to make decisions in the context of a coalition were continually pushing the boundaries of limits on their independent authority, challenging or attempting to renegotiate decisions that were out of line with their guiding mandates.

Information Management

Search for Additional Information:

The gathering and analysis of information is an institutionalized activity within both the NPS and the USFS. The frequency of the data collection is a function of the urgency of the situation. During the summer of 1988, for example, the daily moisture reports became hourly

reports to fire crews as the situation grew more critical. Despite the efforts made by both agencies to understand the unfolding situation and to make decisions based on updated information, the unpredictable weather and the unusual behavior of the fire complicated the situation. As the fire expanded and intensified, the pressure to act in order to contain the damage also increased. The two agencies responded to these pressures in different ways, primarily as a result of their predispositions towards the process of fire suppression. The USFS, with its mandate to protect resources, emphasized an approach of 'doing something now', supporting intervention in all outbreaks of fire very early in the season. With its preference for natural processes, the NPS was more reticent to take action, preferring to gather data and defer intervention until it was absolutely essential. Through aggressive decision-making strategies, the more action-oriented USFS was able to force the NPS to participate in its preferred approach. It can be argued that both organizations, driven by their desire to conform to their traditional policy positions on their approach to fire suppression, were relatively closed to information gathered throughout the incident, indicating that the fire situation in the summer of 1988 would challenge any human efforts at management.

Interaction with the Media and Public:

Interactions with the media and the public during the Yellowstone Fire crisis were generally judged to have been managed poorly. On July 25, six weeks after the outbreak of the first fire in the region, the story broke in the New York Times and on NBC News. Both of these media sources reported that the NPS and the USFS had decided to 'allow the fire to burn', a framing that was only partially accurate. On July 27, Interior Secretary Donald Hodel and Robert Barbee held a joint press conference. They had agreed that the purpose of the message should be to educate the public about the role of fire in maintaining an ecosystem and to encourage support for the natural burn policies implemented by the NPS, but also to reassure them that the NPS was in the process of suppressing fires that had become a threat due to the extreme weather conditions.[3] The message as delivered was confusing and seemed contradictory – a situation that was emphasized by the press – and the NPS was never able to successfully clarify the message to the public.

The media subsequently became a constant presence in the region, especially in the YNP, creating a level of national focus and attention for which the NPS and USFS were unprepared. Despite concerted efforts on the part of NPS officials to explain the complex process of fire management in wilderness areas, the press continued to print stories highly critical of the service. The press coverage during the incident has been widely acknowledged in retrospect to have been overly simplified, often inaccurate or misleading and highly prejudicial. The NPS did not designate a trained official to manage media relations. Instead Robert Barbee and the NPS Director, William Penn Mott, attempted to engage the media personally. Barbee, who was personally targeted for much of the criticism, suggested in subsequent interviews that this was not a successful tactic.

Interaction with Affected Stakeholders

[3] Morrison, 1993; p.90-91.

[29] Ibid, p.94.

Another group of key stakeholders affected by the Yellowstone Fire crisis were the citizens of gateway communities in the GYA. In order to interact effectively with these communities, a USFS information officer was posted in Cody, Wyoming, to keep the public informed of the progress of the fires and to manage the concerns of gateway community residents. As the fires progressed, the NPS joined in this effort, with Barbee and Chief Ranger Dan Sholly holding regular information meetings at the communities themselves regarding the impact of the fires, the suppression tactics being implemented, and the commitment of both agencies to protect threatened towns. Despite these efforts at openness and transparency, residents generally responded with animosity, fueled by the inflammatory press reports. Many adopted the sentiment that hesitation and incompetence on the part of the NPS were to blame for the damage caused by the fires.

Politico-Bureaucratic Cooperation and Conflict

The framing of the problem of the Yellowstone Fires evolved as the situation unfolded. The problem was framed differently by the two principle agencies involved in decision making, the NPS and the USFS. The NPS defined the problem as involving the need to execute a limited response to a natural process that was ultimately beneficial to the wilderness ecosystem. The USFS defined the problem as involving the need to suppress fires that threatened valuable resources. Differences in framing led to constant negotiation between the two agencies regarding goals and tactics. Complicating these negotiations was the underlying sense of territoriality maintained by each agency, which was manifested in a resistance to the imposition of policies or tactics in conflict with fundamental beliefs. While an interagency mechanism, Area Command, was established to facilitate the process, there is general agreement that, due to a lack of clear authority to make or enforce policy, this organization was not particularly successful as a decision-making mechanism on the policy level.

In cases of fire fighting in wilderness areas, many tactical decisions are made by firefighters on the ground. While tensions and areas of contestation made coordination difficult at the policy-making level, there is no indication that joint fire crews on the ground behaved in uncooperative ways. This is due to the high level of professionalism attributed to the firefighting teams operating during the crisis.

Transboundary Coordination and Crisis Internationalization

As has been extensively discussed, transboundary coordination was a critical dimension of the 1988 Yellowstone Fires crisis. The Greater Yellowstone Area is comprised of federal lands managed by the United States Forest Service and by the National Parks Service (Yellowstone National Park.) Guided by different mandates, these two agencies understand the phenomenon of fire from different perspectives and manage it within their assigned boundaries using very different techniques. Fire, by nature not respectful of the cartographical boundaries assigned to regions, frequently spreads across these boundaries, requiring the two agencies to coordinate their response efforts.

Such coordinated responses had historically been reasonably successful in the GYA, but the rapid expansion of the fires early in the summer of 1988 led both agencies to take strong stands in support of the principles guiding their fire management policies. Policy coordination involved high level interactions and required consensus between the NPS and the USFS, although the NPS was essentially coerced into agreement. Although the NPS agreed to fight fires within its jurisdiction, it continued to be reticent about allowing the most invasive fire suppression methods practiced by the USFS to be employed within its jurisdiction. As the magnitude and intensity of the fires increased, the NPS and USFS moved closer together in their perception of the nature of the threat they posed. This resulted in the acceptance by the NPS of the use of all available methods to fight fires within the YNP, including those previously rejected.

Sequencing and Synchronicity

The sequencing of operational decision making (such as tactics and the allocation of resources) was directly impacted by and responsive to the information that was continually being gathered by the Area Incident Commanders associated with the NPS and the USFS in the Greater Yellowstone Area. Due to the volatile nature of the crisis, decisions were made quickly using the most current information available, with the understanding that these decisions were *provisional*, and subject to change as circumstances evolved.

The sequencing of policy decisions was a more complex issue, heavily influenced by the guiding principles of each agency, which led to particular interpretations of the factual realities. Of interest in this case is the fact that both of the agencies that comprised the coalition (the NPS and the USFS) initially pursued *definitive* actions --actions based on the belief that the problem has been adequately diagnosed and that the decision unit has an effective means to deal with it. However, the interpretations of the crisis, and the definitive actions preferred, differed greatly between the two agencies. In response to the early proliferation of fires between mid-June and mid-July in the GYA, the NPS made the decision **not to act**, a *definitive* action based on the belief that fire is a natural and necessary part of the ecosystem, and consistent with the natural burn policy guiding NPS actions. During this same period, the USFS, perceiving the threat this multitude of fires posed to natural resources, made the *definitive* decision to fight all fires within its jurisdiction.

As individual fires threatened to cross jurisdictional boundaries in mid-July, and it became clear that a collaborative effort would become necessary, the USFS employed strategies available to it to force the NPS to participate in its interpretation of the fire situation. The NPS, while fulfilling the obligations to begin suppression of all fires imposed on it by the coalition decision process, continued to challenge the actions of the coalition until mid-August (primarily at the level of operational decision making). In mid-August, the evolving nature of the crisis forced the NPS to re-evaluate its decisions. Even with the combined efforts of both agencies, the Yellowstone fires had defied efforts at suppression, putting towns and important natural sites at risk. With this new 'feedback' from the actions undertaken by the coalition, the NPS modified its view of the fires and accepted more extreme fire suppression methods advocated by the USFS. In late August, when resources became scarce, the coalition was again required to

evaluate its actions and change course. Both agencies accepted the reality that they must focus their remaining resources on the protection of inhabited areas and allow the other fires to burn themselves out. It is interesting that this position is very much in line with the original preferences of the NPS.

The availability of resources during this crisis was also related to issues of synchronicity. While the GYA was certainly experiencing the most dramatic and public fire situation, the extreme weather conditions that had instigated it were not limited to this region. Wildfires were burning in other western states during the summer of 1988, and the national firefighting resources available had to be distributed among these various crisis situations.

Culture

Grid-Group cultural theory as presented by Thompson, *et. al.*, proposes a framework of four typologies for understanding the cultural influences at work within an organization, providing insight into decision-making behaviors exhibited by that organization. Decision making within the NPS-USFS coalition decision unit was influenced by two important cultural typologies. The *hierarchical* approach to decision making (with its associated well-defined rules and procedures) was a strong cultural influence within each organization. The structures of firefighting entities are often based on a military model, valuing experience and expertise in its leaders, and engaging extensively in operational planning – characteristics that apply to both the NPS and the USFS.

At the coalition level of decision making, however, a second typology, *egalitarianism*, emphasizing shared values and a unified response to the crisis, was presumed to be the dominant paradigm. As has been noted, differences in fundamental values held by the two organizations complicated the cultural behavior within this coalition, leading to regular struggles between the members to stake out space where they could each continue to conform to the principles associated with their agency.

It is interesting to note that within the parameters of this theory, these two decision-making cultures share a high level of 'group' adhesion (indicating strong loyalty/identification with the organization), but conflicting levels on the dimension of 'grid', related to structural roles and rules of behavior. This inconsistency with respect to rules of behavior would certainly present challenges to a decision unit in which the key contingency is rules for decision making. This is consistent with the *ad hoc* nature of the decision-making structure associated with the NPS-USFS coalition.

Lessons Learned

While the magnitude of the 1988 Yellowstone Fires incident was unprecedented, both the NPS and the USFS had extensive experience in managing fires on wilderness lands, which had included three consecutive fire seasons that were especially challenging between 1985 and 1987. The fire management response during these three seasons was considered to be a success, involving improved cooperation and coordination between the NPS and the USFS. Despite these

experiences, however, the 1988 fires posed a crisis situation that these organizations had neither the methods nor the resources to suppress.

Immediately following the crisis and over almost a quarter of a century since the incident, numerous reviews and studies of the incident itself and its impact have been conducted. As a result of these evaluations, a number of important lessons have been identified, although, as in 1988, some of them remain controversial.

1. *Ecosystems like that of the GYA are adapted to experience extensive fire incidents, and in fact, these are generally beneficial to the ecosystem.*
2. *Clear fire management plans (not merely general principles) are critical for effective fire management.*
3. *Greater interagency coordination and cooperation at all levels (national state and local) are necessary to manage fire on federal lands.*
4. *Clarification of policy in the face of conflicting values is required.*
5. *Natural burn policies are an important component of fire management efforts, but must be subject to parameters of size, weather, and risk assessment.*
6. *Prescribed burns remain a controversial topic.*
7. *Improved monitoring and evaluation of wildfire incidents are necessary.*
8. *Fire management is both a scientific and political exercise.*
9. *Educational opportunities for the public regarding fire management are important to maintain the support of key stakeholders.*
10. *Positive relationships with the media are critical to both educational goals and crisis management.*

Immediately after the fire season of 1988, a three-year temporary suspension of the natural burn policy instituted while the fire management policies of the NPS and USFS was reviewed. This review included a Congressional hearing on the implementation of the findings and recommendations highlighted by the task force. Among the conclusions reached during this hearing were that natural burn policies would continue to be an integral component of fire management in ecosystems such as Yellowstone Park, but this approach would be subject to the limitations identified above. A key concern was inter-agency cooperation and coordination when fires required control and suppression.[4]

Aftermath

Despite the fact that the firefighting effort associated with the 1988 Yellowstone fires was the largest in history (involving $120 million and the efforts of approximately 25,000 people), human efforts had little impact on these fires, which were extinguished by the arrival of rain and snow in late October. Fires of this magnitude have occurred regularly in the region, but only every 150 to 300 years, and as a result, scientists have taken the opportunity to study extensively the long-term ecological effects of the fires since 1988. Generally, the findings

[4] Congressional Hearing before the Environment, Energy and Natural Resources Subcommittee, May 24, 1990.

indicate that plant growth (including trees) is stimulated by the resultant increase in nutrients in the soil, the benefits trickling down to all forms of animal life.

While the reputation of the federal land management agencies may have been damaged during incident, the positive sentiments that many Americans have with for the Yellowstone area led to an immediate outpouring of offers of recovery assistance, both from individuals and private and public institutions. This has raised the interesting question of whether 'recovery' is an appropriate term to apply to the post-fire period. Once again touching the philosophical differences between the agencies, the NPS considers the fire as merely one stage in the natural process of the forest, with the only recovery involving the rebuilding of damaged structures, and the restoration to their natural state of signs of the fire suppression effort. For the USFS, 'recovery' has additionally involved the active reseeding of critical areas. An interesting issue that arose in the immediate aftermath of the fires was the proposal to engage in supplemental winter feeding of the park wildlife – a policy strongly opposed by the NPS.

Politically, while many feared that the incident would threaten the continuation of the natural burn policies, the findings of the task force, review panel and Congressional hearings all concluded that the policy should stand, subject to some modifications. All national parks and forests have been required to undergo review of their fire management policies, and emphasis has been placed on the development of clear interagency coordination, especially in the GYA (evident in the new GYA fire management plan of adopted in 1992.). The National Interagency Fire Center (NIFC), formerly Boise Interagency Fire Control, has the mandate of managing wild land fires throughout the United States, and has been invested with additional authority in decision making, particularly with respect to issues of resource allocation.

In retrospect, many questions have been raised regarding the timing of fire suppression efforts in the 1988 Yellowstone Fire incident. Could the fires have been stopped if the NPS and USFS had both adopted a policy and broad tactics for fighting fires during the first weeks of the fire season? It is widely suggested that the extreme weather conditions that persisted during the four months of the 1988 fires, in combination with the state of the forested areas at the time, precluded any realistic possibility that suppression efforts could have been effective. Perhaps even more fundamental is a continuing examination of the vision and purpose of federal lands and the role that fire plays in achieving these goals.

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THE 1989 EXXON VALDEZ OIL SPILL[5]

I. INTRODUCTION

The subject of this case study is the Exxon *Valdez* oil spill that occurred in March 1989 in Prince William Sound, Alaska. Just after midnight on March 24, the Exxon *Valdez* ran aground on Bligh Reef, ripping open eight of its eleven cargo tanks and resulting in the spill of approximately eleven million gallons of oil into Prince William Sound (PWS). The accident was the result of malfunctioning equipment, human error and negligence on the part of multiple entities mandated to ensure the safe passage of oil tankers through Prince William Sound. It is estimated that 1,300 miles of pristine coastline were negatively impacted by the spill, damaging aquatic and shoreline ecosystems, as well as the fishing economy that supports local inhabitants. The case is significant for a number of reasons. Until the *Deepwater Horizon* incident in 2010, the *Valdez* oil spill was the largest that had ever occurred in U.S. waters. The spill caused the deaths of as many as 250,000 seabirds, and significant numbers of other resident aquatic animals, including marine mammals, fish and their eggs. More than twenty years later, the impacts of population reductions among many species are still measureable. This is equally true of microbial populations on the shoreline, which were destroyed not only as a result of the spill but also from methods employed during cleanup efforts. On the positive side, researchers have used the incident to advance scientific understanding into natural resilience and remediation processes in instances of contamination.

The poor response to the *Valdez* spill also highlighted the difficulties inherent in the coordination of a wide array of actors in responding to an incident of such magnitude, especially when proper regulations, operating procedures and preparation (both material and personnel) are not in place. The Exxon *Valdez* incident has become a metaphor for the threat to sensitive environmental systems posed by human endeavors. Increased public awareness of these risks has led to significant tightening of regulatory control over the operations of storing and transporting oil, as well as over emergency response procedures. Finally, current public perceptions of accountability for damage to public lands and resources caused by private businesses were shaped by the arduous efforts undertaken to assign responsibility—both moral and fiscal—to Exxon.

The Exxon *Valdez* crisis will be examined from the point of view of the coalition of entities (Exxon, the U.S. Coast Guard and the Alaska Department of Environmental Conservation) that evolved to respond to the spill. Issues surrounding the transboundary coordination of various entities played a key role in the events surrounding the *Valdez* spill. While spill-related impacts and responses continue today, the specific incident under consideration in this case study is bounded temporally as beginning at 12:09 a.m. on Friday,

[5] Portions of this chapter were originally research and written by Jessica Tevenbaugh. Additional research, editing, and writing was conducted by the editors.

March 24, 1989, when the Exxon *Valdez* ran aground at Bligh Reef, ending on Wednesday, April 5, when the *Valdez* was refloated and moved out of the channel.

The nature of the situation—a response to a man-made disaster—and the issues involved in the case of the *Valdez* oil spill fulfill the three requirements that Eric Stern suggests are necessary for a situation to be considered a crisis (Stern, 2002). The situation posed a *threat to a number of basic values*. These included the obvious threats to the health of the population and to the environment, but also involved significant impacts on the local, state and national economy, especially with respect to the energy sector. The effectiveness of the preparation and response to the crisis came under public scrutiny and was widely criticized. The second requirement of *urgency* was met in this incident. Scientific study has shown that mitigation techniques in the case of oil spills are at their greatest effectiveness when employed within eight hours of the initial spill. In the case of the *Valdez*, this was particularly true as the grounding had torn several holes in the storage compartments of the vessel and oil was escaping very quickly. Finally, a *high level of uncertainty* on many fronts was present throughout the crisis. The accident occurred just after midnight, and darkness made the true magnitude of the situation difficult to evaluate. This incident also represented the largest spill that had occurred to date in the U.S., and was certainly beyond the scope of any incident with which the PWS officials had ever dealt. From an organizational standpoint, increasing neglect of maintaining equipment, clarifying operating procedures, creating or practicing emergency contingency plans, and understanding the delegation of responsibilities in such a situation created an uncertain environment in which it was difficult to mount an effective response.

Context of the Case

Prince William Sound is located in southern Alaska, on the east side of the Kenai Peninsula. It is ringed by the Chugach mountain range, which form the Chugach National Forest, the second largest in the U.S. Fifteen major islands and hundreds of smaller islands lie within the sound. While the population density is not high, the area supports several coastal communities. Some are associated with the oil business, but many are dependent on fishing for survival. The largest seaport in the region is Valdez, which is at the terminus of the Trans-Alaska Pipeline (TAP). The region has long been noted for its dramatic beauty, pristine environment and highly diverse ecosystem.

The history of the region has been shaped by its wealth of natural resources. When Alaska was sold to the U.S. in 1867, it became an important center for the fur trade and for fishing. Oil was discovered in sufficient quantities to justify development as early as 1902. However, the famous North Slope oil fields were first discovered in 1968. The Trans-Alaska Pipeline was begun in 1974 and was completed in three years, and represented the most expensive privately funded construction project ever completed at the time. At Valdez, oil transported the 800-mile length of the pipeline is loaded onto tankers and shipped around the world.

While the State of Alaska has experienced fiscal benefits from the development of the North Slope fields and the TAP, this development was strongly contested by many groups within the State. Communities heavily dependent on the natural environment for their livelihoods have

been distrustful of the oil companies associated with the pipeline, and many raised concerns as to whether the Alyeska Pipeline Service Company (representing the consortium of oil companies that own and control the pipeline) was prepared to respond in the case of an oil-spill disaster. Indeed, investigations following the incident determined that it was not only Alyeska that proved itself unprepared for a crisis of the severity of the Valdez incident. Numerous local, state and federal government entities mandated to play essential roles in the prevention and mitigation of tanker accidents were equally unprepared and unable to respond effectively in the critical hours immediately following the accident. The most critical of the actors involved in the incident under consideration here included:

1. **Alyeska Pipeline Service Company (Alyeska):** Underwritten by the consortium of owners of the TAP, Alyeska was formally tasked with response to oil spills on behalf of the oil companies. Although it had begun as a fairly competent organization, over the 12 years of its existence, it had been allowed to deteriorate both materially and organizationally to a point of incompetence.

2. **The U.S. Coast Guard (USCG):** Mandated to coordinate efforts of various actors in the case of a spill, the USCG had a number of roles in this incident. It designed and maintained the Vessel Traffic System (VTS) that was installed with the purpose of monitoring and controlling traffic in the PWS, thus preventing accidents. This process included regular communication with the crews of ships passing through the channel. In the case of accidents, the USCG was designated as a 'first-responder' in both rescue and investigatory roles, including the administration of drug and alcohol tests. In addition, the USCG was to oversee response activities in the event of an oil spill, organizing the decision process with respect to which of several response methods to employ in a given situation. The deterioration attributed to the Alyeska system was in evidence in the USCG as well.

3. **Alaska Department of Environmental Conservation (ADEC):** ADEC was tasked with providing oversight of Alyeska, approving its contingency plan, organizing a yearly drill and observing the organization responding in real spill situations. In the case of a spill, ADEC was to a) provide containment and cleanup, b) require the use of private contractors, c) make sure the cleanup was completed in a timely manner, and 4) identify the source and cause of the spill, as well as those responsible for it. In addition, the ADEC had the authority to grant or deny permission for the use of two of the most effective remedies, dispersants and burning. With no significant resources or enforcement authority, it is unclear how ADEC was expected to fulfill its mandate.

4. **The Regional Response Center (RRC):** This organization serves as an advisory board, but also grants permission to use burning as a remedy. However, no guidelines were available regarding the appropriate conditions for such an approach.

5. **Exxon**: As owner of the Valdez, Exxon company policy applied to the conduct of the crew, as well as to the conditions of operation that were existent on the ship. Appropriate policies were found to be in place in company guidelines, but their enforcement was questionable.

The existence of recorded interactions between the Exxon Valdez and the VTC radio operator, as well as the various written and mechanical logs maintained during the voyage, provide a fairly detailed account of the events as they unfolded on the night of March 23, 1989. These records indicate that shortly before midnight, the Exxon *Valdez*, with its crew of 20, left the Port of Valdez fully loaded with crude oil destined for California. Authority to navigate the PWS is granted by the completion of specific certification, and regulations require the presence in the control room of at least one officer holding this certification. Despite the fact that he was the only individual holding PWS navigation certification on the *Valdez*, the Master of the ship, Captain Joseph Hazelwood left the deck, placing the engines on autopilot and committing the responsibility for piloting the ship through the sound to 3rd Mate Gregory Cousins, who had neither the proper credentials, nor the appropriate experience.

The USCG personnel manning the VTC were aware of the fact that there had been significant and dangerous ice reported in the channel during the day, yet did not increase their vigilance over the passage of the ships in the lanes that evening. Upon departure, Captain Hazelwood, requested and was granted permission from the USCG VTC to move the Valdez to the in-bound shipping lane to avoid ice. Captain Hazelwood made further course change decisions without requesting permission, which ultimately moved the vessel out of the shipping lanes altogether. However, the VTC personnel did not monitor the continued progress of the Valdez and did not note the change. Following somewhat vague instructions left by Captain Hazelwood as he left the control room, Cousins unsuccessfully attempted to run the gauntlet between the Bligh Reef and a large mass of floating ice. At 12:09 a.m. the Exxon Valdez hit a large protrusion from the reef, causing a breach in one of the storage tanks. Subsequent efforts by Cousins and then Captain Hazelwood to free the *Valdez* created further damage (breaching 8 of her 11 storage tanks) and left the ship trapped and unstable on the reef. The VTC was unaware of the position of the ship or of the grounding situation until notified by Hazelwood almost 20 minutes after the accident.

Given the critical importance of rapid response to an oil spill, the various entities identified above attempted to initiate emergency contingency plans as soon as they were notified. In 1989, the possible responses to a tanker-based oil spill included three major methods. *Containment booms*, temporary floating barriers, are often used to surround and concentrate oil spills, effectively protecting shorelines and also making collection methods (skimming, and then collection into recovery barges) more effective and efficient. This approach is the most preferred as it is environmentally friendly, but typically booms must be deployed rapidly in order to contain spills. *Dispersants*, chemical additives that cause the dissipation of oil molecules so that they are more rapidly diluted by the surrounding water, are effective under proper conditions, but have also been shown to increase toxins in fish and their eggs. Finally, *in situ burning* (ISB) involves the controlled burning of oil that has spilled from a vessel or a facility at the site of a spill. Despite its efficacy in reducing the amount of oil that has been spilled in bodies of water, concerns over the water and air pollutants released by such a strategy have led to resistance to its use.

It is critical to note that issues of jurisdiction and responsibility arose immediately in this case. Legally, as the representative for the oil companies in the consortium, the entity ultimately

responsible for response and cleanup operations was assumed by all parties to be Alyeska. As such, in principle, Alyeska was assumed to be prepared to respond rapidly (specifically within five hours of notification of the spill) and to have the resources and capacity necessary to employ any of the above response measures.

II. CHRONOLOGY

Friday, March 24, 1989
12:09 a.m. The Exxon *Valdez* goes aground at Bligh Reef.

12:27 a.m. Captain Hazelwood notifies the USCG VTC of the grounding. The extent of the damage is unclear. CDR Steve McCall, Commanding Officer of the USCG, and Captain of the Port, is notified and is designated Federal On-Scene Coordinator (FOSC).

12:30 a.m. USCG notifies the Alyeska Valdez office of the situation. Alyeska initiates its ADEC-approved oil spill contingency plan.

1:05 a.m. ADEC District Office manager, Dan Lawn, is notified of the accident. He assumes role of State On-Scene Coordinator (SOSC).

1:25 a.m. President Frank Iarossi of Exxon Shipping Co. is notified of spill.

2:38 a.m. Alyeska orally requests permission from the USCG to use chemical dispersants. USCG cannot grant approval without review by the Regional Response Team (RRT) and ADEC.

3:38 a.m. McCall (USCG) and Lawn (ADEC) board the Exxon *Valdez*.

4:14 a.m. Exxon *Baton Rouge* is rerouted to begin lightering operations (oil offloading) from the Exxon *Valdez* and is expected to arrive by 1 p.m.

5:30 a.m. Lawn contacts Alyeska to determine the status of the collection barge and response equipment required under the emergency contingency plan. *(Note: It is now exactly 5 hours after Alyeska was notified, the outer time limit of the obligation of Alyeska to have provided these resources.)* Lawn is told that the barge is on its way.

In reality, the single barge available from Alyeska is undergoing emergency repairs from damage received in a previous response effort and is not immediately seaworthy. In addition, it has been completely offloaded of equipment and supplies.

5:30 a.m. It is estimated that 10.1 million gallons (242,000 barrels) of oil have been discharged from the vessel.

The capacity of the single collection barge being sent by Alyeska is 12,000 barrels.

6:00 a.m. Alyeska officials fly over the spill site (per contingency requirements) and reported that they were informed by Exxon officials on the Exxon *Valdez* that booming was not being considered as a response.

Questionable concerns over the accumulation of flammable gases are cited as the justification.

*6:20 a.m.*Jack Lamb, President of the Cordova District Fishermen United (CDFU) is notified of the spill.

*6:30 a.m.*CDR McCall (USCG) advises Alyeska to submit a formal written request for permission to use dispersants.

CDFU contacts the USCG and Alyeska to offer assistance. Their offer is not accepted.

6:45 a.m. Lawn is again told that the Alyeska barge is on its way. *In fact, it is not yet reloaded with equipment, which has been placed in storage and must be located and transported to the barge.*

7:27 a.m. The oil slick is approximately 100 feet wide and 4 to 5 miles long.

8:30 a.m. Alaska DEC briefs Governor Steve Cowper and Alaska Commissioner of Environmental Conservation Dennis Kelso.

8:42 a.m. U.S. Coast Guard receives a formal request from Alyeska to use 50,000 gallons of chemical dispersants on the spill.

At this time, Alyeska has between 2,500 and 4,000 gallons on hand, with 8,000 more available in the region. The total inventory available in the state of Alaska is approximately 20,000 gallons. Estimates suggest that a feasible dispersant strategy would have required on the order of 400,000 gallons. In addition, Alyeska has neither aircraft nor equipment necessary to effect a dispersant application.

9:50 a.m. The Alyeska barge leaves the Port of Valdez to assist in cleanup.

11:30 a.m. The Exxon *Valdez* is determined to be un-seaworthy.

12:00 p.m. Alyeska submits request for the use of in-situ burning to USCG.

The slick is estimated to be three miles wide and five miles long.

The Exxon *Baton Rouge* moves alongside the Exxon *Valdez* for lightering operations.

Regional Response Team (RRT) meets by teleconference to discuss use of dispersants and ISB. No decisions are made.

CDFU contacts Alyeska to offer the services of 75 vessels, equipment and crews that are on call

and ready to respond within 15 minutes of the spill site. Their offer receives no response.

12:30 p.m. Alyeska collection barge arrives at the scene, more than 12 hours after the report of the incident. The equipment is available for a cleanup of a 10,000-gallon spill; the volume of the spill has already surpassed 11,000,000 gallons.

3:10 p.m. A trial use of dispersants is approved by the USCG in Zone 1. (This technically does not require further state approval.)

5:37 p.m. Frank Iarossi arrives at the Valdez airport.

6:00 p.m. The trial dispersants test is conducted. Results are unfavorable due to poor deployment methods and calm oceanic conditions.

6:50 p.m. ADEC issues a permit for a test ISB.

7:00 – 8:30 p.m. Exxon conducts a press conference. Iarossi announces that the Exxon response team will take over response operations the next day, and assume full financial responsibility for claims.

8:10 p.m. After hours of maneuvering, the Exxon *Baton Rouge* is tied to the Exxon *Valdez*. Lightering preparations begin immediately.

Booming is again rejected for fear of interference with lightering preparations.

Saturday March 25
7:36 a.m. Lightering begins between the Exxon *Valdez* and the *Baton Rouge*.

9:45 – 11:10 a.m. A teleconferenced meeting of the RRT is conducted, during which Exxon officially assumes financial responsibility for the spill as well as control of the cleanup efforts. Permission is given to conduct a second dispersant test on the leading edge of the slick. No permission is granted for an ISB.

12:00 p.m. Exxon officially relieves Alyeska of cleanup responsibility.

During the day, Exxon meets with agency officials to press for the continued efforts at effectively deploying dispersants.

4:58 p.m. A dispersant test is conducted and again deemed inconclusive.

8:00 p.m. Dispersant test is conducted with 'cautiously optimistic' results.

8:45 p.m. A test ISB is conducted which results in an estimated 15,000 gallons of oil being consumed with 100 square feet of tar residue remaining. This is the only time *in-situ* burning is permitted. Residents of nearby villages report health effects from the burn.

11:59 p.m. Visual observation places the leading edge of the oil slick 16.5 miles southwest of Bligh Reef.

Sunday March 26
5:30 a.m. Fishing boats are loaded with boom to protect targeted sensitive ecological areas.

11:00 a.m. A dispersants test is conducted and deemed unsatisfactory.

11:30 a.m. This seems to be at least the third or fourth test, according to the chronology. An additional dispersants test is conducted and deemed unsatisfactory.

2:00 p.m. Iarossi reports to Exxon officials regarding progress acquiring approval to employ dispersants. He notes that the area in question is in Zone 1, pre-approved for dispersant use and expresses extreme frustration that, despite this fact, the USCG feels the need to have ADEC consent.

2:30 p.m. A dispersant test is conducted by Exxon. No USCG official was present to monitor this test. Exxon deems it 'very successful'.

3:00 p.m. The Alaska National Guard is activated to assist with cleanup. Fishermen are employed to help identify sensitive areas.

4:00 p.m. A dispersant test is conducted with a drop from a C-130. Iarossi describes the results as 'spectacular'. McCall (USCG) is less enthusiastic. The test is deemed 'satisfactory'. McCall gives permission for continued dispersant use in Zone 1.

5:00 – 6:45 p.m. Stakeholders meet to continue the discussion of the use of dispersants. Iarossi presses forcefully, noting that political issues are preventing a timely response. McCall supports continued use in Zone 1. ADEC and other state agencies argue against open-ended use, and want to continue to pursue the path of mechanical cleanup. After a heated discussion, McCall summarizes his understanding that approval is for the use of dispersants in Zone 1. ADEC does not object.

A second discussion topic at the meeting is the restructuring of the response organization and operations decision making. Exxon will head the response, but USCG, ADEC; CDFU will have a voice in decision making. Rear-Admiral Nelson (USCG), Iarossi and Commissioner Kelso will become a joint steering committee.

6:30 p.m. Alaska Governor Cowper declares a State of Emergency in PWS.

8:10 p.m. Iarossi and McCall hold joint press conference. Iarossi praises McCall's decision to allow the use of dispersants in Zone 1. He also announces Exxon's intention to use skimming and controlled burns in conjunction with the dispersant use.

9:00 p.m. Approved burning operations are canceled due to high wind velocity.

11:30 p.m. Iarossi meets with Exxon team to discuss plans to begin full-scale dispersant use on the following morning.

Monday, March 27

6:00 a.m. Winds overnight have raged up to 73 miles per hour, grounding all aircraft. The Exxon *Valdez* must be physically supported.

The oil slick, previously contained in Zone 1 has been blown to Zone 3 overnight. Dispersant use is not recommended in Zone 3.

Cordova fishermen hold an impromptu press conference, expressing anger and concerns over the impact of the oil spill.

11:00 a.m. Winds have died down enough for aircraft to fly. The RRT authorizes a drop of a single planeload of dispersants in Zone 3. Controlled burns are given tentative permission, but are subsequently determined not to be viable.

12:30 p.m. C-130 attempts to conduct a dispersant spray run, but does not receive permission to take off.

1:30 p.m. Exxon is made aware that beach cleanup crews will be needed as part of the response. Several islands have been heavily oiled.

2:25 p.m. Exxon conducts a dispersant spray in Zone 1, which is deemed satisfactory.

3:00 p.m. Exxon conducts a test dispersant spray in an unauthorized zone, but does not reveal until after the fact.

4:00 p.m. ADEC and CDFU discover that Exxon has illegally sprayed dispersant in a Zone 3 herring-containment area. An angry Governor Cowper orders ADEC to sidestep Exxon and to 'get creative and do something.'

4:20 p.m. In an informal and closed meeting with the fisherman's union, the ADEC explores options and determines that the protection of the three regional salmon hatcheries is the highest priority.

5:00 p.m. Governor Cowper asks President Bush to declare a State of Emergency in Alaska, raising the possibility of the appointment of a federal official to coordinate efforts, as well as the availability of federal funds.

Iarossi is notified that targeted dispersant use has been approved for Zone 3.

6:30 p.m. Steering Committee (Iarossi, Nelson, Kelso) meet to discuss reorganization of response effort.

7:00 p.m. Due to poor weather conditions, the dispersant aircraft does not arrive at Valdez. The state withdraws permission to use dispersants in Zone 3. Dispersant application does not happen.

11:59 p.m. The oil slick has moved 20.5 miles in one day.

Tuesday, March 28
Midnight to 3:00 a.m. In a surprise move (inspired by the earlier closed-door meeting at ADEC), the Commissioner brings four members of the CDFU (including a marine biologist, and a specialist in sediment toxicology and oil spills) to meet with Iarossi. They successfully persuade Iarossi to change the response priority to the protection of sensitive hatcheries. He offers them full financial support.

Morning. Continued meetings with the fishermen result in the provision of booming materials for the protection of the hatcheries by both Exxon and ADEC. Fishermen begin deploying booms.

11:20 a.m. A request by Exxon for in-situ burning is approved.

1:30 p.m. Burning operations unsuccessful due to high water content in oil.

Afternoon High winds cause cleanup effort to stop. Large bodies of oil begin to hit the shoreline, coating the beaches.

11:59 p.m. The southwest edge of the spill is now 52 miles from Bligh Reef.

Wednesday, March 29
8:00 a.m. Steering Committee meeting. A new operations structure is defined with three arms, including the Steering Committee, Operations Coordinating Committee, and On Scene Working Forces. *Exxon is not represented on the Operations Coordinating Committee.*

9:00 a.m. Iarossi requests use of dispersants in Zone 3 and is denied due to lack of Exxon's demonstration that it can target and control the use in sensitive areas.

12:30 p.m. Iarossi learns that RRT has denied dispersant permission in Zone 3. Two waiting aircraft are dispatched to Zone 1 to apply dispersants. Exxon reports the results as 'excellent'.

Thursday, March 30. AK National Guard deliver absorbent and containment boom.

Response efforts begin to focus on beach cleanup efforts.

Alyeska formally blames USCG and ADEC for the magnitude of the problem, the result of denying Exxon permission to use dispersants. *(Note: the effectiveness of dispersant use was*

never definitively demonstrated and as the response efforts turn to beach cleanup, the issue becomes moot.)

Saturday, April 1 – 5. Cleanup operations continue to evolve, increasingly focused on beach operations. The herring fishery season is closed.

Wednesday, April 5. Governor Cowper asks President Bush to declare a national State of Emergency.

10:35 a.m. Exxon *Valdez* re-floated at high tide and moved to Naked Island

III. OCCASION FOR DECISION

*As the oil slick expands and moves over the first seven days after the grounding of the **Valdez**, an intense debate evolves over the use of chemical dispersants as a response measure. Given the ecological sensitivity of the region, should dispersants have been employed?*

As is indicated in the chronology, the debate over the use of dispersants in response to the *Valdez* spill dominated much of the decision-making process between March 24 and March 30. Stakeholders in the decision included Exxon, ADEC, the USCG, and the regional fishermen. At issue were concerns regarding the toxicity to the marine environment of the chemicals employed as dispersants, and the effectiveness of the dispersants in oceanic/atmospheric conditions that were less than ideal. Criticism was raised over the fact that, due to the lack of preparedness of responsible organizations, mechanical responses to the spill, such as booming, skimming, and collection, were not employed in a timely way. By the time that equipment was available for these responses, they were no longer effective due to the expansion of the slick. Thus, responders were left with few response options that could be used without creating equally deleterious effects.

Decision Unit

The decision unit for this occasion for decision was the *coalition of multiple autonomous actors*, consisting of Iarossi (Exxon), CDR McCall (USCG) and Commissioner for the Environment Kelso (ADEC and the CDFU). It is interesting to note that contingency plans provided for a coalition of the USCG and ADEC to be created as the decision unit in the case of a spill, and that Exxon became a member of this coalition when it announced its intention to take responsibility for the response. An analysis based on the decision tree for determining decision units presented by Hermann and Hermann confirms the designation of the decision unit as a coalition. In responding to the questions posed in this theoretical construct, it is clear that: 1) no single individual or organization existed with the exclusive power/authority to control resources; 2) the problem fell within the decision domain of more than one policy group (Exxon, USCG, ADEC, CDFU); 3) the various policy groups were not related to each other in a hierarchical chain of command; 4) in the decision under consideration, the various stakeholders did not combine into a single decision unit; and 5) the commitment of overall resources required the concurrence/coordination of all of these actors. The challenge facing the responsible agencies

was to determine whether to employ potentially destructive chemicals in the process of cleaning up the *Valdez* oil spill. While all stakeholders had the common interest of cleaning up the spill, their individual interests were divergent with respect to the impact of the response measures to be employed.

Policy Decision

Upon notification of the grounding of the *Valdez*, the responsible officials of the USCG and ADEC initiated the process for accepted emergency response procedures, notifying Alyeska that booming, skimming and collection equipment for a mechanical response was required. Under approved contingency plans, Alyeska was expected to provide this equipment within five hours of the notification. However, due to a lack of preparedness on many fronts, Alyeska did not respond for thirteen hours, and the equipment that was supplied was completely inadequate to the task.

Exxon, possibly aware of the inadequate resources of Alyeska (its representative in responding to such an event), almost immediately accepted responsibility for the cleanup. This intention extended beyond a commitment to provide financial resources. Iarossi, President of the shipping company under the Exxon umbrella, personally traveled to Valdez to participate in the decision process, despite his limited knowledge of spill mitigation techniques. Iarossi immediately began to lobby hard for the use of chemical dispersants to dissipate the spill. He perceived this approach to be cost effective for Exxon, but, in reality, the use of dispersants is only effective under relatively limited conditions, and its utilization poses the risk of serious side effects that concerned other stakeholders in the decision unit. State permission (granted by ADEC and the USCG) was required for the use of dispersants, and these agencies were strongly influenced by the lobbying of the fishermen's union (CDFU).

Over the course of the seven days, Exxon repeatedly made formal and informal requests to employ dispersants, first in Zone 1 (where, in reality, preapproval had already been established as this did not represent a sensitive area for marine life) and then, as the slick moved, in Zone 3, which was where critical hatcheries were located. USCG and ADEC granted limited permission for test runs of dispersants, and while Exxon consistently evaluated the results as 'excellent', the USCG and ADEC found them to be inconclusive at best. The debate became more contested as the slick moved towards the shoreline as the result of extreme weather conditions.

Iarossi attempted to influence the decision process organizationally by proposing the establishment of a Steering Committee made up of himself, McCall and Kelso. The mandate of this formal decision unit would include the authority to approve the use of dispersants – authority which had previously been delegated exclusively to the USCG and ADEC. In this way, Iarossi would now be included in this process and could hope to influence it – not an unreasonable assumption given that Exxon controlled the financial resources. Ultimately, this reorganization took a different form, which expanded the stakeholders involved and delegated decision-making responsibilities to various 'arms' of the structure. Exxon was not represented in all of these decision-making components, thus diluting its influence.

Exxon also attempted to engage in unilateral decision-making, performing an illegal test of dispersants in Zone 3 without the knowledge of the USCG and ADEC. While Exxon did not suffer any legal repercussions from this act, the impact was to galvanize factions that were against the use of dispersants and prompt them to press their interests more effectively.

Ultimately, no conclusive decision was ever reached by the coalition with respect to dispersant use. Once the slick began to hit the shoreline, the mitigation efforts turned increasingly to techniques appropriate to beach cleanup and marine life preservation.

Decision Dynamic

Decision-making during the Valdez oil spill crisis was rendered particularly challenging by a number of factors. Lack of preparedness and resources on the part of the responsible agencies and organizations severely limited the number of options that were available to responders. In addition, the high levels of uncertainty associated with the rapidly changing weather and oceanic conditions impacted the effectiveness of the various choices. A third challenge facing decision-makers in this case arose from the complex and sometimes vaguely structured decision-making process. Delegation of authority for decisions was at times granted to multiple agencies (thus requiring cooperation between them) and the addition of Exxon (which clearly controlled the financial resources) to the mix complicated matters further. The magnitude of the spill was beyond any that U.S. decision makers had ever faced and both the spill itself and the mitigation techniques threatened other vital regional interests, which placed stakeholders in adversarial bargaining positions.

In the case of decision making by a coalition, the key contingency or dynamic is associated with the nature of the rules or norms that guide interactions. In evaluating the nature of these rules, the principle measure used to determine which of three models are employed within the coalition is the 'degree to which procedures and norms for decision making are well-established and institutionalized.' (Hermann, 2001) The nature of the *Valdez* crisis (widespread oil spill contamination) triggered a decision-making process that crossed organizational and jurisdictional boundaries. Authority for approval or response options had been delegated to various authorities (state agencies organized under ADEC), and while the USCG had a 'coordinating' responsibility for the overall response, it was not clear whether this entailed a veto power. If such a power was intended, the USCG was clearly unwilling to exercise it. No rules were in place for the inclusion of an external party (in this case, Exxon) in the decision process. It was assumed that Alyeska would be the oil company representative and its obligations were believed to be specifically determined by the legally mandated and state-approved contingency plan, which, authorities discovered, Alyeska was unprepared to fulfill. This lack of established rules led to a decision process classified as *anarchy*.

The behaviors subsequently engaged in by the various actors, as well as the results of the decision process, support this analysis. As has been demonstrated in the chronological analysis, Exxon expended a great deal of its efforts in attempting to redefine the decision process, proposing alternative decision unit structures in which it would be directly included. The CDFU engaged in similar efforts, attempting to work through its relationship with the ADEC to be included as an official stakeholder in the decision process. During the course of the debate,

numerous tentative decisions were made, such as permission for testing, permission for treatment, and withdrawal of permission for treatment. Responding to frustration over the inaction resulting from these decisions, individual stakeholders began to make decisions on their own initiative. Exxon's decision to conduct unauthorized testing in Zone 3 and the CDFU decision to begin setting up protective booming around sensitive hatcheries without the assistance of the official authorities are clear examples of behaviors identified as *Fragmented Symbolic Action*, often associated with decision processes lacking clear decision rules. As was noted above, no conclusive decision regarding the use of dispersants was ever reached by the decision unit. The lengthy wrangling over the employment of this method and the subsequent evolution of the crisis to another phase (beach cleanup) resulted in *deadlock*, another outcome associated with anarchical coalition decision processes.

IV. THEMATIC ANALYSIS

Definition of the Situation and Framing

The officers onboard the *Valdez* first identified the situation as a problem by notifying the USCG. At this point, the Captain framed the problem as a 'grounding', as he was as yet unaware of the fact that the storage tanks had been breached and were spilling oil into the PWS. The USCG followed protocol and began to notify other governmental agencies, Alyeska, and Exxon, updating the framing to include oil spillage as that component quickly became evident. From this moment, conflicting interests and rapidly changing conditions affecting the status and impact of the spill resulted in the framing undergoing a series of modifications. Situational framing became a highly contested concept between stakeholders.

When the USCG first began the notification process, the extent of the spill was not fully understood. The framing of the situation was that its scale was consistent with other spills experienced regularly in the PWS, and that it required a standard mechanical response. While waiting for the expected Alyeska contingency measures to be deployed, attention was focused on the stabilization of the *Valdez*. As the Alyeska response was not forthcoming within the required timeframe, this lead to the discovery that this organization did not have appropriate resources to deal with what was becoming a spill of serious magnitude. The framing of the situation began to be centered on resource acquisition. At this point, Exxon stepped up and announced its intention to take responsibility for the cleanup.

Subsequently, Exxon began its intensive lobbying for the use of dispersants in managing the oil slick. This proposal triggered yet another reframing of the situation. Concerns over the *effectiveness* of dispersants were debated, and limited trial tests resulted in no conclusive evidence to assist in resolving the issue. Mechanical responses were still clearly favored by the USCG and ADEC. However, the acquisition of the equipment necessary for its implementation was problematic. As the oil was still contained within Zone 1 at this stage in the crisis, environmental concerns played a limited role in this debate. Questions of the efficiency of the decision-making structure also became part of this stage of the framing, and Exxon attempted to address this concern with the proposal of a revised decision unit.

Following severe weather that moved the oil slick into the highly sensitive Zone 3, the situation was once again reframed. Entities with ecological concerns recognized the threats posed by both the spill itself and the use of dispersants to manage it. The same concerns were critical for groups whose economic survival was dependent on the hatcheries located in Zone 3. Exxon continued its attempt to keep the focus on the question of effectiveness, repeatedly requesting dispersant trials in Zone 3. Local groups began to exert pressure on the USCG and ADEC to add the impact facet of dispersant use to the situational framing, resulting in an increasing reticence on the part of these organizations to approve their use. *Blame* also became an increasingly identifiable component of the frame, especially as the media interest in the situation increased.

It is interesting to note that the anarchy that is characteristic of the decision process finds its origins in a similar anarchy with respect to framing. Exxon, framing the problem as one of *effectiveness*, made decisions and lobbied for action consistent with this perception of the problem. ADEC, mandated to protect environmental interests, supported different response options that derived from its framing of the problem as one of *mitigating impact*. The USCG found its role unclear and its interests increasing pulled between these two frames, resulting in the promulgation of indecisive and often contradictory policies.

Preparedness for Dealing with the Crisis

Oil spills are a regular occurrence in areas where tanker traffic is highly concentrated, and although the Exxon *Valdez* spill was the largest that the U.S. had ever experienced, it was not the largest that had occurred worldwide. Accepted response techniques were the result of previous experience. Alaska had acknowledged the importance of preparation for potential accidents, as demonstrated by the establishment of contingency agreements with Alyeska and the assignment of decision authority to various state entities.

Despite this acknowledgement, the responsible agencies were completely unprepared on both a material and organizational front to respond to this crisis. This state of unpreparedness arose from several sources. First, any attention to preparedness from a policy perspective remained at the superficial level of paper and handshakes. No serious analysis of the needs of the PWS in the case of a major spill, or of the capacity of Alyeska (or other responsible organizations) to meet these needs had been conducted. These were assumed to be in place under the general understanding that Alyeska, as the representative of the oil shippers operating in the PWS, would supply what was necessary for any spill mitigation situation.

In addition, there was no awareness of the state of the resources available to the region for a crisis response. At the time of the spill, no definitive information existed regarding the presence or amounts of the necessary equipment and materiel in the region. Officials were unaware that the only collection barge that Alyeska had for such an operation was under repair, and was woefully inadequate to the task. Compounding the problem was the fact that all of its equipment had been off-loaded and stored in undisclosed locations. (It may be that the officials of Alyeska were not even aware of this situation.) Physical and human resources had to be assembled in an *ad hoc* process.

As has been discussed previously in detail, agencies were also unprepared organizationally. Overlapping delegation of authority and the lack of a process for the inclusion of a third party partner made decision-making an anarchical and *ad hoc* process. This was despite the fact that state agencies and the USCG controlled no resources for undertaking a serious spill mitigation operation, under the assumption that a third party would be involved.

Value Complexity

Fundamental to the challenges faced during the *Valdez* oil spill crisis was the issue of value complexity. While all of the stakeholders involved shared the ultimate goal of managing the oil spill effectively, competing values among the stakeholders set the stage for challenges in decision making regarding the methods employed to accomplish this goal. Clearly, at its most basic, the complexity arises from values related to the protection of economic interests and of environmental interests. This is not as simple as it might sound, for the dependence of one segment of local economy on natural resources led for a natural alliance between environmentalists and local populations, who survived mostly from fishing. These values were in competition with the economic interests of Exxon. There was also a significant segment of the local population that depended upon the oil industry for its survival.

The battle over the use of dispersants was illustrative of this conflict. Exxon, focused primarily on short-term interests, was highly committed to the use of dispersants, which it believed would be a low-cost, rapid means for dissipating the oil spill, despite the fact that there was no clear evidence supporting this conclusion. The other stakeholders, fearing the long-term consequences (toxicity) of the deployment of large quantities of dispersants into PWS, challenged Exxon's aggressive push for their use. The agencies responsible for granting permission to use these chemicals (USCG and ADEC) were faced with additional facets of these value dilemmas. Because of a scarcity of resources, methods that were best suited to protecting environmental and local economic values were proving ineffective. Although officials of these agencies philosophically agreed with the concerns raised around dispersant use, they were also concerned with their reputations for dealing with the problem effectively, which was their mandate.

As the crisis became more acute, these disputes increased in intensity. The divergent positions held by each side of the dispersant issue began to be viewed as a value conflict between public and private interests. While it was widely believed that Exxon should be required to fund the response efforts, it was less clear as to what role it should have in making decisions around how these efforts should be conducted. At various points, Exxon was left out of decision making. Examples of this include the meeting on the 26th and 27th between ADEC and the CDFU to revise strategies, the decision of the USCG and ADEC to inform Exxon that they would be expected to provide beach cleanup, and the announcement on the 28th of a new organizational structure that excluded Exxon from key components of the decision structure. Exxon excluded state agencies from decision making as well – most notably on the 26th, when Exxon officials met privately and determined a strategy for dispersant use, a decision that was followed the next day with the unauthorized application of dispersant into Zone 3.

Leadership

The *Valdez* incident illustrates an interesting pattern of leadership that is a common risk during crises that must be managed by a coalition-based decision unit. The fact that contingency planning had been limited to superficial agreements, unsupported by deep analytical assessments, meant that not only were issues of resources and capacity not clearly defined, but the structure of leadership and decision making was also highly nebulous. When Exxon became an unexpected partner in the coalition, bringing with it the resources that were required for any response effort, the flawed but established rules for decision-making no longer applied. State organizations were required to redefine the nature and limits of their authority, and to determine what responsibility they had for overseeing the actions of Exxon. Exxon was also required to explore the leadership role it would play once it asserted 'responsibility'. In this process, new leadership relationships were proposed and modified as each group asserted its interests. In the case of the occasion for decision being examined here, leadership is assessed as being highly ineffective.

Information Management

Search for Additional Information:

As with many aspects of the operations conducted in the PWS related to oil shipping, data collection was provided for on paper, but in reality such operations left much to be desired. After the crisis, it was noted that many of the data collection technologies put in place to prevent and respond to accidents were functioning below standards, or not functioning at all. During the initial days of the crisis, data collection focused on understanding the status of the *Valdez* and on the volume of oil that was escaping from the ship. Imprecise methodologies and faulty equipment hampered these efforts. As the crisis worsened, data collection efforts moved to trying to gauge the movement and volume of the oil slick, and to determine the effectiveness of the use of dispersants. Again, poor methodologies and technologies for understanding and analyzing these questions led to inconclusive results and reticent decision making. Interpretation of collected data became a point of contention between Exxon and other stakeholders. Similar problems would continue to plague information gathering efforts when the cleanup focus turned to the beaches.

Interaction with Media and Public:

Interactions with the media and the larger public during the *Valdez* incident are generally considered to have been poorly handled. In the first few days of the crisis, as media attention grew, Exxon made an effort to control the interaction with the press and to shape the public understanding of the evolving crisis. Exxon represented the situation as stable and manageable, downplaying any serious environmental or local economic concerns. As contradictory information began to surface from environmental experts and local stakeholders, who held an impromptu news conference on the morning of March 27, Exxon began to lose control of media interaction. This interaction became negative when information was released indicating that Captain Hazelwood had been under the influence of alcohol at the time of the accident.
The interaction of government agencies with the media during the initial period of the crisis was sporadic and contained limited information. The uncertainty around how to best respond to the crisis and the growing conflict with Exxon regarding these questions made media interactions

problematic. In addition, there was no contingency plan in place for the dissemination of information through official channels. Thus the USCG and ADEC were generally relegated to playing subordinate roles during press conferences that Exxon organized.

Interaction with Affected Stakeholders:

Another group of key stakeholders affected by the *Valdez* spill were the citizens of the PWS region. There is no evidence that Exxon made any extraordinary attempts to establish an open line of communication with these individuals, and indeed, often found itself in conflict with them over appropriate strategies for dealing with the spill. Although initially unresponsive to the offers by local populations to assist in the response, the state agency members of the coalition developed much more positive interactions with these stakeholders, meeting with the CDFU regularly and bringing them more formally into the decision-making process. Such interactions were critical to the recruitment of local fishermen in the efforts to protect the hatcheries, and the local population to assist with beach cleanup.

Politico-Bureaucratic Cooperation and Conflict

Differences in framing and value constructs between the principle members of the decision coalition made cooperation between them difficult. Exxon's drive to effect a quick and effective dissipation of the oil slick was at odds with the goals of other critical stakeholders to minimize the impact of mitigation techniques on the environment and fishing economy. Unclear authority structures led to difficulties in cooperation, as neither Exxon nor the state agencies clearly understood which entity was to have the final word in a disputed decision process. Resource acquisition also complicated cooperative efforts. Many of these obstacles to cooperation can be directly attributed to lack of preparation for crisis response. As the crisis evolved and windows of effectiveness were perceived to have passed due to inaction, blame began to play a greater part in the interactions between stakeholders. Exxon quickly became perceived by the national public as the entity responsible for the accident, with little attention given to Exxon's attempts to shift some of the responsibility to the state for indecisive decision-making.

Transboundary Coordination and Crisis Internationalization

Officials responding to the *Valdez* crisis initially had a number of response options available to them. The USCG and ADEC had no independent resources for oil spill mitigation. However, they believed that a viable contingency plan was in place with Alyeska providing the resources, and that their role was oversight. As it was discovered during the first few hours of the crisis that Alyeska was incapable of fulfilling its response obligations, Exxon accepted responsibility for the cleanup efforts. While Exxon had the ability to mobilize resources, it was also operating within a limited interest paradigm (cost effectiveness and rapid cleanup) at the expense of other interests important to the local and state communities. This value/interest conflict led to increasingly difficult decision-making processes over the course of the crisis, and cooperation between the stakeholders deteriorated rapidly.

The oil industry is international in nature, and the impact of the incident certainly had worldwide repercussions. However, the decision-making process was primarily a national concern, with the interesting exception of the decision on the part of the State of Alaska to accept assistance from the Soviet Union (skimming and collection equipment) when the U.S. federal government was less forthcoming about offering assistance.

Sequencing and Synchronicity

One of the most contentious arenas for the stakeholders in the decision process was the consistent tendency for the state to take provisional actions (agreeing to trial dispersant applications and limited ISB experiments) when Exxon was seeking a decisive action (permission to use the dispersants on a large scale). Exxon, driven by business paradigm of 'doing something now', seemed almost wholly focused on the issue of oil slick dispersion without concern over long-term impacts on the marine ecology. The state actors simultaneously engaged in actions designed to further their understanding of the crisis.
It is interesting and illustrative to note the differences in interpretation of the various dispersant testing experiences during the crisis. Exxon consistently evaluated the results of the tests as being very positive (even excellent), while the USCG was reticent about interpreting any of the experiences as any better than "cautiously optimistic". As the process continued without the state modifying its reticent stance on the use of dispersants, Exxon began to conduct these tests on its own (even illegally) without the presence of state officials and presenting positive (but unverifiable) findings.

As the oil slick expanded and became more diffuse, all of the standard techniques that were typically employed to respond to spills became even less viable. The arrival of severe weather and oceanic conditions complicated this situation. Stakeholders were required to move beyond the idea of dealing with the oil spill as a whole and to identify critical areas, focusing their attention on protection of these areas. Once the oil came ashore, again the response decision-making had to shift to an evaluation of effective land spill cleanup methods.

Culture

Grid-Group cultural theory as presented by Thompson, *et. al.*, proposes a framework of four typologies for understanding the cultural influences at work within an organization, providing insight into decision-making behaviors exhibited by that organization. In the case of the coalition decision unit under consideration in this case study, the *Valdez* crisis brought into conflict several cultural influences. Both the state organizations and the Exxon corporation internally employed a *hierarchical* approach to decision-making. However, the rules and procedures, as well as the driving purpose behind them, differed between the organizations. ADEC, for example, was seeking scientific/technical understanding as the basis for its decision process, while Exxon was interested primarily in taking care of the problem, as the company perceived it, quickly and effectively. The communities of the region were highly influenced by an *egalitarian* process for decision making, an approach that certainly infused and influenced even the hierarchies existent in the state organizations. Processes for decision making in the case of a catastrophic spill had not been planned. It was difficult for these organizations to meld their

individual approaches into a workable decision unit for the crisis decision process, and the result was frustration and a breakdown of decision making.

A fifth cultural model is proposed by Jacobs that is identified as the *autonomous* model, in which, in the face of unsatisfactory results, stakeholders eschew the decision process and make independent decisions that affect the community. During the *Valdez* crisis, as the decision-making process became increasingly ineffective, stakeholders such as the CDFU and Exxon began to operate independently and undertake actions that did not pass through official channels.

Lessons Learned

The response to this incident was characterized generally by a false confidence in the existence of a contingency plan agreement that lulled responsible parties into inattention. While the *Valdez* spill was the largest that the U.S. had experienced, it had been preceded by a number of international incidents that were equal in scale. The understanding of the response techniques available for the mitigation was a result of those experiences. However, the existence of this standard response paradigm seemed to prevent official decision makers from engaging in creative problem solving. Their efforts churned ineffectively around the issue of how to make these options work in the current situation, even though it was repeatedly demonstrated that the techniques were unworkable or ineffective for various reasons. It was the CDFU that took the initiative to identify the sensitive areas in the PWS and to devise ways of protecting them. The crisis response in this situation has been deemed highly flawed and ineffective in evaluative studies, and a number of important lessons have resulted:

1. *Contingency plans and response standards must be based on detailed evaluative study.*
2. *Prevention techniques were wholly inadequate and require increased attention.*
3. *Resources for crisis response must be constantly inventoried and maintained.*
4. *Cleanup techniques can be more damaging than the oil itself.*
5. *Scientific research should be focused on understanding the impact of response techniques and on developing an expanding panoply of options.*
6. *Liability for oil spills must be clearly defined. Oil companies must be held responsible.*
7. *Communities suffer from a variety of difficulties following a man-made disaster.*
8. *Federal legislation and regulation is necessary to decrease the possibility of accidents and to improve the effectiveness of response. The Oil Pollution Act of 1990 resulted in a vast number of improvements in both of these areas.*

Aftermath of Situation

Large-scale cleanup operations in the PWS continued for more than two years, and monitoring of the lingering serious effects of the spill continue today. At the height of the cleanup effort, more than 11,000 personnel, 1,400 vessels and 85 aircraft were involved, further stressing the ability of the local community to cope with the situation. Full recovery of the ecosystem has not yet occurred, but scientists are actively evaluating natural resilience and recovery processes to gain understanding regarding appropriate cleanup procedures. While legislation has tightened standards and regulatory practices on the oil industry, these are still not

sufficient to prevent the occurrence of major oil spill disasters, as was demonstrated by the Deepwater Horizon incident in 2010.

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1989 San Francisco Loma Prieta Earthquake[6]

I. INTRODUCTION

The subject of this case study is the Loma Prieta earthquake that struck the San Francisco Bay Area on October 17, 1989. Just after 5:00 p.m. PST, people across the country tuned in to national television to watch Game 3 of the World Series between the Oakland Athletics and the San Francisco Giants, which was being held in San Francisco's Candlestick Park. During the pre-game warm-up, an earthquake of magnitude 7.1 on the Richter scale occurred on the San Andreas Fault, approximately 10 miles north of Santa Cruz (56 miles south of San Francisco.) The earthquake caused 67 deaths, thousands of injuries, and an estimated $7 billion in damage to buildings and infrastructure in the region.

The case is significant for a number of reasons. Although not the deadliest earthquake disaster in U.S. history, the incident reminded citizens and officials of the potential dangers to residents posed by a powerful quake, particularly in highly populated regions. The high costs associated with the aftermath were also significant. Until the disaster response following Hurricane Katrina, the Loma Prieta earthquake cleanup represented the most costly natural disaster recovery effort in U.S. history. Subsequently, issues arose regarding allocation of state resources towards preventive earthquake mitigation and retrofitting efforts in the major urban areas that lie along the fault lines in California.

The governmental response that occurred in the immediate aftermath of the earthquake is generally considered to have represented a relatively successful (though not perfect) implementation of the 'shared governance' approach that ideally guides the interactions of federal, state and local agencies in responding to a disaster of this magnitude. Immediately after the earthquake, large numbers of volunteers responded in a wide variety of activities including search and rescue, providing food and shelter to victims, and in the cleanup operations. The significant impact of this stakeholder group on the situation has led to renewed interest in citizen preparation and participation.

The Loma Prieta earthquake will be examined from the point of the view of the *accidental coalition* comprised of local governmental entities in the Bay Area, along with critical institutions such as the area hospitals and the vast number of spontaneously formed citizens' 'groups', all of which played essential roles in the response efforts. Issues surrounding preparation and the transboundary coordination of various entities played a key role in the overall crisis response. This case study is bounded temporally as beginning at 5:04 p.m., Tuesday, October 17, 1989, when the earthquake occurred, and ending on Saturday, October 21, when power and water were restored to affected areas.

[6] Portions of this chapter were originally research and written by Kathy Allison. Additional research, editing, and writing was conducted by the editors.

The nature of the situation – a response to a natural disaster – and the issues involved in the response to the earthquake fulfill the three requirements that Eric Stern suggests are necessary for a situation to be considered a crisis. (Stern, 2002) The situation posed *a threat to a number of basic values*. These included obvious threats to the health and safety of the population and to the infrastructure of the region, and also involved significant impacts on the local, state and national economy. The effectiveness of the preparation and response to the crisis by responsible agencies came under public scrutiny and was widely judged to be fairly positive. On a more abstract level, issues of individual rights were perceived to be under threat as the result of decisions made in the public interest. The second requirement of *urgency* was met in this incident. Clearly rapid response was required on the part of many organizations, first to find and rescue individuals who were hurt or trapped in the debris, and then to contain fires and water main breaches, to provide aid to survivors, and to maintain law and order. Efforts to meet the continued needs of these victims and to restore basic services kept the level of urgency high during the first days following the earthquake. Finally, a *high level of uncertainty* was present throughout the crisis. As scientists are yet unable to pinpoint with any accuracy the occurrence of an earthquake event, specific incidents, while anticipated in general, are always unexpected. The frequency, magnitudes and potential impacts of aftershocks are also difficult to fully understand. The widespread loss of power across the city meant that methods of communication were generally unavailable and, as night fell, damage was difficult to assess visually. Responders were also impacted by these developments and were fairly isolated from each other, especially during the first hours.

Context of the Case

The San Francisco Bay Area, the fourth largest metropolitan area in the United States, lies on the San Andreas Fault, a geologically active region that has historically been subject to regular and powerful earthquake activity. The 1906 San Francisco earthquake and its subsequent fire has been deemed one of the worst natural disasters in U.S. history, with the deaths of 3,000 people, the destruction of 80 percent of the infrastructure of San Francisco, and an economic impact that has been compared with that of Hurricane Katrina. Since that event, seismologists have dedicated extensive efforts to understanding the workings of the geological fault lines that run through the region, and the metaphor of "The Big One" is widely understood to refer to the massive quake event of magnitude 8 or higher that has been predicted for this area.

Cognizant of the historical context, Bay Area officials have heeded the geologists' warnings and have made disaster mitigation and response planning a high priority. Stricter building and infrastructure codes, as well as extensive and costly efforts to 'retrofit' the city's facilities are perpetual works-in-progress. Despite this commitment to rendering the city 'quakeproof', the reality is that limited resources (both financial and manpower) require choices to be made with respect to the prioritization of projects. Priorities are set using calculations of the potential number of lives saved, which dictates the order in which projects are undertaken. Taxpayers foot the bill for these projects, and are not always willing to fund them. Ironically, on April 3, 1989, voters failed to pass Proposition 3, a city initiative that would have provided $90 million in bonds targeted for the implementation of earthquake safety measures.

In addition to improvements to the physical stability of the city, efforts have also been made to create effective response plans to the eventuality of a quake incident. In 1989, San Francisco did have an emergency response plan in place that included the coordination of the activities of a wide-ranging group of response agencies on the local, state and federal levels. A variety of non-governmental organizations, such as the Bay Area Chapter of the American Red Cross, the Salvation Army and a number of citizens' groups (often neighborhood-based), had procedures in place to respond to the expected earthquake. Given the certainty of seismic activity in the region, the Federal Emergency Management Agency (FEMA) had long been interested in ensuring that an integrated and coordinated response plan was in existence. Indeed, in July of 1989, FEMA conducted a major earthquake training exercise in California that involved a full simulation of disaster response. Federal and state officials participated in this exercise. However local officials were not involved. Thus, although the precise details of an earthquake event are for the moment unknowable, residents and officials in the San Francisco Bay Area could be considered fairly well-prepared for the incident that occurred on October 17.

II. CHRONOLOGY

Tuesday, October 17, 1989

5:04 p.m. An earthquake registering 7.1 on the Richter scale occurs 56 miles southwest of San Francisco, with its epicenter at Loma Prieta.

A 30-foot section of the upper deck of the San Francisco – Oakland Bay Bridge collapses.

A mile-long section of the upper roadway of Interstate 880 in Oakland collapses onto the lower section. Cars are crushed and individuals are trapped beneath the rubble.

A shopping mall collapses in Santa Cruz.

Volunteers immediately begin search-and-rescue (SAR) and first aid response, pulling many trapped individuals from the destruction to safety.

Other damage reported includes the collapse or serious damage to buildings, damaged power lines, breached water lines, and fires. Large cracks are observed in roadways and in one airport runway at the San Francisco International Airport,

Mayor Art Agnos is immediately located at Candlestick Park attending Game 3 of the World Series, which has been suspended. He is taken to the city's Emergency Operations Center (EOC) located at the San Francisco Fire Department (SFFD) facility.

Agnos declares a state of emergency, allowing him to authorize purchases and overtime work without prior budget authority or approval by the county supervisors. *This state of emergency is rescinded on November 22.*

Agnos bans the sale of alcohol after dark and orders all bars to be closed.

5:20 p.m. San Francisco Police Department (SFPD) makes initial assessment to determine which level of emergency contingency operations to comply with. SFPD issues a recall of off-duty officers.

A majority of off-duty San Francisco police officers return to duty – many before the recall order is announced. Many are not relieved for 12 hours.

Some police officers report to helipads as designated by emergency contingency plan specifications. Helicopters are not available to transport them.

5:24 p.m. Mayor Agnos is briefed on the status of the situation.

5:30 p.m. San Francisco Sheriff Department (SFSD) makes a complete assessment of prison facilities and performs an inmate check. Work is initiated to repair minor damage. Off-duty Sheriff deputies are recalled.

The Director and the Associate Director of Public Health and the Chief Paramedic report to the EOC. This team works throughout the night assessing damage and directing emergency medical operations.

Emergency Response staff of the Toxic and Safety Services Program responds to several incident calls.

San Francisco General Hospital (SFGH), per contingency plan specifications, establishes an emergency command post, immediately assesses damage to hospital facilities, evacuates areas deemed unsafe, and accounts for all patients. The hospital had sustained moderate structural damage. Within minutes of the earthquake, emergency generators had begun to provide full power to the hospital. Staff return or have remained to work overtime to treat a large proportion of earthquake-related casualties.

City Distribution Division (CDD) personnel begins efforts to redirect water pressure into the mains in the Marina district to assist fire response efforts there.

5:34 p.m. San Francisco Fire Department communications center dispatches trucks to the Marina District to respond to a fire.

The Federal Emergency Management Agency (FEMA) activates its Catastrophic Disaster Response Group within 20 minutes of the earthquake.

5:41 p.m. A magnitude 5.2 aftershock strikes, breaking water mains, which impacts the water supply available to the fire department in its response efforts.

5:59 p.m. SFFD requests mutual aid from the Presidio Fire Department (manned by Army personnel) for new structure fires.

6:21 p.m. Presidio Fire Department Engine 2 arrives on the scene at Beach and Divisadero streets.

6:25 p.m. SFFD firefighters arrive at the Beach and Divisadero fires.

6:36 p.m. Fire hydrant pressure drops in the Marina District.

6:41 p.m. San Francisco Fireboat *Phoenix* arrives to assist with firefighting.

7:00 p.m. City ambulance services have tripled the number of ambulance/first responder teams available to respond to calls – from 10 to 30.

San Francisco Water Department (SFWD) begins the process of locating and repairing leaks in the water mains and service lines. This requires a repeated process of depressurizing and re-pressurizing the system. Approximately 150 breaks are identified. Of these, approximately 90 percent are in the Marina District, impacting water capacity needed by the SFFD to fight fire.

7:15 p.m. Following consultation with the SF Health Department (SFHD) and the California Department of Health Services (CDHS), the SFWD releases a water quality advisory to the residents of the Marina District, instructing them not to drink or cook with public water until further notice.

7:20 p.m. San Francisco District Attorney Arlo Smith announces that looters will be prosecuted to the fullest extent of the law, with the Prosecutor's Office demanding maximum sentences and no bail.

7:30 p.m. SFSD has assembled a majority of employees, set up a command post, inventoried available equipment, established work/rest plans, and prepared facilities to accommodate emergency operations. They are fully prepared to respond to requests for mutual assistance from the SFPD.

10:00 p.m. SFPD makes first request for mutual aid from SFSD, requesting 8 patrols and the transfer of city prisoners to country jails to allow more SFPD officers to be assigned to patrol and response duties.

11:35 p.m. SFPD makes a second request to SFSD for additional teams patrolling with red lights in order to maintain a strong visible presence, maintain barricades and no-trespassing areas, and to escort Red Cross personnel into affected areas.

U.S. Defense Secretary Richard B. Cheney has activated the Directorate of Military Support to assist in federal response. Eight hundred members of the California National Guard have been activated to provide medical, engineering, military police and aviation services to the area.

An Air Force C-140 cargo plane is en route with 14 tons of FEMA equipment from Shepard Field, West Virginia. Additional Air Force Transport aircraft are on alert in preparation to move supplies into the area.

Letterman Army Medical Center in San Francisco and the Naval Hospital in Oakland have opened to civilians.

Treasure Island Naval Station is providing food and shelter to motorists stranded on the Bay Bridge.

Volunteer organizations, such as the Red Cross, the Salvation Army, and tens of thousands of individual volunteers across the affected area organize themselves throughout the first 24 hours to provide assistance to victims. These efforts continue at high levels for several days, and include SAR and first aid response, but also provision of food and shelter, manning of checkpoints, assistance with inspections, clearing of rubble, etc. Some of these efforts continue for up to 18 months.

October 18
6:00 a.m. The first inspections teams begin damage assessments, starting with city offices and schools. *Among these teams are a significant number of volunteer inspectors.*

Federal, state and local officials tour the city and survey the damage. In the absence of Governor George Deukmejian, Lieutenant Governor Leo McCarthy declares a state of emergency in the earthquake region. *The Governor's office may direct state monies to the response effort and make other executive decisions without legislative budget approval*.

The Governor's Office formally requests federal assistance.

Electrical crews restore power to each area as it is deemed free of gas fumes.

Morning Vice President Dan Quayle arrives by helicopter in the Marina District and speaks with the press. He does not attempt to meet with city officials.

12:00 p.m. Mayor Agnos holds an impromptu press conference, where he is informed about the Quayle visit. He expresses his annoyance at what he characterizes as a "cheap publicity stunt".

San Francisco Fire Chief Frederick F. Postel arrives from Boston in San Francisco on White House jet. The FBI transports him by helicopter to the Turk Street Central Fire Station.

The Water Quality Division (WQD) begins intensive water quality sampling throughout the area.

President Bush declares San Francisco and the surrounding areas in the earthquake zone as a major disaster area and authorizes FEMA to coordinate the full federal response.

General SAR, medical and humanitarian assistance, and cleanup operations continue throughout the next several days.

October 19

Presidio Military Police return to regular duty.

State Office of Emergency Services (OES) team arrives. State officials now begin to coordinate the operations of the Incident Command System and at the Cypress Freeway collapse.

October 20
9:45 a.m. President Bush arrives to tour damaged areas. He is briefed by Mayor Agnos. Recovery and rescue operations are suspended during the Bush visit.

Power is fully restored to all affected areas.

SFSD stands down most additional support to SFPD. One exception is that 100 additional officers are on duty to assist over the weekend, if needed.

Bechtel Corporation sends 80 engineers to the Marina District to inspect homes and apartment buildings for earthquake damage.

SFPD orders evacuation of additional buildings following inspection findings.

New York State sends crews of N.Y. Air National Guard to relieve California crews.

Mayor Agnos informs residents in the Marina district that they have 15 minutes to enter their homes and retrieve belongings prior to demolition. Sixty buildings, containing approximately 5,000 residences were ultimately destroyed.

Saturday, October 21

The last live victim is pulled from beneath the Cypress Freeway, 86 hours after the earthquake. He dies one month later from complications.

Full water service is restored to the Marina District.

III. OCCASION FOR DECISION

At 5:04 p.m. PST, an earthquake of magnitude 7.1 struck the San Francisco Bay Area and surrounding counties. Electricity and communications systems were severely disrupted, and widespread destruction occurred, including the collapse of numerous buildings and roadway infrastructures. Immediate response was required at these various scenes in order to prevent additional loss of life. In the immediate aftermath of the earthquake, how would search and rescue operations be effectively conducted?

At scenes of damaged or collapsed infrastructures across the Bay Area, individuals trapped in the wreckage were in imminent danger of their lives. These situations called for immediate SAR operations. Damage to the power and communications systems in the region

complicated the process of assessment and the communications necessary to facilitate decision making within official agencies. While later evaluations indicated that the city's first responders were dispatched efficiently to the emergency sites despite these complications, nonetheless they were often not the first on the scene. The instability of the structures and the occurrence of aftershocks threatened the lives of those trapped in the debris. The most pressing decision involved how to most effectively extract these individuals from the dangerous situations created by the earthquake.

Decision Unit

The decision unit for this occasion for decision was a unique *coalition of multiple autonomous actors*, consisting of local governmental agencies, private organizations and spontaneous groups of individual citizens. The decision unit manifested itself in some sense at the *community* level, transcending boundaries of official agencies and including a highly diverse set of actors. It is interesting to note that contingency plans provided for a collaborative response between local public agencies (such as fire, police and utilities services) and private institutions (such as hospitals) in the case of a catastrophic earthquake event. What was not anticipated in these plans was the spontaneous organization and critical contributions of random groups of citizens (also community-based actors) in such an event. An analysis based on the decision tree for determining decision units presented by Hermann and Hermann confirms the designation of the decision unit as a coalition. In responding to the questions posed in this theoretical construct, it is clear that: 1) no single individual or organization exited with the exclusive power/authority to control resources; 2) the problem fell within the decision domain of more than one policy group (each of the groups identified above); 3) the various policy groups were not related to each other in a hierarchical chain of command; 4) in the decision under consideration, the various stakeholders did not combine into a single decision unit; and 5) the commitment of overall resources required the concurrence/coordination of all of these actors. The challenge facing these various actors was to mitigate the loss of life due to the damage caused by the earthquake. While all stakeholders shared the common purpose of rescuing survivors, their level of preparation for emergency response, their organizational characteristics, and their perceived formal roles with respect to the official contingency plans varied greatly. However, all of their individual efforts were ultimately considered to have been indispensable to the cumulative response and successful outcome of the decision to provide aid to those in danger.

Policy Decision

SAR operations include the search for and provision of aid to individuals who are in distress or in danger. Such operations are widely considered a fundamental component of an official response to crises of various kinds, including natural disasters. In regions of the U.S. that are prone to natural disasters, SAR operations are included in contingency planning. These operations are generally understood to be the purview of a set of official (primarily governmental) first-responder agencies, although specialized non-governmental agencies, such as hospitals or not-for-profit humanitarian organizations, often play formal roles in a full-scale response effort, primarily in the provision of aid. SAR operations are often highly dangerous and are undertaken by individuals who have undergone training in specialized techniques or settings.

In preparing its response to a catastrophic earthquake event, major California urban areas, including the San Francisco Bay Area, have included provisions for SAR operations. Bay Area earthquake contingency plans involved police, sheriff, fire and other first-responder agencies, which were dispatched to the scene of SAR situations as they were reported. Hospitals in the area had also identified procedures to initiate in the event of an earthquake incident, including implementing SAR/evacuation within their own facilities. Thus, decision-making about how to best implement SAR operations was distributed among various institutions that made up a coalition representative of the Bay Area *community* decision unit.

Despite the advanced planning that had been undertaken, the Loma Prieta earthquake presented specific complexities that challenged the capacity boundaries of official responders. Unavoidable delays in arriving on the scene of infrastructure failures and fire outbreaks jeopardized the safety of individuals trapped in those situations. Those who found themselves 'first-on-the-scene' were compelled to respond to the situation, whether or not official first responders had arrived. More abstractly stated, decision-making responsibility for determining how to respond to the situation was dispersed to coalition members faced with specific manifestations of the problem (the occasion for decision). Thus, while, some coalition members played expected roles (i.e., the police ferried motorists off of the jeopardized Bay Bridge, firefighters responded to the outbreak of fire in the Marina District, officials at San Francisco General Hospital initiated SAR and emergency procedures, and the Red Cross began to provide aid to survivors), others played unanticipated roles. For example, a group of citizens from a nearby factory conducted the critical SAR operations at the scene of the collapsed section of Highway 880, a second evacuated the elderly from many residences in the most damaged parts of the city, and yet another pulled employees from the destroyed mall in Santa Cruz. Thus the response was highly situational and was often determined and implemented by those who by chance found themselves on the scene.

Decision Dynamic

Decision making during the Loma Prieta incident was rendered particularly challenging by a number of factors that are inherent in unexpected natural disasters. The first involved the limited capacity to assess the damage immediately and to respond to the needs of the community effectively. Loss of power in the most heavily affected regions, including the area where the command center was located, meant that communications had to be restored for decision making to take place. Uncertainty also played a significant role in the decision-making process. First, while the primary earthquake had presumably ended, aftershocks are a natural component of the earthquake cycle. These aftershocks can themselves be powerful and destructive, as well as unpredictable. Uncertainty also pervaded decisions surrounding the assessment of damage. Structural damage to buildings, roadways and other infrastructure is often not immediately evident. Thus, decisions to allow occupation or to evacuate facilities were difficult and became controversial as the post-crisis period proceeded. Capacity concerns were also critical to decision making during the Loma Prieta incident. The most extensive damage following the earthquake was localized in, but no limited to, the Marina District of San Francisco. The freeway collapse that resulted in most of the deaths associated with the earthquake occurred in Oakland. Legitimate demands for immediate response were both numerous and often required high levels

of manpower. Complicating matters was the high number of calls for less urgent assistance, requiring high capacity and effective screening techniques at the dispatch nodes of responding agencies.

In the case of decision making by a coalition, the key contingency or dynamic is associated with the nature of the rules or norms that guide interactions. In evaluating the nature of these rules, the principle measure used to determine which of three models is employed within the coalition is the 'degree to which procedures and norms for decision-making are well-established and institutionalized.' (Hermann, 2001) The nature of the Loma Prieta crisis – a catastrophic earthquake – triggered a decision-making process that crossed organizational and jurisdictional boundaries. The earthquake contingency plan for the Bay Area had been a collaborative project organized through the Office of Emergency Planning (under the authority of the Mayor's Office), but contributions to this plan came from the various 'official' stakeholders. Immediately following the earthquake, an emergency command center was established that exercised some level of coordination of response efforts. However, the ultimate authority for individual agency actions, especially those of a non-governmental nature, did not lie neatly with the governmental authorities. *The contingency plan was primarily a plan for actions, not a plan for decision-making processes.* Thus, while the expected responses of many of the various actors were defined, the rules of interaction between the stakeholders were not so clear. The addition of groups of private citizens as stakeholders in making decisions is further suggestive of the lack of clear rules for decision making. This lack of established **rules** is a characteristic of a decision process classified as *anarchy*.

The decision behaviors subsequently engaged in by the various actors support this analysis. To a great extent, the nature and number of situations requiring SAR response determined the types of decisions that occurred, as well as the specific coalition partners involved. Simultaneously, numerous situations arose that posed immediate threats to the lives of citizens, leaving little time to engage in formal decision-making processes. In situations in which the official first responders were on the scene quickly, decision making followed prescribed rules and norms. In many cases, however, the response was initiated by spontaneously formed groups of citizens who had no formal links to the decision process. These volunteer groups became stakeholders in the SAR process *accidentally*. However, studies have indicated that their efforts were critical to the successful outcome, despite the fact that they were operating essentially outside of the formal decision process. (Neal, 1990)

Such a relationship, in which there exist no formal rules for interaction in decision making, would in principle lead to a decision outcome of *instability* or *Fragmented Symbolic Action*. Yet, what was actually observed was – from a decision-making perspective – a rather orderly and consistent response towards the policy objective, which was to initiate effective situational SAR operations with the intent of minimizing the loss of life. This alignment of behavior is more suggestive of a consensus model, or in the language of the coalition paradigm, a *unanimity* model. It is critical to note here that the unanimity model often results in deadlock, with the caveat that it can lead to agreement when there is a "strong shared policy orientation that unites each actor." (Hermann) In this case, *the force of the normative framework that guided the development of official contingency plans (the strong shared policy orientation towards preventing loss of life) seemed to override the impact of the lack of formal decision-*

making rules. This enabled accidental and disconnected coalition partners to participate in localized decision making in a manner consistent with the formal policy.

The phenomenon of spontaneously organized volunteer or citizen groups implementing independently determined responses to crisis situations is interesting because it is fairly commonly observed. Researchers have consistently found evidence that disasters provoke altruistic or pro-social behaviors on the part of the public, behaviors that often play an essential role in the response to the crisis. (Tierney, 1992. Pg. 113). The apparent tendency of such actions to support guiding policy norms would suggest that, although these groups do not have formal links with decision-making processes, they are nonetheless often active and effective coalition partners. Neal has suggested that the efficacy of more formal volunteer organizations is related to issues of planning, experience and established ties with other important community organizations, but it is not clear how these types of considerations might apply to spontaneously formed groups. This topic merits further theoretical exploration.

IV. THEMATIC ANALYSIS

Definition of the Situation and Framing

While the precise scale of the earthquake may not have been known immediately, the seriousness of the situation was quickly perceived as a result of the widely experienced power of the seismic activity and the obvious damage that it had caused. It is interesting to note that the earthquake was 'broadcast live' on national television during the World Series game, which meant that the importance of the incident was not limited to the immediate victims. National public attention was directed towards following the events unfolding during the crisis. Tierney reports that the first media accounts exaggerated the extent of the earthquake damage, as well as the death toll. Airing footage of the fires in the Marina District and the collapse of a section of the Bay Bridge helped lead to a misperception that the destruction was far greater than was true. This misrepresentation may have led some smaller, but harder hit regions to decide not to request mutual aid on the assumption that none would be available.

The Mayor formally declared a state of emergency shortly after the earthquake. However, the incident had already triggered immediate action prior to this announcement on the part of the area's first-response agencies, as specified in the Bay Area's emergency contingency plan. To some extent, the disaster had been 'pre-framed'. The perception of the crisis nature of a powerful earthquake, of its implications, and of the required response were all facets of a shared understanding. This common framing extended beyond the official decision makers, even to the level of individual citizens. It was heavily influenced by the historical destruction of San Francisco that occurred as a result of the 1906 earthquake – an event that is memorialized in the area and against which subsequent seismic events are measured. The result of this historical referencing and efforts to create community awareness around earthquake preparedness was that potential problems were widely understood without official communications in the moment. Agencies and individuals could assess the situation independently and exercise some autonomous decision making in response, while still remaining within the framework of the official policy position.

Preparedness for Dealing with the Crisis

The Loma Prieta earthquake caused damage over an area of over 8,000 square kilometers with a population of over four million people. This area encompassed six counties and several dozen independent local jurisdictions. Emergency contingency plans, implemented at the local, state and federal levels, were in place across the region, and public awareness programs for earthquake preparedness are fairly ubiquitous. With a few exceptions, these localized entities handled their own emergency response without outside assistance. In each of these jurisdictions, response efforts were also managed by a variety of organizations, including first-response agencies (police, fire), medical facilities, utilities companies, volunteer organizations, and individuals. Thus, given the large number, variety, and relative independence of stakeholders, the evaluation of preparedness is complex and difficult to study comprehensively. Nonetheless, some efforts were made following the earthquake to evaluate the overall impact of preparedness for dealing with the crisis. Ultimately, these findings generally indicated that agencies were well prepared for dealing with issues that arose in the immediate aftermath of the earthquake (SAR, security, management of water and electricity, shelter, food, evacuations.) In 1991, the Seismic Safety Commission Report, while making suggestions for the improvement in the area of emergency response, rated the overall preparedness of the various official response entities to be very high. There was specific mention of the efficacy of contingency planning, drills and public education efforts in facilitating rapid and coordinated actions. The report noted the automatic procedures were in place in many critical organizations that prepared off-duty employees to assess the situation and report in, even before official recalls had been released. Police, fire and emergency services organizations also had standing procedures for revising work schedules, assessing available inventory of resources, and for providing mutual aid (reallocating resources to the hardest hit areas.) Disaster aid organizations, such as the Red Cross, were found to have been relatively well prepared to deliver shelter and food to survivors. Overall, for formal organizations, standard operating procedures were implemented successfully.

Despite the generally positive evaluation, a number of preparedness problems were identified, including a lack of communications infrastructure allowing more effective evaluation of the situation, and the identification of processes through which the capacity of emergent volunteer groups could be even more effectively harnessed. With respect to the longer-term resolution of crisis-related issues, preparedness was low. These issues included the creation of effective provisions for building inspections, the distribution of assistance checks, and the provision of housing following demolition. Preparation for the effective allocation of resources to victims of the earthquake was found to be either non-existent or hampered by cumbersome bureaucracy and inconsistent interpretation of state and federal guidelines and procedures.

Value Complexity

As with the consideration of the preparedness component of decision making, value complexity must also be considered first in the analysis of short-term decision-making and then in the longer-term assessment. In the hours and days immediately following the earthquake, the priority of ensuring the safety of the population in the area affected by the incident was the shared value of all of the stakeholders. As this critical phase ended and these decision makers

were required to address more long-term problems, a number of value conflicts arose. Individual civil liberties and the obligation of the government to provide safety and protection were at odds in a number of situations. For example, a constriction of some individual rights was noticeable immediately after the Mayor declared the state of emergency. In an effort to reduce lawlessness, Mayor Agnos declared the sale of alcohol to be illegal and closed the bars in the city, raising outcry among some residents. Safety concerns also conflicted with property rights. Days after the earthquake, after building inspections had been completed and those that were condemned had been identified, the Mayor established a policy allowing each resident only 15 minutes within their former residence to gather belongings before the buildings were razed. Again, the public responded with anger. Agnos noted that this concern for the future was a sign that the people of San Francisco were on the road to recovery. (Note that Agnos did not apparently feel particularly affected by the conflict in values that would be created by his desire for re-election.) *Following this announcement, large numbers of volunteers once again spontaneously organized to assist elderly residents who wished to retrieve belongings from their condemned homes.* In most of these situations, the public stakeholders were absent from the decision making.

Value conflicts also arose in the context of the interactions between the various levels of government, especially around issues of resource allocation to residents. Federal government (FEMA) standards for disbursements required a level of accountability that interfered with the primary concern of more local agencies (to distribute funds to those in need). Local agencies distributed money fairly efficiently in the initial days following the earthquake, but they did not follow many of the administrative guidelines associated with these disbursements.

Leadership

The Loma Prieta incident illustrates an interesting pattern of leadership that is perhaps not uncommon in widespread natural disasters, and which has attracted attention in the field. As was noted earlier, the earthquake contingency plan that was in place in San Francisco in 1989 was primarily a plan for action, defining roles and procedures for the various entities responsible for response following an earthquake incident. It did not seem to emphasize formal decision-making procedures. Indeed, it could well be argued that decision making during this incident was highly decentralized. Formal agencies and organizations immediately initiated their response procedures, guided by their internal directors, especially in the immediate aftermath of the quake. The nature of the crisis also resulted in even more widely dispersed concentrations of leadership as spontaneously formed groups of volunteers organized to effectuate response efforts. This decentralization allowed entities to operate flexibly and to meet the situational needs of the incident, leading to a highly effective response overall.

Information Management

Search for Additional Information

As was the case with many aspects of the situation, information-gathering activities were conducted at many different nodes in the environment. Situational assessment was the immediate mission of information-gathering processes in the early hours following the incident. These processes were complicated initially by the disruption of communications infrastructure caused by the earthquake. Certainly, there was a need for city leaders to assess the state of the

affected region overall in order to direct resources and to anticipate evolving problems. Independent agencies also conducted these activities, in order to effectively implement their roles in the contingency plan. The assessment and monitoring conducted by the hospital leadership in order to maximize the response potential of the facility is an illustrative example. Information gathering also took place at the level of the individual citizen-stakeholder. Despite the loss of communications services in the immediate aftermath of the quake, volunteers gathered in force at the various search and rescue sites to assist with evacuations, and later were informed or sought information (presumably through intricate networking) about where their assistance might be required (as in the case of the support of the elderly in evacuating their premises.) All of these efforts were undertaken in order to contribute to effective responses, and there is no indication that any stakeholders were intentionally excluded from the process. Despite the openness of the communications process, however, the extent of the environment in which communications were required, as well as the urgency of the situation, led to many isolated information-gathering activities. Thus, it is not clear that any entity was in possession of a complete picture of the situation. This decentralization is a recurrent theme in many aspects of decision making during the Loma Prieta incident.

Interaction with Media and Public

Media played a fascinating role in the unfolding events following the Loma Prieta earthquake. Ironically, the *first* interaction with the media was the broadcast of the earthquake on national television before a vast national audience watching the World Series. The crisis immediately drew the attention of the national public, and triggered the interest of the national news agencies. These agencies initially exaggerated the effect of the quake, leading to many mistaken beliefs about the situation. For example, the news media initially used an estimating technique to arrive at a number of several hundred expected deaths. This was clearly inconsistent with the reality of 67 deaths. These exaggerated reports also led communities surrounding San Francisco to make decisions *not* to request aid, believing that there would be no extra capacity to send to them. The media was employed by local officials as a tool for conveying information to the populace. The Emergency Broadcast System was not utilized, as critical infrastructure required for its use had been damaged. Radio and television stations broadcast critical information. This included announcements about the closure of bars in the city, the threatened consequences of criminal activity, and the limited access that residents would have to condemned residential buildings. The Public Affairs Office emerged as the primary point of contact for the media, although it is not clear that provisions for such an arrangement were a component of the contingency plan. Overall on the national front, the City of San Francisco effectively benefitted from the sympathetic response that an engaged national public provided. On the local level, the use of media as the primary – almost exclusive – source of information for residents may have led to uneven and inaccurate dissemination of information.

The media was also a political mechanism during the incident. When Vice-President Quayle arrived unannounced to San Francisco on the day following the quake, it was the press that informed Mayor Agnos. His derisive remark in response was a source of consternation among political leaders. Interestingly, the Mayor was unable to capitalize on his opportunities to engage the media, often answering in brusque or dismissive fashion. He did not win a second term of office, losing a run-off election in December 1991.

Interaction with Affected Stakeholders

As has been noted above, citizens were the primary group of affected stakeholders, some as victims of the crisis and others as volunteers implementing service provision. Interactions involving citizens were rendered complex as a result of the fact that many of the neediest were displaced from their residences for significant lengths of time following the earthquake. Although the Emergency Broadcast System was not functioning, officials utilized the media and the many organizations that were delivering aid to individuals as a mechanism for communicating critical information. Clearly, citizen volunteers used both official and unofficial information sources in order to respond so consistently to need as it arose.

Politico-Bureaucratic Cooperation and Conflict

Similarities in framing and in value constructs between the principle stakeholders of the coalition, especially on the local level, meant that the interactions between them were highly cooperative. The earthquake was experienced as a trauma by the community as a whole, and all indications suggest that, especially in the immediate aftermath of the quake, institutions and individuals concentrated their efforts on resolving the situations that arose and not on assigning blame. The advance preparation for just such a crisis meant that roles were understood by the major institutional stakeholders. Individuals were behaving opportunistically, participating in the decision process when the need arose. As the crisis evolved and the longer-term issues began to emerge – surrounding housing for the displaced, blame began to play a greater part in the interaction between stakeholders.

Transboundary Coordination and Crisis Internationalization

As has been discussed, the effective response to the Loma Prieta crisis involved an extensive process of transboundary coordination, requiring the smooth cooperation of a wide range of organizations. It was noted that control over resources was not concentrated under the auspices of one entity (a condition expected in a coalition of this type), and that effective response often required the pooling of resources. It is also the case that many issues during the Loma Prieta crisis were of a complex nature that crossed jurisdictional boundaries, again requiring coordination. One example is the long-term provision of assistance to the victims. The urgency of the crisis generally created conditions that favored coordination, certainly in the short-term. At the local level, this coordination occurred quite smoothly, especially immediately following the earthquake. It is particularly impressive that stakeholders outside the official decision-making infrastructure were able to effectively cross jurisdictional boundaries. For example, citizens performed SAR operations. As the issues evolved and required more long-term and expensive solutions, the state and federal governments were required to participate. Local stakeholders perceived the extensive bureaucracy on the part of these state and federal agencies to be detrimental to the process of providing aid quickly to individuals in need. Local agencies made independent decisions to circumvent some of these procedures regarding the distribution of assistance monies, which led to contentious relations with FEMA.

There is no evidence that any component of this decision process involved international participation.

Sequencing and Synchronicity

Although in a continuous process of information gathering, stakeholders at all levels involved in the initial days of the Loma Prieta crisis engaged primarily in *decisive* actions. There was a fairly clear understanding of the cause and nature of the crisis, and decisions were directed at solving the problems, not deflecting or interpreting responses from the environment. Certainly for some of these decisions, Mayor Agnos received negative feedback. This is particularly true in his handling of access to condemned residences. Nonetheless, as is noted in the theoretical discussion, decision units engaged in decisive actions tend to dismiss negative feedback or interpret it in a positive light. In line with this prediction, Mayor Agnos suggested that protests indicated that the lives of the citizens of San Francisco were returning to normal. Although protests did arise over some issues, such as the decision noted above, the stakeholder community was not particularly factionalized and generally cooperated in the implementation of decisions.

Synchronicity had some impact on the crisis. A natural disaster such as a powerful earthquake creates havoc on many fronts, requiring decision makers to simultaneously address many urgent situations. Clearly, the city had also been hosting a major national sporting event when the earthquake struck, and inquiries were raised from many quarters regarding the resumption of the World Series. In addition, visits by both Vice-President Quayle and President George Bush occurred during the days immediately following the crisis. Both of these events interrupted the flow of the response effort, to the chagrin of Mayor Agnos. Finally, an unusual warm front moved into the area, complicating matters and exacerbating the challenges faced by the displaced, and creating a greater sense of urgency.

Culture

Grid-Group cultural theory as presented by Thompson, *et. al.*, proposes a framework of four typologies for understanding the cultural influences at work within an organization, providing insight into decision-making behaviors exhibited by that organization. In the case of the accidental coalition decision unit under consideration in this case study, it is certainly the case that some of the entities involved employed a hierarchical approach to decision making. However, this model will not fully explain the organizational culture framework in which all of the decisions were made, especially the many decisions that involved coalition members who were not within the hierarchical governmental bureaucracy, or who were completely outside of official decision-making channels. Another important cultural influence was the *egalitarian* process for decision making. These entities were able to successfully meld their individual approaches into a workable decision model for responding to the crisis.

A fifth cultural model is proposed by Jacobs that is identified as the *autonomous* model. In this, in the face of unsatisfactory processes or results, stakeholders eschew the decision process and make independent decisions that affect the community. During the Loma Prieta crisis, the accidental coalition partners were essentially required to adopt this model, as decisions had to be made and the official process was unavailable to them.

Lessons Learned

The response to this incident was highly influenced by a confidence in the existence of a contingency plan that gave stakeholders guidance when the crisis arose. In addition, an overarching norm had been conveyed to the larger population of stakeholders that enabled them to engage in the decision process in a manner that was consistent with the goals of the official process. Overall, the crisis response during the Loma Prieta incident was deemed to be relatively effective. This is not to say that the response unfolded without problems, many of which have been identified in subsequent reviews of the crisis response. A number of important lessons have resulted from these studies:

1. *Contingency plans should be updated to include improvements in areas such as inspections following earthquakes.*
2. *The priority system for determining retrofitting projects was flawed, resulting in the collapse of highway infrastructure. The system should be re-evaluated.*
3. *Retrofitting of major infrastructure must continue.*
4. *Planning for housing victims following major earthquakes must be improved, and should be evaluated to ensure that they are not influenced by discriminatory practices.*
5. *Interaction with the press should be more carefully planned.*
6. *Personnel management should be streamlined.*
7. *Communication/coordination between agencies that are critical to the response effort should be improved.*
8. *Provisions for neighborhood-based citizen response/preparedness should be a high priority.*
9. *Earthquake safety education should continue to be a priority.*
10. *Plans for coordination/cooperation between small local governments in the region to organize emergency response efforts should be implemented.*
11. *Communications infrastructure should be strengthened and redundant systems should be in place in order to facilitate assessment and response for future crises.*
12. *The potential response capacity of citizen stakeholders should be analyzed and harnessed to enhance the city's response capacity.*

Aftermath of Situation

Large-scale recovery operations continued for several years following the earthquake, and represented the most expensive natural disaster recovery effort in the U.S. until Hurricane Katrina. In response to this, a $3.45 billion federal relief package was signed on October 26, 1989. The following day, Game 3 of the World Series was played, and the series was won by the Oakland As. Bridge crews opened the Bay Bridge on November 18. Over the course of the next ten years, billions of state taxpayer dollars were redirected from highway and transit improvements to the project of seismic retrofitting, and the emergency contingency plan has undergone regular review and improvement. California has also placed increased emphasis on a state program entitled Community Emergency Response Teams (CERT), a community-based training program aimed at preparing teams of private citizens to respond effectively in a number of activities during emergencies, especially when first-responder capacity is limited.

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2005 New York City Transit Strike[7]

I. Introduction

Description and Significance of Case

The subject of this case study is the 2005 transit strike that began on December 20, 2005. With the failure of contract negotiations with the Metropolitan Transit Authority (MTA), members of Transport Workers Union (TWU) Local 100, the largest transportation union in the city, went on strike. The transit strike lasted for three days and shut down the nation's largest public transportation system for more than 60 hours. This case is significant for several reasons. Estimates suggest that the transit strike resulted in an economic loss to the city of approximately $1 billion. This was especially critical as the strike occurred during what is typically the busiest week of the year for retail sales. The disruption of the public transportation system impacted millions of commuters (including residents of New Jersey and Connecticut), both public and private educational institutions, and emergency response services as a result of traffic gridlock. Striking workers and union officials were not exempt from economic hardship as a result of the severe financial penalties imposed on them under the auspices of New York State's Taylor Law.

The case is also important because it represented a test of the Taylor Law, which grants public employees within New York State certain rights with respect to negotiating conditions of employment with the State, but is most well-known for its prohibition on strikes by public employees. The severe financial impact on the striking workers and the union affected the long-term relationship between the MTA and the TWU, and quite possibly the relationship between other public employers and their employees in New York State. The incident also highlighted the imbalance in negotiating power created by the Taylor Law, arguably putting the employees at a serious disadvantage and threatening workers' basic civil liberties. The 2005 NYC Transit Strike has sparked calls for reform of the law.

This incident involved numerous actors, including the members and leadership of the TWU, the leadership of the MTA (headed by Peter Kalikow), New York State Governor George Pataki, N.Y. Court of Appeals Justice Theodore Jones, and the citizens of the affected areas. The transit strike will be specifically examined from the point of view of New York City Mayor Michael Bloomberg, who played a prominent decision-making role during the crisis. The case study encompasses a temporal period beginning at 12:01 a.m. on December 16, 2005, when the TWU contract with the MTA expired, and ending on December 23, 2005, when bus and subway service was fully restored to the City of New York. Although a new contract was accepted by the TWU executive board on December 27, 2005, additional controversy over this contract arose in the following months. An arbitrated contract was ultimately forced on both parties in December of 2006.

The nature of the situation (a response to a confrontation) and the issues involved in the case fulfill the three requirements that Eric Stern suggests are necessary for a situation to be

[7] Portions of this chapter were originally research and written by Michelle Hill. Additional research, editing, and writing was conducted by the editors.

considered a crisis (Stern, 2002). The situation posed a *threat to a number of basic values*. These included the obvious threats to the economic well-being of the residents and business owners within the City of New York, to the health and safety of the population, to the maintenance of effective governance, and to the civil liberties of striking workers. National security was a likely concern, as the attacks of September 11, 2001 were recent events, and the consequences of an incapacitated public transportation system in the event of a terrorist strike would have been disastrous. Clearly the second requirement of *urgency* was met in this incident. The economic impact of the strike was calculated by the hour by some analysts, and issues regarding the health and safety of vulnerable populations were a serious concern. The urgency had a political component as well. Mayor Bloomberg was aggressive in his handling of the strike situation, ostensibly to send a message to public employees that strike actions would not be tolerated. Finally, a *high level of uncertainty* was present throughout the period of this crisis. Bloomberg had no prior experience in dealing with a labor dispute, and a quarter of a century had passed since New York had experienced such a disruption in public transportation. As resolution of the strike depended on the agreement of a large body of workers, it was unclear how quickly the situation could be resolved.

Context of the Case

New York City has one of the most extensive public transportation systems in the world. This system includes subway, bus and rail service utilized by residents of the city's five boroughs and commuters from surrounding areas, including New Jersey and Connecticut. The bus and subway systems have a total average daily ridership of more than 10 million passengers, ranking it the third most-heavily used public transportation system in the world behind Moscow and Tokyo, and one of the few systems worldwide that runs 24 hours a day (Jung, 2008). As evidenced by the 2005 statistics reported in the annual MTA report, the large volume of ridership (totaling close to 3 billion passengers annually) suggests that public transportation is a critical component of the economic, social, and political life of the metropolitan area. Senator Schumer of New York characterized public transportation as the "lifeblood of New York City."
The Transport Workers Union Local 100 (TWU) has traditionally represented all employees of the public subway, bus and rail services. The TWU Local 100 is a local chapter of the Transport Workers Union of America, and in 2005 it represented 33,700 workers. The TWU has used the threat of strike during contract negotiations and has followed through on these threats by instigating strike actions three times in its history.

The first strike by the TWU took place in 1966, following unsuccessful negotiations (primarily focused on wage increase issues) to replace the expiring contract. The strike lasted for twelve days and prompted then-Governor Nelson Rockefeller to initiate the process for legislative action to prevent further "disruptions of vital public services by illegal strikes." (Donovan, note 9) The Taylor Law was subsequently passed in 1967, defining the rights and limitations of public employees in contract negotiations with public employers. While the Taylor Law affirmed the rights of public employees to organize, to be represented by professional employee organizations during contract negotiations, and to utilize alternative prescribed mechanisms of dispute resolution in the case of an impasse, the most potent provision of the law is an absolute ban on strike actions. This ban has been very broadly interpreted in its

application to employee unions. Violations include encouraging or even condoning strike actions and carry severe fines and criminal penalties.

Despite the passage of the Taylor Law, a second strike by the TWU occurred in April of 1980. This strike was an 11-day walkout, called when the MTA and TWU failed to achieve agreement over wage increases. During this strike, the city lost approximately $3 million a day in taxes and overtime expenses for city employees (Feinman, 2011), with the private sector losing as much as $100 million a day. The city's losses were offset to some extent by an increase in public transportation fares of 50 to 60 cents. Heavy fines were imposed on employees and the union. These fines are widely held to have acted as a deterrent to strike actions among public employees until 25 years later, when the third transit strike occurred in December of 2005, during the busiest shopping week of the year.

TWU Local 100 workers went on strike at 3:00 a.m. on December 20, 2005, after failed negotiations with their employer, the Metropolitan Transportation Authority (MTA). While transit worker demands included issues related to safer working conditions, wage increases, retirement age requirements[8], and levels of employee contributions to pension and healthcare plans for current and future employees, the most difficult of these to negotiate were the pension and healthcare reforms. (The MTA was proposing significant increases in employee contributions.) While the impact of these contributions represented only a minor dollar amount within the timeframe of the three-year contract that was being negotiated, the long-term financial impact to the city of these contribution plans was estimated to be quite significant.
The political context of the incident was also influenced by the recent re-election of Mayor Michael Bloomberg, a self-described fiscal conservative whose relations with labor organizations have often been characterized as difficult. Bloomberg took a strong public stance against TWU positions during the negotiations, as well as during the strike action, and he sometimes expressing himself belligerently in the press. Some analysts suggest that Bloomberg was attempting to establish new precedents with respect to healthcare and retirement issues in the face of predicted huge cost increases to the city. In his first term, Bloomberg did preside over the renegotiation of several public employee contracts, but had no experience with negotiation during a strike action. During the strike, Bloomberg initiated an extensive emergency contingency plan that was praised for keeping the city running safely.

II. CHRONOLOGY

December 16, 2005 The contract between Transport Workers Union Local 100 (TWU) and the Metropolitan Transportation Authority (MTA) expires at 12:01 a.m.

Negotiations continue between the MTA and the TWU with a deadline set for 12:01 a.m. on December 20.

[8] While this issue has received much attention, neither the TWU nor the MTA had the authority to negotiate retirement requirements, which are exclusively established by legislative action.

December 19 Transit Worker Union workers walk off their jobs at two Queens' bus lines, Triboro Coach and Jamaica Bus.

Mayor Bloomberg moves into the Emergency Operations Center in Brooklyn where he resides for the duration of the strike.

December 20
12:01 a.m. Deadline passes for the MTA/TWU contract negotiation extension, with no agreement reached.

1:30 a.m. Local 100 President Roger Toussaint announces the TWU decision to implement a strike action. Workers are directed to return buses and subways to their stations.

3:00 a.m. TWU Local 100 workers go on strike.

December 20 In a morning press statement, Mayor Bloomberg announces the *Morning* TWU strike decision, characterizing the union actions as 'morally reprehensible', 'selfish' and 'cowardly', and informs residents of the implementation of the city's Strike Contingency Plan.

The New York Times and other media publish details of the contingency plan.

Mayor Bloomberg, imitating his predecessor Mayor Ed Koch, walks across the Brooklyn Bridge to work.

The Mayor's office dispatches City Corporation Counsel Michael Cardozo (along with MTA counsel) to request a special hearing before New York State Supreme Court Justice Theodore Jones.

December 20 In a press statement, Bloomberg employs terms including "thuggish" and "selfish" to describe striking workers.

Afternoon
Justice Jones rules the TWU in contempt of court for disobeying two injunctions not to strike and fines the union $1 million for every day of the strike. '2-for-1' fines are imposed on individual workers, penalizing them two days pay for each day missed.

In response to the announcement of the fines, the International TWU issues a statement demanding that TWU Local 100 members return to work immediately.

New York Governor Pataki issues a statement saying the MTA remains committed to negotiating in good faith and urges the TWU to end the illegal strike and return to the bargaining table.

December 21 Mayor Bloomberg issues a statement that negotiations with the TWU would not resume until the employees return to work. Governor Pataki issues a similar statement.

MTA Chairman Peter Kalikow issues a statement criticizing the TWU actions but indicating (contrary to the conditions included in the Bloomberg/Pataki statements) that the MTA is willing to continue negotiations.

Judge Jones orders TWU leaders to appear in N.Y. State Supreme Court to face charges of contempt, and possible jail sentences.

TWU President Toussaint delivers a blistering attack on Bloomberg's description of striking workers, and states that the union would not return to the negotiating table until pension demands are dropped by the MTA.

Despite these public statements on both sides, MTA officials and TWU representatives meet in prolonged negotiations with state mediators.

December 22 Formal talks between the TWU leadership and the MTA

1:00 a.m. resume through third-party mediators. As a result of the resumption of negotiations, the TWU directs its membership to return to work.

December 22 The Transport Workers Union Local 100's board agrees to a

2:35 p.m. preliminary framework of a settlement as a basis to end the strike. The vote is 36-5, with two abstentions.

TWU workers return to work.

Afternoon Mayor Bloomberg issues a statement announcing the end of the strike, complimenting residents and framing the strike as a 'victimization' of NYC and its residents.

December 23 Full bus and subway services resume throughout the five boroughs in time for the morning commute. Contingency plan conditions are suspended.

III. OCCASION FOR DECISION

At 3:00 a.m. on Tuesday, December 20, 2005, TWU Local 100 transit workers begin a strike action that suspends all subway and bus service in the New York City area. What actions should be taken to enable the city to continue functioning with minimal disruption during the strike?

In a confrontational situation such as that represented by the labor contract dispute between the TWU and the MTA, a number of occasions for decision and the involvement of a variety of actors are inevitable. For the purposes of this analysis, the occasion for decision to be considered is the immediate response implemented by Mayor Bloomberg when the strike action was announced.

Decision Unit

The decision unit for this occasion for decision was New York City Mayor Michael Bloomberg, acting as a *predominant leader*. This is confirmed in an analysis based on the decision tree for determining decision units presented by Hermann and Hermann. In responding to the questions posed in this theoretical construct, it is clear that: 1) Bloomberg was legally empowered to commit/withhold the City's resources regardless of the opposition of others in an emergency situation; 2) Bloomberg had manifested interest in involvement with labor management and crisis response; 3) Bloomberg perceived the implementation of an effective contingency plan as critical to the well-being of the city; 4) Bloomberg had a personal interest – both political and financial – in the resolution to the immediate problem; 5) Bloomberg actively participated in the decision process throughout the duration of the crisis (indeed, choosing to live in the Emergency Operations Center during the strike); and 6) Bloomberg certainly relied on the information provided by his experts throughout the New York City governmental infrastructure, but there is no indication that "veto" power was granted to any of these advisors. Legally, neither the Governor nor the Legislature was authorized to overturn Bloomberg's decisions with respect to city management during an emergency situation. Meeting the definitional requirements of this category of decision unit, Bloomberg was the single individual who legally had the authority to commit the resources of the City to the emergency response efforts, and the power to prevent others from reversing his policy decisions. The situational challenge for Mayor Bloomberg was to implement a series of contingency actions that would minimize the impact of the strike, and keep New York City functioning as normally as possible for the duration of the situation.

Policy Decision

New York City had experienced two transit strikes prior to 2005, allowing Bloomberg to draw on the experiences of Mayor John Lindsay in 1966 and of Mayor Ed Koch in 1980. These two mayors took different approaches to the respective crises that they faced. In 1966, transit workers went on a 12-day strike on Mayor John V. Lindsay's first day in office. He was mocked for urging city workers to stay at home if they did not consider themselves "essential," and his approach to managing the city's operations was to prohibit all traffic in many of the boroughs, to increase the police force to maintain order, and to limit the number of people entering the city to essential personnel (suggesting that up to 75% of the commuters into the city should plan to stay at home.) However, the ultimate focus was on moving vehicles, not people, and despite the restrictions on entry into the city, serious traffic gridlock was experienced. The serious economic consequences experienced by the region led then-Governor Nelson Rockefeller to pursue the passage in 1967 of the Taylor Law, making strikes by public employees illegal. During the eleven-day strike in 1980, Mayor Edward I. Koch won praise for cheering commuters crossing the Brooklyn Bridge by foot into Manhattan. Koch instituted emergency carpooling and traffic measures, and made provisions, such as temporary lane changes and the creation of bicycle lanes, in order to emphasize the movement of people. However, Koch was fortunate that the strike occurred during the spring, when the good weather allowed many commuters to opt to travel by foot. In addition, the strike corresponded for the most part with public school spring break periods, which eliminated one difficult issue from the calculations. Reports suggest that Koch was under no extreme pressure from business or other interests to resolve the dispute

quickly. Indeed, there was much public support for him to hold his aggressive stance against significant pay increases to the transit workers, even if this resulted in a prolonged strike.

However, much had changed in the region in the intervening years between the 1980 and 2005 labor disputes. It is estimated that the population of the NYC Metropolitan area had increased as much as 15%. Public transportation services had become increasingly important in the functioning of the city, as evidenced by the estimates published in the Bloomberg administration's analysis of the contingency plan, suggesting an almost 20% increase in public transportation ridership between 1980 and 2005. The city was suffering from the economic crisis being experienced nationwide. Thus, the financial impact of a long strike was perceived to be a major threat to the economic viability of the city. The 2001 terrorist attacks on the World Trade Center had also heightened the sense of vulnerability experienced by political leaders and residents of New York City, leading to concerns over the potential impact of a strike on the functioning of emergency services. Longer-term economic concerns were also a factor in the response to the strike. Calculations of the economic impact of health, retirement and pension benefit concessions sought by the TWU suggested that these would result in huge costs to the city in coming years. In weighing these short and long-term issues, decision makers tended to emphasize the goals of minimizing the impact of the strike and of ending the work stoppage as quickly as possible.

When the TWU contract expired on December 16, talks were extended through December 19. However, it was widely believed that a strike was inevitable. Indeed, no agreement was reached between TWU Local 100 and the MTA, resulting in the strike action that began on December 20. On that morning, the Mayor announced the implementation of a comprehensive contingency plan that incorporated basic components of the 1980 emergency response, but also expanded these elements. Traffic management provisions focused on the "movement of people" approach adopted in 1980, but incorporated stricter guidelines regarding carpooling (allowing only cars carrying four passengers to enter the city by the major thoroughfares), actively opening and promoting carpooling stations to facilitate ride sharing, the modification of several activities and restrictions that would impact traffic flow (construction, street cleaning, parking/standing regulations), and strategically closing streets that would be reserved for emergency vehicles. These enhancements greatly increased the efficacy of the city's traffic management response.

In addition to these provisions, the Mayor's office worked with businesses to encourage staggered work hours, suspended restrictions prohibiting taxis from picking up multiple passengers, and maximized the schedules of commuter services that remained in operation during the strike. School hours were modified in order to enable the transportation of students to occur during non-rush hour periods. The Mayor's office identified the use of the Traffic Monitoring Camera system as a critical component of the contingency plan. Installed widely to serve as an effective traffic surveillance tool, this allowed traffic engineers to monitor and respond to traffic conditions in critical areas of the region – an option unavailable to Koch in 1980.

The overall emergency response was managed through a unified command center, the Emergency Operations Center (EOP), located at the Office of Emergency Management (OEM).

City agencies worked cooperatively through the command center to implement the contingency plan, to provide situational updates to City officials, and to respond to developing needs as they emerged. The Mayor moved into the command center, sleeping there for the duration of the strike.

Communication was a critical component of the emergency response. Mayor Bloomberg personally communicated the details of the contingency plan to the public, joined by the various commissioners associated with agencies critical to the effort. Bloomberg employed personal messages encouraging cooperation and patience during the strike, and alluded to 9/11 in expressing his certainty that the strike would represent little more than an inconvenience to New Yorkers given the situations that they had successfully faced in the past.

Decision Dynamic

Decision making during the 2005 New York City Transit Strike was rendered complex for a number of reasons. First, it was not clear where the authority to make definitive agreements lay during much of the negotiation process. The leadership representing both the TWU and MTA were negotiating terms that seemed to be at odds with the positions of other stakeholders within their own groups. This misalignment was clearly illustrated on both sides. The union membership rejected the agreement negotiated by Toussaint as a result of the required healthcare contributions. Immediately upon hearing of this rejection, the MTA disavowed its own concessions with respect to pension provisions (characterizing them as "a mistake") and began to pursue arbitration as the next course of action.

The question of who was (and who should be) in charge during a labor-related crisis in New York State raised additional levels of complexity. In principle, the MTA answered to Governor Pataki, yet he seemed to concede his leadership prerogative to Mayor Michael Bloomberg, who played a highly visible and provocative role in the proceedings. This was at odds with the more understated style of leadership that he had previously exhibited. However, the legal reality was that neither of these individuals had the authority to negotiate the most pressing of the issues on the table: the conditions of the pension system. The establishment of pension and retirement regulations is unambiguously and exclusively the domain of the N.Y. State Legislature. However, both sides in the TWU/MTA negotiations seemed either oblivious to or unaware of this reality.

Finally, there was intense pressure to get the transit system moving again. The loss of economic activity in the week before the Christmas holiday created great anxiety among business owners and government officials. Although Bloomberg and Pataki released public statements that stated that negotiations would not resume until the workers returned to work, the MTA and TWU nonetheless continued talks through mediators throughout the strike. As a result of the Taylor Law prohibiting public employees from going on strike, the TWU workers also faced severe consequences as a result of their action– accumulating exorbitant union and individual fines for every day that the strike continued. Under such pressure, transit employees returned to work after the resumption of negotiations, but before a contract settlement had been reached.

As Mayor of New York City, Michael Bloomberg played a critical role in these complex decision-making situations associated with the transit strike negotiations. Although he was a very visible and influential presence, he did not have the authority to impose decisions on the multiple stakeholders in those settings. However, Bloomberg did have authority for the decisions related to the functioning of the city during the strike, which minimized the negative economic impact, ensured the well-being and safety of the residents and visitors, and kept the city functioning as smoothly and efficiently as possible.

In the case of decision making by a predominant leader, the key contingency or dynamic is associated with the leader's sensitivity to information from the political or situational context. In evaluating the level of sensitivity, measurement is based on an evaluation of the flexibility the leader exhibits in his pursuit of goals and choice of means to attain those goals. In decisions surrounding implementation of the contingency plan, Mayor Bloomberg was pursuing **well-defined goals** – to minimize the overall impact of the strike on the daily functioning of New York City through strategic logistical management of traffic and public services, and to ensure the safety of the City's residents and visitors. The **means** to accomplish these goals were **flexible**, determined as a result of the input of experts from the various agencies critical to the implementation of the measures, and responsive to situations as they developed during the strike. Given this analysis, Mayor Bloomberg, in relation to this occasion for decision, would be categorized as employing a decision process of *strategic leadership*.

It is important to note that there was no challenge to Mayor Bloomberg's authority or to the elements of the contingency plan in this particular decision-making process. Thus, there are limits to which his sensitivity to pressures from other environments can be analyzed. However, additional insight might be gleaned from his approach to other decision-making situations that arose in the context of this case. Bloomberg's public stance with respect to negotiating with striking workers, as well as his position on the healthcare/retirement/pension provisions under negotiation, was generally perceived to be highly inflexible, indeed provocative at times. While it must be acknowledged that Bloomberg was NOT acting as a predominant leader in relation to these particular decisions, this behavior would indicate inflexibility (insensitivity) to external influence with respect to *goals*. His continued success in the political realm suggests that he is perhaps able to exhibit enough flexibility of *means* to maintain the favor of his constituency.

IV. THEMATIC ANALYSIS

Definition of the Situation and Framing

When negotiations failed to result in a new contract with the TWU before the expiration of the old contract on December 16, it was widely perceived within the Bloomberg Administration that a strike action was highly probable. Measures were taken to review components of the contingency plan and to prepare agencies for its possible implementation. Mayor Bloomberg was, thus, well-prepared within hours of the commencement of the strike to announce the immediate implementation of the emergency measures and to provide an initial framing of the situation for the public.

While he used his platform to level harsh criticisms at the TWU and striking workers for the threat the strike posed to the city, Bloomberg also presented the overall response to the event as organized and efficient. He reminded New Yorkers that they had faced much worse situations (subtly referring to the recent 9/11 attacks) and expressed his certainty that they would handle it with patience and persistence. Bloomberg was attempting to avoid panic or chaos, and to present his Administration as effective, while still framing the strike as a serious and precarious situation for the city, thus seeking support for the strong anti-strike position that he wished to maintain. This was indeed an interesting and delicate framing exercise. Bloomberg wanted to convey to the public that the strike posed a direct threat to the safety and well-being of New York City in order to establish support for his strong position vis-à-vis the TWU. However, at the same time, in his role as the responsible authority, he was clearly mandated to implement measures to prevent such threats. Even the public perception of fear or vulnerability could have conceivably been harmful to his Administration's reputation and his personal political ambitions.

To alleviate the tensions between these two components of Bloomberg's framing of the situation, he also focused on the illegality of the strike under the Taylor Act. This allowed him to claim a moral high ground with respect to the striking workers, and to set the stage for his Administration's role in seeking court action and punitive consequences against the TWU and the transit workers. These actions hastened the achievement of the short-term goals of the Bloomberg Administration – the quick end to the strike.

While this framing may have its subtle points, Bloomberg also committed several widely criticized errors in the process. For example, in press conferences on the first day of the strike, during which he announced the implementation of the contingency plan, Bloomberg used a number of terms that were widely interpreted as racist and elitist. (These included a description of striking workers as "thuggish" and "selfish", and the characterization of the strike action as "morally reprehensible".) The Union and the press were quick to raise criticism over these and subsequent similar comments. During and after the strike, New York residents were polled regarding their perception of the positions of the two sides: a slight majority actually supported the striking workers, very possibly as a result of this mishandling of the framing process on Bloomberg's part.

Preparedness for Dealing with the Crisis

In responding to issues related to the daily functioning and mobility of traffic in New York City during the 2005 transit strike, responsible government agencies were well prepared. Mayor Bloomberg had reviewed and updated the city's contingency plan during the days prior to the strike, taking into consideration lessons learned from two previous transit strike experiences, as well as utilizing resources available to his Administration. Unlike his predecessors, Bloomberg is generally perceived to have employed a strategy of high-level preparedness in order to maintain control of a precarious and uncertain situation. Mayor Lindsay had adopted an approach of restricting and minimizing access to the City in response to the 1966 strike. Mayor Koch, who was often characterized in 1980 as having a *laissez-faire* approach, had encouraged New Yorkers to find ways of coping with a less extensive level of governmental intervention.

Bloomberg's contingency plan centered on two major goals: maintaining mobility and functionality of the City for the duration of the strike in order to minimize the economic impact, and ensuring the safety and security of residents. To this end, the measures outlined above were implemented immediately upon the announcement of the strike action. Agencies responsible for implementing the measures were prepared and standing by in the event of the strike, and command and control functions had been centralized in order to ensure efficacy. Communication with the public was also swift and detailed. The New York Times published an extensive article conveying the entire contingency plan on the morning of December 20, just hours after the strike was announced. Individual citizens were encouraged to remain patient and to persevere in the face of this 'inconvenience', seeking ways to enhance the measures implemented by the city authorities.

While the transit strike was not unexpected, details about its duration and how it would unfold were highly uncertain. Despite the fact that New York City did experience significant impacts as a result of the strike, the contingency plan is widely credited for having succeeded in mitigating these effects. A post-crisis review of the contingency plan and its implementation found that the measures implemented had been 'very successful' in managing traffic flow in the NYC metro area, and only one injury was reported as strike-related. (A firefighter was hit by a car while biking to work.)

Value Complexity

The 2005 transit strike involved conflict between a number of short- and long-term values for Mayor Bloomberg. As Mayor, fulfilling his responsibility to keep the city running efficiently during the strike was critical to his reputation. However, as was noted in the discussion of framing, Bloomberg also had a stake in the strike being perceived by the public as a threat to the functioning of the City. Such a perception would help him to garner support for his political anti-strike position, and, by association, against concessions on healthcare/retirement/pension benefits for striking workers, critical to his long-term values related to the financial viability of the City. These fiscal considerations were in conflict with the issues of justice and fairness for workers, played out in the battle over wages, benefits and working conditions. Behind all of these conflicting values lay the persistent debate over the provisions of the Taylor Law: the preservation of the ability of government to govern effectively versus the civil rights of individuals to collectively bargain for better working conditions and to engage in strikes.

Other, more personal, political considerations came into play. Bloomberg had only recently been elected by a wide margin to a second term in office, a re-election that required the support of minorities, including blacks and Hispanics. He had gained much political capital with these groups during his second campaign. However, as the TWU membership was overwhelmingly made up of minorities, a strong anti-labor stance had great potential of jeopardizing this political capital. Statements made to the press by Bloomberg containing terms that were widely interpreted as racist in nature did not help him to preserve his standing with these important constituencies.

Patterns of Leadership

Experience with crippling strikes in major U.S. cities, and – even more critically – the more recent crisis experienced by New York City following the 9/11 terrorist attacks have led to the evolution of a pattern of leadership that seems to have become a standard in crisis management in major urban areas. Local authorities are expected to take a lead in preparation and implementation of emergency measures, and the highest ranking official (the Mayor) is expected to be visible on the front lines and responsible to his constituents. Thus, Mayor Bloomberg's actions were well within the expectations of his job description in preparing a contingency plan, in overseeing its implementation, and in being the public face of the effort through interaction with the press and his visibility in the City.

Organizationally, Bloomberg had assembled a competent team for dealing with such an emergency, organizing the major agencies in the city under his leadership. While he did clearly seek information from the experts within these agencies, there is no indication that he relinquished any part of his decision-making prerogative to the heads of these agencies. He also retained tight control on the flow of information, holding press conferences twice daily to update the public on the current situation.

Information Management

Search for Additional Information

In preparing for the implementation of a contingency plan in the case of a transit strike, Bloomberg sought both experiential information and technical advice from the experts in the various agencies responsible for critical aspects of the functioning of New York City. The measures that were incorporated into the plan are quite comprehensive and reflect a thoughtful attempt to avoid errors committed by previous administrations in emergency management situations. Bloomberg was able to make use of new technologies, such as the Traffic Monitoring Camera system, and techniques in city management. He used his personal connections to enhance his information-seeking interaction with these agencies, as well as with business and other interests. This commitment to information seeking through his expert staff was continued throughout the three days of the strike and organized through the Emergency Operations Center, where he and many agency heads were in residence for the duration of the event.

Interaction with the Media and Public

Interaction with the media and the public was also managed in a highly efficient manner. Mayor Bloomberg retained the role of spokesperson, appearing for press conferences at least twice daily. (This public presence can be attributed to expectations for such behavior as a result of prior crisis situations.) The flow of information was timely, thorough, consistent and frequently updated. Bloomberg had communicated the details of the contingency plan to the major media outlets in advance of the announcement of the strike action, enabling news organizations to publish these details on the first morning, only hours after the strike began. Although Bloomberg's statements in the media regarding the contract dispute and the striking workers was less positive with respect to the implementation of the contingency plan, this attention to communications with the media and public were critical to its success.

Interaction with Affected Stakeholders

Mayor Bloomberg was obligated to take into consideration the responses of a number of important stakeholders in the process of decision making within the context of the transit strike. These included the residents and the large community of people who commuted into the city to work, the TWU leadership and membership, tourists and visitors to the city during the holiday season, and government organizations at the state and local levels. Even within each of these groups, interests were at times conflicting. For example, residents had a clear interest in a rapid resolution to the strike but would also be affected by the longer-term components of any agreement. Thus, their interest also lay in the careful negotiation of contract conditions. Bloomberg chose to identify the striking workers as the scapegoat for the impact of the strike, and cast himself in the role of leadership for the government perspective. In some cases, this was a legitimate characterization (as with the decision to implement the contingency plan) and in others Bloomberg did not actually have the legal authority to engage in definitive decision making. Nonetheless, his tactics were an effort to rally public support for an anti-strike stance, and to bring pressure to bear on the union and its membership to end the strike quickly. It is widely acknowledged that this was an effective strategy, although Bloomberg did alienate important constituents representing labor and minority groups in the process.

Politico-Bureaucratic Cooperation and Conflict

As has been discussed above, in the larger context of the transit strike resolution, the various stakeholders framed the problem in different ways, leading to defensive behaviors and clear examples of the employment of "the blame game" on both sides. With respect to the implementation of the contingency plan, however, there seemed to be a strong solidarity among the key actors. Mayor Bloomberg is known for building an administrative structure that is staffed with individuals who hold opinions that are very much in line with his own. Thus, there is good evidence that the experts and agency leaders on whom he depended during the crisis engaged in some level of *groupthink.* However, the other strategies listed by Hermann as commonly utilized to achieve cooperation and solidarity were also in evidence. The *rally around the flag effect* is illustrated by the response of New York City commuters in altering their schedules – and thus traffic flow – resulting in a less disruptive traffic situation in response to Bloomberg's appeal to New Yorkers for patience and perseverance. Mayor Bloomberg's decision to reside at the Emergency Operations Center for the duration of the crisis and to personally handle press conferences and information releases are examples of *leader attentiveness*. Both of these strategies represented important influences in the effective implementation of the decision.

Transboundary Coordination and Crisis Internationalization

As has been noted with other components of this analysis, the question of authority with respect to decision making and resolution of the transit strike did fall under the purview of several political entities. These included Mayor Bloomberg, Governor Pataki, the MTA, the TWU leadership, the TWU membership, the N.Y. State Supreme Court, and the N.Y. State Legislature. The complexity of these issues of transboundary coordination and cooperation

created a number of difficult situations within the context of the case. (One is the earlier example regarding purview over the negotiation of pension issues.) With respect to the more limited decisions regarding implementation of the contingency plan, however, Bloomberg and his crisis management team addressed many problems in inter-agency coordination that had been identified in reviews of the response to the 9/11 attacks.
Command and control was centralized, with all agencies responsible for components of the plan represented in the Emergency Operations Center. Bloomberg was well versed on the details of the contingency measures and played an active authoritative role. Media reports at the time do not suggest that there was any dissent with respect to the contingency plan, even among those who supported the cause of striking workers. Contingency plan measures did have impact across sovereign borders, as many commuters travel to New York City from neighboring Connecticut and New Jersey, but again, there is no indication in the media that the authority or legitimacy of the decision-making power of Mayor Bloomberg in this situation was questioned.

Sequencing and Synchronicity

With respect to the decision making associated with the contingency plan, the actions taken are best classified as *conditional*. Bloomberg and his team certainly accepted a clear causal interpretation of the broader situation since the transit strike threatened to have serious economic, social, health and safety, political impacts on New York City. They agreed that the solution would be the quick end to the strike. To this end, Bloomberg took strong and inflexible positions. With respect to the occasion for decision at hand, however, Bloomberg was committed to the implementation of the original contingency plan, but continued to seek information and was prepared to modify the plan's specific elements in light of changing circumstances. This firmly places this decision event within the realm of conditional decision making. Despite the serious economic repercussions that were a result of the strike, it is widely believed that Bloomberg's comprehensive contingency plan and preparedness for a quick response mitigated the overall crisis for New York City.

In the context of the broader crisis situation, decisions made by Mayor Bloomberg certainly had an impact on the way in which the crisis unfolded. Bloomberg's strong stance against the strike, expressed very publicly through the media, put pressure on TWU leaders to engage in behaviors that would lead to an end to the strike. Thus, sequencing was an important factor in this crisis.
Issues of synchronicity were not apparent in this crisis. Key decision makers were not distracted by other events taking place simultaneously.

Culture

Grid-Group cultural theory as presented by Thompson, *et. al*., proposes a framework of four typologies for understanding the cultural influences at work within an organization, providing insight into decision-making behaviors within that organization. In the case of the Bloomberg administration's decision to implement the contingency plan, the '*hierarchical* approach' to decision making (with its associated well-defined rules and procedures) was employed. Mayor Bloomberg retained the decision-making authority, and established a clear

chain of command among his staff and the agency heads responsible for preparing for and implementing the plan.

In other aspects of decision making during the crisis, it is interesting to note that there were other organizational cultures at work. Within the TWU, for example, the predominant influence on the organizational culture was an attitude of *egalitarianism*. While the leadership was representative of the larger membership and had some authority to propose contract agreements, it had no authority to finalize such agreements without the supporting vote of the entire membership. Such a condition left negotiations and resulting resolutions in a state of uncertainty.

In an adaptation of the Grid-Group cultural theory, Jacobs proposes a fifth cultural option, that of *autonomy*, in which individual component stakeholders in a decision-making process choose to make independent decisions. On the government's side of the negotiations, for example, a number of stakeholders were involved in the process, (the Mayor's administration, the MTA, the N.Y. State Legislature). Internal cultures exited within each of these organizations. However, there was less clarity in the authority structure between them. This led to misconceptions about which entity was responsible for what aspects of the negotiations. Bloomberg continued to maintain a strong anti-strike stance stating publicly that no negotiations would take place until the workers went back to work. Meanwhile, the MTA was busy negotiating through mediators with the TWU. However, the MTA was also negotiating provisions in the contract over which it had no authority (retirement and pensions), which were the purview of the N.Y. State Legislature.

Lessons Identified and Lessons Learned

Lessons from the previous two transit strikes, as well as the emergency response experience following the attacks on 9/11 had a clear influence on Mayor Bloomberg's response to the 2005 transit strike. With respect to the contingency plan, Bloomberg's team members engaged in extensive and comprehensive planning in order to mitigate the impact of the strike using a variety of strategies, not limiting themselves to traffic control. His administration was prepared to implement the plan immediately upon announcement of the strike, and had resources in place to do so. Bloomberg engaged business interests and other organizational stakeholders, such as businesses and the school districts, to employ strategies that would facilitate the mitigation effort, and addressed himself directly to individuals, urging them to contribute as well. Finally, command and control efforts were centralized and clearly structured in order to ensure communication and cooperation between the various agencies responsible for the implementation of the plan.

Lessons learned from problems experienced during the prior emergency efforts, noted above, allowed Bloomberg to respond more effectively to the situation with which he was faced. Bloomberg was also attentive to his predecessors' successful crisis strategies. First and foremost, he incorporated the value of maintaining a public presence during the crisis into his own repertoire. He appealed to the everyday New Yorker in his struggle to deal with the implications of the situation. Mayor Bloomberg was not as successful at this strategy as those he

was clearly attempting to emulate (Mayors Koch and Giuliani), but his presence on the Brooklyn Bridge and his daily press conferences and appeals to the public indicate that he was aware of the value of connecting personally with the public in a difficult time. Evaluations of the contingency plan and its effectiveness have suggested that the response was generally successful.

With respect to the larger crisis, Bloomberg's strong stance against the strike and his hard bargaining position with respect to the union demands was probably also in line with the strategies taken by the previous mayors who had dealt with similar situations. Despite their extreme positions, in reality none of these leaders successfully achieved their objectives with respect to concessions to labor. Bloomberg's response may have successfully shortened the duration of the strike and instigated a return to bargaining. His framing of the situation also allowed him to introduce fiscal problems into the greater public debate. He perceived these would plague the City with exponentially growing deficits, setting the stage for other measures that he would undertake during his administration. As this is an ongoing endeavor, it is too early to evaluate the efficacy of his approach.

Aftermath

Relative to the duration of the two previous transit strikes that New York City had experienced, the 2005 strike came to a quick end. Transit workers returned to work on December 23, despite the fact that no contract agreement had been reached. A new contract was accepted by the TWU executive board on December 27. However, additional controversy over this contract arose in the following months, and an arbitrated contract was ultimately forced on both parties in December of 2006.

Although there were serious economic impacts on the city during the three days of the transit strike, it is generally acknowledged that the contingency plan was implemented effectively and mitigated the crisis to the extent possible. The health and safety of residents and visitors was never in jeopardy as a result of the measures aimed at increasing police presence and ensuring clear passage for emergency vehicles along specified routes, and traffic gridlock was controlled through a variety of measures. Bloomberg's public presence kept people informed about the details of the plan and changing conditions in the city, and to some extent about the progress in resolving the crisis, although he used this platform more widely as a forum from which to communicate his anti-strike rhetoric. Following the end of the strike, Mayor Bloomberg exhorted residents and visitors to 'go shopping', in an effort to salvage the critical retail sales season.

With respect to the larger situation, Bloomberg was seeking more than just a quick end to the strike, but was attempting to pave the way for significant changes in the way benefits for state and local workers are financed. The interactions between Bloomberg and the leadership/membership of the TWU may well have cost him some political capital with these groups, and more widely with minorities and the working class in general. The severe application of the Taylor Law (actively promoted by the Bloomberg administration) resulted in serious economic consequences for the union and its individual members. The absence of strikes on the part of public employees since 2005 has been widely attributed to these harsh consequences. However, the implications of the Taylor Law as applied during the 2005 transit

strike event have led to a growing movement to promote a reconsideration and modification of its provisions to protect the civil rights of public employees.

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Accident at Three Mile Island – 1979[9]

I. INTRODUCTION

Description and Significance of Case

The subject of this case study is the nuclear accident that occurred at the Three Mile Island (TMI) facility near Middletown, Pennsylvania, in March and April of 1979. Early on the morning of March 28, equipment failures in the TMI facility and subsequent human errors led to the overheating of the reactor core and the release of significant amounts of radiation inside the reactor building. This case is significant for several reasons. The incident at TMI represented the worst nuclear accident to occur at a commercial power generation plant to date. While ultimately it was determined that most of the radiation was contained within the facility, the potential for catastrophic consequences for residents in the surrounding areas was high.

The case is also important because it dramatically changed the public's perception of nuclear energy and played a role in altering the direction of America's energy policy away from nuclear power. While records indicate that as many as forty nuclear power plant projects had already been cancelled between 1973 and 1979, the TMI incident was likely the final straw in the rejection of nuclear power as a viable energy alternative in the U.S. – an attitude that continues today. The United States Nuclear Regulatory Commission (NRC) has not reviewed an application to build a new nuclear power plant since the incident occurred. In addition, the case highlighted the lack of preparedness and coordination between government agencies in response to such crises, leading to a significant evaluation and expansion of emergency response procedures by the NRC.

The TMI crisis will be examined from the point of view of the NRC, the federal agency tasked with the regulation of nuclear facilities. The issues surrounding the cross-boundary coordination of response of various levels of government (federal, state and local) played a key role in the events at Three Mile Island. The specific incident under consideration is bounded temporally as beginning at 4:00:36 a.m. on Wednesday, March 28, 1979, when water pumps stopped working in Unit 2 at the TMI plant, and ending on Monday, April 2, when experts determined that a bubble of hydrogen gas that had been building inside the reactor was dissipating. (The build-up of the hydrogen bubble could have had catastrophic consequences if an explosion had occurred.) Cleanup efforts began the following day and officially ended in 1993, with associated costs estimated at up to $2.4 billion.

The nature of the situation (response to a man-made disaster) and the issues involved in the accident fulfill the three requirements that Eric Stern suggests are necessary for a situation to be considered a crisis (Stern, 2002). The situation posed a *threat to a number of basic values*. These included the obvious threats to the health of the population and to the environment, but also involved the security of a component of the national energy sector. In addition, the

[9] Portions of this chapter were originally research and written by Steve March. Additional research, editing, and writing was conducted by the editors.

effectiveness of government response to the crisis came under scrutiny by the public and was seriously criticized. Clearly, the second requirement of *urgency* was met in this incident. With the reactor core overheating and radiation being released, decisions had to be made quickly in order to avoid a more widespread disaster. Finally, a *high level of uncertainty* was present throughout the period of this crisis. A reactor malfunction of this magnitude had not previously occurred. Thus, there was little experience on which to draw. While some contingency plans existed, most were focused on "large-break" accidents – large-scale equipment failures that are easily identifiable. Little to no attention had been paid to smaller-scale failures that could develop into significant incidents, nor to the issue of operator-related errors. The disaster management contingency plans that were in place were poorly conceived or communicated and were generally untested.

Context of the Case

At the time of the TMI incident in 1979, the nuclear power industry had enjoyed a short but fairly volatile history. In 1946, President Truman signed legislation establishing the Atomic Energy Commission (AEC), which was mandated to organize the development of peaceful uses of nuclear power under civilian control. Over the next three decades, nuclear power plants came online across the United States under the aegis of the AEC. However, the agency faced serious criticism for having insufficient regulatory programs and oversight. In 1974, the AEC was dissolved and replaced with the Nuclear Regulatory Commission (NRC). Sixty-eight nuclear power plants were in operation in 1979, and 36 additional plants that were under construction at the time were subsequently completed. No applications for new nuclear plants have been reviewed by the NRC since the TMI incident. Currently in the United States, 104 commercial nuclear reactors are operating in 31 states.

Planning for the Three Mile Island facility began in the mid-1960s. A construction permit for Unit 1 was issued by the AEC in 1968 and for Unit 2 in 1969. The AEC issued an operating permit for Unit 1 in 1974. When Unit 2 was finished in 1978, the AEC had been replaced by the Nuclear Regulatory Commission (NRC). The new organization issued an operating permit and Unit 2 went into commercial service on December 30, 1978. Construction costs had been estimated at $130 million, but eventually exceeded $700 million (Ford, pp. 35-6). Both reactors were Babcock and Wilcox pressurized water reactors (PWE). Unit 1 was 800 MWe in size, while Unit 2 was 900 MWe (World Nuclear Association). The reactor design used steam generators to produce electricity and was known to have an unusually small cooling system volume (PBS Online).

The TMI plant is located on an island in the Susquehanna River in central Pennsylvania and covers about 400 acres. The site is in Dauphin County, a heavily industrialized area, with the capital city of Harrisburg approximately ten miles away. Smaller communities near the plant include Middletown, Steelton, Highspire, and Royalton. When construction of the plant was approved, 620,000 people were living within 20 miles of the TMI site (Ford, p. 34).
The accident at Three Mile Island occurred in the context of a continuing debate on two major issues related to the development of nuclear power capacity in the United States. The first involved the safety of nuclear power. Proponents of atomic energy argued that plants were safe even in heavily populated areas. Citing the number of safety systems engineered into proposed

and existing nuclear power plants, they contended that the possibility of a significant accident was negligible. Opponents countered that even a very small release of radiation could have grave effects on the surrounding population. A series of mishaps since the first nuclear plants went online gave anti-nuclear activists adequate cause for concern. However, prior to the TMI incident, activists opposed to construction of the additional plants (including TMI) lacked resources and were unable to rally public support to their cause (Ford, p.38).

The second debate influencing the fate of nuclear power in the United States involved the importance of nuclear power generation to the security of the national energy supply. Proponents of nuclear power argued that events like the major electrical outage in the northeastern U.S. in November of 1965 and the oil embargo of 1973 made nuclear power generation a critical requirement for the security of U.S. energy supply. While the OPEC oil embargo in 1973 caused a nationwide energy crisis and initially created pressure on regulators (supported by several Presidential administrations) to approve the construction of additional nuclear power plants, the ultimate impact of this crisis turned out to be just the opposite. In response to the high cost of energy, demand fell sharply following the oil crisis. This decrease in demand led to the perception that energy produced by proposed nuclear power plants represented "surplus" supply. During the same period, the cost of the construction of nuclear power plants had increased substantially as a result of increased litigation instigated by environmental activists, tying up nuclear power plant projects in the courts for years, and leading utilities companies to conclude that the increased price was too high for "surplus energy," resulting in the cancellation of some forty nuclear power plant projects prior to the 1979 TMI incident.

These contradictory pressures had additional impacts on legitimate safety concerns. When the NRC replaced the AEC in 1974, the new regulators continued the fast approval process for new nuclear plants even when problems with design or with particular plants were known to exist. Before Unit 2 at TMI was licensed, NRC experts identified fourteen problems that needed more technical evaluation (Ford, pp. 36-7). Another impact on the safety of nuclear plants was the high cost of construction. In order to recover these costs, utilities had to operate power plants at near 100 percent capacity. In addition, plant managers were pressured to minimize maintenance downtime, delaying repairs for long periods (Ford, pp. 36-9). Thus, the nuclear power industry was already facing significant challenges to safe and effective operations, and perhaps even its survival at the time of the TMI incident.

II. CHRONOLOGY

Wednesday, March 28, 1979

4:00 a.m. + 36 seconds	Water pumps in Unit 2 stop working.
4:00 a.m. + 38 seconds	Safety system shuts down the steam turbine.
4:00 a.m. + 44 seconds	Control rods drop, stopping nuclear fission, and emergency water pumps start.

4:00 a.m. + 50 seconds Operator fails to see that valves that allow emergency water flow are closed.

4:20 a.m. Instruments measure a high neutron count inside the core – an indication of a Loss of Coolant Accident (LOCA) – which goes unidentified by the operators.

4:39 a.m. High levels of water recorded in the containment building sump pump lead to the shutting down of the two pumps.

5:00 a.m. The reactor's four coolant pumps begin to shake violently.

5:14 a.m. Following procedures, two coolant pumps are shut down.

5:41 a.m. Two additional coolant pumps are shut down.

5:40 a.m. A stuck valve allows coolant to leak from the reactor core, causing the core to overheat.

6:00 a.m. Met Ed VP John Herbein, TMI Station Manager Gary Miller, Babcock and Wilcox TMI representative Leland Rogers, and TMI Tech Support Manager George Kunder speak in a conference call.

6:30 a.m. A radiation technician reports rapidly increasing levels of radiation in the building.

6:22 a.m. The stuck valve is closed.

6:48 a.m. *Unbeknownst to operators, temperatures between 3,500 and 4,000 degrees are registering in the core due to its exposure.*

6:54 a.m. One of the reactor coolant pumps is turned on, but is shut down 19 minutes later due to violent vibrations.

7:00 a.m. A site emergency is declared at TMI because of threat of "an uncontrolled release of radioactivity to the immediate environment."

7:05 a.m. Gary Millar, TMI station manager, arrives at TMI-2 control room, assumes control as emergency director, and forms a team of senior employees to aid him in controlling the accident and implementing the emergency plan.

TMI personnel follow emergency plan, contacting state authorities, including the Pennsylvania Emergency Management Agency (PEMA), the Bureau of Radiation Protection (BRP), the Dauphin County Office of Emergency Management, and the local and State Police.

Met Ed contacts the U.S. Department of Energy Radiological Assistance Plan Office, and, after several failed attempts, finally contacts the NRC Region I officials.

7:24 a.m. A general emergency is declared. The situation is now an "incident which has the potential for serious radiological consequences to the health and safety of the general public."

7:45 a.m. Nuclear Regulatory Agency (NRC) Region I office is notified

7:50 a.m. NRC Region I establishes phone communication with TMI-2 control room.

8:25 a.m. Local radio station WKBO breaks story of TMI-2.

8:45 a.m. NRC inspectors are en route to TMI.

9:06 a.m. The Associated Press files news story on the TMI-2 incident.

9:15 a.m. NRC notifies the White House.

Harrisburg Mayor Paul Doutrich learns about the accident as the result of a phone call from a Boston news organization.

10:05 a.m. NRC inspectors arrive at TMI.

11:00 a.m. Non-essential personnel are ordered off the island.

11:38 a.m. Efforts begin to depressurize the core (suspended at 3:08 p.m.)

1:50 p.m. A hydrogen explosion occurs in the containment room. This is heard as a "thud" in the control room. It is not recognized as significant and is attributed to "instrument malfunction."

2:30 p.m. Met Ed holds a briefing meeting with Governor Scranton. He is told that Met Ed neglected to inform reporters in an earlier briefing about radiation releases.

4:30 p.m. Governor Scranton holds press conference.

6:00 p.m. Walter Cronkite opens CBS Evening News with references to a "nuclear nightmare" when reporting on the TMI-2 incident.

7:30 p.m. Discussions of evacuation plans begin between Goldsboro Mayor Ken Myers and the borough council.

Thursday, March 29th

5:45 a.m. PEMA reports the reactor is stabilized. Reports of stabilization continue at intervals throughout the day.

2:10 p.m. A helicopter over TMI-2 detects a brief burst of radiation over the plant's vent. This is reported to the NRC but causes no concerns.

Wastewater from the plant is determined to be contaminated with low levels of radiation (within NRC guidelines). Dumping into the Susquehanna is halted, but the state BRP approved the release. No communities downstream are notified.

3:30 p.m. Situation inside plant seems to be improving.

6:00 p.m. NRC Chairman Hendrie learns of wastewater dumping and orders it to cease.

6:30 p.m. NRC inspectors realize damage to reactor is much worse than originally thought.

10:00 p.m. Governor notified of greater possibility of radiation release.

Friday, March 30th

12:00 a.m. The wastewater in the plant, which may require further release, poses a critical situation.

7:10 a.m. A radioactive gas transfer results in radiation release to air.

9:00 a.m. NRC Headquarters receives a mistaken report that the waste gas decay tanks at TMI-2 had filled, while coincidentally receiving the report of the results of the radiation release caused by the gas transfer.

Without confirming the source or accuracy of these reports, the NRC informs Pennsylvania officials to evacuate residents within 10 miles of the TMI plant. This distance is chosen randomly as there is no plan with recommended evacuation distances.

10:00 a.m. The evacuation recommendation is rescinded, although residents within 5 miles are recommended to remain indoors. Governor Thornburgh requests the assistance of a technical advisor from the NRC.

11:00 a.m. President Carter calls Governor Thornburgh, indicating that he will provide Harold Denton as the requested expert, and promises the establishment of a special communications system between the Governor's Office, the White House, the NRC and Three Mile Island.

11:00 a.m. Herbein holds press conference in which he is questioned about the radiation release, about which he knows nothing. He comments that he sees no need to tell the press about "each and every thing we do," damaging Met Ed's credibility.

11:40 a.m. Hendrie calls Governor Thornburgh, commenting that pregnant women and small children should leave the area.

12:30 p.m. Governor issues advisory to close schools and evacuate pregnant women and preschool children within a 5-mile radius

2:00 p.m. Harold Denton arrives with staff. Begins to address the problem of a growing hydrogen bubble, which has been identified as a potentially serious problem in the system.

8:30 p.m. Denton meets with Governor Thornburgh, briefing him on the status of the damage to the core and the complications posed by the hydrogen bubble. Denton and Thornburgh hold a joint press conference and the evacuation advisory is lifted.

Evening PEMA tells local officials to prepare 20-mile radius evacuation plans, despite the evacuation advisory being lifted.

Saturday, March 31st

1:00 p.m. Concerns grow that the hydrogen bubble could cause an explosion

8:23 p.m. Public gets first word about a possible hydrogen explosion a in a press release.

Midnight State Senator George Gekas (Dauphin County) notifies Mayor Scranton's office that if there is no contact with local officials by 9:00 a.m. on Sunday, the County would order its own evacuation.

Sunday, April 1st

Morning County officials are deluged with phone calls from citizens; local officials can get no information from state officials

1:00 p.m. President Jimmy Carter arrives to tour Unit 2. NRC officials have conflicting opinions on the likelihood of an explosion.

Late afternoon NRC officials determine that there is no danger of an explosion. However, they do not share this news with the press, public or with Governor Thornburgh.

Monday, April 2nd

Morning Officials brief press that the gas bubble is decreasing in size and that the situation is under control.

III. OCCASION FOR DECISION

Beginning on the evening of Friday, March 30, concerns mounted that a hydrogen bubble forming in the reactor could react with oxygen, potentially causing a strong explosion, releasing large amounts of radiation, leaving the core exposed and precipitating a "meltdown." What action should be advised?

It is clear from the chronological record that a great number and variety of occasions for decision arose in the context of the TMI crisis. All three types of Decision Unit are apparent in the decision-making process at critical moments during the crisis. For the purposes of this analysis, the occasion for decision chosen involves the response within the NRC regarding concerns over the buildup of the hydrogen bubble coupled with the question of whether excess oxygen was being produced within the reactor – circumstances which had the potential to result in a serious explosion (the magnitude of which was also in question.) The resolution of the debate over these issues was critical in determining the recommendation the NRC would make. It was unclear whether an evacuation would be ordered and what the extent of a potential evacuation zone would be. This decision process unfolded between Friday evening, March 30, and Sunday morning, April 1.

Decision Unit

The decision unit for this occasion for decision was the *single group* consisting of NRC scientists and officials. This is confirmed in an analysis based on the decision tree for determining decision units presented by Hermann and Hermann. In responding to the questions posed in this theoretical construct, it is clear that: 1) The problem as defined fell within the domain of an issue area for which the NRC was the only dominant policy group as a result of its technical expertise; 2) everyone within the agency that was essential for coping with the immediate problem was a member of the group, and decisions cannot be readily altered by outside opposition, and 3) resolution of the problem at TMI was not dependent on the approval of an external or foreign entity. The challenge for NRC experts in this situation was to determine details about the existence of a hydrogen bubble in the reactor, and to ascertain what type of threat such a bubble represented. Fear of a potential explosion within the reactor led some officials to support evacuation of the entire population within a 20-mile radius of TMI. Two teams of scientists were assigned to evaluate these questions, one working on site at the facility and a second at NRC Region I Headquarters in Bethesda, Maryland. These groups also sought advice from experts outside the NRC. Although Joseph Hendrie was chairman of the NRC, he did not choose to act as a predominant leader, preferring to seek consensus among his scientific experts regarding the evolving situation. This was an especially challenging task given that the two teams had reached conflicting conclusions.

Policy Decision

Although the problem had already been considered, fears of a hydrogen gas fire or explosion within the reactor increased significantly on Friday afternoon (March 30), when NRC officials first learned of a hydrogen 'flash' that had occurred in the containment building on Wednesday (March 28). Plant operators knew that hydrogen gas had been formed as a result of the interaction of hot steam with the coating on the uranium fuel rods. The concern was that radiation released inside the reactor would break down water molecules releasing oxygen, allowing for a volatile mixture. A fire or explosion could damage the reactor vessel and result in a major release of radiation. (Kemeny, p. 146) Harold Denton, who was serving as President Carter's personal NRC representative to Governor Thornburgh, had information suggesting that there was no imminent danger of explosion. In their first joint press conference at 8:30 p.m. on Friday evening, the Governor and Denton announced that no evacuation was necessary.

At 9:30 p.m., however, NRC Chairman Hendrie contacted Roger Mattson, NRC Director of Systems Safety, to discuss his continuing concerns regarding excess oxygen production within the reactor, and the potential for a fire or explosion. Two NRC teams were assigned to work on the problem – one at TMI and the other at NRC headquarters. Both drew on the knowledge of nuclear experts around the world. Calculations continued throughout Saturday and into Sunday. At noon on Saturday, Hendrie contacted Denton to convey his concerns. A determination of the true danger was needed as President Carter was scheduled to visit TMI at 1:00 p.m. on Sunday, April 1.

During Saturday afternoon and evening, Mattson received conflicting reports from the two teams on the status of oxygen buildup within the reactor and the danger of explosion. At 1:00 p.m., the team working at the facility determined that excess oxygen was not being generated and that there was, thus, little danger of explosion. At 6:45 p.m., Mattson received information from the second team that oxygen percentages within the reactor were already on the threshold of the flammability limit. In light of this conflict, Mattson sought expertise to determine the impact of a hydrogen explosion, again receiving widely disparate views on the destructive potential of an explosion.

Meanwhile, without consulting Denton or Governor Thornburgh, Chairman Hendrie met with reporters in Bethesda, Maryland, at 2:45 p.m. and shared concerns about the continued possibility of the need to evacuate the area as a result of complications that could arise if engineers attempted to force the hydrogen bubble out of the reactor. This information was released by the AP at 8:23 p.m., shortly before a joint press conference held by Denton and Governor Thornburgh, who had been unaware of the story. Publicly forced to disagree with Hendrie and NRC colleagues, Denton tried to reassure reporters that there was no immediate danger from the TMI reactor. Following the press conference, in light of the planned presidential visit the following day, a representative of the White House called to inquire about the conflicting reports.

State and local officials were also aware of the conflicting information being released through the press, but they had been systematically and increasingly excluded from the decision-making process. In frustration, the Dauphin County officials threatened to institute an

evacuation on their own if they did not receive further information and cooperation from the Governor's office by 9:00 a.m. on Sunday morning. The Lieutenant Governor met with officials at 10:00 a.m. that morning, deflecting local action. Mattson and Hendrie met with Denton and his second-in-command, Victor Stello Jr., in an airport hangar minutes before President Carter's arrival. Mattson and Hendrie believed the potential for a hydrogen fire or explosion did exist, while Denton and Stello denied there was any immediate danger.

While Denton escorted the Carters and Governor Thornburgh on a tour of the TMI facility, Mattson, Hendrie and Stello met at NRC temporary offices to hash out their differences. In this process, with the assistance of additional external expertise, errors were discovered in the calculations presented by Mattson's team, leading the two sides to ultimately concur that there was no immediate danger from the hydrogen bubble. By mid-afternoon, measurements indicated that the hydrogen bubble was dissipating on its own.

The NRC shared this information with neither Governor Thornburgh nor the press on Sunday. On Monday, Denton addressed the press indicating vaguely that NRC calculations had been "too conservative" but never acknowledging that they were, in fact, erroneous.

Decision Dynamic

Decision making during the Three Mile Island incident was rendered particularly challenging by a number of factors that are inherent in many crisis situations, of which three are perhaps of particular interest. The first involved the relatively limited previous experience of the responsible agencies with a crisis involving nuclear technology. While a few incidents involving nuclear generation plants and radiation releases had occurred previously, none was as extensive or had occurred within such proximity to large population centers as TMI. This lack of experience was coupled with an incomplete understanding of the general effects of radiation on humans and other living beings, as well as a limited range of options available to public officials in response to a radiation release (evacuation being the only truly viable option). Throughout the crisis, decision making was hampered by lack of agreement among scientists and experts regarding the facts unfolding during the incident, the nature of the threat, and the proper procedures to mitigate it.

A second challenge to decision making rose around the lack of clear decision-making structures. The actors involved in the crisis in 1979 included individuals and organizations at the federal, state, and local levels. Complex issues arose that involved jurisdiction, roles and responsibilities in reacting to the crisis. There were myriad and often-conflicting interactions with the media, local emergency personnel, and the citizens living in the towns surrounding TMI. Communication and coordination among these various government officials was extremely poor (even at the highest levels), leading to confusion, frustration and inconsistency in decision making. The Presidential Commission that investigated the incident at TMI stated:

The response to the emergency was dominated by an atmosphere of almost total confusion. There was lack of communication at all levels. Many key recommendations were made by individuals who were not in possession of accurate information, and those who

managed the accident were slow to realize the significance and implications of the events that had taken place (Kemeny, p. 17).

While some procedures existed on paper regarding crisis response, it is evident that they were woefully inadequate, and had never been tested in preparation for a real crisis.

The final challenge that had an important impact on decision making during this crisis involved the knowledge gap between the technical personnel at TMI and in the NRC, and those ultimately responsible for making decisions that impact the public. The NRC was, in principle, the federal organization in the best position to evaluate the need for an evacuation, but it was Governor Thornburgh and local officials who were responsible for promulgating and executing such an order. While these latter individuals could be viewed as *predominant leaders* (exercising control over resources and authority), they were, in fact, extremely dependent on the recommendations of the experts in making choices. The disagreements and indecision that existed among the experts during the crisis is clearly reflected in the confusion communicated by policy makers regarding the evacuation decisions. It is as a result of this dependence that the NRC, operating as a *single group,* is identified as a critical decision unit.

In the case of decision making by a single group, the key contingency or dynamic is associated with the manner in which the single group deals with internal conflict. In evaluating the methods employed for conflict resolution, two principle measures help determine which of three models are employed within the group: 1) the level of identification (or loyalty) with the group among the individual members, and 2) the nature of the decision rules used by the group. In the case of the decision under consideration, the two decision options seemed to drive the process as well. As long as a contingent felt *some* risk existed from an explosion, the NRC could not come to an agreement that *no* evacuation was needed. For this to happen, unanimity had to be achieved. This position was based on a concern with determining accurate information about the situation as opposed to managing the interactions within the group. It also reflected a loyalty to the integrity of the organization. Thus the overall decision making for the NRC seems to follow a *unanimity model*. It can reasonably be argued that within the smaller teams some elements of *groupthink* existed, leading team members to experience difficulty in stepping back from their assumptions and challenging their own solutions. However, the more political implications that imply subjective justification for decision making, which is inherent in many of the behaviors associated with the *groupthink* phenomenon, do not seem to apply. With respect to the rules governing the decision process, as will be discussed below, there was no precedent for decision making in such a situation, and the rules seemed to evolve over the course of the event. This was evident in the "instability" of the recommendations that were coming from different nodes in the NRC hierarchy.

IV. THEMATIC ANALYSIS

Definition of the Situation and Framing

The crisis at TMI was first identified by four nuclear plant operators present at the Three Mile Island facility at 4:00 a.m. on the morning of March 28th. The combination of a number of malfunctions of critical valves in the coolant system, as well as the failure to identify warnings of these malfunctions in a complex control room, led to a loss of coolant in the reactor, the

uncovering of part of the core, and the subsequent near-meltdown. Had the operators framed the situation correctly in the first few critical minutes, the mechanical problem that initiated the crisis would have been corrected by the automated emergency systems built into the reactor system. Instead, a minor mechanical failure was magnified by several human errors resulting in the worst nuclear accident in United States history.

This initial failure to properly frame the situation would be compounded over the next twenty-four hours. Plant operators and NRC inspectors had numerous indications that the reactor core was becoming uncovered, but did not grasp the seriousness of what was happening. Workers assumed that the sensors indicating soaring temperatures and radiation were defective and ignored the readings. Despite these indicators, it was incorrectly assumed that the reactor had sufficient cooling water.

It was not until the second day of the crisis, when plant technicians risked their lives to get a sample of cooling water from the reactor core, that plant operators and the federal inspectors realize that the reactor core had been badly damaged. At the point, the core was found to be highly radioactive. This information revealing the gravity of the crisis led decision makers to reframe the problem and to consider more extreme responses.

The result of failing to correctly frame the situation at the beginning of the crisis nearly led to a catastrophe – a complete meltdown of the reactor core. This failure can be attributed to a number of factors including poor operator training that emphasized automatic responses to stimuli (as opposed to preparing operators to make an analytic evaluation of a situation), inefficient layout of the control room, failure to rely on the redundant safety systems built into the plant, and lack of prior experience dealing with such incidences.

Preparedness for Dealing with the Crisis

Government organizations and TMI officials were not prepared to deal with the crisis at TMI in 1979, and myriad problems were identified with all aspects of crisis management. The Report of the President's Commission on the crisis found that standard emergency response plans were focused primarily on large-scale incidents, but there was little or no emphasis on dealing with smaller mechanical failures that could escalate. Some aspects of the training of the plant operators were raised as contributing factors as well. The Commission suggested that operators were armed with automated responses to problem indicators in the control room, but that they had little training in approaching problem solving analytically, hampering their ability to evaluate problems that were "outside the box." Communication between the critical participants in decision making were severely limited as a result of both technical issues (for example, only a few phone lines went into the TMI plant) and an inadequate and untested protocol for conveying essential information to important stakeholders in an emergency. Many of the towns surrounding the plant had no evacuation plans, and those that did had never practiced them. Interactions with the media were poorly planned and coordinated, leading to the reporting of a number of conflicting statements in the press and confusion among the public. This contributed to concerns of the development of a crisis of confidence in policymakers.

This lack of preparedness was also a result of a complacent attitude towards issues of safety in nuclear power plants that was widely prevalent at the time, leading TMI and NRC

officials, as well as government officials responsible for implementing emergency measures, to be caught unprepared for the situation that arose. Most people took the safety of nuclear facilities for granted, despite the warnings from a small but persistent group of voices in the scientific community and the abolition of the AEC only five years previously in the wake of heavy criticism regarding regulatory procedures.

Value Complexity

The short duration and immediacy of the crisis, coupled with a limited range of response options, resulted in perhaps fewer obvious conflicts of short- and long-term values during this crisis. However, while ensuring the safety of the population was a shared priority among all decision makers, underlying pressures and conflicting values did play some role in the decision-making processes that led to the crisis. Metropolitan Edison (Met Ed), the utility company that operated TMI, faced difficulties that were inherent within the nuclear power industry. Already under fire from opponents of nuclear energy, Met Ed was under extreme pressure to maintain the support of the public for the continued generation of electricity at TMI. In order to recover rising costs of building nuclear facilities, the company was also forced to operate the reactor at a high capacity (approximately 97 percent of capacity) and to minimize downtime for maintenance, perhaps jeopardizing the safety of the reactor. These factors may have adversely affected the vigilance with which MetEd reviewed and monitored training, operations, and safety issues. While government actors as whole were focused on bringing the reactor under control and in safeguarding the population living near the plant, different values and challenges also influenced the different levels of government. At the federal level, the NRC struggled with internal conflicts over scientific information and analyses. This was embarrassing for a regulatory agency that needed to appear competent in order to maintain the public's trust. At the state level, the administration of Governor Thornburgh was under pressure to make decisions in an environment in which they were dependent on external agencies to provide the necessary information. Local officials in the communities around TMI faced intense public pressure as they were more immediately accountable to the citizens than authorities at higher levels. These officials were excluded from decision making, primarily as a result of the lack of an effective communications infrastructure. At all levels of government, elected officials had to be mindful of the public perception that they had the situation under control, perhaps impacting their position on evacuation.

Leadership

The TMI incident illustrates an interesting pattern of leadership that can arise in similar cases of crises requiring specialized knowledge of complex technology. As Governor of Pennsylvania, Richard Thornburgh clearly had executive authority to make decisions impacting his state and its citizens. He played a critical role in legitimating and communicating decisions to the affected populations. However, Thornburgh was highly dependent on the recommendations offered by the single group of the NRC officials in making these policy decisions. Thus, the NRC played a critical leadership role in decision making. This organization engaged in the pursuit of information, experienced conflict, resolved this conflict internally, and proposed policy recommendations. Some of these were flawed, withdrawn and modified, but were ultimately implemented during the course of the crisis. Governor Thornburgh, who did not

possess sufficient understanding of nuclear technology to engage independently in these processes, played a relatively passive role, acting on NRC recommendations.

This dependence on advisory information from the NRC led to the emergence of one individual who was called on to exercise leadership beyond what was in his usual job description. On March 30, "Black Friday," Governor Thornburgh contacted the White House to express his exasperation with the inconsistent information he was receiving from various sources at the NRC. President Jimmy Carter named Harold Denton, director of the Office of Nuclear Reactor Regulation within the NRC, as his personal deputy and point man in communications with the Governor. Denton was instrumental in establishing order and facilitating the resolution of conflict within the NRC organization.

Organizationally, the NRC attempted to act effectively in gathering information necessary to decision making by establishing separate teams to evaluate different, but related technological problems occurring in the TMI reactor. The fact that these two teams arrived at opposing conclusions posed a serious difficulty in the NRC, emphasizing the lack of communication within the organization. This was exacerbated by an apparent lack of a mechanism for resolving such differences.

Information Management

Search for Additional Information

The decision makers involved in the TMI crisis were hampered in their efforts by a lack of understanding of what was happening within the reactor. The subsequent search for information involved TMI operators, NRC scientists, and experts from institutions worldwide who were contacted for assistance. Information from numerous sources suggested that the crisis, although serious, could be safely contained, but the conflicting findings of one of the NRC research teams led to nagging doubts that complicated decision making. The lack of adequate communication mechanisms between important stakeholders exacerbated this problem, as it caused delay in review of procedures and conclusions, some of which proved to be flawed. Decision makers were caught between the pressure to act quickly (to "do something now") and the need to understand the context more completely in order to make good decisions. Review of the subsequent investigative reports on the incident suggests that the decision makers were open to information from the environment, and that this led to some indecision and confusion in the decision-making process.

Interaction with the Media and Public

Interactions with the media and public were generally judged to have been handled poorly. Officials were slow in releasing information to the press, both because they were not sure about the facts of the situation themselves and because there was no plan in place for communication with the press or public in the case of an emergency. In addition, the information that was released to reporters came from different sources, and delivered contradictory assessments of the situation and which response was appropriate. The report from the Presidential Commission suggested that this lack of consistency and coordination led to a loss of

credibility for the responsible officials. On Friday, the third day of the crisis, Harold Denton of the NRC was designated as the official spokesperson to the press on the accident (Kemeny, p. 57). His involvement resulted in an improvement in the timeliness and accuracy of information that the public received, although even this measure did not completely resolve the problem.

Interaction with Affected Stakeholders

Beyond the decision-making groups and immediate personnel, the key stakeholders affected by the TMI crisis were the citizens living near the plant. These individuals faced immediate danger from any releases of radiation and the possibility of an evacuation order requiring them to leave their homes. As was the case with interaction with the press, interaction with these stakeholders was generally poor. The confusing information being provided through the media was compounded by the fact that local officials, who would be called upon to implement an evacuation order, could not secure accurate information from state and federal authorities. Once these groups threatened to take independent action, efforts were made to incorporate them into the process and to improve communications.

Politico-Bureaucratic Cooperation and Conflict

Framing of the technical problem evolved as information became available and was accepted by the various stakeholders. From a policy standpoint, the primary framing for all stakeholders involved ensuring the safety of the surrounding population. The political entities responsible for emergency actions were committed to respond to the recommendations of the experts, which essentially involved the questions of whether or not to effect an evacuation, and of what scale. Myriad difficulties in communication and coordination arose as a result of incomplete or faulty information and the lack of standardized procedures for communication, not necessarily differences in framing. While differences of opinion regarding the facts of the situation existed during the crisis, there is no indication that individuals were attempting to manipulate these differences in order to cast blame on others.

This is not necessarily true for the period following the crisis. The TMI event bolstered anti-nuclear sentiment to such an extent that no new nuclear facility permits have even been considered by the NRC since 1979. Public fear following the crisis brought greater attention to the risks of nuclear power, and a reticence among policymakers to commit to this technology, not wishing political fallout.

Transboundary Coordination and Crisis Internationalization

In the case of the TMI incident, the order to evacuate the area was the only response action under consideration, but ultimately, such an action was never actually implemented. Thus, the coordination of local emergency response teams was not put to the test, but there was some criticism in the post-incident investigation that inadequate preparation had been made for such an eventuality. The communications problems that have been highlighted throughout the case study suggest that inadequate information flow would have been a primary contributor to the challenge of undertaking an effective response. In addition, there was no indication that an over-arching system of organization or coordination had been planned for in the case of an

emergency. Lack of knowledge regarding the effects of a release of nuclear radiation or of a hydrogen explosion within the reactor led to disagreement about the extent of the recommended evacuation area. As this recommended area expanded, encompassing populations as far as 20 miles from the TMI site, the potential for a coordination nightmare increased.

In the short term, the international impact of the incident was not reported as a primary concern, although it would quite possibly have been greater if the reactor had not been brought under control. The advice and expertise of other experts in the nuclear industry was sought during the crisis, but the information available seems to suggest that these were all domestic sources. The beginning of a rising awareness of the international nature of nuclear accidents can be attributed to the TMI incident, leading to increased international regulatory mechanisms. Following the disaster, the NRC expanded its role in sharing its expertise and experience with the international community.

Sequencing and Synchronicity

Official policy recommendations to the public, promulgated through the office of Governor Thornburgh (advised by Harold Denton) remained fairly consistent throughout the incident. No evacuation was ordered, and an advisement was extended to pregnant women and very young children within a 5-mile radius of the facility. This was a provisional action, accompanied by an ongoing effort to gather further information. However, Thornburgh and Denton were challenged to maintain control of this policy position throughout the crisis as a result of dissension within the NRC, where the internal sequencing of decisions was driven by the need to gather information as the technical crisis unfolded. As the understanding of the nature and extent of the crisis evolved, much of the decision making within the NRC involved the initiation of processes to clarify the facts and evaluate the possible consequences. Many of these processes evolved in an ad hoc manner, and were inefficient and inaccurate in due great part to a lack of communications between stakeholders. In the occasion for decision included in this case study, for example, the NRC officials were not informed until Friday of the hydrogen explosion that had occurred on Wednesday, initiating the sequence of information-gathering processes that complicated policy making throughout the remainder of the incident.

When the information gathering resulted in conflicting findings, no standard procedures seemed to be in place to evaluate the findings or to resolve the differences. As a result of the extreme nature of some of these findings, some NRC officials adopted a "worst case scenario" position, recommending evacuation of populations in a much wider radius than had previously been considered. This was in direct contradiction to the "no evacuation" position that was being officially recommended by Denton (also an NRC official.) Failure to control access to high-profile NRC officials and the flow of information to the press raised questions about credibility and the proper source of authority. This led to an impression that policy options were being reconsidered and modified as more information was uncovered, forcing Denton/Thornburgh to publicly disagree with other NRC officials. As a result of this confusion, local authorities then offered "unsolicited" feedback, threatening to take policymaking responsibilities into their own hands, again requiring intervention from the Governor's office. It is interesting that even when the NRC had evidence that the hydrogen bubble (and thus the associated threat) was dissipating, there was an unwillingness to make a definitive policy statement.

Issues of synchronicity were not apparent in this crisis. Key decision makers were not distracted by other events taking place simultaneously.

Culture

Grid-Group cultural theory as presented by Thompson, *et. al*., proposes a framework of four typologies for understanding the cultural influences at work within an organization, providing insight into decision-making behaviors exhibited by that organization. In the case of the NRC, conflicting typologies seemed to be at work, perhaps explaining the inefficient decision-making process. Certainly, the "hierarchical' approach to decision making (with its well-defined rules and procedures, closely associated with scientific/technological endeavors) was cited as one of the critical causes of the initial crisis. TMI operators were trained to follow a series of "unthinking" procedures in response to warning signals. They did not consider the possibility that the evolving crisis was atypical, and even failed to report situations in a timely fashion that they could not identify in reference to this training. Their failure to quickly report the early hydrogen explosion is one example.

At higher levels of decision making within the NRC, however, this hierarchical culture seemed to break down, a development attributable to a number of factors. First, processes for decision making and response in crisis situations were practically non-existent. Thus, no clear hierarchical decision-making framework existed – a serious problem during the incident. While this lack of planning is typically associated with the "fatalistic" typology, it appears to have been based less on a sense that one *cannot* exercise control over a situation than on the unquestioning belief that technology and expertise had *ensured* absolute control. Another influence on the decision-making culture at the NRC was almost certainly a strong strand of *individualism*, which grants credibility and authority based on individual expertise – a phenomenon that is typical of settings requiring understanding of complex technologies.

It is interesting to note that these two decision-making cultures are diametrically opposed to each other in the Grid-Group framework. This competitive organizational culture was a contributing factor to the challenges with which the NRC struggled in making clear and effective decisions during the TMI incident.

Lessons Learned

While the severity of the nuclear incident at TMI was unprecedented, it had been preceded by a number of smaller events that signaled potential problems with reactor facilities. Inadequate prevention and response to these incidents had led to the dissolution of the predecessor of the NRC, the AEC, only five years prior to the TMI incident, and improvements in regulatory procedures were being implemented. However, the mentality of invulnerability had persisted within the organization, preventing the NRC from considering issues of crisis response in any adequate way. Ultimately, despite this attitude, NRC and industry scientists discovered that their knowledge of the workings of the reactor and of the impact of radiation releases on populations was also limited.

Within the TMI facility itself, evidence existed of potential problems prior to the incident, but this evidence went unanalyzed or unheeded. The faulty valve in the TMI reactor that allowed cooling water to leak out in the early morning hours of March 28, 1979 represented the latest in a series of valve-related problems that had occurred during the previous months, which had not been addressed. The small capacity of the cooling mechanisms of Babcock & Wilcox reactor designs had been criticized, and other safety problems had been identified with the designs from all of the various manufacturers.

Although the TMI incident was ultimately prevented from becoming a serious nuclear radiation crisis, the situation was widely assessed to represent a major policy and decision-making failure in subsequent studies. The NRC attitudes, procedures, and response to the crisis at TMI in 1979 were deemed highly flawed and ineffective by the numerous commissions and studies undertaken to evaluate the incident. A number of important lessons learned have been attributed to the evaluation of this incident:

1. *The safety of nuclear power plants was taken for granted*.
2. *Operator training was inadequate*.
3. *The control room facilities were too complex and poorly organized, often obscuring critical information.*
4. *Preparedness for crisis management in the case of a nuclear reactor incident was wholly inadequate*.
5. *Ineffective communication mechanisms exacerbated the crisis*.
6. *During the TMI incident, interactions with the media were handled haphazardly, and resulted in the release of often contradictory information*.
7. *The sharing of industry knowledge needed to be more effective*.

In addition to these lessons related to the decision making during the crisis, the NRC was forced to evaluate and modify many of its regulatory, monitoring, reporting and enforcement procedures.

Aftermath of Situation

The danger of a large radiation release had passed by Monday, April 2. However, the aftermath of the crisis at TMI would last for years. Although no evacuation was implemented, numerous efforts were instituted following the incident to determine whether there were any health effects on the local population due to radiation releases. After much analysis, experts generally agreed that only a limited amount of low-level radioactive gas and water had escaped from the crippled reactor and the surrounding containment buildings. No long-term physical health effects have been detected (i.e., no noticeable anomalies in the incidence of cancer or birth defects, or other indicators of the effects of radiation.) The emotional effects caused by the stress of the crisis affected people living in the immediate area long after the crisis ended.

The cleanup effort at TMI started immediately after the crisis ended. This intense project took 12 years and cost nearly a billion dollars. A team of 1,000 skilled workers removed more than 100 tons of damaged uranium fuel and tens of thousands of gallons of contaminated water during the period. TMI Unit 2 is now in a safe long-term storage state.

The final aspect of the aftermath of the TMI crisis is the effect that the incident had on the nuclear power industry, most especially within the United States. Following TMI, confidence in the nuclear power industry plummeted. No new plants were licensed after the accident and many others that had been approved for construction were cancelled. Reforms in nuclear power plant safety, maintenance, and training that were enacted as a result of the TMI accident failed to stop the loss of appeal for nuclear power.

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2000 - 2001 CALIFORNIA ELECTRICITY CRISIS[10]

I. Introduction

Description and Significance of Case

The subject of this case study is the energy crisis experienced by the State of California between 2000 and 2001. Beginning in the summer of 2000, the two largest utility companies in California, Pacific Gas & Electric (PG&E) and Southern California Edison (SCE), began experiencing major losses in earnings due to high wholesale energy prices. The utilities were unable to respond to the situation with corresponding increases in consumer prices due to restrictive provisions in state legislation. Although the crisis had been building since the legislative changes to the state's electricity system in 1996, neither the citizens nor the government were prepared for the severity of the situation and its repercussions. The situation escalated until the spring of 2001, when PG&E filed for bankruptcy, threatening the collapse of the state energy industry.

The case is significant for several reasons. First, the situation represented a serious threat not only to California's energy industry, but also to its economic health in general. California's continuing economic difficulties have their origins in decisions and policies associated with the energy crisis of 2000-01. Secondly, unlike many crises, this incident was predicted well before it occurred, and had been brought to the attention of state and industry officials. Despite this knowledge, the limited measures taken were insufficient to prevent its escalation. Indeed, decision makers avoided direct acknowledgement of the crisis until it reached a critical level. Once the situation had escalated to this level, major structural and foundational changes to the management of electricity in California had to be made merely in order to mitigate the damage. The California energy crisis is closely associated with the Enron scandal. Enron executives engaged in fraud, corruption and energy speculation practices that exacerbated the crisis.

This crisis is also significant because it is widely held that the crisis was due in significant part to mismanagement by California's Governor, Gray Davis. In August of 2000, Davis was briefed by the California Public Utilities Commission (CPUC) on the impending energy crisis. Unwilling to compromise on his political position of allowing no increases to consumer electricity prices, Davis took no decisive actions to respond to the imminent crisis until the severity of the situation forced his hand five months later. In this intervening period, a number of factors contributed to the rapid deterioration of the financial solvency of the utility companies. In January 2001, faced with utility companies on the edge of bankruptcy and unable to acquire the energy needed for California and the subsequent threat of widespread energy blackouts in the state, Davis declared a state of emergency. Availing himself of the extra-constitutional authority that such a declaration allowed him, Davis then made critical decisions that changed the relationship between government and the energy industry in California, and committed the state to long-term high energy prices. Davis' early inaction is often identified as a source of the crisis, and his critics argue that a more proactive approach could have curbed the

[10] Portions of this chapter were originally research and written by Chiara Cruciano. Additional research, editing, and writing was conducted by the editors.

most disastrous results. For Davis, the crisis of energy contributed ultimately to a crisis of legitimacy, and, for the first time in its history, Californians recalled their Governor.

While numerous actors were associated with this incident, it is clear that a critical decision-making role belonged to Gray Davis, and it is from his perspective that this incident will be examined. The case study encompasses a temporal period beginning the week of June 11-14, 2000, when California experienced its first energy blackouts, through April 2001, when PG&E filed for bankruptcy. Although the state of emergency that Davis declared in January 2001 was lifted in 2003, serious repercussions of the energy crisis continue to plague the economic and financial stability of California today.

The nature of the situation (response to a man-made economic disaster) and the issues involved in the case fulfill the three requirements that Eric Stern suggests are necessary for a situation to be considered a crisis (Stern, 2002). The situation posed *a threat to a number of basic values*. The risk of power losses, potentially for weeks or months at a time, threatened the economic and financial stability of the State of California. Individual citizens were also at risk, both economically and with respect to personal safety and security. From the perspective of Gray Davis, political integrity was also a value that was threatened, as he was forced to consider reneging on promises to control consumer prices for energy. The second requirement of *urgency* became more important as the crisis progressed. Ineffective measures in the early stages of the crisis meant that later repercussions were extreme and had to be dealt with as emergency situations. Finally, *a high level of uncertainty was present during the crisis*. Although political decision makers had advanced warning of the crisis, the public and the utility companies both experienced high levels of uncertainty, the former not knowing whether or not they would have power the next day, the latter, teetering between survival and bankruptcy, unsure as to the impact of the government policies on their fragile situation.

Context of the Case

Despite being the most populated state in the nation, Californians have the lowest *per capita* energy usage in the nation, estimated at 7,032 kWh in 2005 (as opposed to the U.S. average, at 12,347 kWh). (Energy Almanac, 2005) California's 11.5 million electricity consumers are serviced by approximately 32,700 miles of transmission lines, more than 239,000 miles of distribution lines, and over 200 electrical generation units. (CPUC report, "Energy Facts", 2010) The state's two largest utilities are Pacific Gas & Electric (PG&E), and Southern California Edison (SCE), which jointly provided 86% of California's electricity in 1999 (PG&E 45% and SCE 41%). (Sweeney, 2002) The Western region of North America is highly linked through its energy lines. Power is bought and sold throughout the western states, Canada, and Mexico, over a synchronized electric power network. (Joskow, 2001) California generates 42% of the energy on the network, and consumes 51% of total electricity production. (Sweeney, 2001)

Until 1998, the California Public Utilities Commission (CPUC) regulated consumer pricing in an attempt to reduce the monopoly power wielded by the utilities, which were also the primary energy generation companies. (Joskow, 2001) At the federal level, the Federal Energy Regulatory Commission (FERC) is mandated to monitor wholesale pricing and trading between utilities across the country and possesses the authority to impose controls over these interactions.

In the mid-1990s, responding to complaints which arose first in the business sector and then among individual customers regarding the high price of electricity, the State of California began to pursue a strategy of partial deregulation of the electricity sector of the energy market. The logic of this strategy was that an increase in competition among electricity producers would lead to reduced wholesale prices, allowing the state to impose caps on retail prices for electricity charged by the utilities to consumers without jeopardizing the utilities companies. Although California's deregulation plan was a complex process whose details are beyond the scope of this study, the essential elements are critical, and included: 1) the divestiture of 40% of the producing capacity of the two 'incumbent' utilities (PG&E and SCE) to unregulated 'independent power producers'; 2) the *deregulation* of the wholesale market for energy, and 3) the continued *regulation* of the retail market in the form of fixed consumer prices that were not responsive to the wholesale market. In addition, PG&E and SCE were precluded from entering into long-term agreements with electricity producers, which would have mitigated extreme day-to-day fluctuations in the market. The utilities were required to purchase their electricity through the California Power Exchange (CalPX), which also did not commit to long-term contractual agreements with producers. The result of this paradigm was that PG&E and SCE could neither make decisions to optimize the conditions of their purchases of electricity, nor employ standard sales strategies to correct for the unfavorable purchasing conditions that were the inevitable result of a deregulation limited to the wholesale component of the equation. The deregulation of wholesale prices went into effect in 2000. Based on experiences from April of 1998 to May of 2000, it was assumed that, even though the retail prices that the utilities were allowed to charge consumers would remain frozen, the wholesale price of electricity would be below this controlled retail rate, and the utilities would continue to be profitable.

While the goal of the deregulation scheme was to encourage increased production of energy at a lower cost, the result of partial energy deregulation was quite the opposite. The wholesale market became extremely vulnerable to manipulation by energy producers and entities attempting to 'game the market' (most infamous among these being Enron.) Instead of responding to increased demand by creating more and less expensive electricity, producers used a variety of means to charge utilities higher wholesale prices, which soon surpassed the controlled retail prices established in California. PG&E and SCE, which were contractually required to provide for the energy demands in California, had no options but to purchase this expensive electricity, and no means for passing increased costs to customers. Very quickly, these utilities found themselves in a dire financial situation.

Besides the difficulties created by this complex system of wholesale/retail price manipulations, other factors exacerbated the problems faced by the California utilities in the months immediately following deregulation. Energy demand increased in the state during this period as a result of a number of factors: a 13% population increase in California in the 1990s; a drought in the Pacific Northwest that reduced the amount of excess hydroelectric power available to the state (and on which it had become dependent); state Clean Air Standards that penalized the use of coal; and the intentional manipulation of weaknesses in the aging California electricity infrastructure by the independent producers to create shortages, with the intention of raising wholesale prices.

On June 14, 2000, California experienced its first rolling blackouts, defined by the California Independent System Operator (CAISO) as planned power outages of short duration (1-3 hours) instituted when demand surpasses supply, usually during peak hours, in order to maintain control over the system. (Community Energy Center, 2010) A complaint containing allegations of market manipulation by the producers was filed to FERC by the San Diego Gas & Electric Company during the summer, which responded in November with an acknowledgement of weaknesses in the system and recommendations, but no decisive moves to control the wholesale market. Aware of the impending crisis, PG&E and SCE petitioned the California Public Utilities Commission (CPUC) to allow them to sign long-term contracts with producers in order to fix prices, but were refused. (Higgins, 2001) The state appealed to the Federal Energy Regulation Commission (FERC) to impose regulations on wholesale energy producers, but again received indecisive recommendations. Given the unwillingness of any responsible agency to take action, crisis was inevitable.

II. CHRONOLOGY

May 22	Energy supply crisis begins as CAISO declares a Stage-2 power alert, and recommends power interruption to industrial and other large customers.
June 11 – 14	California spends over $1 billion to buy electricity for this one week, approximately one-eighth of total spending for 1999. Wholesale electricity prices had risen to 270% of 1999 prices.
June 14	California institutes first planned rolling blackouts in order to avoid unpredictable statewide blackout. Blackouts take place in the San Francisco Bay Area on a 103-degree day.
Summer 2000	Rolling electricity blackouts continue throughout the summer months. Governor Davis requests CPUC report on the status and challenges of the California electricity system.
August 2	San Diego Gas & Electric (SDG&E) files a complaint with FERC alleging manipulation of the market by producers, and requesting that FERC cap the wholesale costs. FERC did offer some limited remedies to SDG&E, but not until November.
August 2	CPUC issues report, as requested by Governor Davis, outlining the energy challenges facing the state, and recommending, *inter alia*, a restructuring of California's wholesale electricity market system. In response to the CPUC report, Davis issues three Executive Orders (D-14-00, D-15-00, D-16-00), requesting the creation of a Task Force to consider plans for new power generation plants, and

	requesting conservation measures in the building and operation of all state-owned facilities.
October 16	PG&E asks CPUC for the ability to sign long-term contracts with power generators in order to keep prices down. CPUC denies this request.
November 1	FERC recommends California utilities sign long-term contracts to avoid rising prices, but denies Davis' request to place rate cap on wholesale pricing. CA utilities at this point are paying 30 times the rate they were paying the year before.
December 7	CAISO declares a Stage-3 power alert (indicating that state power reserves have dipped below 3%). The state shuts down two large water pumps to stave off statewide blackouts.
December 13	Energy Secretary Bill Richardson issues an order to energy providers outside of California to sell electricity to California at FERC's standard "just and reasonable" rates, which Davis argues they had not been doing.
December 15	FERC offers a number of remedies, including the lifting of restrictions on utilities requiring them to purchase electricity exclusively from CalPX. However, FERC rejects Davis' request to institute a price cap on wholesale energy prices sold to California, instead approving a flexible $150 breakpoint rate that is expected to "discipline prices in California".
January 3, 2001	Davis calls a Special Legislative Session to address energy issue.
January 4	CPUC approves a temporary emergency rate increase (a surcharge) of 15% to consumers to help SCE and PG&E avoid bankruptcy.
January 9	State and Federal officials convene to discuss the crisis but take no decisive actions.
January 16	SCE and PG&E announce that they will not be able to pay creditors, which consequently downgrades their credit rating to junk status.
January 17-18	CAISO issues rolling blackouts for two days in central and northern California.
January 18	***Governor Davis declares a state of emergency in California.***
January 19	Davis proposes emergency legislation asking the Department of

	Water Resources (DWR) to spend $400 million of taxpayer money to buy electricity. Technically in a state of bankruptcy, PG&E and SCE do not have the financial credit to make the purchase. **** The State thus becomes an active stakeholder in the California power industry.***
February 1	The State approves the $10 billion DWR power-buying plan, as well as a plan to sign long-term contracts with generators.
February 6	The Bush administration allows the emergency order to sell power to California at a low rate to expire.
February 16	Governor Davis proposes buying the transmission lines from SCE and PG&E to keep them solvent. Davis reaches a deal with SCE, but not with PG&E.
March 6	Davis announces that he has obtained long-term contracts for long term power, at rates that are double the price of energy before the crisis.
March 19-20	First statewide rolling blackouts.
April 5	Davis makes public announcement assuring Californians that the State has managed to gain control of the crisis.
April 6	PG&E files for bankruptcy, announcing that it is $8.9 billion in debt.

*The timeline was adapted from *Frontline, 2001* and *Metcalfe, 2001*.

III. OCCASION FOR DECISION

On January 16, 2001, PG&E and SCE announce that they do not have sufficient funds to pay creditors, triggering an immediate downgrading of their credit ratings to 'low junk' status. Without sufficient funds or credit, the utilities are unable to purchase electricity for the State of California. On January 17, CAISO issues orders for widespread rolling blackouts to begin the next day. Faced with the potential bankruptcy of the primary utility companies in the state and the prospect of uncontrolled blackouts, the crisis has arrived at a critical juncture requiring an urgent response. What actions should Governor Davis take to avoid the threatened collapse of the state's electrical power system and the subsequent repercussions that would ensue?

In the nine months preceding the occasion for decision described above, numerous indicators increasingly pointed to the inevitability of a catastrophic event in the energy sector. Immediately after the first energy blackouts in June, Davis requested a full report from the California Public Utilities Commission (CPUC), advising him on the state of the California's electricity situation. The CPUC presented the report to Davis on August 2. In a scathing

condemnation of the deregulation plan, supply and demand economic theory, and California lawmakers' lack of sense in 'trading away' California's ability to 'protect California businesses and consumers', the CPUC emphasized the unstable energy situation facing California. The CPUC also identified a number of sources of this instability, including aging infrastructure, lack of investment in power generation capacity, and, most disturbing of all, and the vulnerability of the wholesale market to manipulative bidding behavior. (Lynch, CPUC report: 2000) The Commission recommended immediate action on four fronts:

1) *The re-assertion and establishment of California's sovereign ability to protect state consumers and to hold market players accountable;*
2) *Long-term investment in efficient, clean and renewable energy sources;*
3) *Engagement with FERC to address wholesale price volatility, including pursuit of information through legal means regarding the possibility of illegal market manipulation;*
4) *Good-faith efforts to inform the public regarding the impact of the crisis, measures being taken, and an attempt to find temporary means of providing consumer price relief. (Lynch, 2000)*

I In response to the report, Davis announced three Executive Orders that requested expedited approval for new California power generation plants, established an expert task force on energy reliability, and instituted energy saving measures/construction guidelines for all state-owned facilities. In addition, he called for an investigation of the allegations of price manipulation on the wholesale market, and the State Attorney General was directed to file a case with FERC requesting the imposition of controls on wholesale market bidding. Despite repeated requests, Davis refused to take actions aimed at mitigating the dire financial situation faced by the utilities if they entailed an increase in retail electricity prices to consumers.

These actions, seemingly in line with the recommendations of the CPUC report, could not stave off the crisis. California utilities were forced to pay increasingly higher prices as the months passed. However, the CPUC refused to allow PG&E and SCE to arrange long-term contracts that would stabilize both the supply of electricity available to them and the prices at which it would be purchased. (Sweeney, 2002: p. 81) On December 7, California's power supply dipped to an all-time low below 3%, triggering a Stage-3 power alert. After numerous requests from Governor Davis, the FERC implemented an emergency order requiring that wholesale suppliers sell power to California utilities at more reasonable prices. (Frontline, 2001) However, Davis' request to set a price cap for wholesale energy was denied.

On January 4, 2001, Governor Davis was forced to allow for a retail rate increase of up to 15%, despite his long-defended commitment to prevent any increases to customers. On January 16, Southern California Edison announced that they would be unable to pay $596 million that it owed to wholesale producers, and PG&E was reported to be in the same situation. The announcement prompted Standard & Poor's to downgrade both companies' credit ratings to junk-bond status, making them non-investment grade. In response, wholesale providers refused to sell electricity to the two utilities, as they were no longer solvent. On the morning of January 17, PG&E and SCE announced that rolling blackouts would occur across the state for an indefinite amount of time, as the energy supply was unable to keep up with demand. In the face

of an imminent collapse of the electricity system in California, Governor Davis was forced to decide whether to continue to seek resolution through conventional channels, or whether to take immediate and dramatic action.

Decision Unit

The decision unit for this occasion for decision was Governor Gray Davis, acting as a predominant leader. This is confirmed in an analysis based on the decision tree for determining decision units presented by Hermann and Hermann. In responding to the questions posed in this theoretical construct it is clear that: 1) Governor Davis was legally empowered to make decisions for the State of California in the case of an emergency involving energy supply, and to commit/withhold the state's resources in such an emergency situation, regardless of opposition; 2) Davis had demonstrated a long-standing interest in energy issues in the State of California, making the protection of the consumer from high electricity prices a core political focus of his campaign and administration; 3) Davis was convinced that the resolution of the various factors causing instability in the electricity situation in California was essential to the well-being of the state; 4) as a politician with serious career aspirations, Davis understood that resolution of the electricity issue was of personal interest to him; 5) Davis actively participated in the decision process throughout the duration of the crisis; and 6) while Davis solicited information and expert advice from a number of sources over the course of the incident, there is no indication that 'veto' power was granted to any other stakeholder or entity. In addition, while Davis was not in a position to impose decisions on federal legislative or regulatory bodies, he was the single individual who could legally assume the authority to commit the State's resources to the problem. The situational challenge for the Governor was to decide whether to arrogate the decision-making power of California's state institutions in order to address the electricity crisis.

Policy Decision

Forced to confront the fact that California was in an energy crisis that was quickly spiraling out of control, Governor Davis moved with greater urgency to determine a viable solution to stave off catastrophe. On January 3, he called a Special Legislative session to address the issue and on January 9, state and federal officials met to discuss the crisis, but neither of these attempts to bring together decision makers resulted in any decisive actions. Following the announcement on January 16 that PG&E and SCE were financially insolvent, Davis made the decision to declare a state of emergency in California, thus assuming decision-making authority that was relegated to various other state institutions under normal conditions.

At this late stage in the crisis, Davis' actions were focused on putting out fires – the first, to ensure that the state would not run completely out of energy in the immediate future. Within days, Davis had approved a plan whereby $400 million of state money would be transferred to the Department of Water Resources (DWR), which would then purchase electricity on behalf of the utilities. Davis extended this arrangement on a long-term basis in early February when he orchestrated approval of a $10 billion DWR power-buying plan, announced intentions to sign long-term contracts with power wholesalers, which were concluded on March 6, and then proposed for the state to purchase transmission lines from PG&E and SCE in order to keep them solvent. Through these actions, Davis made the State of California an active stakeholder in the

California power industry. In retrospect, these decisions had highly negative consequences for the economic health of the state that have continued until the present.

Decision Dynamic

Decision making during the California energy crisis was rendered complex for a number of reasons. At the heart of this crisis was a philosophical battle over the appropriate role of government intervention in economic interactions that was being waged between the federal stakeholders embodied in the FERC and the State of California. Cooperative action was imperative for any possible solution to the crisis, yet the commitment of the various stakeholders to their divergent perspectives rendered such coordination extremely difficult to achieve.

Secondly, in addition to the complications created by legitimate political differences among critical decision-making entities, the problems were being exacerbated behind the scenes by entities engaged in questionable (if not criminal) activity. The efforts undertaken by energy wholesalers and investors to 'game the market' were highly manipulative of the energy market, driving California's utilities to the verge of collapse. Poorly designed deregulation rules allowed some of this manipulation to retain a technical legality, and it was exceedingly difficult to rein in much of this behavior.

In his role as Governor of California, Gray Davis had a primary role to play in the resolution of this crisis, yet he was widely criticized for engaging in the process too late and too slowly. The majority of his decisions in the early stages of the crisis (despite the accurate predictions that the consequences would be severe) were centered on information gathering and fairly lethargic appeals to federal officials to impose controls on wholesale providers. It was not until the dire predictions were very clearly transformed into dire realities that Davis seemed to recognize the urgency of the situation and act decisively. He then exercised his authority to impose decisions on state stakeholders and to circumvent federal actions in order to keep California's energy system from complete collapse. At this point in the crisis, Davis was forced to act as a *predominant leader*.

In the case of decision making by a predominant leader, the key contingency or dynamic is associated with the leader's sensitivity to information from the political or situational context. In evaluating this level of sensitivity, measurement is based on an evaluation of the flexibility the leader exhibits in his pursuit of goals and the choice of means to attain those goals. On January 17, in declaring a state of emergency in California, Davis' actions veered sharply from the behaviors that had been characteristic of him until that point. Certainly he had been operating with the goal of resolving the energy crisis for California. However, this goal had been entangled with other political goals of maintaining public favor through the regulation of consumer prices, and of challenging the FERC and highlighting federal policy as a critical factor in the difficulties facing the state. It was widely understood that Davis had been identified as a contender for a future Presidential nomination. Steering the onus of blame and responsibility in the direction of federal entities may have reflected some attention to political expediency. During this early period of the crisis, Davis demonstrated a relative insensitivity to contextual information, and pursued a well-defined goal using fairly conventional and inflexible means, placing his style as one of *principled leadership*.

This strategy proved highly ineffective, however, and as the situation rapidly deteriorated, Davis was required to modify his approach. During the state of emergency, although Davis continued to assign blame to federal regulatory agencies and policies, his decision-making goals became highly concentrated on acquiring immediate energy supplies for California and ensuring the security of that supply for the longer term. In addition, Davis chose to accomplish this task through the use of means that had previously been eschewed (raising rates) or disallowed by the rules of the system (signing long-term agreements). He created a new paradigm as well, committing the state to an active and risk-filled role as a player in the energy market. The decisions made as a part of the state of emergency represent a reorientation of his goals and the willingness to employ flexible means to achieve it. This would place Davis' decisions in the category of *pragmatic leadership*. It is notable that the severity of the crisis required Davis to modify his leadership style along both dimensions, yet it is not clear that either of these styles was particularly effective for him, perhaps as a result of timing issues. An earlier shift to a pragmatic approach may well have salvaged the situation in California more effectively, and would most certainly have prevented the wave of criticism charging Davis for 'inaction' in the face of crisis that later cost him his political career.

IV. THEMATIC ANALYSIS

Definition of the Situation and Framing

Weaknesses in the deregulation scheme for California's electricity system were identified as early as 1996, when the state government enacted the provisions. However, it is not apparent that many understood the extreme vulnerability to destabilizing forces that would result. The driving political issue at the time of its design was the need to address the high electricity rates paid by California's consumers (voters), rates which were estimated to be twice the national average. Utilities companies blamed the high rates on high wholesale prices that they were required to pass on to customers in order to maintain viability. Based on a supply-and-demand model, deregulation of the wholesale side of the equation would, it was reasoned, create more and cheaper electricity through market competition, allowing for control over prices that were then charged to customers. It was also well understood among state authorities that attracting investment to California would require a stable energy price environment. Although it seems that he was aware of the flaws in the deregulation scheme, Davis supported consumer price controls on electricity in his campaign for Governor, and an important component of his political platform was the commitment to prevent any retail price increases. Thus, the original framing of the situation was focused on consumer prices, with the utilities companies widely viewed as the culprit. Davis rather single-mindedly adopted this frame and applied it to the evolving crisis far longer than it was applicable, for in the spring of 2000, the problem would change, requiring a different frame.

When the wholesale deregulation provisions came into full effect in 2000, the impact on the utilities was almost immediate, exposing their vulnerabilities under the scheme. In May, the CAISO was required to institute a Stage-2 alert, indicating a power reserve shortage, and power was interrupted to a few large industrial consumers. The severity of the problem increased over

the next few weeks. For the week of June 11-14, California paid over $1 billion for its energy at rates over 270% of the 1999 rates, a total price that was equal to one-eighth of the entire 1999 energy expenditures. Then, on June 14, as a result of a continued shortage of state power reserves, California was forced to institute the state's first rolling blackouts in the San Francisco Bay Area. To many in the energy industry, the blackouts exposed the deeper threats inherent in the deregulation scheme – the high risk of power shortages and the potential financial ruin of the utilities companies.

The utilities companies immediately attempted to reorient the framing of the situation, appealing to responsible state agencies for remedies to combat the effects of high wholesale prices, and to the FERC to institute controls on the wholesale energy producers. Davis was willing to explore the claims made by the utilities companies, requesting information and advice from the CPUC. However he did not seem to grasp the urgency of the situation. The Governor stuck doggedly by his commitment to control consumer prices, which he continued to perceive as the critical issue on the table.

Following the release of the CPUC report, Davis expanded his frame to begin to include the issues surrounding the wholesale energy market system, authorizing the state Attorney General to file a case with the FERC requesting price controls on wholesalers. Again, the Governor did not exhibit a sense of urgency or understanding of the imminent nature of the crisis. Within this expanded frame was a willingness to rely on conventional paths of problem resolution, regardless of their inherently slow response time and the unlikelihood of a satisfactory response. Noticeably absent seem to be any efforts at cooperative approaches between Davis and the utilities companies to head off the disaster, or any search for creative solutions to the situation.

In January, when SCE and PG&E announced their inability to pay their creditors, Davis was forced to recognize the nature of the situation and to reorient his framing of the crisis. In declaring a state of emergency on January 17, Davis assumed legal authority to make all binding decisions for the state in matters related to the electricity crisis. His exercise of this authority included the reallocation of funds to the Department of Water Resources for the purpose of purchasing electricity, and the negotiation of contracts with wholesale producers. Finally exhibiting a realization that the most critical issue for California was insuring a sufficient supply of electricity, Davis adopted this new framework for the crisis. In this new paradigm, deregulation was a problem that he had "inherited" (Gledhill, March 19, 2001) and California was cast in the role of 'victim' of FERC, Enron, and the deregulation scheme. This framing was presented publicly in the Governor's State of the State address on January 8, 2001. (Davis, State of the State Address, January 8, 2001).

While Davis' framing of the electricity crisis is clearly the most critical for the analysis at hand, it was not the only one promoted publicly during the incident. The two utilities, PG&E and SCE, framed the issue very differently. They put much effort into emphasizing the mishandling of the situation by Davis, characterizing his response as representing inaction in the face of urgent need. They cited the fact that Davis had not allowed them to sign long-term agreements with energy generators early on, nor allowed them to raise consumer prices, two strategies which they contended could have helped them to avoid bankruptcy. Other stakeholders

supportive of Davis' actions note that Davis had no authority to control the actions of the FERC, suggesting that he had few other options at the time.

Preparedness for Dealing with the Problem

None of the primary stakeholders in California (government, public, business community, utilities) were prepared to deal with the severity of the electricity crisis as it reached its most critical point in January of 2001. Since 1996, when the deregulation legislation had been approved in the California State Legislature, questions had occasionally surfaced regarding the nature of any potential threats and ways to mitigate them. However, the standard operating procedures that were in place were minimal, involving only a short-term response to limited blackout conditions. Utility companies had developed measures for dealing with exceptionally low energy supply, instituting Stage 1, 2, or 3 emergencies, each of which required specific procedures on electricity rationing. These mechanisms were, however, insufficient for coping with long-term disruption of supply. No procedures had been considered for responding to the financial collapse of the state's two primary utility companies.

Davis faced the crisis with little background in energy policy, and seemed to focus primarily on the political ramifications of his decisions – attempting to respond to the immediate demands of the public rather than the more structural problems in California's energy industry. Given the critical nature of the issue, Davis needed to make provisions for access to experts to offer sound advice. His decision to appoint Loretta Lynch to the position of President of CPUC has been widely criticized as she had little experience in energy policy.

The lack of preparedness was also a result of Davis' insistence on maintaining low consumer prices, regardless of the larger cost. With such a limited agenda, Davis was unprepared to quickly grasp the larger threats posed by the weaknesses in the deregulation scheme.

Value Complexity

A number of core values were in conflict during this crisis, including energy security, political integrity, and economic well-being. Conflict often arose when the value in question represented different goals for different stakeholders, and, thus, implied competing means for achieving them. *Energy security* for the utilities was intimately entwined with strong financial health, which led them to seek increases in the rates that they could charge to consumers when wholesale prices created financial instability. For the consumer, *energy security* means access to a consistent supply of low-cost electricity, contributing to the economic well-being of the individual. However, the citizens of California also had a stake in the financial health of the utility companies, which was essential for continued investment in and growth of California's economy.

As the highest authority in the State of California, it was the role of Governor Davis to moderate and balance these competing interpretations. Davis initially tended to interpret energy security/economic well-being, critical values tied to both his public and personal political goals, from a perspective consistent with that of the consumer. His insistence on maintaining low

consumer prices was challenged when the crisis escalated to the point at which the energy infrastructure of the state was at risk. At this point, Davis' perception of these values shifted towards that of the utility companies, requiring actions to ensure that the state and its infrastructure would be able to function, that its people would have electricity (even at higher cost), and that California's businesses could continue to operate. This was a difficult shift for Davis, as it presented a challenge to his political reputation, forcing him to renege on promises to control consumer prices for electricity.

Value conflicts were also exacerbated when placed in the context of short- versus long-term interests. Short-term decisions to maintain low consumer pricing, despite the pressures being experienced by the utility companies, allowed the threat of financial collapse of these companies to go unanswered. Even after the declaration of the state of emergency, when Davis committed the state to an active role in the energy trading business, short-term interests in rapidly resolving the state's energy shortages had negative long-term repercussions for energy security and economic well-being.

Another interesting value conflict that arose was that of a commitment to free market economics versus the interest in self-preservation, which played out most markedly in the interactions between the State of California and the FERC. The FERC, ideologically committed to a free-market approach, was reticent to interfere in the energy trading market with price caps. This unwillingness to intervene jeopardized the survival of California's electricity system, forcing Davis to take the extreme action of declaring a state of emergency in order to respond to the crisis. Finally, it should be noted that the act of declaring a state of emergency, while provided for in the constitutions of most states, represents a value conflict between self-preservation and principles of democratic rule.

Leadership

The issue of leadership is often identified as the critical determinant of the direction in which the California electricity crisis unfolded, and the leadership challenges that presented themselves during the crisis were typical of many incidents of this type. The situation was highly complex in nature, with technical, economic, social, political and even criminal dimensions, resulting in an unclear dominant paradigm. As such, resolution required the coordinated actions of diverse entities with different agendas (a coalition), including external federal agencies, each of which held legitimate authority over some component of any possible solution. Davis, as the highest authority in the State of California, was responsible for the difficult task of identifying a viable strategy for avoiding catastrophe, and then for convincing the various entities whose cooperation was essential to conform their actions to this plan.

Davis is widely criticized for not having taken more aggressive action in the face of evidence of a rapidly deteriorating situation in the electricity industry. However, given the dispersion of authority to act in these initial months, it is unclear that there was any definitive action that he could have taken. Much of this criticism centers on his commitment to low consumer rates, but even if he had backed away from this position earlier, it is unclear that legislators and responsible agencies would have followed his lead, as such a policy change would have been politically unpopular. The resulting deadlock forced the situation to reach a

critical level, at which point Davis changed the leadership paradigm by declaring a state of emergency, thus concentrating decision-making authority in his office. Thus, both organizational and situational components influenced the pattern of leadership during this incident.

Information Management

Search for Additional Information

During the period between June of 2000, when California experienced its first blackouts, and April of 2001, when PG&E declared bankruptcy, the Davis administration expended significant resources to the task of clarifying the situation underlying the crisis. In some respects, this process was not primarily directed towards gathering information for understanding; so much as it was intended as support for influencing critical stakeholders in their decision making. Davis specifically requested that the CPUC report on the overall status of the energy situation in California, but this effort revealed no new information. Rather, the findings it contained reiterated the essential sources and potential threats of the crisis, all of which had already become a part of the public discourse. The crisis was not unexpected (indeed it had been predicted as early as 1996 when the original deregulation legislation passed) and there was a fairly clear understanding of the circumstances provoking the crisis and the potential consequences. Even the urgent nature of the situation is clearly conveyed in the CPUC report, as well as in the communications emanating from the utility companies early in the crisis. It is unclear why Governor Davis chose to pursue a remedy through very conventional and relatively slow-moving procedures, especially when it was essentially a given that the institutions to which he was appealing for assistance were predisposed to refuse his request. It is perhaps this lack of creative, persuasive and aggressive effort on the part of Davis in response to the search for solutions that left him vulnerable to criticisms of inaction.

Interaction with Media

Davis' relationship with the media was mixed. During the crisis, the media became a critical mechanism for disseminating information to the public about potential blackouts and advisories. This was not done well early in the crisis, as San Diego residents were caught by surprise when the area experienced the first blackouts in June, but the process improved. More importantly, the media became the main source of information and explication regarding the deregulation plan and the energy crisis facing the state. As the primary gatekeepers for this information, the media possessed a significant amount of power in shaping public opinion. As the media became increasingly critical of Davis, the influence that the press wielded played a critical role in his eventual recall. During the crisis, Davis did not appear to understand the full potential of the media, using it primarily as a political pulpit for directing blame for the crisis on third parties. While Davis was certainly a constant topic in the media, there is no evidence that Davis actively sought to employ media resources to influence public understanding of the situation facing California, or to rally support for a cohesive solution. In general, Davis was perceived as reticent to share information, especially after he was forced to make crisis decisions that have resulted in long-term negative consequences for the state.

Interactions with Affected Stakeholders

Clearly the citizens and business community of California represented key groups of stakeholders during the electricity crisis, as they faced the immediate and long-term threats associated with the loss of secure energy supplies. The utility companies were also critical stakeholders, as policies related to the energy crisis were directly linked to their survival. Davis is reported to have had fairly extensive personal interactions with the PG&E and SCE during the crisis, and perhaps with some elements of the business community as well. As was noted above, although Davis used the media to communicate primarily political messages to the public, it is not evident that he was personally engaged in this interaction.

Politico-Bureaucratic Cooperation and Conflict

Many of the prevalent frames surrounding the California energy crisis emphasized conflictual relationships between important stakeholders (for example, the State of California v. the utility companies, the State of California v. FERC, the utility companies v. the wholesale electricity providers). Such adversarial contexts made cooperative behavior between the various entities (critical for the resolution of the problem) extremely difficult, and the majority of the decisions throughout the crisis were the result of forced agreements. While the public expressed its displeasure at the negative economic impacts of the crisis, the complexity of the situation and the lack of a clear adversary or solution prevented any of these stakeholders from eliciting a "rallying around the flag effect". The California public, following the lead of its Governor, engaged in a blame-game approach. Responding to increasing criticism regarding his leadership, Davis used the incident as an opportunity to attack the FERC (for refusing to rein in manipulative and abusive market practices), the administration of Governor Pete Wilson (which had overseen the passage of the deregulation legislation) and Enron (for engaging in criminal business practices).

Transboundary Coordination and Crisis Internationalization

It was clear from the outset that a solution to the California energy crisis would require the cooperative efforts of entities across jurisdictional boundaries, and that this would require a balancing of diverse and sometimes conflicting agendas. Given the adversarial framing of the crisis, it was extremely difficult to envision how to achieve such a coordination of efforts, and indeed, it can be argued that it was not achieved in any satisfactory way. There was no centralized entity for coordination, in part because the conflict lay in a struggle for power between the federal and state governments that is as old as the country itself. Davis attempted to assert some control by declaring a state of emergency in California, and by bringing the message of federal culpability for the crisis to the public forum often and loudly in the months following the critical days in January 2001. The FERC did eventually institute some weak price controls on energy wholesalers, but also engaged in a counterattack against Davis, emphasizing the existent criticisms that he had done too little too late.

Sequencing and Synchronicity

During the first months of the electricity crisis, Davis promulgated a very definitive position that he would not allow an increase in consumer prices in response to the crisis. Despite this position, it can be argued that during this period, Davis was also engaged in highly *provisional* decision-making. The majority of the decisions that he made during the months between June and January involved efforts to gather information, to advocate (not require) conservation and other cost-saving behaviors in the state, and to seek remedy from external entities (primarily the FERC) in the form of controls on electricity wholesalers, a highly unlikely scenario from the outset. This lack of decisive action has led many to characterize Davis' behavior as 'inaction'.

These provisional actions proved ineffective in altering the trajectory of the evolving crisis. They also provoked consistently negative political feedback from a variety of sources. The public and the business community in California, which represented the primary victims of the crisis, were dissatisfied with the ongoing instability of the energy situation in the state. The media began to criticize the Governor for inaction, and the utility companies expressed frustration at the refusal of the Governor's office to acknowledge and attempt to head off the impending catastrophe. The FERC offered some weak interventions, but they were insufficient and tendered too late. In addition, Davis received negative situational feedback as the energy situation continued to deteriorate despite his actions,. During the early months of the unfolding crisis, Davis remained fairly closed to this feedback, and demonstrated a commitment to a consistent approach to the resolution of the crisis, heedless of the indications of its ineffectiveness.

Ultimately, the consistently negative feedback to these provisional actions, and the progressively deteriorating situation reflected in the sequence of events, required Davis to adopt a radically different approach to the problem: the declaration of a state of emergency and the exercise of gubernatorial authority in making emergency decisions. This represented a shift to *decisive action*, and involved a decision-making process and outcomes that had been rejected or disallowed in previous phases of the incident. As was noted in the evaluation of leadership style, the shift that is in evidence here is quite extreme, and it is not clear that either approach was employed effectively.

The issue of *synchronicity* was certainly important in the California energy crisis by virtue of the fact that energy considerations are fundamental to almost every aspect of the economic, social and political components of a political entity – in this specific case, the State of California. Thus, the energy shortages in the early phase of the crisis, as well as the debt caused by the contractual provisions negotiated by Davis following the declaration of the state of emergency, had profound impacts on the economy of the state. The poor economy affected all of the citizens and the business community, but was particularly difficult for vulnerable populations. In the long-term, fundamental social institutions, such as the educational system, have suffered severe repercussions. As the impacts of the crisis arose on many fronts, Davis was pressed to respond to the challenges they presented. Politically, the crisis occurred during a highly contested Presidential election in which the Democratic Party lost the White House. Davis, who many felt was being groomed for a future Presidential candidacy, was heavily involved in this election cycle. Finally, conflicting values also contributed to issues of

synchronicity, as Davis was required to weigh short- and long-term interests in his decision making.

Culture

Grid-Group cultural theory as presented by Thompson, *et. al.,* proposes a framework of four typologies for understanding the cultural influences at work within an organization, providing insight into decision-making behaviors exhibited by that organization. In the case of the decision to declare a state emergency, the *hierarchical* approach to decision making was employed. This paradigm presupposes the existence of well-defined rules and procedures, which did exist within the constitutional structure of the State of California. Governor Davis appropriated decision-making authority, and proceeded to undertake a series of decisive actions that subsequently fell within his purview. Davis' approach to the crisis before the declaration also seems to suggest that he operated within a paradigm of hierarchical culture. His reliance on conventional avenues for resolving the crisis (appealing to the FERC for controls on wholesalers) and his oft-noted lack of engagement in creative problem solving imply a reliance on clear authoritative structures and processes.

Within the paradigm of culpability that Davis promoted as the crisis progressed, behavior can also be identified that is consistent with a hierarchical culture. In such a culture, blame is assigned to individuals or institutions that do not follow established procedures. Throughout the crisis, but especially during the period following the declaration of emergency, Davis emphasized the lack of collaborative effort from the FERC and its unwillingness to do its job by enforcing fair pricing in the electricity market.

Lessons Learned

The electricity crisis in California was the most serious energy-related crisis that the state or the nation had experienced. As an unprecedented event, the state had little experience on which to rely in crafting a response. A number of critical lessons were identified following the incident.

1. *Deregulation is a complex process that was inherently flawed in California, which did not realistically acknowledge and plan for the vulnerability to market manipulation that would be such a destructive force.*
2. *State and federal regulatory agencies need to coordinate their efforts to achieve the shared goal of protecting consumers, not to support political agendas.*
3. *Management of energy systems requires a quick, responsive and flexible approach.*
4. *State assets supporting its energy system must be maintained and upgraded in response to demand.*
5. *Public confidence can be built and maintained by systematic interaction with the citizenry, even when complex issues are involved.*
6. *The media plays a critical role in the rapid dissemination of information to the public, and will fill a void of framing if the decision units do not promote an interpretation of the events at hand.*

Although it had been predicted in theory, the reality of the situation seemed to take many by surprise, and California continues to suffer economically from the lingering impacts of the energy crisis. Many would argue that even today, California has not institutionalized lessons from the 2000-2001 crisis. As a result, the state remains highly vulnerable to energy-related crises due to the fragility of the physical and policy infrastructure of the system.

Aftermath

A number of consequences continue to plague the State of California in the aftermath of the electricity crisis of 2000-2001. The long-term energy contracts that were negotiated in February 2001 by Davis in his desperate attempt to ensure an adequate supply of electricity for the state had extremely unfavorable terms for California. Consequently, these contracts have saddled California with debt and financial instability that threaten fundamental social programs and institutions, such as higher education.

The crisis is also widely cited as having cost Davis his political career. On October 7, 2003, Governor Gray Davis was recalled, the first time a Governor had been recalled in the history of California, and only the second time in the history of the United States. While the recall campaign was framed from a variety of perspectives (concerns over immigration policy, Republican opportunism), the most damning criticism of Davis' tenure was the massive deficit with which California continues to contend, a direct legacy of the 2000-2001 energy crisis.

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1982 - The Tylenol Product Tampering Crisis[11]

I. Introduction

Description and Significance of Case

The subject of this case study is the 1982 product tampering case involving the deliberate contamination of Extra-Strength Tylenol capsules with lethal amounts of potassium cyanide, which resulted in the deaths of seven people. On September 29 of that year, 12-year old Mary Kellerman of Elk Grove, Illinois, died unexpectedly as a result of ingesting the contaminated product. Over the next forty-eight hours, six more individuals fell victim after taking the tainted painkiller. Johnson & Johnson, the parent company of the McNeil Consumer Products Company, which manufactures the Tylenol product line, was suddenly faced with finding a response to this unprecedented crisis that would meet the two goals of protecting the public welfare, and avoiding serious long-term repercussions for the company.

This case is significant for several reasons. Most immediately, the widespread popularity of Tylenol as a pain relief product meant that the situation represented a significant potential threat to the health of the public, possibly on a national scale. At the time of the incidents, an estimated 31 million bottles of the product were in circulation, many of these in hospitals and medical facilities. As no direct threats or prior notice of the attacks had been received, there was no way to determine whether they were limited to the Chicago area or were also directed to other areas of the country. There was concern about international incidents of contamination as well. The case is also important because it offers an iconic example of the response of a high-profile company faced with a dilemma in its decision making in a crisis situation. The most extreme response, the nation-wide recall of Tylenol products, while offering the most efficient means of ensuring public safety, also held the potential of doing irreparable financial damage to the Johnson & Johnson company. Ultimately, the decision to implement the recall worked to the company's advantage, allowing it to claim a moral high ground that set the stage for its financial recovery within a single year.

In these processes of response and recovery, the leadership of Johnson & Johnson made remarkable use of a number of strategies involving the press in its communication with the public. This enabled them to accomplish a number of complex goals, including communicating the danger to the public, implementing the recall, safeguarding (indeed, perhaps enhancing) the reputation of the company, and engineering the recovery of not only the Johnson & Johnson company, but of the Tylenol brand as well.

Finally, the case raised awareness of the vulnerability of the public to product tampering. As a result, the FDA established more stringent regulations to avoid product tampering, including the use of tamper-resistant packaging for over-the-counter (OTC) products. Congress passed the Federal Anti-Tampering Act (FATA) in 1973, expanding the criminalization of product tampering. In addition, drug companies have modified the form of OTC drugs, moving away from easily tainted capsules to less vulnerable forms.

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[11] Portions of this chapter were originally research and written by Chris DeMure. Additional research, editing, and writing was conducted by the editors.

While there were numerous important actors associated with this case, including officials from the Food and Drug Administration (FDA), the Federal Bureau of Investigation (FBI), and local law enforcement officials, this case will be examined from the point of view of the Johnson & Johnson company, whose various decision units made the critical decisions during the crisis. The case study encompasses a temporal period beginning on September 29, 1982, when the first death attributable to the tainted Tylenol occurred, and ending on October 24, when Johnson & Johnson launched a campaign to salvage the Tylenol brand. Within approximately a year, Tylenol had recovered its position as the leading OTC pain relief medication.

The nature of the situation (a response to a man-made crisis) and the issues involved in the case fulfill the three requirements that Eric Stern suggests are necessary for a situation to be considered a crisis (Stern, 2002.) The situation *posed a threat to a number of basic values*. The health and welfare of the public was at risk as a result of the contamination of a widely consumed product. The situation also threatened the future of Johnson & Johnson, which is an important producer of health-related products, and an important employer and member of the community of health-care companies. Finally, the impact of the response by Johnson & Johnson on the potential for similar attacks in the future constituted a serious concern. The second requirement of *urgency* was also clearly met. Seven people died within a short period of time, and there was no information regarding the extent of the tampering. The company was required to respond quickly in order to avoid any further deaths. Finally, *a high level of uncertainty* was present throughout the period of the crisis. Johnson & Johnson had received no threats warning that the attack was to take place, or the extent to which it would occur. Indeed, the company could not even know whether it was only the Tylenol brand that had been contaminated. In addition, it was unclear how the public would respond in the face of such a crisis.

Context of the Case

Tylenol is Johnson & Johnson's brand name for acetaminophen, a pain reliever similar to aspirin, which is used to treat a number of common conditions (colds, fever, arthritis, headaches, muscle aches, back pain, etc.) without the stomach irritation that is often a side effect of aspirin. Tylenol was developed by McNeil Laboratories in 1950, and was sold exclusively as a prescription drug until 1975. During this period, the drug was marketed to doctors and hospitals, where it became widely employed for pain relief.

McNeil Laboratories was acquired by Johnson & Johnson in 1959, split into two companies (McNeil Pharmaceutical and McNeil Consumer and Specialty Pharmaceuticals) with the latter maintaining control over the Tylenol brand. In 1975, Tylenol entered the OTC drug market, and soon accounted for approximately 90 percent of all acetaminophen sales. This was strongly influenced by the marketing campaign stating that "Hospitals trust Tylenol," and a distribution policy that offered the product to hospitals at consistently lower prices than competing brands, effectively cornering that market. By 1979, Tylenol had achieved a 25 percent market share of the entire analgesic market, 70 percent of this being held by the specific member of the Tylenol product line called Extra-Strength Tylenol.

The financial importance of Tylenol was also impressive. Before the tampering incident occurred, Tylenol was the most widely known and successfully OTC medicine in the country. Sales of the Tylenol product line accounted for nearly 20 percent of Johnson & Johnson's corporate profits in 1982. Had Tylenol been a corporate entity itself, its profit levels would have placed it in the top half of Fortune 500 companies in the early 1980s. (Berge, 1990)
The Johnson & Johnson company, while certainly benefiting from the popularity of the Tylenol brand, has also been known for its ethical approach to business. This is exemplified in the Johnson & Johnson credo, written in the mid-1940s by Robert Wood Johnson, in which he propounded a philosophy of responsibility that has served as a guiding principle in decision making within the company, most especially during the 1982 crisis situation. Johnson defines the responsibilities of business to go far beyond the profit motive that drives much decision making. These include: 1) the responsibility to meet the needs of consumers, both individuals and medical organizations; 2) the responsibility to provide high quality employment to their employees; and 3) the responsibility to participate as active members of the local and world communities of which they are a part (including investment in these communities, care of the environment, etc.) In addition, responsibility to stockholders is included, but the goal is to enable them to realize a 'fair return' (as opposed to the 'greatest possible return') without jeopardizing the commitment to research.

The regulatory history of OTC drugs is also important to this case. The Food and Drug Administration, established in 1930 as a part of the Department of Health and Human Services, has played a critical role in ensuring that consumer products, including drugs, are safe for consumption. Beginning in the early 1900s, a series of legislative acts were passed that were directed at the oversight of the drug industry, including regulating the content of drugs, empowering the FDA to undertake inspections and seek injunctions against violators of laws governing drug production, and distinguishing between prescription and OTC drugs. Certainly there had been instances of drug-related deaths before 1982. However, this was the first situation in which intentional tampering with a product had resulted in fatalities. The FDA would play a critical role in exonerating Johnson & Johnson's manufacturing facilities and procedures as the culprit in the tragedy. The incident led to the creation of even more stringent controls on OTC drugs and their packaging, as well as expanded legal powers for the FDA.

II. CHRONOLOGY

September 29, 1982

Early morning Elk Grove Village, Illinois: 12-year-old Mary Kellerman dies after ingesting Extra-Strength Tylenol contaminated with potassium cyanide.

Arlington Heights, Illinois: Adam and Stanley Janus die under similar circumstances.

First responders realize the Tylenol connection between the deaths. They retrieve the bottles of Tylenol from the victims' homes and deliver them to the Cook County Medical Examiner, Dr. Michael Schaffer.

Afternoon An investigation is initiated by the Cook County Medical Examiner.

September 30, 1982

Two additional deaths associated with Extra-Strength Tylenol are confirmed.

Dr. Schaffer inspects capsules and confirms that they contained cyanide.

Afternoon. Food and Drug Administration (FDA) and Johnson & Johnson officials are notified of the poisonings.

Officials hold a press conference to inform the public of findings.

CEO James Burke establishes an Emergency Strategy Group (ESG), to evaluate the developing situation. Members included executive leadership and senior public relations personnel.

The first decision by the ESG is to recall an estimated 4.7 million capsules in 93,000 bottles of lot number MC 2880, which had been distributed to 34 states.

Teams of Johnson & Johnson officials are sent to Elk Grove Village, Illinois, to cooperate with law enforcement, and to Fort Washington, Pa., in order to spearhead plant inspection operations.

Evening. Johnson and Johnson spokesperson Robert Andrews conducts an interview with the media and issues a statement that Johnson & Johnson had "launched an investigation to track down the capsules."

All television advertising for Tylenol is suspended.

October 1, 1982

Two additional individuals die of cyanide poisoning from ingesting Tylenol, bringing the death toll to 7.

All McNeil manufacturing and distribution operations are temporarily closed.

Johnson & Johnson conducts an internal investigation of more than 100 distribution centers in the area.

More recalls are announced and 8.5 million capsules in 171,000 bottles in the Chicago area bearing the code 1910MD are removed from store shelves.

Johnson & Johnson Vice President Lawrence Foster states, "We believe the contamination occurred after it left the manufacturer. We believe it happened somewhere in the distribution or at the point of sale."

Johnson & Johnson posts a $100,000 reward for information leading to the arrest and conviction of the person or persons responsible for tampering with the drug.

Johnson & Johnson establishes toll-free numbers with recorded information for the public. Included are instructions for delivering Extra-Strength Tylenol local police departments.

October 2, 1982.

Two bottles of cyanide-laced Extra-Strength Tylenol are discovered in an Osco Drugs in the Chicago area.

October 3, 1982

Kane County Police find several hundred Extra-Strength Tylenol capsules in a motel parking lot near Elgin, Illinois.

October 4, 1982

A Johnson & Johnson spokesperson announces that the company has stopped manufacturing and shipping of Tylenol capsules throughout the United States.

CEO Burke meets with FBI Director William Webster and FDA Director Arthur Hayes to discuss the possibility of a national recall

October 5, 1982

Strychnine-laced Tylenol is discovered in Oroville, California.

Johnson & Johnson announces the possibility of a nationwide recall of Tylenol capsules. In the meantime, they ask all U.S. retailers to discontinue selling Tylenol.

Johnson & Johnson Group Chairman Wayne Nelson asserts his belief in deliberate sabotage of the company.

October 6, 1982

Nationwide recall of 31 million bottles of Extra- and Regular-Strength Tylenol is initiated.

A demand for $1 million dollars is received at Johnson & Johnson corporate headquarters. It is determined to be a hoax.

October 7, 1982

Johnson & Johnson announces that it will destroy all Tylenol capsules from a nationwide recall.

An internal task force is established to design an "image rescue project."

October 8, 1982

Johnson & Johnson announces a plan to exchange Tylenol capsules for tablets.

October 11, 1982

Visine eye drops contaminated with hydrochloric acid found in Colorado. This represents the first 'copy-cat' incident.

October 8-24, 1982

Johnson & Johnson begins an intensive advertising media campaign urging consumers "to continue to trust Tylenol" and to inform the public about tamper-resistant containers.

In order to motivate consumers, Johnson & Johnson offers a $2.50 coupon on the purchase of their products through several media.

Over 2,300 sales people make presentations to the medical community to restore confidence in the Tylenol product line.

III. OCCASION FOR DECISION

September 29, 1982 – 12-year-old Mary Kellerman, the first victim of the contaminated Tylenol, dies in Elk Grove Village, Illinois, followed shortly by two additional fatalities. The Medical Examiner confirms that Tylenol capsules laced with potassium cyanide were the cause of death in all three incidents. What immediate steps should Johnson & Johnson take to respond?

The chronological record indicates that there were a significant number of critical occasions for decision during the course of the Tylenol crisis. In addition, there are examples of different types of decision units being involved in the decision-making process. For the purposes of this analysis, the occasion for decision chosen involves the immediate measures taken by Johnson & Johnson when the Tylenol link between the first three deaths was discovered. In the first forty-eight hours following the initial deaths, the source of the contamination was an unknown variable, as was the extent to which contaminated capsules had been distributed. One of the first and most critical decisions made during this period focused on the issue of the possible recall of the product, and the extent to which such a measure should be implemented. This decision unfolded between the evening of September 30 and the afternoon of October 1.

Decision Unit

The decision-making behavior of CEO James Burke as a *predominant leader* with respect to many of these occasions is recognized and often analyzed. However, in the immediate period following the first set of deaths, the decision unit responsible for making these initial decisions was the *single group* consisting of the members of the Emergency Strategy Group (ESG). The ESG was convened by Burke within hours of the determination that cyanide-laced Tylenol was

responsible for the three deaths on September 30. The identification of this single group as the critical decision unit is confirmed by an analysis based on the decision tree presented by Hermann and Hermann. In responding to the questions posed in this theoretical construct, it is clear that: 1) the problem, as defined, fell within the domain of an issue area for which the structure created within the Johnson & Johnson company was the dominant policy group (perhaps not because it had the only claim to appropriate expertise, but rather because of the novelty of the situation and the speed with which the company chose to take the matter in hand, essentially precluding the intervention of other agencies, such as the FDA or FBI); 2) everyone within the company who was essential for coping with the immediate problem (including Burke, his top executives, and public relations personnel) was a member of the group, and decisions could not be readily altered by outside opposition (in this case, the fact that Johnson & Johnson chose to take even more stringent positions than other organizations advocated influenced this factor); and 3) solutions to the problems faced by Johnson & Johnson were implemented without the approval of external entities. The immediate challenges for the ESG were to find responses that would minimize the threat to consumers, to seek information to determine the facts of the crisis, to communicate with the public in order to avoid panic, and to preserve the reputation and future of the company.

Policy Decision

Certainly the experience of contaminated drugs, foods and other products had occurred in the past. Indeed, the existence of the FDA and the regulatory and legal remedies available to this agency were a response to such incidents. However, the majority of these situations involved accidents or negligence on the part of producers. The intentional and malicious contamination of an OTC drug by a third party was an unprecedented event. Thus, the initial assumption held by the media and the public was that the poisonings were the result of carelessness by Johnson & Johnson and McNeil Consumer Products.

On September 30, shortly after the company was made aware of the deaths, CEO James Burke established an 'Emergency Strategy Group', which met twice daily throughout the crisis. The role of this group was to monitor the unfolding situation and to develop appropriate responses. The group was led by Burke, and consisted of the corporation's most senior executives, public relations personnel, security experts, and other key individuals. This crisis team was responsible for all strategies and tactics, as well as for communications with the media and the public. The first decision that was made by the ESG was the recall of all Tylenol capsules within the Chicago area. These were tested and two additional contaminated capsules were found.

Several other important strategies implemented by the team were related to this decision. First, the manufacture of all Tylenol products was halted. Second, the ESG engaged openly with the media, creating a rapport of trust, and ultimately an ally among this interest group – a critical factor in the recovery of the Tylenol brand. The third was the commitment to engage fully in the investigative process. Within hours of the start of the crisis, the ESG had dispatched various teams by corporate jets to critical locations: to the facilities of the local law enforcement agencies investigating the deaths in Chicago (in order to cooperate with the investigations), and

to the manufacturing sites of the contaminated bottles in Fort Washington, Pennsylvania, (in order to undertake full inspections of these facilities).

At this point in the crisis, the two goals of the ESG were to warn the public and to determine how the cyanide had been introduced into the capsules. The unlikelihood of this being an accident or result of negligence was quickly established, yet the perpetrator of the poisonings was never identified. The company was later exonerated with respect to responsibility for the contamination. However, the team was making decisions with little information in these early hours, and had to consider the possibility that the criminal was an employee. Ultimately, despite heated discussion airing all of the possible impacts of taking Tylenol off the shelves, the decision to implement a recall was made by consensus.

Although consumers are currently accustomed to receiving recall notices as a result of quality issues among a wide variety of products, a product recall was a novel strategy at the time of this initial decision. As such, it received much attention, especially when the national recall was initiated a few days later. The willingness of the company to endure the financial loss in order to safeguard the consumer did much to bolster Johnson & Johnson's reputation. These recall decisions had a significant financial impact on the company in the short term. However, the recovery of not only Johnson & Johnson but the Tylenol brand name within a year is widely attributed to the recall decision made by the ESG (along with the second, national recall a few days later), in conjunction with the media strategies used to implement them.

Decision Dynamic

Decision making in the case of the Tylenol incident had the potential to be challenging as a result of a number of factors. First, although an 'emergency contact list' existed among the top leadership of Johnson & Johnson, designed to be utilized in the case of a crisis situation, the company had no real contingency plan in place. It had never had any experience of implementing a decision-making mechanism in the face of a serious situation. Burke's quick decision to take control of the situation essentially concentrated authority in the hands of his *ad hoc* Emergency Strategy Group (ESG), relegating other institutions with some claim to decision-making authority (the FDA, the FBI) to the role of advisory entities. Thus, despite the potential limitations that could have resulted from a lack of preconceived emergency decision-making structures, these were rendered essentially non-existent by the authoritative actions of CEO Burke. Despite this fact, however, the leadership of Johnson & Johnson maintained excellent channels of communication, cooperation and coordination with these agencies.

The second factor that rendered decision making more complex during the Tylenol incident was the lack of information available to decision makers regarding the source of the poisoning and the extent to which it had been disseminated. Thus, the ESG and later Burke were forced to make decisions that were widespread and had great impact on the company in order to ensure the safety of the public.

An interesting factor that also governed decision making was the existence of a highly visible corporate culture of ethical conduct. Johnson & Johnson's corporate credo has always

been at the heart of the business's culture and identity. The one-page document was written in the 1950s by Robert Wood Johnson, the son of the founder, and strongly influenced many of the key decisions throughout the crisis. Mounted on the wall in the entrance at the corporate headquarters, the credo prioritizes the obligations of the company. Johnson & Johnson's overarching responsibility is identified as the care of the customer, employees and communities in which the company operates. Shareholders are to expect fair (not maximal) returns, and profit-seeking is not mentioned. It is widely acknowledged that these principles are accepted and adhered to throughout the Johnson & Johnson community, and that violation of any of them is grounds for dismissal. Thus, such clear ethical values required the decision makers to place the safety of the public first, and to deal with the media, federal agencies and law enforcement honestly and forthrightly.

In the case of decision making by a single group, the key contingency or dynamic is associated with the manner in which the single group deals with internal conflict. In evaluating the methods employed for conflict resolution, two principle measures help to determine which of the three models are employed within the group. These measures are: 1) the level of identification (or loyalty) with the group among the individual members, and 2) the nature of the decision rules used by the group. *It is important to note that, in the case under consideration, the impact of the crisis was still understood by the ESG to be relatively localized. Once the decision options entailed nationwide and company-wide consequences, a different decision unit (a predominant leader) and, thus, different decision dynamics governed the process*. The Johnson & Johnson company prided itself on employee loyalty as a critical element of its image and culture. The prioritization of employee welfare, included in the company credo, was a fundamental factor in the creation of this culture. The resultant high level of individual identification with the company mission and with colleagues was reportedly no exception within the ESG. Members of this decision unit later reported that frank discussion and dissent were fundamental elements of the conversations surrounding critical choices, but that ultimately, these decisions were made by consensus.

Consensus building seems to have been the predominant goal in the decision process within the ESG, implying the goal of a *unanimity model* of decision rules. While such unanimity was not always possible in the day-to-day running of the company, this was reportedly the preferred approach when faced with a crisis in which the stakes were high. Another source of 'decision rules' also had its provenance in the company credo. The clear priority structure represented in this ethical construct played a critical role in clarifying company priorities in the face of value conflicts. In this sense, the credo could be identified as a set of 'decision rules' that were accepted and employed by the company leadership to guide decision making in the absence of any alternative precedent in such crisis circumstances.

Structurally, the high level of group identity and cohesion, and the pervasive influence of this philosophical approach to decision making would suggest that the critical dynamic within the ESG was what Janis (1972) identified as *groupthink*. However, the rather limited perspectives and subjective justification behaviors that are implied by some of the more negative 'symptoms' of this dynamic were not apparent in reports of the conduct of the ESG. Rather, the *unanimity model resulting in integrative solutions* as a result of high group cohesion is a more appropriate model.

IV. THEMATIC ANALYSIS

Definition of the Situation and Framing

The link between the three deaths on September 29, and the potential contamination of Extra-Strength Tylenol was first proposed by two firefighters from Elk Grove Village who had learned details of the fatalities. Noting the common factor – Tylenol ingestion – connecting the three incidents, these firefighters retrieved the bottles of Tylenol from the victims' residences, and delivered them to the Medical Examiner's office. At the same time, medical personnel at the hospital that received the three victims also noted similarities that raised suspicions. After confirming the presence of potassium cyanide in the blood of the victims, physicians also contacted the Medical Examiner's office. It was the Cook County Medical Examiner, Dr. Michael Schaffer, who consolidated the various pieces of information and on the morning of September 30 held a press conference explaining that cyanide-laced Tylenol was the cause of death. The serious implications of the widespread use of the product in homes and medical facilities were immediately evident. The announcement created a sense of urgency due to the fear that other containers of contaminated product were still a risk to the population.

The media was critical in framing the initial situation. Following the press conference by the medical examiner, the story was reported in the local Chicago area, but was quickly picked up by the major national news media. All three of the major television networks (CBS, NBS, ABC), as well as most of the major print media organizations, including the *New York Times*, *The Washington Post*, *Time Magazine* and *Newsweek*, put the Tylenol-related deaths at the top of their news stories on September 30. The totality of the coverage of this story was staggering – it is estimated that in the first week, more than 80,000 separate stories were reported by the various media, and that that more than 90 percent of Americans were informed of the crisis. Indeed, it is interesting to note that Johnson & Johnson management was initially informed of the situation through the media, the result of a phone call from the *Chicago Sun* to the company's public relations department, requesting background information on the drug.

This initial framing by the media was damaging to Johnson & Johnson. Based on historical experience of negligence by manufacturers (including a very recent incident of contaminated Perrier), the news media framed the incident as the result of negligence on the part of Johnson & Johnson and McNeil Consumer Products. In the first 48 hours of the crisis, the possibility of deliberate sabotage was not even raised in the media, and was only beginning to surface as a potential explanation among the Johnson & Johnson leadership. The initial framing for the crisis certainly jeopardized the financial health and reputation of the company, and the future of the Tylenol product line. As has been noted, the effects of this initial framing also had impact on consumers. While their understanding of the details of the situation was clearly flawed in these early hours, the urgency of the situation was widely conveyed, which may well have prevented other fatalities.

As more details of the crisis emerged, this initial framing changed significantly. As the result of the historically positive relationship with the media, and the deliberate decision on the

part of the ESG to adopt an honest and transparent approach in interactions with the media during the crisis, Johnson & Johnson was able to re-frame the crisis. On October 1, Johnson & Johnson Vice President Lawrence Foster released a press statement proposing the new theory that the product had been tampered with after distribution. This hypothesis was seemingly confirmed by the findings released following the internal investigation of McNeil manufacturing facilities, which uncovered no evidence that contamination had occurred during manufacturing or packaging. Johnson & Johnson's other actions also supported a re-framing of the crisis. These actions included the hiring of a private investigator, the offering of a large reward for information about the perpetrator, the nationwide recall of Tylenol, and the extensive interaction with the press emphasizing the interpretation of the incident as an act of sabotage against the corporation and the everyday consumer. Ultimately, Johnson & Johnson was viewed by the public as the victim of a malicious crime that threatened the safety of the nation's food and medicine supply.

Preparedness for Dealing with the Crisis

As the first documented case of fatalities caused by random but deliberate product tampering, the 1982 Tylenol crisis was unprecedented. Thus it was clearly unexpected, and indeed was characterized as 'unthinkable' at the time. Although the initial framing of the problem was based on the incorrect assumption that the fault lay with Johnson & Johnson, the true nature of the attack was quickly assessed and accepted, and the strategies to cope with the problem were altered to reflect this new understanding.

Like other large corporations, Johnson & Johnson's organizational infrastructure included a robust public relations force and a well-defined hierarchy of key decision makers. However, besides an emergency call list and plans in the case of a plant fire, no standard operating procedures for a crisis of the nature represented by the contamination incident existed. Several sources suggest that this was not an uncommon situation for large companies at this time. The lack of a pre-determined mechanism for dealing with the crisis did not prevent decision makers from defusing the situation in this case. Johnson & Johnson leadership attributes its ability to respond to the crisis to the existence of a company philosophy, expressed in its oft-cited credo, which clearly establishes the responsibilities and priorities of the company. This ideological framework was no empty symbolic statement – rather its principles were widely embraced by company executives and employees. It prioritized the wellbeing of consumers and community, and its clear principles enabled decision makers to make fairly rapid decisions and to resolve many dilemmas involving value conflicts. Years later, the former Johnson & Johnson CEO, James Burke, argued at the Harvard Business School that companies who follow an ethical charter are more able to swiftly navigate crises, especially highly unexpected events such as the Tylenol incident.

Value Complexity

The 1982 Tylenol product tampering incident involved conflicts between a number of short- and long-term values for Johnson & Johnson. The situation was a clear and urgent threat to the health and safety of the general population. This threat dictated that the proper response to the situation was the most extreme necessary to eliminate the risk – in this case, the recall of all

Tylenol products. However, such action would potentially jeopardize not only the Tylenol brand, but the reputation and future of the Johnson & Johnson company as well. The extensive distribution of the product meant that such a recall action would involve millions of bottles of Tylenol, with an estimated retail value of over $125 million. The decision involved yet another layer of complexity. It must be noted that the FDA and the FBI were reticent about the instigation of a recall, fearing that such an action might be interpreted by the perpetrator as a "success" and encouraging further attacks of this nature. Thus, there was some valid concern that the decision to recall the Tylenol would lead to an increase in the threat to the public.

With respect to its strategy for dealing with the press, interesting value conflicts can also be identified. In the first forty-eight hours following the death of the first victim, there was no clear explanation or identified source for the contamination. It was widely assumed that negligence on the part of the manufacturer was to blame. Yet, even at this early stage, the ESG decided to share information with the press in a candid way and to make its decision makers available to the media. This approach seemed to the leaders of Johnson & Johnson to be a natural corollary of the guiding credo, thus fulfilling the ethical values embraced by the company. It was assumed that such honesty would win the support of the press, although such a frank approach had the potential of causing harm to the company as well, risking the exposure of any discoveries of wrongdoing on the part of Johnson & Johnson to the scrutiny of the press.

Leadership

The Tylenol tampering incident illustrates an interesting pattern of leadership that is often referred to as the *concentration of authority*. This leadership phenomenon is often observed to occur in cases in which the implications of the crisis and the response become more extreme as the details of the situation are clarified. In the first forty-eight hours of the Tylenol crisis, as the death toll rapidly climbed from one to seven, and as the theory attributing the incident to malicious tampering was just beginning to evolve, the impact of the crisis was assumed to be limited in scope. Under these circumstances, the CEO established an Emergency Strategy Group composed of the top leadership in the company, and, with himself as the head, invested the group with the responsibility and authority to explore and implement solutions. However, as the potential magnitude of the tampering became apparent, it also became clear that the company might have to engage in strategies that could threaten its existence and possibly cause the end of the Tylenol brand. Burke sought the opinions not only of his top leadership, but also of external experts, such as officials of the FDA and the FBI. However, when the crisis reached this point, he asserted himself as the decision unit in the role of a predominant leader. Burke was uncompromisingly committed to the values embodied in the credo, and his actions ensured that, regardless of the consequences, the commitment to the public would be the primary consideration in the decision-making process. Burke was also widely acknowledged as a keen strategist, who easily grasped the short- and long-term implications of his decisions. The difficult decisions that he made in instituting a national recall of the Tylenol brand are widely attributed to the ultimate recovery of the company.

Information Management

Search for Additional Information

During the first hours of the Tylenol crisis, Johnson & Johnson leadership was faced with an unanticipated crisis that posed a potential direct threat to the public at a national level. The most immediate response by the ESG was to 'do something now', as illustrated by the fact that the first decision it made was to recall all Tylenol with the same lot number as the those containing the lethal capsules. In the same meeting, decisions were also made to temporarily close facilities producing Tylenol products, to conduct internal investigations, to terminate all Tylenol advertising, and to implement a coordinated approach to media relations. Swift and decisive measures were characteristic of decision making throughout the crisis.

However, despite this tendency to respond with action, the ESG also put significant resources into information gathering that occurred simultaneously with the action-oriented behaviors. The ESG immediately sent a team to work closely with law enforcement officials to assist in determining the source and perpetrator of the contamination. Other teams were sent to carry out internal investigations into the manufacturing facilities of the McNeil subsidiary. In addition, the ESG authorized the establishment of toll-free information numbers for consumers, and the offer of a reward for information related to the tampering. CEO James Burke, as head of the ESG, was engaged in intensive consultations with the FDA and FBI throughout the crisis. Another interesting, though subtle, point is the willingness of the ESG to field questions from the press to which they did not have answers, with the promise and consistent follow-through of finding the information. Johnson & Johnson's willingness to work with outside actors ultimately assisted them in mitigating the crisis and reestablishing its name as a trusted company.

Interaction with Media

Johnson & Johnson's successful interaction with the media and public is widely acknowledged to be a critical factor in its survival of the Tylenol crisis. During the initial crisis period (prior to the national recall) the frank dealings with the media led to the reframing of the situation and the exoneration of the company. Johnson & Johnson leadership understood that the press played an important role in disseminating critical information to the public, and it made use of this resource. The alliance built between the company and the press through cooperative and transparent communication also set the stage for media support during the yearlong effort by Johnson & Johnson to recover financially from the incident.

Johnson & Johnson worked with nearly all media outlets by a variety of mechanisms including press conferences, telephone interviews, and personal contacts. As reporters called with questions, the company kept a list of the names and media companies, and made it a point to return calls as quickly as possible. Many months after the crisis, Johnson and Johnson held a national press conference in order to unveil their new packaging design. Reporters who raised questions, even difficult ones, during the preceding months were the first to be invited. The public relations department within the company was experienced and staffed with talented individuals who managed these interactions, but very quickly in the process, the CEO undertook to handle many of these communications personally. Burke added to the company's positive media exposure by making appearances on both *60 Minutes* and *The Donahue Show*, where he demonstrated skill in delivering Johnson & Johnson's message of responsibility to the consumer and the community, and conveyed his sincere commitment to ethical business practices.

Interaction with the Affected Stakeholders

The ESG was obligated to take into consideration the responses of a number of important stakeholders in the process of decision making within the context of the Tylenol crisis. Among these was the public, whose most pressing interest was to be informed about the unfolding details in order to ensure their safety. Later, this same public represented the audience that had to be convinced that the Tylenol brand was safe and responsive to their interests as a tested and effective pain reliever. Johnson & Johnson leadership made masterful use of the media to deliver key messages throughout the crisis, and then to employ strategies to regain the public trust. The decisive action taken to recall the product, despite the serious financial consequences of this course of action, was also critical in responding to the interests of the public. These same actions were more complicated with respect to other stakeholders, most critically the employees and the stockholders. The financial impact on the company, first of the report of the deaths attributed to Tylenol, and then later of the national recall, rendered the future of the company uncertain. The ESG undertook to communicate personally with every employee from the very beginning of the crisis, and employees were engaged in the product recovery program that unfolded in the months following the recall. For example, 2,300 Johnson & Johnson employees delivered presentations to hospitals around the country encouraging their continued trust in the Tylenol product. Shareholders, who were certainly aware of the credo governing the conduct of the company, were also reassured by the consistency of the message and the action, ultimately suffering only briefly until the recovery of the Tylenol product.

Politico-Bureaucratic Cooperation and Conflict

The framing of the crisis evolved significantly during the first forty-eight hours. As the details around the circumstances were uncovered and strongly suggested that the contamination was the result of a malicious act, all of the stakeholders accepted this interpretation. The predominant nature of the decision-making process was one of cooperation and solidarity during the crisis. This attitude among the decision makers and stakeholders was the result of a number of influential factors. The urgency of the situation and the serious risk to both consumers and to the company created conditions that favored cooperation. The various decision units involved throughout the crisis, even when considered together, represented only a small number of individuals. CEO James Burke, the seven members of the Johnson & Johnson ESG, and only the top officials from the FDA and the FBI were essential participants in the decision-making process. This limited number of participants also facilitated cooperation. Finally, important decision-making dynamics at work within these decision units also created pressure for a cooperative approach. For example, the existence of widely shared philosophical perspectives on the appropriate priorities and behaviors of the company (embodied in the company credo) created some level of the *groupthink* phenomenon. The *rally around the flag effect* was also in evidence as a result of the urgency of the crisis situation and the need to consolidate the response to avoid further fatalities. The third important dynamic, *leader attentiveness*, is also clearly at work in the conduct of CEO James Burke, who made many of the most difficult decisions as the predominant leader, and who personally became the "face of Johnson & Johnson" in the media over the course of the recovery of the Tylenol brand.

Transboundary Coordination and Crisis Internationalization

The recalls (both local and national) of the Tylenol products required extensive coordination among the Johnson & Johnson company, government, media, medical facilities and law enforcement entities across the country. All of these entities shared the common interest of protecting the public from harm and preventing further fatalities. Clearly, no system of organization or coordination had been planned in advance for response to such an extensive emergency. Post-crisis analyses suggest that the recalls ran smoothly and were successful endeavors. Decisive action on the part of Johnson & Johnson and effective communications and information dissemination through the mechanism of the media are widely acknowledged as the critical factors in this coordination effort across innumerable jurisdictions. The crisis was primarily domestic, although warnings were issued in other countries where Tylenol was sold.

Sequencing and Synchronicity

In the early hours of the crisis incident, Johnson & Johnson's ESG made two critical decisions that represent interesting examples of managing feedback during a crisis situation. The first decision was a recall of all Tylenol products that shared the same lot number as the ones that had been contaminated. This initial recall affected a limited number of products from only seven states. The critical message conveyed to the public in this decision was the obvious priority that the company placed on the welfare of the consumer, even at the expense of its own profits. The second important decision, the intentional choice to establish a candid and honest relationship with the press, enhanced this same message. The feedback that was received as a result of these decisions was a complete reframing of the crisis, exonerating Johnson & Johnson of wrongdoing, praising the company for its conduct, and creating an alliance between the company and the press that would prove essential to the recovery of the Tylenol brand. As the decision units received and evaluated this very positive feedback, future decisions followed along the same path. These decisions were based on the belief among the decision makers that they were the best way to deal with the problems at hand, and, thus, they were definitive decisions. This is not to imply that the officials were in possession of all of the information surrounding the situation (indeed, the perpetrator of the tampering has never been identified), and the company engaged fully in information-gathering processes. However, there was a clear understanding that, regardless of the source of the tampering, the best way to ensure that no further fatalities occurred was to effectuate the recalls.

Issues of synchronicity were not apparent in this crisis. Key decision makers were not distracted by other events taking place simultaneously. However, it is interesting to note that the focus of the effort evolved quickly from a pubic safety response to a product rehabilitation project.

Culture

Grid-Group cultural theory as presented by Thompson, *et. al*., proposes a framework of four typologies for understanding the cultural influences at work within an organization, providing insight into decision-making behaviors exhibited by that organization. In the case of the first recall of the Tylenol product, a decision that emanated from the ESG, the 'egalitarian'

approach to decision making seemed to be highly influential. The ESG was a small group of high-ranking executives who made this (and other) decision through consensus. Statements made by members of the group indicated that frank and highly participatory discussions were the norm in the twice-daily meetings, and that dissenting opinions were encouraged. However, as the implications of the company response became more extreme, representing not merely a threat to consumers but quickly becoming a potential threat to the survival of Johnson & Johnson, the 'hierarchical' framework for decision making clearly became the predominant paradigm. In considering the strategy of implementing a national Tylenol recall, CEO Burke was sensitive to the opinions of his ESG team, as well as to the advice of the FDA and the FBI. The input from these various sources did not universally support the national recall that Burke ultimately chose to implement. Burke continued in this hierarchical decision-making role throughout the effort to rehabilitate the Tylenol brand, as this, too, was considered essential to the survival of the company.

Lessons Learned

The 1982 Tylenol tampering crisis was unprecedented in both its nature – a malicious act– and its national scope. Thus, there was little in the way of past experience that could offer guidance to Johnson & Johnson in its response. Nonetheless, the company did have a well-defined ethical tradition as part of its history that proved useful in decision making. The credo placing the well-being of consumers as the highest priority allowed the ESG to make quick and effective decisions in the early hours of the crisis.

The Johnson & Johnson response to the Tylenol contamination incident in 1982 has been widely studied with respect to decision making and leadership, and is generally acknowledged to offer a number of critical lessons to the conduct of business in general, and to the response to crisis in particular. These include:

1. *Decisions should serve the public interest, even if these entail short-term costs to the organization.*
2. *A responsive, open public relations policy, including (timely and truthful interaction with the media and the public, is critical to crisis management, minimizing the spread of misinformation and providing valuable information and guidance to the public.*
3. *A strong culture of ethical business conduct can be a critical factor in surviving crisis situations.*
4. *The establishment of public trust is essential to recovery from crisis.*

In addition to these abstract lessons, the concrete lessons that were learned by the company, as well as the industry and regulatory organizations, were that OTC drug products (and many other consumer goods) are vulnerable to tampering, and that regulatory powers needed to be strengthened. The result of these lessons was the enactment of more extended legal powers for the FDA and law enforcement in cases of intentional tampering, and the creation of tamper-proof containers and drug forms.

Aftermath of Situation

Six weeks after the crisis, Johnson & Johnson launched a recovery campaign for the rehabilitation of the Tylenol brand. The components of the plan included: 1) the reintroduction in November of the caplets in a triple-seal tamper-resistant packaging (making the company the first to comply with the new FDA regulations); 2) the nationally accessible offer of coupons to the public towards the purchase of Tylenol products; 3) the institution of a new pricing structure that offered significant discounts to retailers and hospitals; 4) the active engagement of almost 2,300 Johnson & Johnson employees to participate in a marketing campaign and in presentations to the medical community to generate support for the Tylenol brand. In less than a year after the start of the crisis, Tylenol had regained nearly 80 percent of the market share it held beforehand. The Tylenol crisis led to significant policy changes that impacted both the OTC drug industry and the prosecution of convicted product tampering offenders. On November 5, 1982, the FDA published strict new guidelines requiring drug manufacturers to package their products in tamper-resistant packaging. On October 13, 1983, Congress passed the Federal Anti-Tampering Act (FATA) that expanded current federal and state laws through the creation of a new category of crimes related to tampering with consumer products, violations of which carry significant criminal penalties.

Finally, the national recall of the Tylenol product, the first such product recall implemented nationally, began the evolution of a new consciousness on the part of the consumer regarding the responsibility of business with respect to the quality and safety of the products that are available on the market. Product recalls have become an expected response to concerns – or even suspected concerns – surrounding safety issues.

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APPENDIX 1

A Guide to Doing Comparative Case Studies
Maxwell Style

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Step 1: Selecting a Case

A. What Is a Case?

Cases are stories that focus on a particular event that is forcing policymakers to make decisions even if those choices include deciding not to act. The Dayton Accords, the Persian Gulf War, the European Union's decisions regarding Mad Cow disease, the downing of the U.S. plane on Hainan Island in China, the Mexican peso crisis or the so-called "Asian flu," the anthrax-tainted mailings in the United States, the embassy bombings in Kenya and Uganda are all incidents ripe for case studies. They have a plotline as well as a beginning, middle, and end; they are time bound and have generated enough analysis already that there is material to examine and people to interview concerning what happened. Generally case studies take one actor's point of view and explore what occurred within that political entity. For example, in exploring the Mexican peso crisis the case study would either focus on what was occurring within the Mexican economy and government or the decisions within the U.S. government to mediate the crisis. What is going on within the other country becomes part of the context and feedback affecting the policymakers' decisions in the case being described.

B. Cases Must Constitute a Crisis

The case that the analyst selects must involve a crisis situation. Crises are endemic to the world of politics and can emerge across any issue area (economic, military, political), may be of human origin (military attack, financial breakdown, etc.) or of natural origin (earthquake, health epidemic, etc.) and can last anywhere from several days to several months and beyond. Yet all crises have certain elements in common. Crises are most often visible and dramatic events that have the capacity to reshape the political landscape and test the cognitive, moral, and leadership capacities of decision makers. In addition, the successful management of crisis situations helps to establish political legitimacy, build public trust in political institutions, and cement faith in political leadership. In contrast, failure to successfully manage a crisis can result in political fragmentation, public discontent, and even regime change. Stern (1999) suggests that crises involve each of the following: (1) a threat to basic values, (2) urgency, and (3) uncertainty. Basic values include a country, organization, or individual's sense of the intrinsic principles or qualities that are necessary for that country, organization, or individual to exist. These might include, for instance, secure national borders, honesty in accounting practices, and individual autonomy. All crises also come with a sense of urgency; that is, a finite time in which decision makers are able to respond to the situation—a window of opportunity in which to act. Finally, crises are by nature uncertain. In crisis situations decision makers often have an incomplete understanding of the origin and risks of the crisis and an uncertain understanding of the impact that their actions will have on alleviating or exacerbating it. Each of these elements must come into play in the selected case.

C. Case Must Be Bounded in Time

It is important that the case be bounded in time so that both the amount of material and narrative to be developed become manageable. In the course of choosing cases, analysts are encouraged to select events that have an identifiable trigger or starting point as well as an explicit end. A U.S. plane seeking an emergency landing on Hainan Island in Chinese territory is such a trigger; the successful negotiation for the release of the plane (even if in pieces) becomes an end point. In events that cover fairly long periods of time, we urge those doing case studies to select a phase within the larger incident for their focus. For instance, several case studies are possible

concerning the Persian Gulf War including the invasion of Iraq into Kuwait, decisions on the part of U.S. policymakers regarding how to respond to the invasion, the building of the coalition against Iraq, the negotiations between the U.S. and Iraqi governments before the beginning of the bombing campaign, the war itself, and its aftermath. Each of these phases has a triggering incident and an end point. The previous phases set the context for the phase under study that, in turn, affects the phases that follow. Moreover, the phases as set forth above suggest that in the Persian Gulf War, we are dealing with a variety of different types of situations: invasion, negotiation, intervention, war. To facilitate comparison within and across different types of situations, we want to keep the various phases distinct.

D. Sufficient Information Must Be Available on Case

The final important consideration in selecting a case to study is that there is sufficient information available about the decision-making process in the course of dealing with the problem that an in-depth analysis of the case is possible. In the kind of writing of case studies that we are proposing here, the analyst is involved in "process tracing," in delving into the case to try and understand on a day by day, if not hour by hour, basis what is happening and why. Thus, it is important to have access to rather detailed information about what occurred from insiders' accounts (memoirs and biographies), journalistic and scholarly analyses, archival materials, reports of hearings (committees, commissions, inquiries, trials) regarding the incident, and intelligence/media monitoring of events (through online sources such as Lexus/Nexus, Foreign Broadcast Information Service Daily Report, BBC). Where feasible, such sources should be augmented with interviews of participants in the policymaking process. In the preparation of several case studies, Stern and Sundelius (2001) have organized what they call "witness symposia" that have brought together policymakers who participated in the decision-making process with scholars engaging in case analysis to reflect on what happened in a particular event. Such workshops have proven most beneficial when the case analysts had completed their study so that they, too, had in-depth knowledge about the event. Before considering writing about a prospective case, then, the analyst needs to check on the availability of these various types of information; without such data, case analysis becomes limited, frustrating, and of little worth.

Step 2: Setting the Stage

A. Introduce the Case

Once a case is chosen for study, bounded in time, and materials have been uncovered concerning what happened, the next step is to start writing. By way of introduction, the analyst's first step is to explicitly identify the case he or she is working on and discuss why this particular case is important for the reader to know about. In the introduction, the analyst should also demarcate the beginning and the end of the case study as well as identify the actor from whose point of view he or she will be writing the case. Remember, although episodes of crisis usually involve multiple actors, the story being told in the case study should focus on the perception of the crisis from only one actor's point of view. This will allow the analyst to see how the case actually looked to a chosen participant, examine the sequence in the way in which it unfolded, and do so without the benefit of hindsight. Such an approach mimics real-world conditions and extends our understanding of the motivations, uncertainties, and constraints facing decision makers in times of crisis.

B. Place Case in Context.

The second step is to develop a synthetic narrative or chronology of the case. Such narratives begin by setting the context surrounding the particular incident. Discussions of the context present background information that is not explicitly part of the case as the analyst has bounded it but is necessary data for the reader to understand the nature of the case. Sometimes such information includes the way that decision making is organized in a particular country or government regarding the specific problem that forms the heart of the case. Other times it may involve a description of the history of a certain relationship and why particular parties are adversaries or sought as third-party mediators. At still other times it may focus on why this case is important to explore because of its effect on future events. At issue in presentations of contextual factors is consideration of what is peculiar about the case that needs to be explicated to draw the reader into the story and set the stage for what will follow. Generally contextual factors center on historical and/or political concerns.

C. Identify the Nature of the Situation and Topic

As part of the description of the context, the analyst needs to consider the type of problem that the policymakers are facing -- in other words, the kind of situation they find themselves in. Is it (1) a confrontation in which they must figure out how to respond to a proposal, threat, sanction, or act of aggression by another; (2) a call to intervene to solve a problem that is happening elsewhere but has implications for their own interests; (3) a negotiation in which the policymakers are participants; (4) a mediation in which they are third parties working to avert, end, or facilitate a ceasefire or truce between other parties engaged in a confrontation, or (5) a disaster that has occurred naturally or is man-made? Research has suggested that the policy process and how policymakers handle these various types of situations may differ; by classifying cases according to type of situation, we can explore this proposition. Also of interest is the kind of issue or topic the case is focused around; does it involve security, financial/fiscal, environmental, health, resource, intelligence, diplomatic, religious, development, democratization, self-determination, identity, or sovereignty concerns. In designating type of situation and kind of topic, the analyst is asked to select that category which seems most characteristic of the event -- that situation and topic that are highlighted or appear to be the dominant themes of the case. If more than one category seems applicable, all should be listed. In describing the type of situation and topic, it is important to indicate the rationale for a particular designation, denoting why the case appears to be that type of situation and center around a certain issue.

D. Build Chronology of Case

The next step is to develop a chronology of the case – to build a time line indicating what happened when and who was involved in the decision-making process during the bounded portion of your case. The chronology presents the story line or plot of the case, as the analyst has been able to uncover it in the course of sorting through the materials available on the case. The chronology begins with the initial problem that triggered the policy process – that which defined the problem and brought it to policymakers' attention. It continues by delimiting what happened next on a day-by-day or month-by-month basis depending on the time line of the case. An example of a chronology can be found in Supplemental Reading 1 (excerpted from Bernhardsdottir, 2001) detailing the Icelandic government's handling of a devastating avalanche in 1995. Much like a detective looking for clues to a crime, the analyst writing a case study

searches through the various (sometimes contradictory) materials describing the situation considering how the policy process evolved. In writing down the chronology, the analyst should highlight what his or her search has suggested are the most important decisions that were taken in dealing with the particular situation. In the process, "the analyst gains a fuller knowledge of the decision-making processes than that previously available to many, if not most, of the individuals actually participating in the examined case" (Stern and Sundelius, 2001:12). Whereas the policymakers involved in the event are generally aware of certain parts of the process, in developing the chronology the analyst gains a more holistic perspective on what happened.

Step 3: Delimiting the Occasions for Decision

A. What Is an Occasion for Decision?

Policy problems often lead to a series of decisions. Policymakers do not deal with a problem by making a single decision and then sit back to await a response. Problems tend to get structured into a string of decisions that involve different people and institutions. Consider the British response to the Argentinean invasion of the Falkland Islands. It consisted of a series of decisions made in the British cabinet, defense ministry, parliament, and foreign ministry. General guidelines for policy were developed by the cabinet, troop movements were defined by the defense ministry, cabinet policy was ratified by the parliament, and diplomatic moves in the United Nations and elsewhere were determined by the foreign ministry (Franks, 1983; Hastings and Jenkins, 1983; Lebow, 1985). ***Each time policymakers formulate a question about a recognized foreign policy problem that needs answering and arrange for someone or some body to respond to it, we have an "occasion for decision***." The occasion for decision provides analysts with a basic unit of analysis for studying how policymakers and governments deal with policy problems. It facilitates isolating and examining the sequence of decisions that are made in handling such problems by breaking the sequence into its parts. In rebuilding the sequence we learn about the flow of decisions and who was involved in which decisions with what consequences to the decision process, choices made, and eventual outcome.

B. Identifying Evidence of Occasions for Decision

Occasions for decision become evident to the analyst in the process of developing the chronology for the case. They are usually perceived by policymakers as questions that need to be addressed. The questions that drive occasions for decision generally take one of seven forms: (1) queries that focus on the need to search for more information in order to define the nature of the situation (e.g., what exactly is happening on our border?), (2) queries about whether action is needed in relation to the problem (e.g., are their troop movements along our border something we need to take action on at this time?), (3) queries seeking possible solutions to the problem (e.g., what should we do about their troop movements along our border?), (4) queries about whether one or more proposals for dealing with this aspect of the problem should be adopted (e.g., should we mobilize our troops to counter theirs, seek a resolution condemning their action through the United Nations, and/or cut all relations with them?), (5) queries about who is going to implement the decisions that have been made (e.g., who is responsible for carrying out actions in dealing with this border incident?), (6) queries concerning how to deal with the media and the public regarding what is happening (e.g., how much should we tell the press and who should do it?), and (7) queries focused on the ratification process (e.g., what do we have to do to have our decisions legitimated by the legislature?). Supplemental Reading 1 presents an illustration of how one case analyst moved from the chronology to specifying a set of occasions for decision

for a disaster that occurred in Iceland (Bernhardsdottir, 2001) – see the table on the top of page 234 of the document after reading through the chronology.

Once the chronology is developed, the analyst should dissect the case into its various occasions for decision following the above criteria. As a result, the course of events will be broken down into its component parts, each of which can be studied individually to see who was involved and what happened. This sequence of occasions for decision can also be reassembled for a more general thematic analysis once we have a good understanding of the individual decisions. Since each link in the chain of events is dependent on those that have occurred previously, it is important to map each to gain some sense of the flow of influences on what happened. Such a process tracing allows the analyst later in the case study to pose "what if" questions and consider how changes at any point in time might have led to a more or less effective outcome.

C. Write-Up Guide for Part One

1. **Brief description of case and its significance**
2. **Who is the actor?**
3. **What are the temporal boundaries of the case?**
4. **Context in which case is occurring**
5. **Type of situation in which policymakers find themselves and how/to what degree this case constitutes a crisis (the 3 criteria)**
6. **Time line or chronology of case**
7. **Identification of the occasions for decision**

PART TWO: IDENTIFYING AND DESCRIBING THE IMPACT OF DECISION UNITS

Step 1: Deciding on Decision Units

In any political entity there is a group of actors who, if they agree, have both the ability to commit the resources of the entity and the power to prevent other people, groups, or institutions from overtly reversing their position. The unit having this authority may (and frequently does) vary with the nature of the problem. For instance, in governments for issues of vital importance the highest political authorities often constitute the decision unit; there is a contraction of authority to those most accountable for what happens. For less dramatic, more technical issues, the decision unit generally varies depending on the type of problem the government is facing whether military, economic, diplomatic, scientific, and so on. In governments where policy normally involves multiple bureaucratic organizations, the problem may be passed among different units – within one agency, across agencies, or between interagency groups. The basic point here is that for most policy problems and occasions for decision, some person or collection of persons come together to authorize a decision and constitute for that issue at that point in time the authoritative decision unit.

A. Types of Decision Units

An examination of the various decision-making models that have been proposed in the literature indicates that there are, in essence, three types of possible authoritative decision units (see Hermann, 2001). They are: (1) ***predominant leader:*** a single individual who has the ability to stifle all opposition and dissent as well as the power to make a decision alone, if necessary; (2) ***single group:*** a set of individuals, all of whom are members of a single body who collectively select a course of action in consultation with each other; and (3) ***coalition of autonomous actors:*** the necessary actors are separate individuals, groups, or representatives of institutions which, if some or all concur, can act for a political entity such as a government, but no one of which by itself has the ability to decide and force compliance on the others; moreover, no overarching authoritative body exists in which all these actors are members. This categorization is intended to be both mutually exclusive and exhaustive. The actors making decisions with regard to the set of decisions the analyst has identified in his or her case should correspond to one of these three configurations. Consider some examples of these three types of authoritative decision units in the current international environment. Cuba's Fidel Castro and Iraq's Saddam Hussein represent predominant leaders; single groups include the British cabinet and the Standing Committee of the Chinese Communist Party; and a coalition of autonomous actors is in evidence in Iran where policy can only result from the interaction of the more moderate forces led by President Khatami and the more conservative forces led by Ayatollah Khamenei.

B. Determining Nature of Decision Unit for Each Case

Among the goals of the Maxwell Case Methodology is to consider the impact that each of the above decision units has on the choices, perceptions, and constraints facing those who are in a position to respond to crises. Therefore, the next step in doing a case study is to determine the nature of the authoritative decision unit for each of the occasions for decision that were identified in the chronology. In taking this step, the analyst is ascertaining who was involved in dealing with each important decision in the course of events, where the locus of authority was for each occasion for decision, and whether or not those that outside experts talk about as having dealt

with a specific decision actually did. Figure 1 below presents a way of determining which of the three types of decision units is likely to have ultimate authority to respond to a particular occasion for decision. Four assumptions are built into this figure. First, the authoritative decision unit can vary from one occasion for decision to another. Second, decision units with the power to make a decision with regard to a specific occasion for decision may not elect to do so. Third, certain kinds of problems increase the likelihood of particular units exercising authority. Fourth, the identification of the authoritative decision unit for any occasion for decision involves an inferential task in which the analyst must exclude possibilities as well as find evidence with which to estimate the probable unit. The Figure 1 can be compared to a sorting machine that separates apples of different sizes into alternative bushel baskets. The smaller apples are siphoned off first as they pass through the sorter, followed by the medium-sized apples, with the larger apples left at the end of the chute. The initial questions in the figure seek to determine if the authoritative decision unit for a specific occasion for decision is a predominant leader; if this is not the case, questions are posed to ascertain if the authoritative decision unit is a single group; if not, the remaining units must be coalitions of autonomous actors. The material in the four International Studies Review articles found at Supplemental Readings 2-5 augments the figure indicating the various conditions that tend to favor one or the other of these decision units given the nature of the occasion for decision at hand; it also discusses some of the issues that have arisen in differentiating between the three types of decision units and indicates the rules that have been developed across case studies to help the analyst in making such determinations. Go through the questions in the Figure 1 for each of the occasions for decision and develop a rationale for linking a particular decision unit to an occasion for decision.

Step 2: Examining the Decision Process

A. Key Contingencies

Each of the three types of decision units can exist in one of several states that suggest how members of the unit are going to engage in the policymaking process and the likely result of the decision making. Each has a different decision calculus; there is a particular "key contingency" – a specific condition – that permits the analyst to differentiate configurations leading it to operate in fundamentally different ways. For predominant leader decision units, the key contingency variable involves the individual's sensitivity to information from the political context which helps to define how much attention he or she will pay to others' points of view and to situational cues (see M. Hermann, 1984, 1993; Hermann and Kegley, 1995; Kaarbo and Hermann, 1998; Hermann and Preston, 1999). The less sensitive the leader, the more important his or her leadership style and beliefs become in determining what will happen; such leaders are usually more interested in persuading others and in carrying out their own agendas and programs than in seeking advice or listening to others' points of view. These leaders want people around them who will implement their decisions and who will provide them with confirming rather than disconfirming information. Contextual cues are highly relevant to the more sensitive predominant leader who does not take action until the positions of important constituencies and pressures from the domestic and international environments are taken into account. The situation, not the person, becomes the focus of attention.

Figure 1 HERE “Instructions for Determining the Nature of Authoritative Decision Units (From Appendix B)

THIS FIGURE WILL BE HANDED OUT IN HARD COPY FORM

The operation of a single group decision unit is, in contrast, conditioned largely by the techniques that are used to manage disagreement and conflict within the group. Since conflict in a problem-solving group can be debilitating, members often devote energy to developing ways of dealing with substantive differences. The literature indicates three different models to describe how single groups cope with conflict: (1) members act to minimize conflict by promoting concurrence ("groupthink"), (2) they acknowledge that disagreement is a fundamental, often unavoidable, part of the decision-making process and seek to resolve the conflict through debate and compromise ("bureaucratic politics"); and (3) even though disagreements are likely, members recognize that such conflict may have no resolution and enact a rule to govern decision making ("winning majority") (see Janis, 1982; C. Hermann, 1993; 't Hart, Stern, and Sundelius, 1997; Stern and Verbeek, 1998; George and George, 1998). Two variables that help to differentiate among these models of group decision making are the extent to which members identify with the group itself or with external organizations and the decision rules used by the group. A focus on building concurrence and denying conflict is more likely when members' loyalties lie within the group. Members are concerned with what is happening in the group itself, in maintaining morale and cohesiveness, and in retaining their position in the group. When members' loyalties lie outside the group, the rules in place to guide decision making help to differentiate if conflict is accepted or resolved. With a unanimity decision rule, members have recognized that no solution is possible unless it is acceptable to everyone; with a majority decision rule, members agree to abide by what a certain percentage of the group decides (see Miller, 1989; Levine and Moreland, 1990).

Basic political processes within a coalition of autonomous actors are influenced by the nature of the rules and procedures guiding interaction -- the "rules of the game" that shape what is possible (see Hagan, 1993, 1994, 1995; Kaarbo, 1996; Hermann and Hagan, 1998). In particular, we are interested in the degree to which political procedures and norms are well-established and "institutionalized." Where rules are essentially absent, we generally find a degree of anarchy and instability in the government with different actors vying for power. When there are established rules, the nature of the rules and theories of coalition formation help us ascertain the decisions that are likely to prevail. If the decision rules permit an authoritative decision when a subset of actors (i.e., a majority) achieves agreement on a course of action, a minimum connected winning coalition is possible. If the decision rules – or political reality – require unanimity among all participants in the coalition, we have a "unit veto" system in which any single actor can block the initiatives of all others.

B. Theory Selector

Knowledge about the nature of these key contingencies provides us with core theoretical insights into the operation of the decision units. Indeed, these key contingencies act as a kind of "theory selector" indicating which models of decision making we need to focus on in understanding the linkage between the decision process and outcome. Table 1 shows how the theory selector works. As the table indicates, each of the basic decision units can be found in three different forms depending on the nature of certain contingencies. The resulting nine types of decision units tap into a wide range of research and theory on how decisions are made by individuals and in groups, organizations, institutions, and political systems. Moreover, the decision units in this elaborated categorization engage in decision making with different aims and highlighting different processes. Thus, for example, a coalition with no established rules

Decision Unit	Key Contingency	Theories Exemplify	Decision Process
Predominant Leader	**Sensitivity to Contextual Information:**		
	(a) Relatively Insensitive (Goals and Means Well-Defined)	Personality Theory	Principled
	(b) Moderately Sensitive (Goals Well-Defined, Means Flexible; Political Timing Important)	Theories Based on the Person/ Situation Interaction	Strategic
	(c) Highly Sensitive (Goals and Means Flexible)	Theories Focused on the Situation Alone	Pragmatic
Single Group	**Techniques Used to Manage Conflict in Group:**		
	(a) Members Act to Minimize Conflict (Members Loyal to Group)	Group Dynamics ("Groupthink")	Deny Conflict and Seek Concurrence
	(b) Members Acknowledge Conflict Is Unavoidable; Group Must Deal With It (Members' Loyalty Outside Group; Unanimity Decision Rule)	Bureaucratic Politics	Resolve Conflict Through Debate and Compromise
	(c) Members Recognize Conflict May Have No Resolution (Members' Loyalty Outside Group; Majority Decision Rule)	Minority/Majority Influence and Jury Decision Making	Accept Conflict and Allow for Winning Majority
Coalition	**Nature of Rules/Norms Guiding Interaction:**		
	(a) No Established Rules for Decision Making	Theories of Political Instability	Anarchy
	(b) Established Norms Favor Majority Rule	Theories of Coalition Formation	Minimum Connected Winning Coalition
	(c) Established Norms Favor Unanimity Rule	Theories Regarding Development of Under- and Over-Sized Coalitions	Unit Veto

Table 1: Decision Unit Dynamics

will probably deadlock since the parties comprising the decision unit are less interested in resolving the substantive problem than in gaining control and power for themselves. A relatively insensitive predominant leader is likely to take strong, forceful actions as he or she moves to put into place an agenda or push for a cause. Members of a single group with an interest in resolving conflict but not wishing to "lose face" with the organizations they represent are likely to want to "paper over differences" or to engage in building a compromise all can accept.

In addition to telling the analyst what theories to apply in understanding a particular decision, the contingencies also provide insights concerning whether the decision unit will be "open" or "closed" to the pressures of its environment, both domestic and international. In effect, they tell the analyst when to focus on the decision unit itself in determining the nature of the decision and when there is a need to look outside the unit for influences that will shape the decision. Decision units with principled (less contextually sensitive) predominant leaders, single groups with strong internal loyalties, and coalitions with poorly established decision rules have internal dynamics that override external pressures and largely dictate their decision outcomes. Consider as examples, Mao's leadership of the cultural revolution and isolation of China, decisions made within the Thatcher Cabinet following the Argentinean invasion of the Falkland Islands, and the futile attempts at building a cohesive Iranian foreign policy during the hostage-taking crisis when Khomeini had yet to solidify his control over the government. In each case decisions were driven by *internal* dynamics, be it the personalities of principled leaders, the strong loyalty within a single group, or the severe politics within an unstable coalition. In marked contrast, those decision units characterized by more sensitive predominant leaders, single groups whose members' primary identities are to other entities, and coalitions with well-established rules are penetrable and more susceptible to outside sources of influence; that is, they are "open" and more likely to take into account what is going on in the particular situation both domestically and internationally. As illustrations, note Brezhnev's waffling over the decision to invade Czechoslovakia in 1968 until he sensed that there was unanimity among members of the Politburo and their important constituencies to taking such action, the struggles currently going on within the Israeli coalition cabinet as each party tries to gain domestic leverage through slowing down or speeding up the Middle East peace process, and the debate that occurred between President Clinton and the Congress over giving China most favored nation status.

The dynamics that characterize these different types of decision units are described in general in Supplemental Reading 2. Each article in Supplemental Readings 3-5 focuses on one of the basic decision units – predominant leader, single group, and coalition of autonomous actors – and elaborates the ways in which the various contingencies affect what happens in the foreign policymaking process. In addition, each article contains descriptions of a set of actual foreign policy decisions to illustrate how the contingencies work for that particular type of decision unit.

C. Linking Occasions for Decision and Decision Units to Decision Process

After determining which of the various configurations of the three types of decision units one has for each occasion for decision, the analyst should use the material from the appropriate Supplemental Reading (3=predominant leader, 4=single group, 5=coalition of autonomous actors) in examining what happened in the particular occasion for decision. The models described in these three pieces provide the analyst with a set of guides for thinking about the decision process in each occasion for decision. They can help to organize the presentation of how

the decision unit helped to shape the nature of the action that was taken. Consider how closely the models proposed in these articles come to describing what occurred. Are there aspects of what happened that are not captured in the models? In other words, how could the models be tweaked or enlarged to better account for what occurred in the occasion for decision?

Refer to the sample case studies available as Supplemental Readings 6-9 for examples of well structured decision unit analyses.

D. Write-Up Guide for Part Two

1. **Identification of authoritative decision unit for each occasion for decision**
2. **Description of the decision-making process for each occasion for decision in chronological order**
3. **Examination of how the decision units helped to shape what happened**

PART THREE: PERFORMING THEMATIC ANALSYSIS

A. Ten Themes of Crisis Management

With the advantage of having gained an insider's knowledge about what happened in a case, there is benefit in exploring certain themes that the literature on policymaking suggests can affect how the plotline in the case -- or story -- plays out across occasions for decision. Among these themes are (1) the effects of the initial definition of the situation and framing of the problem, (2) how prepared those involved were for dealing with such a problem, (3) how and where decisions are made in the institutional system, (4) the value conflicts that often arise in the making of policy, (5) the nature of the general leadership that was exercised, (6) how information was managed, (7) patterns of organizational cooperation and conflict (8) how policy was coordinated across occasions for decision and organizational boundaries, (9) the effects of the particular way decisions were sequenced and what was happening in the broader political context, (10) lessons that appeared to be learned or not learned in the course of the occasions for decision, and (11) how this case shaped what occurred next. In what follows, each of the themes will be developed in more detail. Suggestions will be made about what the analyst should consider regarding a particular theme. It is important for the analyst to consider each in turn in doing the case study. The only way that we are going to learn about the actual influence of these various themes in different types of situations and problems is to explore the relevance of each in every case study. By building a data bank out of the application of these themes to a set of cases, we can begin to understand which are more and less influential in which kinds of situations and for which types of problems. For examples of such a thematic analysis, see sample case studies in Supplemental Readings 6-9.

1. Definition of the Situation and Framing

Who First Identified Problem? As we observed earlier, policymakers respond to problems that they perceive in their environments. Problems are subjective and often grow out of policymakers' interpretations of the particular context of the moment and the expectations that they have about what should or should not be happening. Of interest is where the problem is first identified, who says we have a problem and what the nature of the problem as first defined is. What factors appear to account for viewing the situation as posing a problem at this point in time? Are there reasons why the problem is identified by certain people, groups, or institutions? Is there a sense of urgency about the problem so that others are immediately made aware of it and a decision unit is convened?

Effects of Initial Framing. Often those who identify a problem have the first opportunity to frame how others are going to view what is happening. And once a problem is framed, it can narrow the range of alternative courses of action that are considered and focus attention on a particular source of the problem. The analyst should explore how the problem was initially framed and consider the effect that this framing had on what happened. Did the framing change across the course of the case; if so, why did it change and who was responsible for re-framing what was occurring? "Framing is heavily influenced by cognitive and social structures and processes such as (historical) analogical and metaphoric reasoning, culture, context, organization and information flows" (Stern and Sundelius, 2001:17). For U.S. policymakers we often talk about the lessons of Vietnam as helping to shape the way certain international events are characterized; the same actions coming from a traditional adversary versus friend or ally

generally are interpreted differently; whereas a military unit may see civilian casualties as a tragic part of war, workers for a humanitarian aid agency may view such casualties as reprehensible and worth stopping what is precipitating such effects. Is it possible to see such influences on how the problem was framed in the particular case under study? Are there other ways the problem could have been framed that would have changed what happened?

A particularly vivid illustration of how problem framing can influence what is done is found in the Swedish response to the nuclear accident at Chernobyl (see Stern, 1999). The first inklings that there was a problem for the Swedes came to light at the Forsmark nuclear power plant north of Stockholm when a heightened level of radiation on the shoes of a worker triggered an alarm. As a result of where the increased radiation was discovered, for the initial hours of the crisis it was framed as a problem with the Forsmark plant. "This hypothesis would dominate the definition of the situation for roughly the first seven hours of the crisis" (Stern, 1999, p. 125) and would lead to the eventual evacuation of the plant. It was not until readings taken in other parts of Sweden confirmed higher levels of radiation throughout the country and a wind analysis suggested the contamination was coming from the region of the Chernobyl plant in the Ukraine that this frame was changed. For the first time, unlike the 1979 accident at the Three Mile Island nuclear power plant that had served as the reference point for how plants should react when alarms sounded, the contamination was transboundary acting more like acid rain. Previous analogies proved inappropriate, as did standard operating procedures. By evacuating the Forsmark plant, management was putting the employees out into the radiation whereas keeping them in the plant would have provided them protection from the radiation.

2. Preparedness for Dealing with Problem

Did Standing Operating Procedures Work? Some political entities have had a lot of experience in dealing with particular types of problems. In fact, that is why governments often create agencies, interagency groups, task forces, and planning staffs; why cities often have emergency management teams; why international and transnational organizations have secretariats and headquarters' staffs. There have developed standard operating procedures for dealing with certain problems that can be instituted should the current problem appear to be like those in the past. Some problems, however, are new, surprises, ambiguous, or time urgent and there may be few who have had to deal with "something like this" before. As the analyst, which kind of problem do the policymakers in the case you are studying believe they are facing? Were they prepared to deal with what was happening? Were their standard operating procedures appropriate for this particular situation? If not, were the policymakers able to adapt to what was happening; was there time to react to what was occurring? Consider, for example, the reactions of the New York City firefighters to the World Trade Center terrorist attacks. They responded to what they believed was a "typical" burning skyscraper, parked their engines close to the buildings, and worked the hoses up the stairs into the buildings. Not realizing that the heat of the jet fuel from the two airplanes would burn hotter than most fires and cause the steel to become pliable and collapse, their standard operating procedures did not fit the event and there was little time to change plans.

Were Policymakers Prepared to Defuse Situation? Under certain conditions, it is possible for policymakers to anticipate what might happen and to attempt to keep a situation from escalating and getting out of hand. At other times, their views concerning what is

happening are so set that they miss cues that would facilitate de-escalation. How a problem is framed can lock one into a particular point of view. Currently in the Middle East, neither Sharon and his cabinet nor Arafat and those close to him are ready to interpret any move by the other as a gesture of peace. Each sees the other as having malevolent intentions. Their views make de-escalation more difficult. Which is symptomatic of the case under study? Were there windows of opportunity where policymakers could have controlled what was happening, either limiting any damage or moving toward their goals? Did the policymakers take advantage of these opportunities and with what result?

Was Event Unexpected? Sometimes policymakers assume a stance that "something like that can't happen here"; "our people would never engage in that kind of behavior." But, then, the unthinkable happens. Expectations are shattered. Of interest is how long it takes policymakers to shift focus and come to grips with the event. Where does the change in attitude begin and how does it affect how the problem is framed? The Oklahoma City bombing in the U.S. and the assassination of Israeli Prime Minister Yitzhak Rabin illustrate this point. Those engaged in the bombing and killing were counter-intuitive to what policymakers would have expected. The Oklahoma City bombing was first considered the work of a Middle Eastern terrorist, not a U.S. citizen and the killing of Rabin was thought initially to be the work of the Palestinians, not a Jewish Israeli citizen. Does dealing with an unexpected event and making an incorrect initial judgment lead to a harsher, more deliberate course of action? How does it change future expectations and behavior?

3. Decision Units[12]

This theme focuses on the question of how and where decisions are made in the complex institutional systems which typically engage in crisis management. For example, cruicial decisions can be taken by single individuals, tandems or dyads, small groups, or organizational networks. Similarly, decision units may be located and play various roles within a give political/administrative (or corporate) system. Decision units may be strategic or operative and may be located at local, regional, national, or supranational (e.g. EU or UN) levels. Decision units may vary considerably in terms of their composition, mode of operation, and placement across the course of a given crisis—it is not uncommon for shifts upward (up-scaling) and downward (down-scaling) to occur as part of the complex politico-administrative escalation and de-escalation processes (see, e.g. Syder, Bruck, and Sapin, 1963; Hermann, Hermann, and Hagan, 1987; Stewart, Hermann, and Hermann, 1989; Rosenthal, 't Hart, and Kouzmin, 1991; Stern, 1999). Finally, what are the criteria for determining which individuals and organizations will be included in (or excluded from) the decisional "loop" and the decision unit?[13]

4. Value Complexity

Were Value Conflicts Present? An important ingredient in any political situation is value conflict. Indeed, politics have often been described as involving decisions regarding the distribution of resources given value conflicts. Stakeholders in politics often differ in how they prioritize goals and the values such objectives represent. Such differences can have profound effects on how these stakeholders define a problem and what options seem viable at any point in

[12] If you have chosen to do Part 2 of this manual called "Decision Units" you should not do this theme.

[13] This section is a direct quote from Stern and Sundelius (2002) "Crisis Management Europe: An Integrated Regional Research and Training Program" *International Studies Perspectives*, no. 3, p. 78.

time. Reputations are made and lost based on how well the policymaker is perceived as doing in working on various stakeholders' goals; moreover, political positions often depend on being able to deliver on one's promises. Delivery becomes more difficult when problems arouse conflicting values. The analyst needs to consider if there is a value conflict in the case under study. What are the values at stake among the various actors in the case? "Are they unrelated, mutually suggestive of one line of action, or in conflict" (Bynander, 2001:5)?

How Did Policymakers Cope with Value Conflicts? Value conflicts can increase the complexity of dealing with a particular problem. They can increase the stress in the decision-making process as policymakers are faced with difficult, and often contradictory, choices that are likely to offend one or more sets of stakeholders even while satisfying others. At issue is how policymakers deal with the value complexity. Do they ignore it or do they accept and try to deal with value conflicts? Do they bolster their own position at the expense of others or do they work to find a compromise that will offend as few as possible? Do they try to "paper over differences," engage in trade-offs with those who have less at stake in the current situation, or seek an integrative solution that gives all some of what they want? In other words, how do the policymakers involved in dealing with the problem under study deal with value conflict?

Short-Term Versus Long-Term Interests. One type of value conflict that is often in evidence in dealing with policy problems is that between short- and long-term interests. An action taken to help relieve the problem or take advantage of the situation now may have negative consequences in the long term. In illustrating this dilemma, Bynander (2001:5) talks about the hostage-taking event; in deciding whether on not to negotiate with the hostage takers, policymakers are "weighing the short term value of getting the hostages free against the long term cost of having encouraged future hostage takings." Does the case under study evidence such value conflict? How did policymakers deal with this conflict? Some argue that officials who are elected are more likely to choose short term over long term goals while those who are selected or appointed can afford to focus on the long term. As an analyst, was there evidence of this proposition in the case?

Was Anyone Excluded from Decision Making Because of Position? It has become evident in examinations of the Iran-Contra Affair, which occurred in the United States during the second Reagan administration that the Secretaries of Defense and State were kept from knowing about the dealings with Iran because they did not agree with the premise of the negotiations (see Tower, Muskie, and Scowcroft, 1987). They were excluded deliberately from meetings because of their points of view and the expectation that they would prevent the negotiations from going forward were they to know. In the course of the case under study, was there a change in the nature of the decision unit in order to exclude certain values from the policymaking process? Was action taken covertly (secretly) in order to avoid direct value conflicts with specific stakeholders? What happened as a result?

Who Resolves Conflict Can Matter. Stakeholders may better accept controversial actions in general if they are done by those who previously had opposed such activity. Consider Nixon's overture to China and Rabin's willingness to sign the Oslo Accords. Nixon had been a staunch anti-Communist before his overture and China had been perceived as an adversary. Similarly, Rabin had fought aggressively for the security of Israel against intrusions from the

Arab world on behalf of the Palestinians; yet he was willing to sign an accord with those same Palestinians moving closer to the creation of a Palestinian state. These two leaders were so unlikely to make such moves that their behavior and rationales were persuasive. Is any such behavior found in the case under study? Or, are decision unit values and actions in line with previous behavior? In effect, they are acting as an observer would have expected.

5. Leadership

Patterns of Leadership. In linking decision units to occasions for decision, patterns of leadership often become evident. Some political entities tend to depend on a particular type of decision unit; structure tends to dictate a particular leader, group, or coalition will dominate. Saddam Hussein is unlikely to include many others in making decisions, particularly important decisions, for the Iraqi government; he is interested in having people around him willing to implement what he wants rather than give him advice. Sometimes problems arise that are specialized and the domain of one organization or institution so that much of the decision making is localized within that specific entity. At other times, many individuals, groups, and institutions become involved in policymaking. In this latter instance, the issue often becomes one of coordination revolving around who will exercise leadership at what point in time. In thinking about the case under study, how would you, as analyst, describe the types of decision units that were involved? Did they fit any of these patterns?

Situational Determinants of Leadership. Were some individuals or groups called upon to exercise leadership beyond what was usually deemed part of their job description or focus? At times we talk about situations causing people to rise to the occasion and to assume more leadership than they may have before. The mayor in the case of the avalanche in Iceland (see pages 235, 239 in Supplemental Reading 1) was forced by circumstances to shoulder most of the administration of initial rescue efforts. Some organizations may want to instigate problems in order to move their agendas forward and increase the likelihood that appropriate others recognize there is an issue that needs addressing. The U.S. Federal Maritime Commission threatened to close American ports to Japanese ships to raise awareness of problems American ships were having in Japanese ports. This Commission had jurisdiction to make such a threat. The latter escalated to become a cause celebre between the U.S. president and the Japanese prime minister and force action. Did either of these characterize the case under study? Were there any changes in how events are handled as a result of such factors? Should there have been?

Organization of Leadership Setting. Some types of political entities seem to have a chain of command that is set into motion whenever problems are identified. Everything works like a well-oiled machine with those involved knowing the limits of their responsibilities. Other types have overlapping areas of responsibility and encourage competition among those involved with the hope of getting more innovative solutions as a result of the competition. Still other leadership settings are more collegial in nature; accountability is shared and all members of the team are empowered to participate in the decision-making process. In the case being examined here, are any of these patterns evident among the decision units who participated in the various occasions for decision? Was there more of an emphasis on one of these patterns over others? Did the pattern chosen affect the nature of the decision-making process and the decisions that resulted?

6. Information Management

It is important to examine three types of information management in the examination of any case. These three include (1) the search for information on which to base both the definition of the situation and the designation of options, (2) interaction with the media and public, and (3) interaction with groups and organizations in the society who may be particularly affected by what has occurred.

Search for Additional Information. The case study in Supplemental Reading 1 of the avalanche disaster in Iceland on pages 241-242 analyzes the first type of information management showing how important garnering information about what is happening is and how difficult sometimes it is to acquire. Particularly when situations are surprises and unanticipated – the terrorist attacks on the World Trade Center on September 11, 2001 – there is a need to search for information to understand what is happening but also a need to act to contain any further damage. Because of the pressure to act, at times policymakers jump to conclusions about the nature of the situation based on previous events or their own beliefs without trying to learn more about what is occurring. At other times, the decision unit becomes consumed with gaining information about the nature of the situation and holds action in abeyance until the context is well understood. The emphasis in the one case is on "doing something now" while in the other case it is on "knowing exactly what is happening." In the case under study, did policymakers evidence one kind of behavior over the other? How did it affect both who was involved in decision making and the choices that were made?

As we noted above, some types of decision units are more open to information from their environments than others. Predominant leaders who are relatively insensitive to the political context – they know what they want to do, single groups that are focused on maintaining group cohesion, and coalitions without well-established rules of the game tend to be more closed to information; they are more focused on achieving their agendas in the case of the predominant leaders, on not "rocking the boat" or being seen as deviant on the part of the members of the single group, and in having more power than the others in the case of the coalition. Their focus of attention is inwardly directed. The current situation becomes caught up in what is happening in the decision unit and used for its purposes. The other types of decision units seek information from the environment because it is important to helping them decide what options are feasible at any one point in time. They are less likely to act until they have assessed what is going on. Consider the nature of the decision units across the various occasions for decision in the case under study. Did they tend to be more open or closed to information from the environment? Did this predisposition have any effect on who was involved in dealing with the problem or the nature of the decision making across the situation?

Interaction with Media and Public. As many observers have commented, policymakers are considered more and less successful in dealing with a crisis-like event based on how they handle communications with the media and public (e.g., see Pearce, 1995; Regester and Larkin, 1998; Stern, 1999; Henry, 2000). The relations between those managing the event, the media, and the public have implications for how credible the policymakers' performance is judged to be. As president of a democratic Russia, Putin learned this lesson the hard way when the submarine Kursk sunk in the Barents Sea in August 2000. His delay in traveling to Murmansk to mourn with the families of those trapped in the submarine and refusal to accept help from other

governments even though the world press was providing evidence that Russian divers were having a hard time achieving any kind of rescue made Putin seem callous, unresponsive, and similar to Soviet leaders of old. Policymakers have different ways of dealing with the media and through them, the public. Some are quick to take responsibility for their actions while others try to find someone else to blame or work to attribute what happened to fate, luck, chance, historical circumstances, or inevitability given the context and the others involved. At times policymakers are defensive and bolster their own position vis a vis others as opposed to being proactive and seeking interaction with the media or even using the media to get their message out. Some policymakers seem to invest effort in maintaining friendly relations with the media and public, remaining open and willing to discuss issues at what appears to be a moment's notice while others are more secretive and intent on controlling the flow of information to the press corps. As Stern and Sundelius (2001:18) note, "there are a number of recurring credibility 'traps'" that can cost policymakers dearly. Among them are engaging in very different actions from what has been promised or is expected (as, for example, from boldly stating "read my lips, no new taxes" to raising taxes), failing to appropriately empathize or be concerned with victims' plights (Putin's problem as noted above), and retreating from the symbolic aspects of leadership so that the public fails to perceive or understand what is happening. In the case under study, how did policymakers handle the media? Were any of these patterns in evidence? Did different types of decision units use different ways of interacting with the media? Was a particular person or group given the task of dealing with the media and public? How effective were the relations between the policymakers and the media/public during the course of events?

Interaction with Affected Stakeholders. Sometimes a problem raises the stakes for particular domestic parties and interest groups. In coping with the problem, policymakers must also be alert to how their decisions will affect these domestic publics who may be generally supportive or in opposition to those in power. Banning exports of British beef to other countries within the European Union to stem the flow of "mad cow" disease caused difficulties not only for the British cattle industry but also for its tourist industry as people were reluctant to travel where the disease appeared rampant. The strategies the leadership uses to try to ameliorate these difficulties can prove critical to assessment of its performance and, at times, whether or not it continues in office. Often policymakers caught in such dilemmas try to find a scapegoat on which to blame what is happening that is outside the leadership circle itself while enhancing the role they are playing. Indeed, the diversionary theory of war grew out of the numerous observations by historians and political scientists of times when governments diverted attention away from domestic problems by targeting an adversary abroad. It is also possible to view some summit meetings and trips abroad at crucial times as involving this same technique Nixon going to the Middle East during Watergate and Clinton touring Africa as the Monica Lewinsky affair was overpowering the media are examples of such behavior. But policymakers may also use such dilemmas to co-opt representatives of these groups into the policymaking process and seek their advice. Or they may accommodate their policies to the positions of the affected groups. As an analyst, it is important to consider the types of strategies the leadership is using if your case includes some disaffected groups. How did the strategies affect what happened? Did the disaffected groups remain so after the event was over and, if so, what did they do?

7. Politico-Bureaucratic Cooperation and Conflict

When Stakeholders' Definitions of the Problem Differ. When a problem involves a

number of different groups and institutions, there is a high likelihood that they will frame what is happening in a variety of ways. Problems can look quite different when the values and interests at stake vary. As we noted above in discussing framing, how one defines a problem can have implications for the options that are considered viable as well as decisions about who should be involved in the policymaking process. In the case under study, was the problem framed in different ways by the various stakeholders? Did this lead to difficulties in coordination? Were there any strategies that the leadership used to bring about coordination such as papering over differences, arranging for trade-offs, use of coercion, cooptation of position, or changing the decision rules? The Reagan administration's decision to place marines in Beirut during the Lebanese Civil War illustrates what can happen when the problem is framed differently across the bureaucracies responsible for policymaking. Policymakers in the State Department believed the United States needed a military presence in the region in order to enhance its capability to negotiate a ceasefire and ultimately a settlement to the conflict; those in the Defense Department wanted a particular objective and end game before sending U.S. troops into harm's way. Since neither were satisfied with the options proposed by the other, the president papered over the differences by having the Defense Department send in a limited number of marines to the Beirut airport for a specified length of time. Each side got some of what they wanted but did not prevail. Interestingly, the conflict continued to fester as neither State nor Defense officials were pleased with what was happening; each tried at a number of points in time to see its framing of the problem take precedence. (For a detailed description of this case, see Haas and Kennedy, 1989.)

Pressures to Stick Together or to Blame Others. There are a number of dynamics that tend to create pressures for cooperation and solidarity in crisis, for example, the "rally around the flag" effect, leader attentiveness, and "group think" (see, Rosati, 1981; Janis, 1982). However, there are also a number of countervailing tendencies. Crises often present particularistic risk which may induce political or bureaucratic actors to engage in defensive behaviors, which may in turn antagonize other actors to play a "blame game." Equally important, crises present opportunities as well as risk and so actors may compete in seeking credit for their contribution (and denigrating that of others). Finally, situational and contextual factors tend to be moderated by the nature of personal relationships within policy communities and the strength of national cultural norms opposing opportunism in extraordinary situations (see, e.g. Rosenthal, 't Hart, and Kouzmin, 1991; Stern and Verbeek, 1998; Allison and Zelikow, 1999).[14]

8. Transboundary Coordination and Crisis Internationalization

Need for Coordination. Policy problems do not generally fall under the purview of only one kind of political entity. They often cut across political jurisdictions. As a result, groups and institutions with different interests and functions may be called into play to deal with a problem and issues of coordination can quickly arise. Moreover, the incident may cross borders and be germane to international as well as transnational actors. Sharing power and authority at the risk of losing credit or future resources become dilemmas for those interested in coordination, as does being held accountable if things go wrong. At issue in developing a case study is considering the various political entities that are involved in dealing with the problem and the number of different jurisdictional boundaries that need to be crossed. For example, in reacting to the

[14] This subsection, except for the heading, is a direct quote from Stern and Sundelius (2002) "Crisis Management Europe: An Integrated Regional Research and Training Program" *International Studies Perspectives*, no. 3, p. 79.

September 11, 2001 terrorist attacks on the World Trade Center (WTC), the New York City firefighters, police, emergency management teams, area hospital personnel, officials in City Hall, management of the various companies in the WTC among others on the local scene needed to coordinate their activities as well as develop ways of interacting with officials from U.S. federal-level agencies and New York state-based agencies tasked with dealing with such operations. How well does such coordination work? Does it result in a lot of infighting, jockeying for position, leaking of information, and seeking credit for contributions while denigrating what others have done? Or does someone or some body assume the task of coordination organizing others' activities so that there is less overlap in the delivery of services and cooperation among those involved? If the latter is the case, who assumes such a coordination role and with what results?

Conditions Favoring Coordination. Sometimes political entities develop norms that facilitate coordination. Some problems also foster coordination better than others. In our discussion of decision units, it became evident that decision units with a decision rule involving unanimity must reach some kind of consensus or risk deadlocking. The decision rule forces coordination or nothing will happen. Some governments have in place a norm favoring consensus-building that automatically fosters a certain degree of coordination. In a similar fashion, it is easier for groups and institutions to come together and coordinate their activities when their survival is being threatened or there has been a catastrophe that will be highly damaging if not dealt with quickly. The 1995 avalanche in Iceland, which is described in Supplemental Reading 1, is a case in point. The terrorist attacks on the World Trade Center also illustrate such an event, as does an attack on one's soil. Such situations are likely to "rally people around the flag" for a period of time and to increase a sense of patriotism while decreasing and providing disincentives for partisanship. Did the case under study have these characteristics? Were policymakers able to put away their differences to coordinate policy and action on the ground? How long was such coordination possible before underlying differences came to the surface? What happened when the differences surfaced once more?

When Problems Cross Sovereign Borders. Increasingly in the current highly interconnected world, cases involve transboundary problems. Dilemmas that cross borders do not pay attention to sovereignty as well as geographical or sectional boundaries. Consider the problem for San Diego's city council when the sewage from Tijuana, Mexico follows the currents to its beaches and makes tourism impossible. To deal with the issue officials on both sides of the border must consult with their national governments and the problem becomes international in scope. When problems become international, the number of political jurisdictions that must be consulted increases and the nature of relations between the larger political entities comes into play. Is this particular problem the most important one between these larger political entities, can it be leveraged by one party to gain something it wants, is working on it in conflict with another important goal? As the current problem becomes internationalized, it joins a larger agenda of issues and may get lost. In addition to crossing country boundaries, the problem may involve nongovernmental organizations or multinational corporations that also know no borders. The International Red Cross is often an important player in disasters; Amnesty International where there are concerns about human rights violations, Green Peace where the environment is threatened, the Nike Corporation when sweatshop charges are made. How do these groups interface with the policymakers in the city, country, or region where the problem is located?

What coordination issues arise among these various transnational actors in addition to those with the policymakers involved in taking action? Do the increasing numbers of transnational actors engaged in areas of conflict in the world complicate dealing effectively with the problem or make it easier to get things done?

9. Sequencing and Synchronicity

Managing Feedback. As we have observed before, policymaking is an ongoing process in which decisions (and non-decisions) generate responses that create new opportunities for choice. Policymaking is sequential in nature as those involved are faced with reconsidering a problem or some variant of it as a result of feedback from their environments and with deciding whether or not to change their earlier positions. In some instances policymakers recognize that their current decisions will necessitate future decisions on the same problem. For example, when a foreign minister goes on a fact-finding mission, there is a search for more information on which to base a policy. In other circumstances, policymakers may reconvene to review past actions and subsequent developments, concluding that no new decisions are appropriate. Or they may elect to redouble their efforts and increase their commitment to the course previously established. Alternatively, they might choose to change direction, that is, to terminate the prior actions and follow another course. If a new action is taken, it may vary from past actions in both magnitude and direction. It might involve only a minor adjustment or clarification in the previous activity or it could entail a major increase in the commitment to the prior act. Policymakers could initiate a complete break with previous behavior and reverse their policy direction. During the long course of American involvement in Vietnam, all these different types of responses occurred at one time or another. In the case under study, how did the actors involved in policymaking deal with feedback from the environment? Are any of these patterns in evidence? Did the policymakers emphasize one of these patterns more than others? Was there a dramatic change in course and, if so, what was its impact on what happened?

In their selections of a particular response to a problem, policymakers often have expectations about what the action will accomplish. They may believe that it will yield more information; reveal an adversary's intentions; generate support for their position; or slow, stop, or reverse the effects of the problem. Policymakers' expectations indicate when they are likely to recognize and interpret new information from the environment that can trigger further consideration of the problem. Indeed, actions appear to range along a continuum reflecting the policymakers' relative certainty regarding how to interpret and cope with the problem they are facing. At one end are actions that involve further search for information and at the other are definitive actions that are intended to resolve the problem. In between are provisional actions that are tentative and limited in their scope and conditional actions that demand a response from some other indicating whether future decisions are necessary. When policymakers initiate a search for information, they expect feedback. Unless the search is a smoke screen for inaction, the decision unit knows that it will be deliberating further on what to do about the problem when an answer is forthcoming. Anticipation of future reconsideration of the problem is built into the decision to search for information. By choosing provisional actions, policymakers perceive a need to make some effort to address the problem but they do so in a tentative and limited fashion. Provisional actions are generally small incremental steps that keep options open, including the ability to terminate the activity or limit its consequences if it does not seem to be working. In undertaking conditional actions, policymakers expect a response from the

environment; they have generally accepted a certain causal interpretation of what is happening that enables them to specify what specific others must do (or stop doing) to alleviate the problem. Definitive actions are taken when policymakers believe that they have adequately diagnosed the problem and have an effective means of dealing with it; as far as they are concerned at the moment the matter is settled. In examining the sequence of occasions for decision in the case under study, did one of these types of action predominate? Did the sequence involve searches for more information and provisional behavior or did those involved in making decisions move quickly to conditional and definitive responses? Did the type of response help to shape any feedback and who was involved in responding to such feedback?

Policymakers appear to be more committed to their decisions when the actions are conditional and definitive than when they are provisional or are searches for more information. With increased certainty and commitment goes reduced alertness to signals that things might not be going well and greater reluctance to changing course if forced to reconsider. In fact, research has found that decision units with a strong commitment to a previous action tend to increase their commitment to that action when confronted with negative feedback rather than change course (Staw and Ross, 1987; Vertzberger, 1990; Brockner, 1992; Uhler, 1993). They engage in an escalation of commitment by investing more effort in the goal of the prior action. Moreover, they are more likely to pay attention to information from the political environment the more it conforms to their prior expectations. Indeed, the more committed the decision unit is to its prior action, the more likely members are to interpret information from the context as supportive and not to recognize disconfirmatory information. Thus, taking a definitive action diminishes a decision unit's vigilance for feedback. Are these ideas evident in the present case? How do the decision units react to negative feedback – do they even perceive negative feedback? Do those decision units that manifest commitment in their actions engage in an escalation of commitment in the face of negative feedback so that even though changing course would appear the more effective next move they choose, instead, to continue down the same path?

Agitators for Change. When one party's (or faction's) position prevails, there is a lopsided compromise, or members of the decision unit cannot even agree to disagree, some participants do not "own" the decision that is made and have a reason to monitor resulting action and agitate for reconsideration of the decision should feedback be negative or not have the effect they want. They become agitators for change. And like a George Ball or Clark Clifford in US decision making on Vietnam, the current hard-line members of the inner circle of the Chinese Communist Party with regard to partnership with the United States, or the reformers in Iran on economic opening to the West, they may push for reconsideration of decisions that go against them when events support their original positions. These agitators for change often represent a minority position among advisers, in a group, or in a coalition, having divergent perspectives and preferences for action as well as competing definitions of the problem and occasions for decision than the majority. Because the minority often have reservations about the merit of the prior decision, they are more likely than those whose positions are represented in the choice to recognize discrepant feedback. By assuming a post decision monitoring function, the minority increase the likelihood that the majority will be forced to acknowledge negative feedback and reconsider the problem. And if said agitators persist in their message, retain a consistent position, argue their position is for the good of the decision unit given what is happening based on prior action, or gain support in the broader society, they may persuade enough members to reconstitute

the majority. Alternatively, they may induce some members of the majority to engage in divergent thinking and create a new position that can gain support across both the majority and minority. And even if the agitators for change are not successful in influencing the majority to modify their prior position, they may have some effect indirectly on the majority by reshaping the latter's values or decisions on related issues or how such issues will be framed. Consider in the case under study if any members of the various decision units represent a minority position and the influence that their position had, if any, on what happened. Did the size of the minority, their status in the group, or the consistency of their position affect the decisions that were made? At what point in the decision process did the minority try to make itself heard?

Dealing with Simultaneous Events. Sometimes other events are occurring in the political environment that can affect the policymaking process in addition to the case under study. The literature refers to this phenomenon as synchronicity. Simultaneous occurrences can have a variety of effects. They can be seen as parallel or causally related as a result of happening at roughly the same time. One can distract policymakers away from the other. For instance, might the Cold War have been of shorter duration had the Suez Crisis and Hungarian Uprising not occurred together for U.S. policymakers? It is hard enough to deal with one crisis, let alone tackling two at once. As we observed earlier, events like upcoming elections, summits, critical parliamentary votes, scandals, strikes, guerrilla warfare, and what alliance partners are doing can all influence how the current case is framed and how much attention can be given to it. Moreover, at times the complexity of the issue spreads available policymakers too thin leading to cumulative stress and potential burnout or it involves such a wide range of decision units that it is difficult to coordinate among the stakeholders. Are there any events that are synchronous with the case under study? If yes, what are they and how did they influence what happened in the present case from problem framing to the choice? Did the effects of the simultaneity lead policymakers to assume the events were causally related or was the influence one of diverting attention and resources away from the case under study?

10. Culture

Grid-group Cultural Theory. Different cultures respond to crises in different ways. Studies of public attitudes and values in case studies of crisis situations suggest that culture can affect preparedness, decision making, communication, learning, and blame behavior—in other words, the way that leaders and participants perceive, interpret, and react to the event (Bernhardsdottir and Kristinsson, 2003). This theme considers how four different cultural patterns can shape crisis management: individualism, egalitarianism, hierarchy, and fatalism, here defined by the Grid-group Cultural Theory (Thompson, Ellis and Wildavsky, 1990). Consider, for example, how leaders and the public in these various types of cultures might prepare for crises. While the fatalists will view the future as unpredictable and thus planning as relatively futile, those in a hierarchical culture will stress expertise, order, and resource management in their planning; those in an individualistic culture will focus on the individual household with less collectively based strategies; and those who believe in egalitarianism will demand public participation in any planning as well as collective plans of action.

Questions. Do cultural patterns in the case under study become visible? How do they indicate the four perspectives of the Grid-group Cultural Theory? What was the dominant cultural pattern in your case? Did it change or remain stable and what might account for this

variability. You should use Hood's (1998) Grid-group Cultural Theory (found in the reader accompanying this manual) as a complementary to your analysis.

11. Lessons Identified and Lessons Learned

Is the Past Prologue for the Present? How does what policymakers are doing reflect lessons of the immediate past? At times policymakers appear to compensate for what they thought happened before and take actions that are opposite to what was done earlier – the US government avidly avoids sending troops into a nation-building exercise that might be another Vietnam or Somalia. At other times previous behavior is reinforced – until the events of September 11, when a plane was taken over, passengers assumed they were in a hostage-taking situation and behaved accordingly. Or, the lessons can be ignored or disregarded – so-called "generational" differences among leaders can lead to "convenient forgetting" of the lessons of the past. As the leadership changes from those who were in office under Communist rule in Russia to the younger generation who did not have such experiences, world views can change as can values and interests and the past no longer is prologue to the future. Are any of these patterns in evidence in the case under study? What lessons from the immediate past are relevant to the current case? How did compensating, reinforcing, or ignoring the lesson affect what happened?

Reflections and Changes. "Crises present considerable opportunities for learning" (Stern and Sundelius, 2001:19; see also Stern, 1997). Generally policymakers reflect upon their experiences after a problem has been solved or, at the least, dealt with for the moment. If what was done was perceived as successful, analyses often abound in the media; if it was considered closer to a failure, there are often commissions and committees set up to study "what happened." Perceived success can reinforce what was done and turn it into a standard operating procedure. "Remember what we did last time worked very well." Recognized failure can lead to reconsideration of usual practices and at times firing of prominent policymakers and a realignment or reframing of policy. If a policy or procedure is entrenched, it may take several failures to force policymakers to develop new policies. In the case under study, were there any lessons learned? Did policymakers re-evaluate their policies after the event was over, reinforce previous practices, or just move on? Did the lessons learned affect how the problem was framed, notions about appropriate practices to use in dealing with such problems, or the particular policymakers who would be involved in future decision making around this type of problem – or all of the above? How did the lessons learned change these?

B. Aftermath

Implementation. The final step in the thematic analysis is to consider what happened in the aftermath of the case. Did implementation go smoothly; were there unanticipated logistical dilemmas, unintended consequences, or contextual changes that affected what could be done? Implementation can be a lot like the children's game of "telephone," where someone starts a message, whispering it in the next person's ear, and all wait to hear how it turns out after it makes its way around the circle. In the case under study, were the policy directives coming out of the various decision units re-interpreted and re-framed as they moved through the policy implementation process; if so, how? Was what happened more the result of communication and coordination problems or was it shaped by value conflicts and bureaucratic interests or by those who may not have agreed with the policy decisions to begin with (agitators for change)? As many specialists in the field of public policy have observed, "varied factors can intervene

between the authoritative commitments made by high-level decision units and the resulting actions by the state" (Stern and Sundelius, 2001:14).

Effects on Future Events. Sometimes the current situation and what policymakers choose to do can lead to further crises or an ongoing political trauma that the political entity continues to face. Often such an outcome results from ineffective management of the original event, because the situation raised underlying fissures in the polity, or international and contextual changes that overtook the policymaking process. At times policymakers can believe they have successfully dealt with the cause of the problem and not perceive quickly enough some unintended consequences that will come back to haunt them. The examinations of the assassinations of John F. Kennedy in the United States and Olof Palme in Sweden continue to raise questions and generate books and commissions; the initial decisions made by the Yugoslav elite following the death of Tito have led to the disintegration of a country; decisions by U.S. policymakers to stop working with the Mujahadeen in Afghanistan after the Soviets pulled out are considered one of the causes of the civil warfare in that country and the rise of the Taliban. As we noted at the beginning of this guide, it is not possible in one case, particularly following the process tracing procedure we are advocating here, to examine these prolonged situations. A case must focus on a critical phase of such ongoing events. It is in examining the aftermath of the current case, however, that discussion can explore how what the policymakers did could have helped frame what happened next. In such an examination, the analyst may want to pose a set of counterfactual or "what-if" questions that center around what might have occurred if the policymakers had followed a different course or courses of action. Would any of these options have led to a different outcome; in other words, could the policymakers have affected what happened with a different set of choices?

C. Write-Up Guide for Part Three

1. Effects of definition of the situation and framing
2. Preparedness for dealing with problem
3. Decision Units
4. Influence of value complexity
5. Patterns of leadership
6. Information management
- **a. Search for information**
- **b. Interaction with the media and public**
- **c. Interaction with affected stakeholders**

7. Politico-Bureaucratic cooperation and conflict
8. Transboundary coordination and crisis internationalization
9. Sequencing and synchronicity
10. Culture
11. Lessons identified and lessons learned
12. Aftermath of situation

PART FOUR: WRITING AN EXECUTIVE SUMMARY

For this project the analyst is asked to prepare as a final step an executive summary that overviews the case and what the analyst has learned. This summary should be attached as a cover to your entire paper.

A. Writing Case as an Executive Summary

Executive summaries are short digests of a case that are often written for the policymaking or policy analytic communities to highlight what we have learned from investigating the case that may have relevance for doing a better job in the future. They generally present an overview of the context of the case and why it is important to study. In other words, what is the relevance of knowing more about this particular case? This presentation of the context of the case is followed with a brief description of the major occasions for decision and what happened. The executive summary ends with a discussion – often numbered or bulleted – of the lessons learned that should be considered in future such situations. These summaries are kept to 2-3 pages in length so that they are likely to be read by busy executives or policymakers.

Examples of executive summaries are found in the sample case studies (Supplemental Readings 6-9). A short introduction to the case is followed by an overview of the occasions for decision faced. Once describing these occasions for decision, the executive summary focuses on how the decisions that were made affected the course of the crisis and its aftermath. It concludes with a series of policy relevant lessons that can be derived from the particular case.

Epilogue

Congratulations! Having now completed one in-depth case study involving the "process tracing" technique described here, you are now ready to tackle many more and to begin to compare and contrast what is found in one case with what occurs or does not occur in others. By depositing a copy of the current case study into the Maxwell case data bank, you allow us to build a set of cases and data to improve both our theory and practice. In so doing, you are eligible to use the data for future research, teaching cases, simulations, executive summaries, and policy statements.

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